Aram_Abrahamyan_HW3

Aram Abrahamyan

2025-03-14

```
df = read.csv("mobiles_dataset.csv")
head(df)
```

```
##   Company.Name           Model.Name Mobile.Weight RAM Front.Camera Back.Camera
## 1        Apple      iPhone 16 128GB          174g 6GB         12MP        48MP
## 2        Apple      iPhone 16 256GB          174g 6GB         12MP        48MP
## 3        Apple      iPhone 16 512GB          174g 6GB         12MP        48MP
## 4        Apple iPhone 16 Plus 128GB          203g 6GB         12MP        48MP
## 5        Apple iPhone 16 Plus 256GB          203g 6GB         12MP        48MP
## 6        Apple iPhone 16 Plus 512GB          203g 6GB         12MP        48MP
##     Processor Battery.Capacity.mAh Screen.Size.inches
## 1 A17 Bionic                 3600                6.1
## 2 A17 Bionic                 3600                6.1
## 3 A17 Bionic                 3600                6.1
## 4 A17 Bionic                 4200                6.7
## 5 A17 Bionic                 4200                6.7
## 6 A17 Bionic                 4200                6.7
##   Launched.Price.Pakistan.PKR Launched.Price.India.INR Launched.Price.China.CNY
## 1                      224999                    79999                     5799
## 2                      234999                    84999                     6099
## 3                      244999                    89999                     6499
## 4                      249999                    89999                     6199
## 5                      259999                    94999                     6499
## 6                      274999                   104999                     6999
##   Launched.Price.USA.USD Launched.Price.Dubai.AED Launched.Year
## 1                    799                     2799          2024
## 2                    849                     2999          2024
## 3                    899                     3199          2024
## 4                    899                     3199          2024
## 5                    949                     3399          2024
## 6                    999                     3599          2024
```
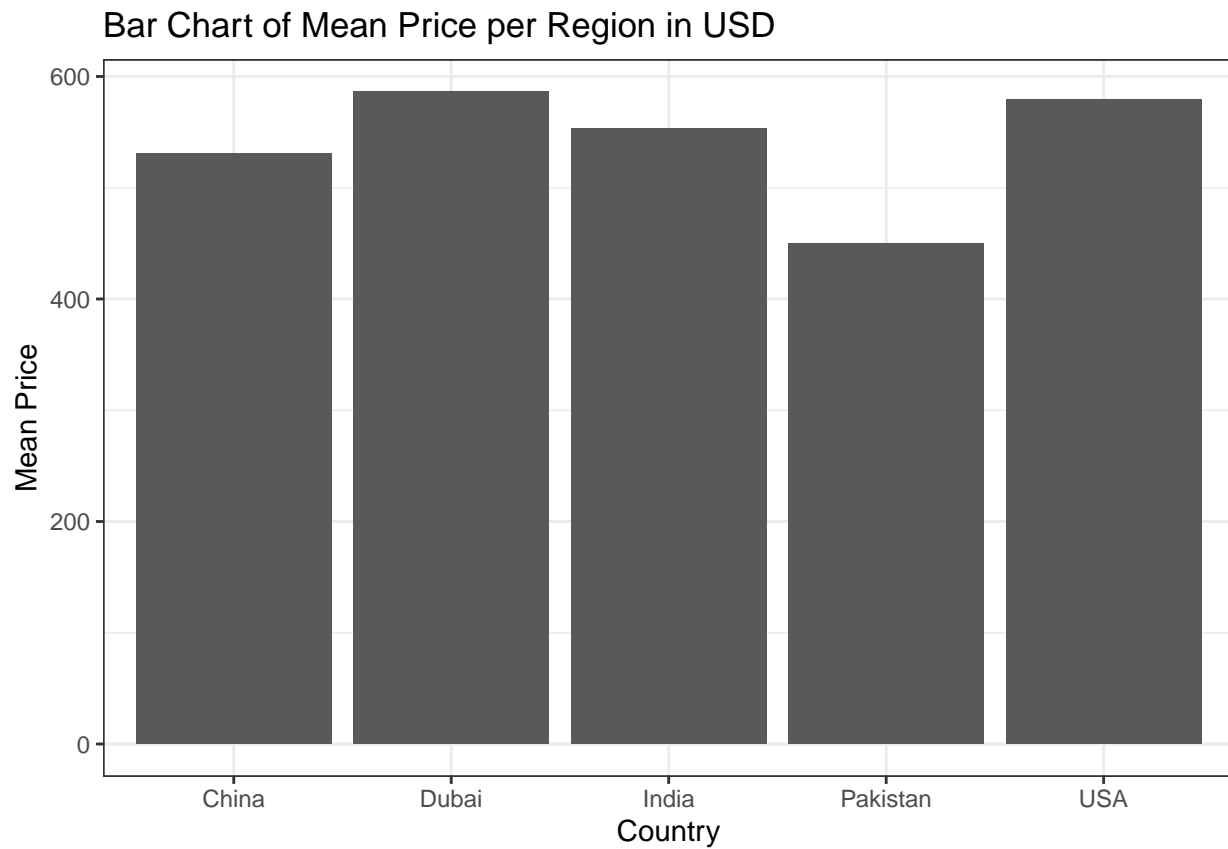
```
df$Launched.Price.Pakistan.PKR = df$Launched.Price.Pakistan.PKR * 0.0036
df$Launched.Price.India.INR = df$Launched.Price.India.INR * 0.011
df$Launched.Price.China.CNY = df$Launched.Price.China.CNY * 0.14
df$Launched.Price.Dubai.AED = df$Launched.Price.Dubai.AED * 0.27
head(df)
```

```
##   Company.Name           Model.Name Mobile.Weight RAM Front.Camera Back.Camera
## 1        Apple      iPhone 16 128GB          174g 6GB         12MP        48MP
## 2        Apple      iPhone 16 256GB          174g 6GB         12MP        48MP
## 3        Apple      iPhone 16 512GB          174g 6GB         12MP        48MP
## 4        Apple iPhone 16 Plus 128GB          203g 6GB         12MP        48MP
## 5        Apple iPhone 16 Plus 256GB          203g 6GB         12MP        48MP
```

```
## 6         Apple iPhone 16 Plus 512GB           203g 6GB         12MP         48MP
##    Processor Battery.Capacity.mAh Screen.Size.inches
## 1 A17 Bionic                 3600                6.1
## 2 A17 Bionic                 3600                6.1
## 3 A17 Bionic                 3600                6.1
## 4 A17 Bionic                 4200                6.7
## 5 A17 Bionic                 4200                6.7
## 6 A17 Bionic                 4200                6.7
##    Launched.Price.Pakistan.PKR Launched.Price.India.INR Launched.Price.China.CNY
## 1                    809.9964                 879.989                   811.86
## 2                    845.9964                 934.989                   853.86
## 3                    881.9964                 989.989                   909.86
## 4                    899.9964                 989.989                   867.86
## 5                    935.9964                1044.989                   909.86
## 6                    989.9964                1154.989                   979.86
##    Launched.Price.USA.USD Launched.Price.Dubai.AED Launched.Year
## 1                    799                   755.73          2024
## 2                    849                   809.73          2024
## 3                    899                   863.73          2024
## 4                    899                   863.73          2024
## 5                    949                   917.73          2024
## 6                    999                   971.73          2024
```
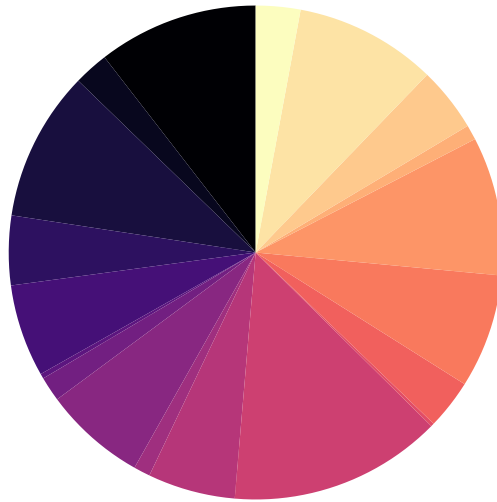
```r
mean_price <- data.frame(
  Country = c("Pakistan", "India", "China", "USA", "Dubai"),
  Mean_Price = c(
    mean(df$Launched.Price.Pakistan.PKR, na.rm = TRUE),
    mean(df$Launched.Price.India.INR, na.rm = TRUE),
    mean(df$Launched.Price.China.CNY, na.rm = TRUE),
    mean(df$Launched.Price.USA.USD, na.rm = TRUE),
    mean(df$Launched.Price.Dubai.AED, na.rm = TRUE)
  )
)
```

```r
ggplot(data=mean_price, aes(x=Country, y=Mean_Price))+
  geom_bar(stat='identity') +
  labs(y="Mean Price", title="Bar Chart of Mean Price per Region in USD")+
  theme_bw()
```

Bar Chart of Mean Price per Region in USD


```
ggplot(data = df, aes(x = "", fill = Company.Name)) +
  geom_bar() +
  coord_polar("y", start = 0) +
  labs(title = "Market Share by Company", fill="Company Name") +
  theme_void()+
  theme(
    legend.position = "bottom"
  )+
  scale_fill_viridis_d(option="magma")
```
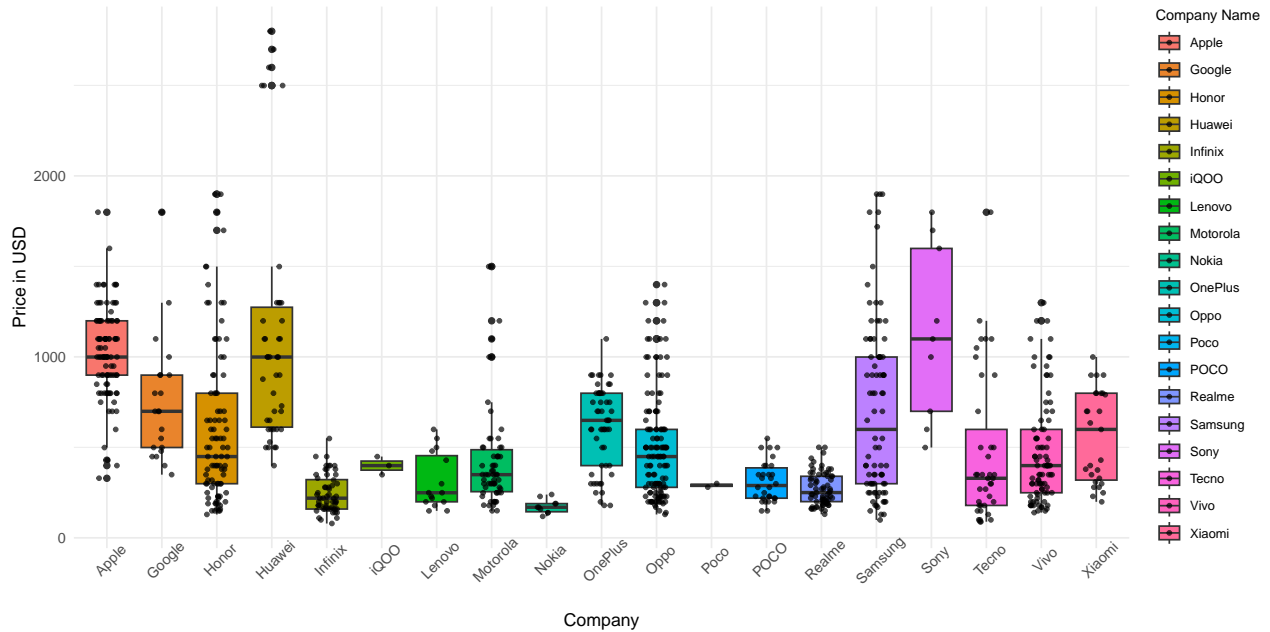
Market Share by Company

Company Name

- Apple
- Google
- Honor
- Huawei
- Infinix
- iQOO
- Lenovo
- Motorola
- Nokia
- OnePlus
- Oppo
- Poco
- POCO
- Realme
- Samsung
- Sony
- Tecno
- Vivo
- Xiaomi

```
ggplot(data=df, aes(x=Company.Name, y=Launched.Price.USA.USD, fill=Company.Name))+
  geom_boxplot()+
  geom_jitter(width = 0.2, size = 1, alpha=0.7)+
  theme_minimal()+
  labs(title = "Price Distribution by Company in USA",
    subtitle = "A boxplot showing how the price varies by company, with individual data points overlaid
    x = "Company",
    y = "Price in USD",
    fill = "Company Name")+
  theme(
    axis.text.x=element_text(angle=45),
    plot.title = element_text(face="bold"),
    plot.subtitle = element_text(face="italic"),
    legend.text = element_text(size=8),
    legend.title = element_text(size=9),
    legend.key.size = unit(17, 'pt')
  )
```

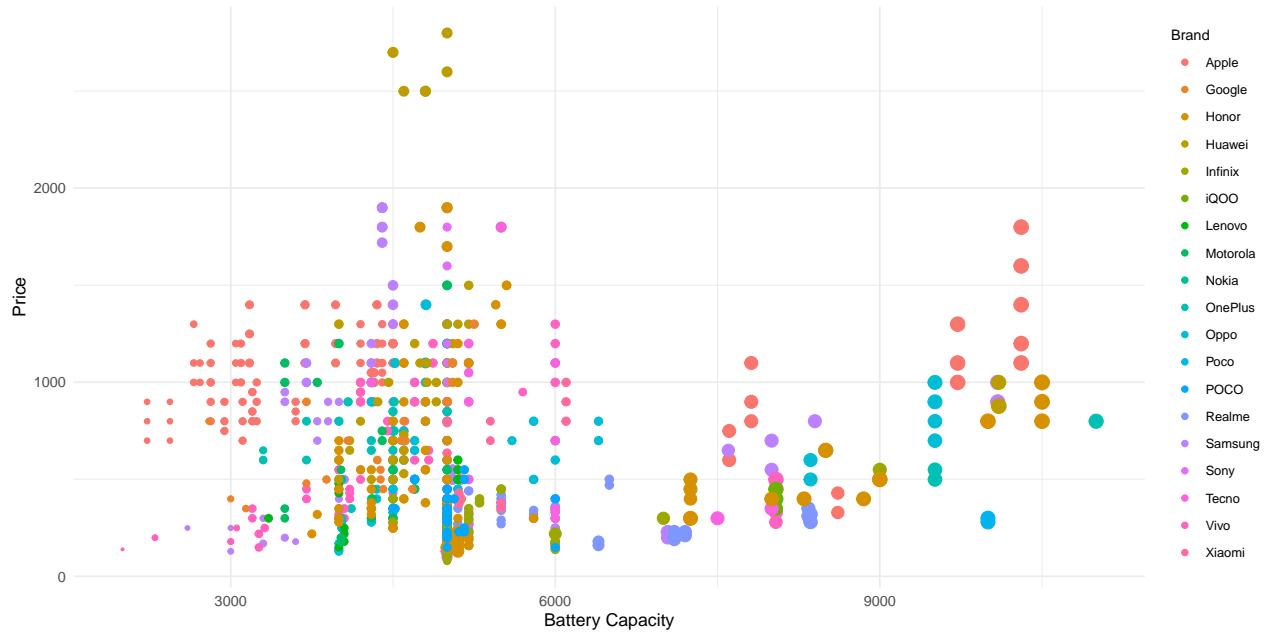**Price Distribution by Company in USA**

A boxplot showing how the price varies by company, with individual data points overlaid


```
ggplot(data=df, aes(x=Battery.Capacity.mAh, y=Launched.Price.USA.USD, color=Company.Name, size=Screen.S
  geom_point()+
  theme_minimal()+
  scale_fill_viridis_d()+
  labs(title="Battery Capacity vs. Price in USA",
       subtitle = "The relationship between battery capacity, price, and screen size across different s
       x="Battery Capacity",
       y="Price",
       color="Brand")+
  theme(
    plot.title = element_text(face="bold"),
    plot.subtitle = element_text(face="italic"),
    legend.text = element_text(size=8),
    legend.title = element_text(size=9),
    legend.key.size = unit(17, 'pt')
  )+
  scale_size(guide="none", range=c(0.5, 4))
```

Battery Capacity vs. Price in USA

The relationship between battery capacity, price, and screen size across different smartphone brands


```r
filtered = df %>% filter(Company.Name %in% c("Apple", "Honor", "Oppo", "Samsung", "Vivo"))
ggplot(data=filtered, aes(x=Battery.Capacity.mAh, y=Launched.Price.USA.USD, shape=Company.Name, color=Sc
  geom_point()+
  labs(
    x="Battery Capacity (mAh)",
    y="Price (USD)",
    title="Battery Capacity vs. Price for Top 5 Brands",
    subtitle="Different Shapes for Each Brand, Color by Screen Size, (USA)",
    shape = 'Brand'
  )+
  theme_minimal()+
  theme(
    plot.title=element_text(face="bold"),
    plot.subtitle=element_text(face="italic")
  )+
  scale_size(guide="none")+
  scale_alpha(guide="none")+
  scale_color_continuous(guide="none")+
  scale_shape_manual(values=c(16, 17, 18, 15, 19))
```

Battery Capacity vs. Price for Top 5 Brands
Different Shapes for Each Brand, Color by Screen Size, (USA)