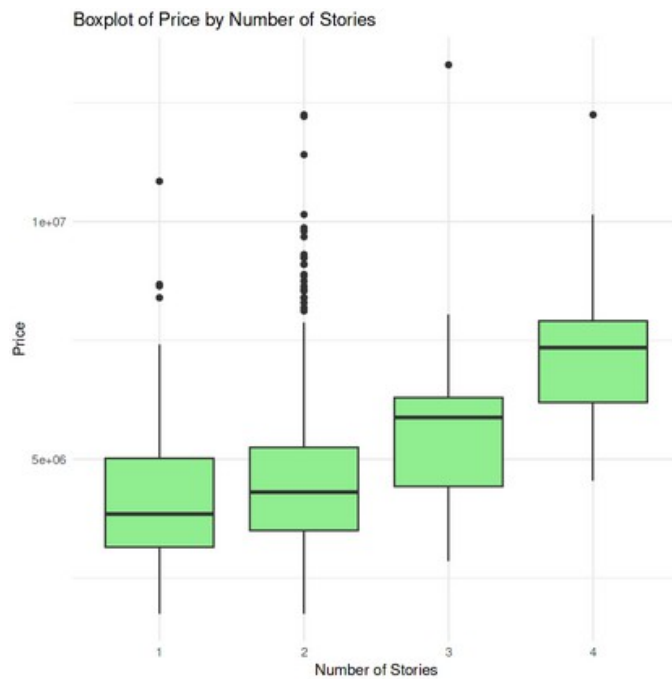


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Dataset	<div>Housing dataset:</div> <div>A data.frame: 5 × 13</div> <table><thead><tr><th></th><th>price</th><th>area</th><th>bedrooms</th><th>bathrooms</th><th>stories</th><th>mainroad</th><th>guestroom</th><th>basement</th><th>hotwaterheating</th><th>airconditioning</th></tr><tr><th></th><th>&lt;int&gt;</th><th>&lt;int&gt;</th><th>&lt;int&gt;</th><th>&lt;int&gt;</th><th>&lt;int&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th></tr></thead><tbody><tr><td>1</td><td>13300000</td><td>7420</td><td>4</td><td>2</td><td>3</td><td>yes</td><td>no</td><td>no</td><td>no</td><td>yes</td></tr><tr><td>2</td><td>12250000</td><td>8960</td><td>4</td><td>4</td><td>4</td><td>yes</td><td>no</td><td>no</td><td>no</td><td>yes</td></tr><tr><td>3</td><td>12250000</td><td>9960</td><td>3</td><td>2</td><td>2</td><td>yes</td><td>no</td><td>yes</td><td>no</td><td>no</td></tr><tr><td>4</td><td>12215000</td><td>7500</td><td>4</td><td>2</td><td>2</td><td>yes</td><td>no</td><td>yes</td><td>no</td><td>yes</td></tr><tr><td>5</td><td>11410000</td><td>7420</td><td>4</td><td>1</td><td>2</td><td>yes</td><td>yes</td><td>yes</td><td>no</td><td>yes</td></tr></tbody></table> <div>A data.frame: 5 × 13</div> <table><thead><tr><th>throoms</th><th>stories</th><th>mainroad</th><th>guestroom</th><th>basement</th><th>hotwaterheating</th><th>airconditioning</th><th>parking</th><th>prefarea</th><th>furnishingstatus</th></tr><tr><th>&lt;int&gt;</th><th>&lt;int&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th><th>&lt;int&gt;</th><th>&lt;chr&gt;</th><th>&lt;chr&gt;</th></tr></thead><tbody><tr><td>2</td><td>3</td><td>yes</td><td>no</td><td>no</td><td>no</td><td>yes</td><td>2</td><td>yes</td><td>furnished</td></tr><tr><td>4</td><td>4</td><td>yes</td><td>no</td><td>no</td><td>no</td><td>yes</td><td>3</td><td>no</td><td>furnished</td></tr><tr><td>2</td><td>2</td><td>yes</td><td>no</td><td>yes</td><td>no</td><td>no</td><td>2</td><td>yes</td><td>semi-furnished</td></tr><tr><td>2</td><td>2</td><td>yes</td><td>no</td><td>yes</td><td>no</td><td>yes</td><td>3</td><td>yes</td><td>furnished</td></tr><tr><td>1</td><td>2</td><td>yes</td><td>yes</td><td>yes</td><td>no</td><td>yes</td><td>2</td><td>no</td><td>furnished</td></tr></tbody></table>		price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheating	airconditioning		<int>	<int>	<int>	<int>	<int>	<chr>	<chr>	<chr>	<chr>	<chr>	1	13300000	7420	4	2	3	yes	no	no	no	yes	2	12250000	8960	4	4	4	yes	no	no	no	yes	3	12250000	9960	3	2	2	yes	no	yes	no	no	4	12215000	7500	4	2	2	yes	no	yes	no	yes	5	11410000	7420	4	1	2	yes	yes	yes	no	yes	throoms	stories	mainroad	guestroom	basement	hotwaterheating	airconditioning	parking	prefarea	furnishingstatus	<int>	<int>	<chr>	<chr>	<chr>	<chr>	<chr>	<int>	<chr>	<chr>	2	3	yes	no	no	no	yes	2	yes	furnished	4	4	yes	no	no	no	yes	3	no	furnished	2	2	yes	no	yes	no	no	2	yes	semi-furnished	2	2	yes	no	yes	no	yes	3	yes	furnished	1	2	yes	yes	yes	no	yes	2	no	furnished
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Code and Charts	<div>Box plot:</div> <div># Box and Whisker plot of Price by Stories</div> <div>ggplot(housing_data, aes(x = as.factor(stories), y = price)) +</div> <div>geom_boxplot(fill = "lightgreen") +</div> <div>labs(title = "Boxplot of Price by Number of Stories", x = "Number of Stories", y = "Price") +</div> <div>theme_minimal()</div>																																																																																																																																																			



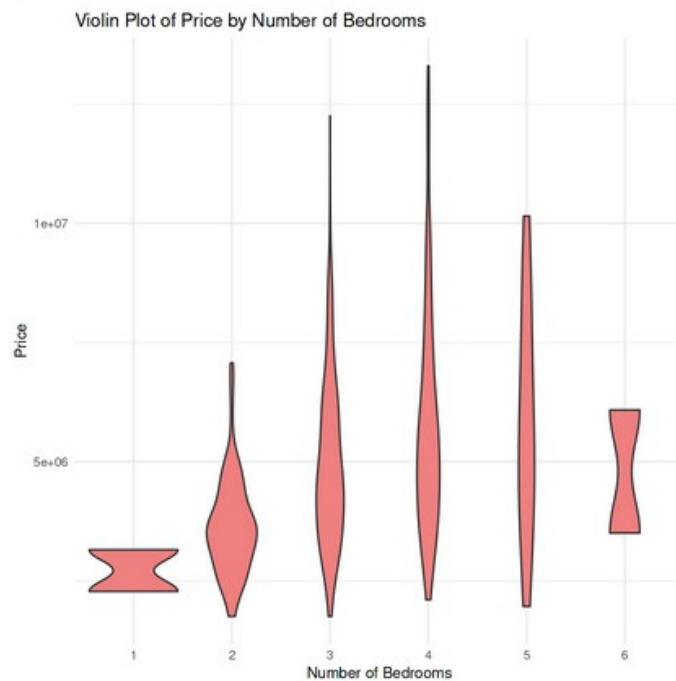
**Observation:**

This shows that as prices increase of homes, number of rooms also increases. For 2 rooms there are outliers as well. They may be luxurious houses.

**Violin plot:**

# Violin plot of Price by Bedrooms

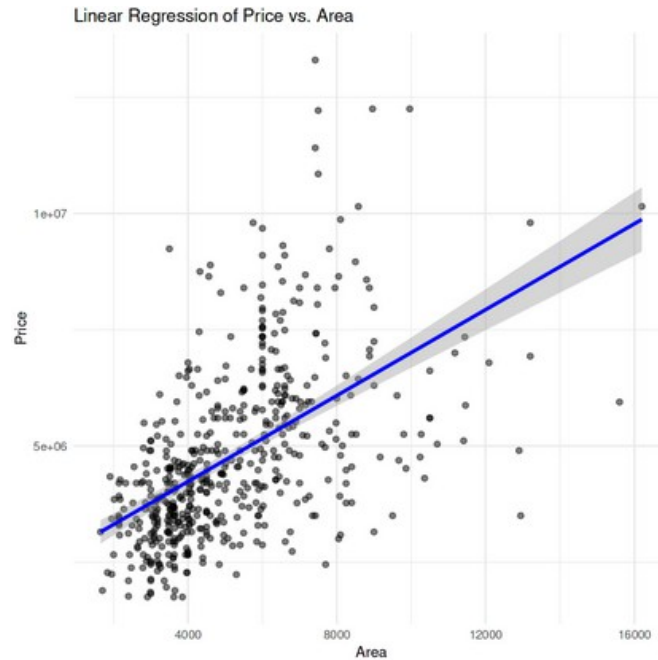
```
ggplot(housing_data, aes(x = as.factor(bedrooms), y = price)) +
  geom_violin(fill = "lightcoral") +
  labs(title = "Violin Plot of Price by Number of Bedrooms", x = "Number of
  Bedrooms", y = "Price") +
  theme_minimal()
```



This is showing distribution of numerical data that is number of bedrooms based on price, as price increases number of rooms tends to increase

#### Linear regression:

```
# Linear Regression plot of Price vs. Area
ggplot(housing_data, aes(x = area, y = price)) +
  geom_point(alpha = 0.5) +
  geom_smooth(method = "lm", color = "blue") +
  labs(title = "Linear Regression of Price vs. Area", x = "Area", y = "Price") +
  theme_minimal()
```



[+ Code](#)

[+ Markdown](#)

**Observation:** This regression plot is showing linear regression between price and area, it is positive linear regression and as house price increases number of square foot getting also increases.

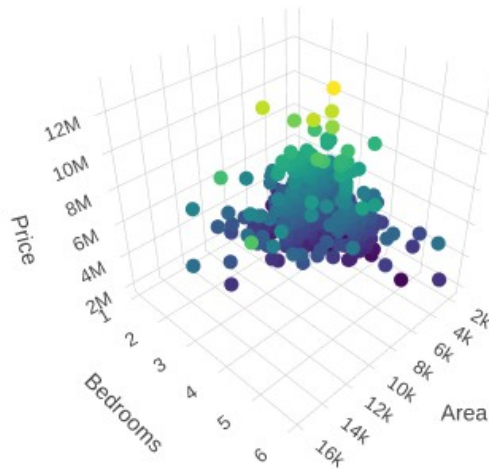
### 3D chart:

```
# Install and load plotly if not already installed if(!
require(plotly)) install.packages("plotly")
library(plotly)
```

### # 3D Scatter Plot

```
plot_ly(housing_data, x = ~area, y = ~bedrooms, z = ~price,
        type = 'scatter3d', mode = 'markers',
        marker = list(size = 3, color = ~price, colorscale = 'Viridis')) %>%
  layout(title = "3D Scatter Plot of Price, Area, and Bedrooms",
        scene = list(xaxis = list(title = 'Area'),
                      yaxis = list(title = 'Bedrooms'),
                      zaxis = list(title = 'Price')))
```

3D Scatter Plot of Price, Area, and Bedrooms



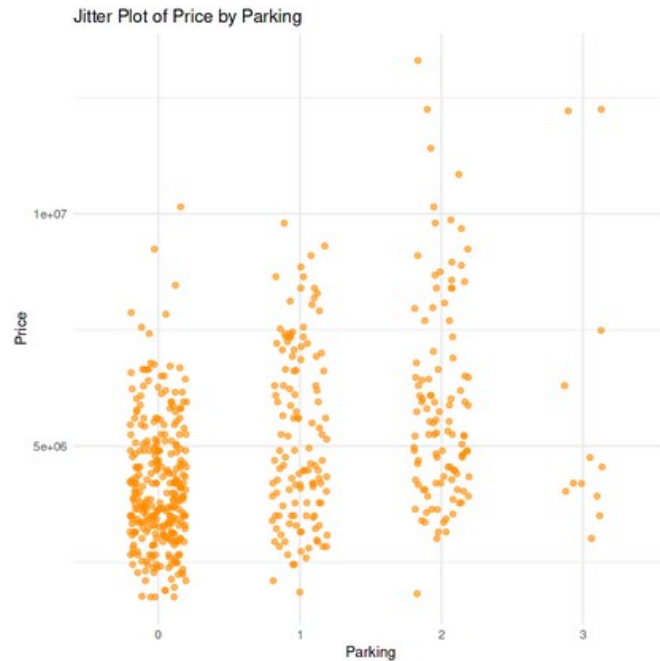
**Observation:**

3D plot is showing price of houses, bedrooms and area, and their values on 3d plane.

Scatter plot:

# Jitter plot of Price vs. Parking

```
ggplot(housing_data, aes(x = as.factor(parking), y = price)) +  
  geom_jitter(width = 0.2, height = 0, alpha = 0.6, color = "darkorange") +  
  labs(title = "Jitter Plot of Price by Parking", x = "Parking", y = "Price") +  
  theme_minimal()
```



Observation: Scatter plot also shows that as price of houses increases parking area for vehicles also increase.

**Conclusion:**

In this practical, I learnt about advance chart charts using R on dataset Housing data set. I learnt alot regarding R language