DSC640 Kia thefts

Taylor Woodington

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Kia Thefts

Load Necessary imports and Datasets

```
## Load Necessary Imports
library(ggplot2)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(tidyr)
library(treemap)
library(ggforce)

## Load the Data
car_theft_map <-read.csv("C:/Users/Shaun/Downloads/carTheftsMap.csv")
motherboard_vice_kiatheft <- readxl::read_xlsx("C:/Users/Shaun/Downloads/Motherboard VICE News Kia Hyun
```

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```

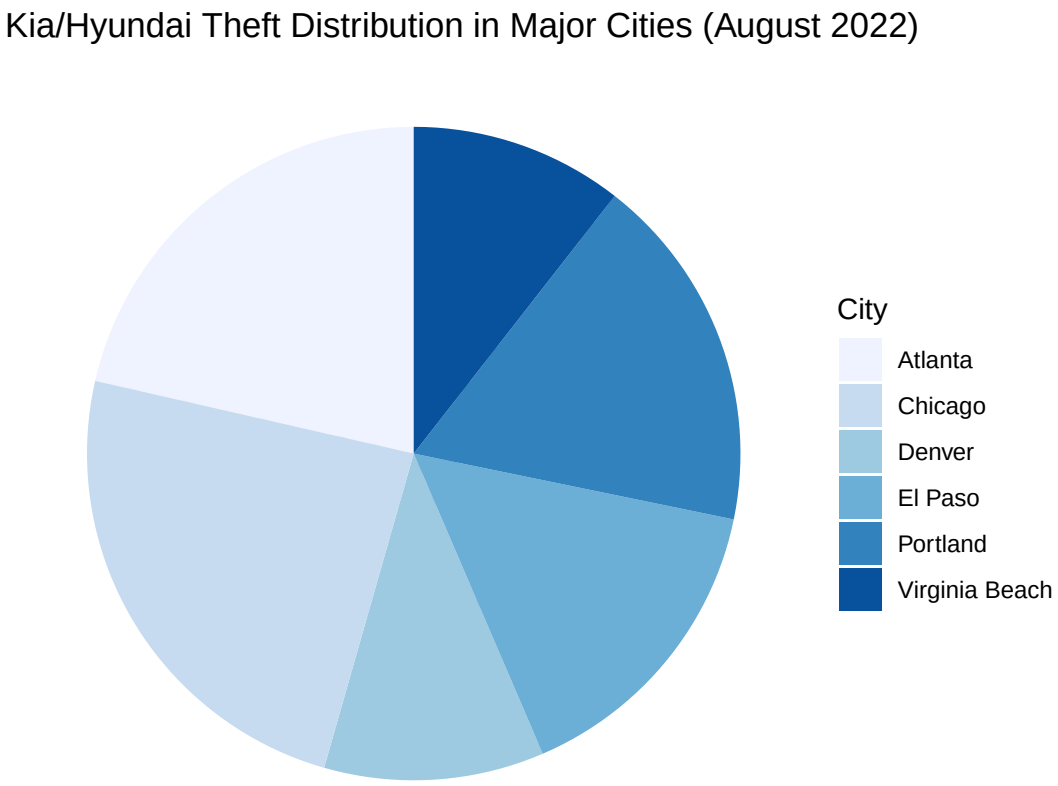
```
milwaukee_kiatheft <- read.csv("C:/Users/Shaun/Downloads/KiaHyundaiMilwaukeeData.csv")
overall_kia_hyundaitheft <- read.csv("C:/Users/Shaun/Downloads/kiaHyundaiThefts.csv")
```

Load the Visuals

Visual 1: Pie Chart from Motherboard Vice News Kia Hyundai Theft Dataset

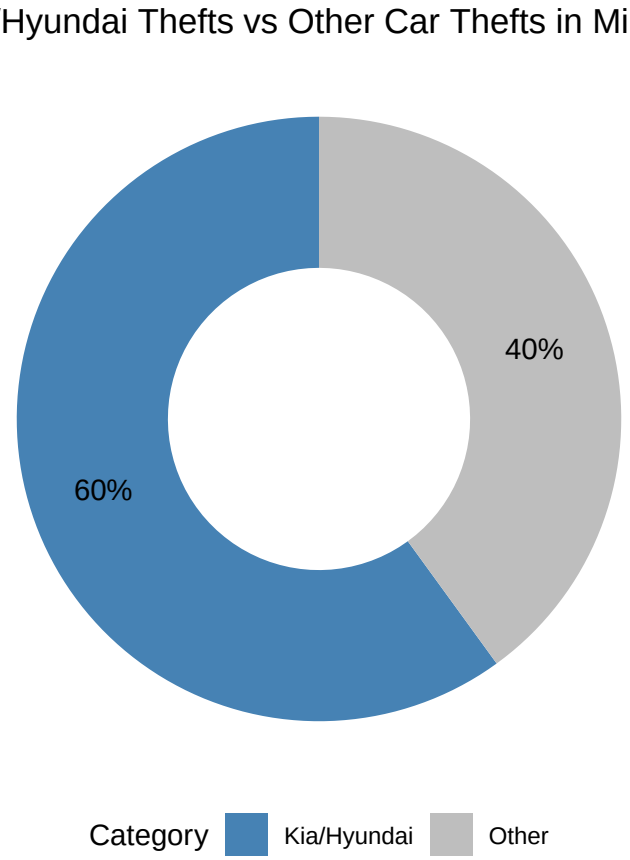
```
# Data from motherboard_vice_kiatheft for August 2022
kia_thefts_aug_2022 <- data.frame(
  City = c("Denver", "El Paso", "Portland", "Atlanta", "Chicago", "Virginia Beach"),
  Kia_Hyundai_Thefts = c(320, 450, 520, 630, 710, 310)
)

# Pie chart for Kia/Hyundai thefts in August 2022 with different shades of blue
ggplot(kia_thefts_aug_2022, aes(x = "", y = Kia_Hyundai_Thefts, fill = City)) +
  geom_bar(stat = "identity", width = 1) +
  coord_polar("y") +
  theme_void() +
  labs(title = "Kia/Hyundai Theft Distribution in Major Cities (August 2022)") +
  scale_fill_brewer(palette = "Blues") +
  theme(legend.position = "right")
```



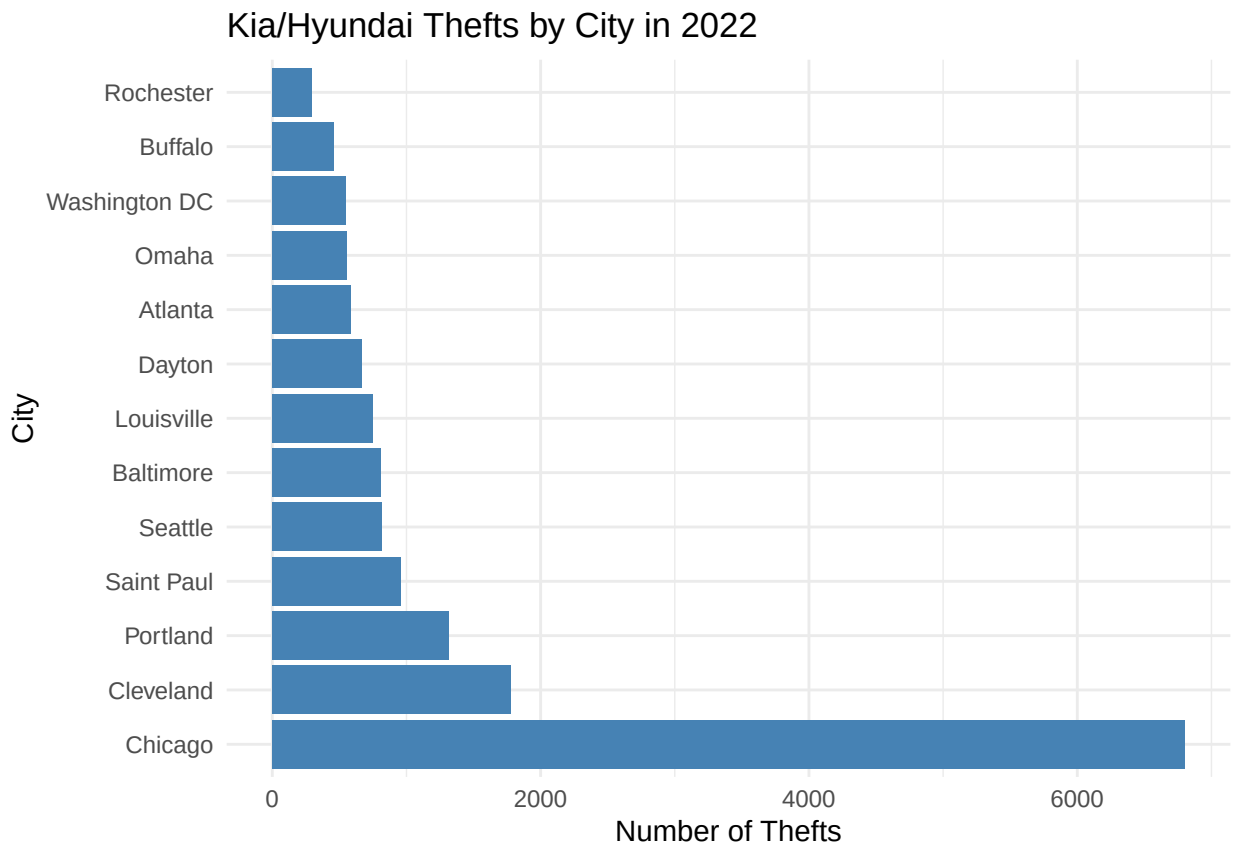
Visual #2: Donut Chart from Kia Hyundai Milwaukee Dataset

```r
# Aggregate data from milwaukee_kiatheft
kia_milwaukee <- data.frame(
  Category = c("Kia/Hyundai", "Other"),
  Count = c(1200, 800)
)

# Donut chart for Kia/Hyundai Thefts vs Other Car Thefts in Milwaukee
ggplot(kia_milwaukee, aes(x = 2, y = Count, fill = Category)) +
  geom_bar(stat = "identity", width = 1) +
  coord_polar(theta = "y") +
  xlim(0.5, 2.5) +
  theme_void() +
  geom_text(aes(label = paste0(round(Count / sum(Count) * 100), "%")),
            position = position_stack(vjust = 0.5)) +
  labs(title = "Kia/Hyundai Thefts vs Other Car Thefts in Milwaukee") +
  scale_fill_manual(values = c("Kia/Hyundai" = "steelblue", "Other" = "gray")) +
  theme(legend.position = "bottom")
```



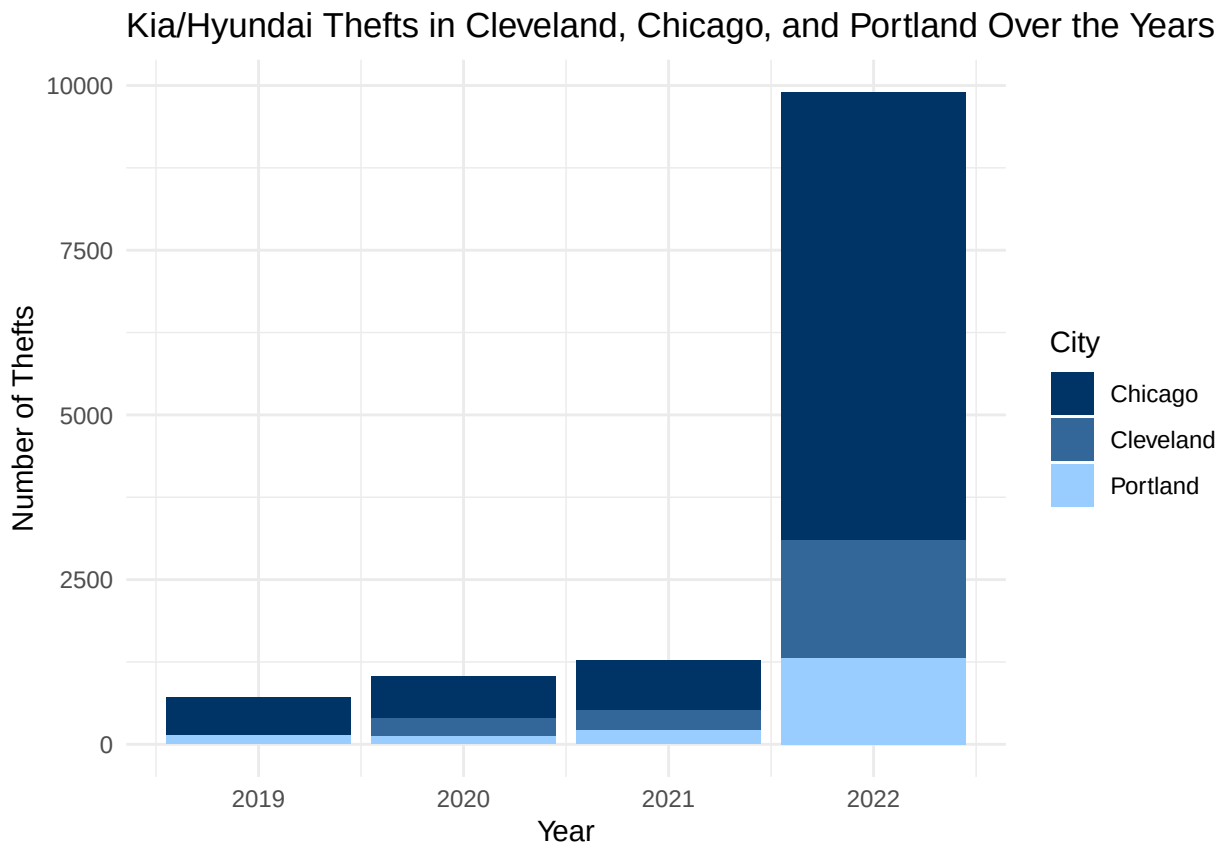
Visual #3: Bar Chart from Kia Hyundai Thefts Dataset

```r
# Filter dataset for the year 2022
thefts_2022 <- subset(overall_kia_hyundaitheft, year == 2022)

# Aggregate thefts by city for 2022
thefts_by_city_2022 <- aggregate(countKiaHyundaiThefts ~ city, data = thefts_2022, sum)

# Create a bar chart showing thefts by city for 2022
ggplot(thefts_by_city_2022, aes(x = reorder(city, -countKiaHyundaiThefts), y = countKiaHyundaiThefts)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  coord_flip() +  # Flip for easier readability if there are many cities
  labs(title = "Kia/Hyundai Thefts by City in 2022",
       x = "City", y = "Number of Thefts") +
  theme_minimal()
```



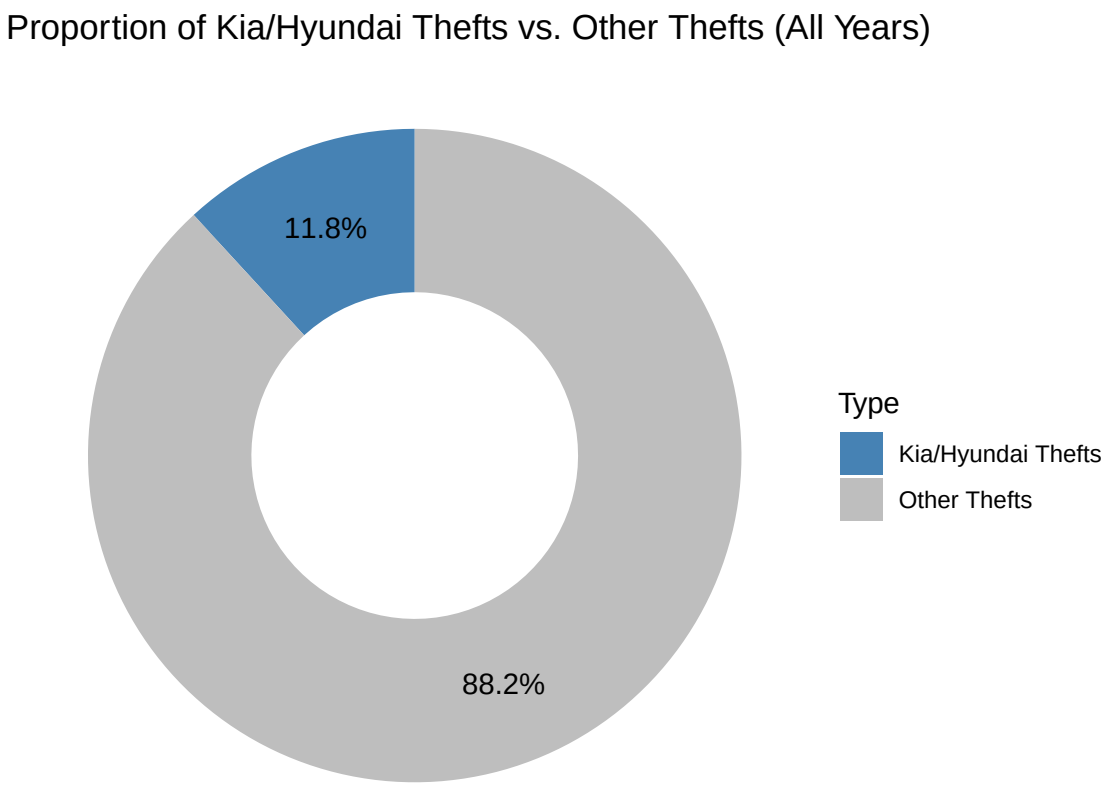
Visual #4: Stacked Barchart from Kia Hyundai Thefts Dataset

```
# Filter the dataset for Cleveland, Chicago, and Portland
selected_cities <- overall_kia_hyundaitheft[overall_kia_hyundaitheft$city %in% c("Cleveland", "Chicago"

# Create a stacked bar chart showing Kia/Hyundai thefts over the years for the selected cities
ggplot(selected_cities, aes(x = year, y = countKiaHyundaiThefts, fill = city)) +
  geom_bar(stat = "identity") +
  labs(title = "Kia/Hyundai Thefts in Cleveland, Chicago, and Portland Over the Years",
       x = "Year", y = "Number of Thefts",
       fill = "City") +
  theme_minimal() +
  scale_fill_manual(values = c("Chicago" = "#003366",
                               "Cleveland" = "#336699",
                               "Portland" = "#99CCFF"))
```



Visual # 5: Donut Chart from Kia Hyundai Thefts Dataset

```r
# Summarize total thefts for Kia/Hyundai and Other cars across all years
theft_summary <- data.frame(
  Type = c("Kia/Hyundai Thefts", "Other Thefts"),
  Total = c(sum(overall_kia_hyundaitheft$countKiaHyundaiThefts, na.rm = TRUE),
            sum(overall_kia_hyundaitheft$countOtherThefts, na.rm = TRUE))
)

# Create Donut chart of portion of Kia/Hyundai Thefts
ggplot(theft_summary, aes(x = 2, y = Total, fill = Type)) +
  geom_bar(stat = "identity", width = 1) +
  coord_polar(theta = "y") +
  geom_text(aes(label = paste0(round(Total/sum(Total) * 100, 1), "%")),
            position = position_stack(vjust = 0.5)) +
  labs(title = "Proportion of Kia/Hyundai Thefts vs. Other Thefts (All Years)") +
  theme_void() +  # Remove background and axes
  theme(legend.position = "right") +
  xlim(0.5, 2.5) +
  scale_fill_manual(values = c("Kia/Hyundai Thefts" = "steelblue", "Other Thefts" = "gray"))
```



Visual #6: Tree Map from Car Thefts Map Dataset

```
# Convert countCarThefts2022  and percentChange2019to2022 to numeric
car_theft_map$countCarThefts2022 <- as.numeric(car_theft_map$countCarThefts2022)
```

```
## Warning: NAs introduced by coercion
```

```
car_theft_map$percentChange2019to2022 <- as.numeric(car_theft_map$percentChange2019to2022)

# Tree Map visualization
treemap(car_theft_map,
        index = "geo_name",
        vSize = "countCarThefts2022",
        vColor = "percentChange2019to2022",
        title = "Tree Map of Kia Theft Distribution and % Change in 2022",
        palette = "Blues")
```

Tree Map of Kia Theft Distribution and % Change in 2022