

# ExploratoryAnalysisOfTMData

Terrell Edwards

2024-05-30

```
library(tidyverse)

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.5.0     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr    1.3.1
## v purrr    1.0.2

## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()   masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

library(ggplot2)
library(caret)

## Loading required package: lattice
##
## Attaching package: 'caret'
##
## The following object is masked from 'package:purrr':
## 
##     lift

df_unfiltered<-read.csv("/Users/tedwards/Desktop/Files and Images/Python Programs/MarketValuesCompleteM...
df <- df_unfiltered %>%
  filter(!is.na(as.numeric(Age)), grepl("^€[0-9.]+[km]$", Market.Value))

## Warning: There was 1 warning in `filter()` .
## i In argument: `!is.na(as.numeric(Age))` .
## Caused by warning:
## ! NAs introduced by coercion

convert_market_value <- function(value) {
  numeric_value <- as.numeric(sub("€", "", sub("[km]", "", value)))
  if (grepl("k$", value)) {
    return(numeric_value * 1e3)
  } else if (grepl("m$", value)) {
    return(numeric_value * 1e6)
  } else {
    return(numeric_value)
  }
}

df$Market.Value <- sapply(df$Market.Value, convert_market_value)
```

```

df$Age <- as.numeric(df$Age)

ggplot(df, aes(x = Age, y = Market.Value)) +
  geom_point() +
  labs(title = "Age vs Market Value of Players", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <e2>

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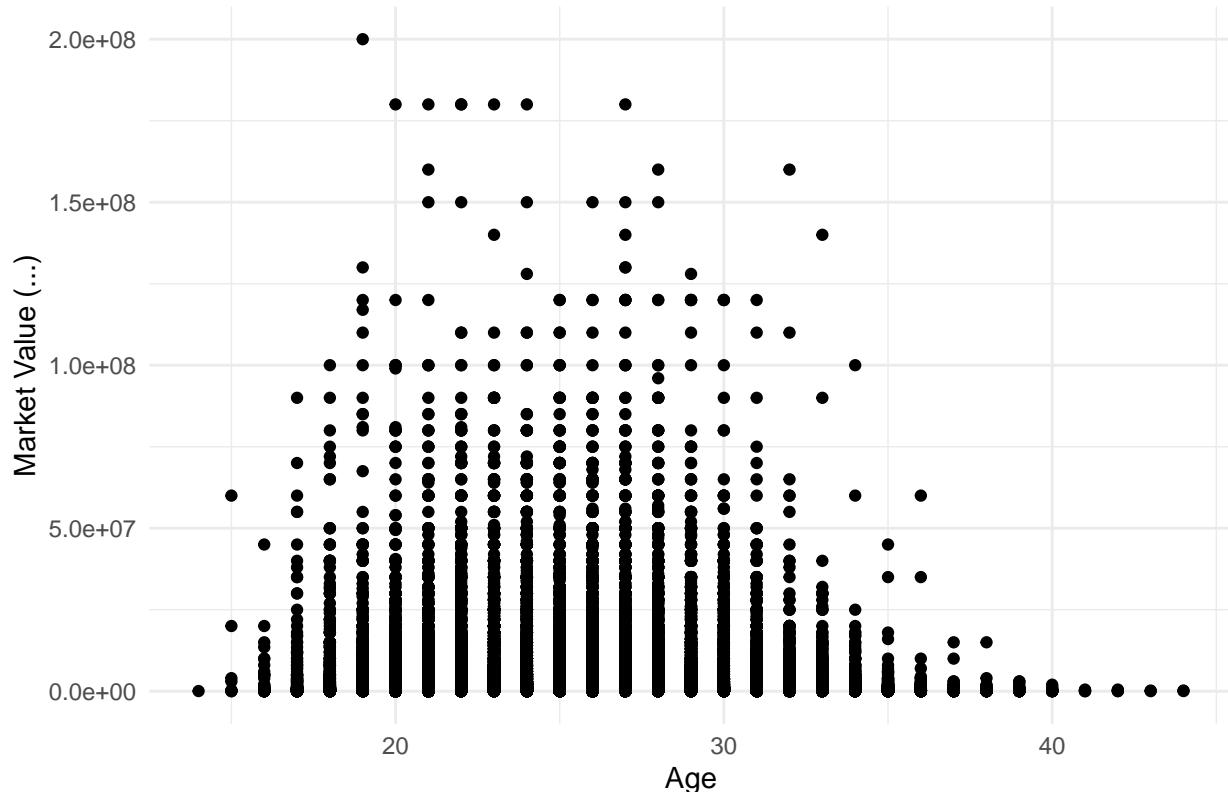
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## <ac>

```

Age vs Market Value of Players



```

ggplot(df, aes(x = Age, y = Market.Value)) +
  geom_point() +
  facet_wrap(~ Season) +
  labs(title = "Age vs Market Value of Players by Season", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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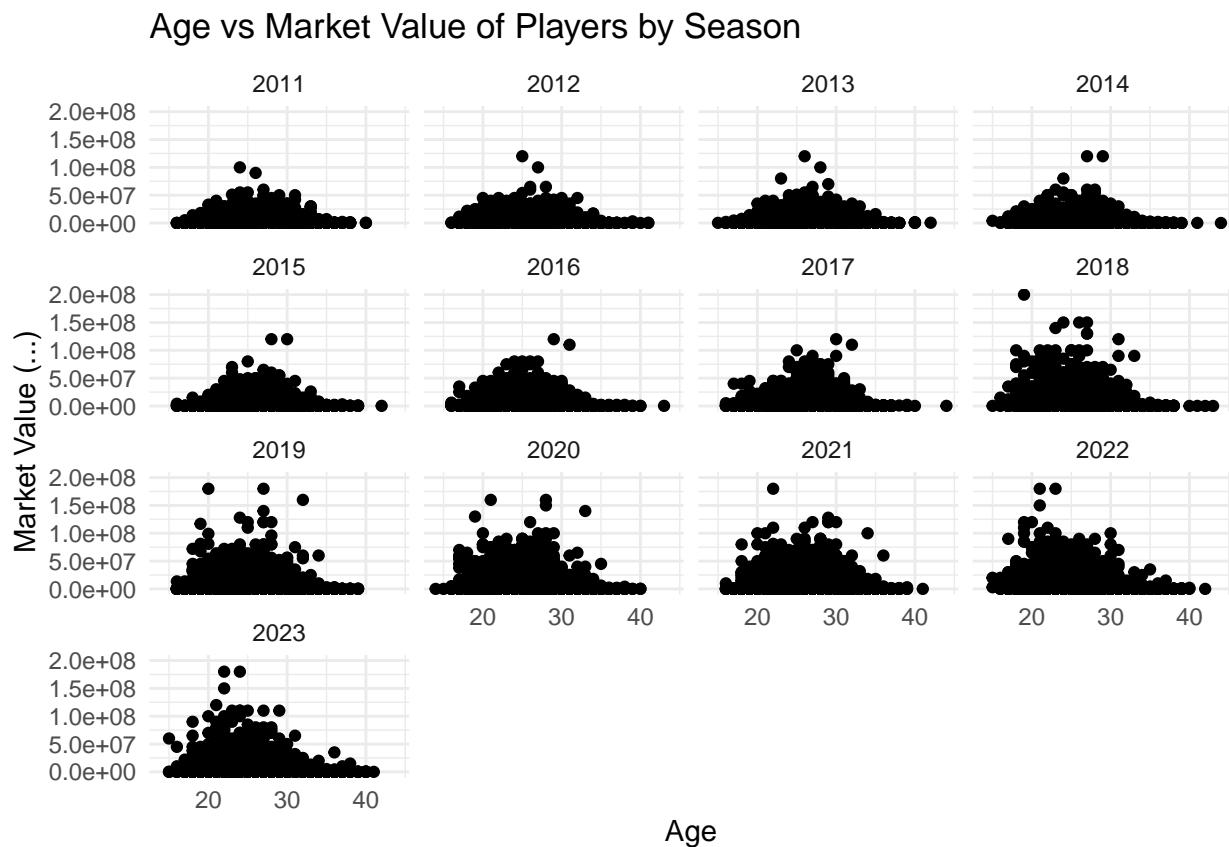
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## <ac>

```



```

ggplot(df, aes(x = Age, y = Market.Value)) +
  geom_point() +
  facet_wrap(~ Position) +
  labs(title = "Age vs Market Value of Players by Season", x = "Age", y = "Market Value (€)") +
  theme_minimal()

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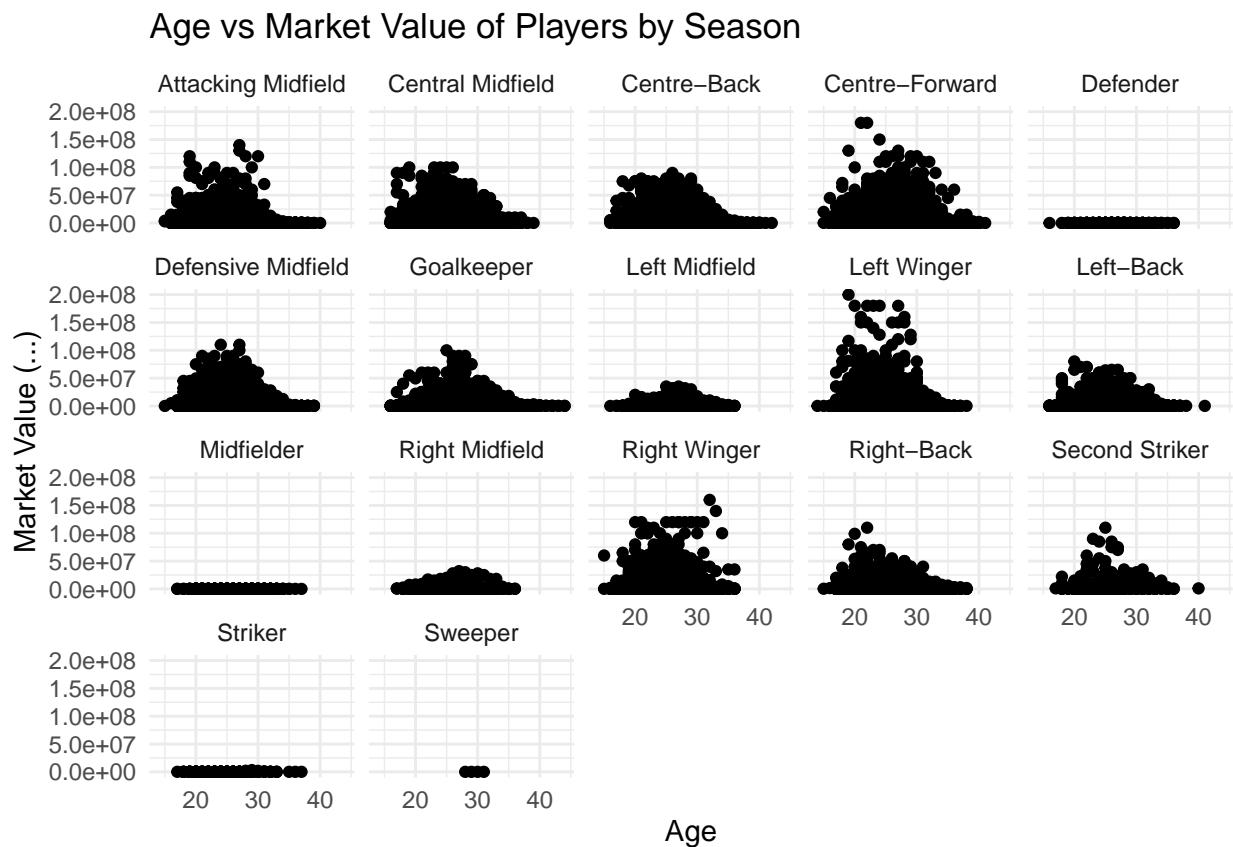
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## <ac>

```



```

df_gk <- df %>% filter(Position == "Goalkeeper")

df_defenders <- df %>% filter(Position %in% c("Centre-Back", "Defender", "Left-Back", "Right-Back"))

df_midfield <- df %>% filter(Position %in% c("Attacking Midfield", "Central Midfield", "Defensive Midfield"))

df_attackers <- df %>% filter(Position %in% c("Centre-Forward", "Striker", "Second Striker", "Right Winger"))

df_right <- df %>% filter(Position %in% c("Right-Back", "Right Midfield", "Right Winger"))

# Filter the DataFrame for left positions
df_left <- df %>% filter(Position %in% c("Left-Back", "Left Midfield", "Left Winger"))

ggplot(df_gk, aes(x = Age, y = Market.Value)) +
  geom_point() +
  labs(title = "Age vs Market Value of Goalkeepers", x = "Age", y = "Market Value (€)") +
  theme_minimal()

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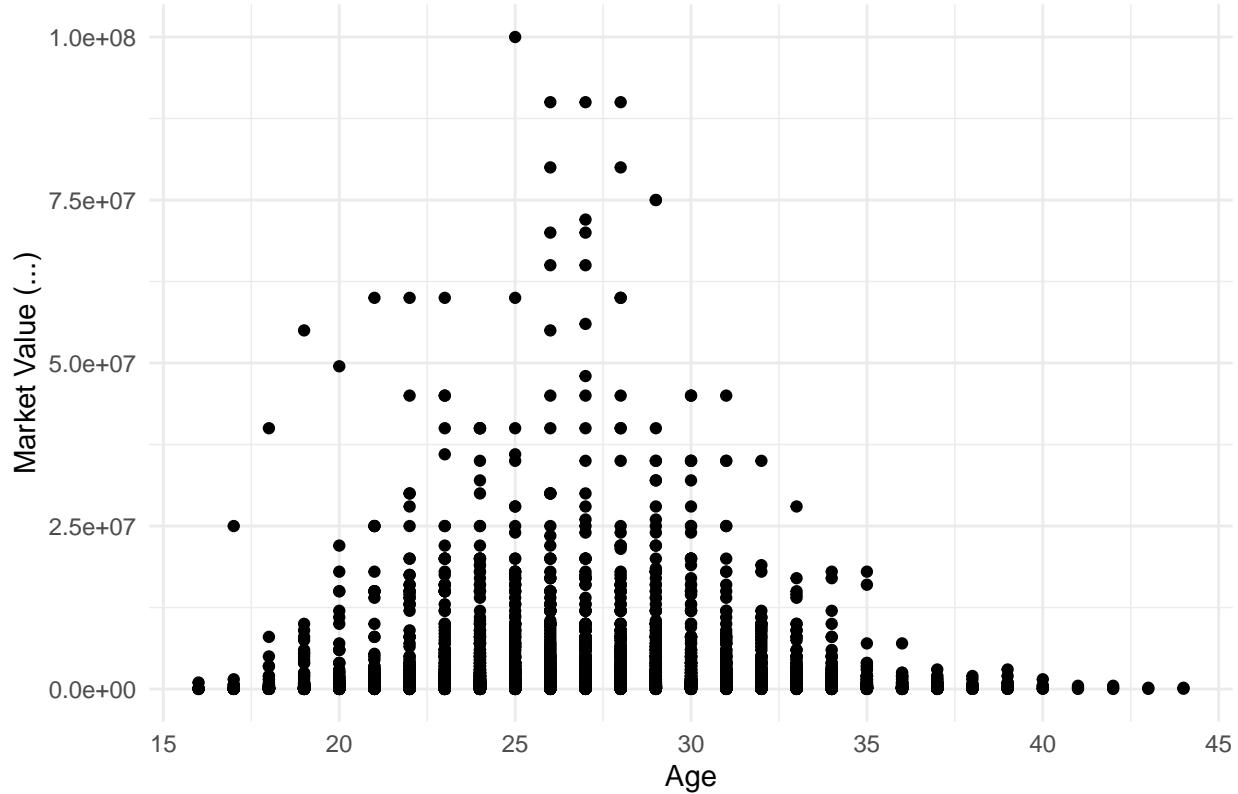
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## <ac>

```

## Age vs Market Value of Goalkeepers



```
ggplot(df_gk, aes(x = as.factor(Age), y = Market.Value, fill = Position)) +
  geom_bar(stat = "identity") +
  labs(title = "Market Value of Goalkeepers by Age", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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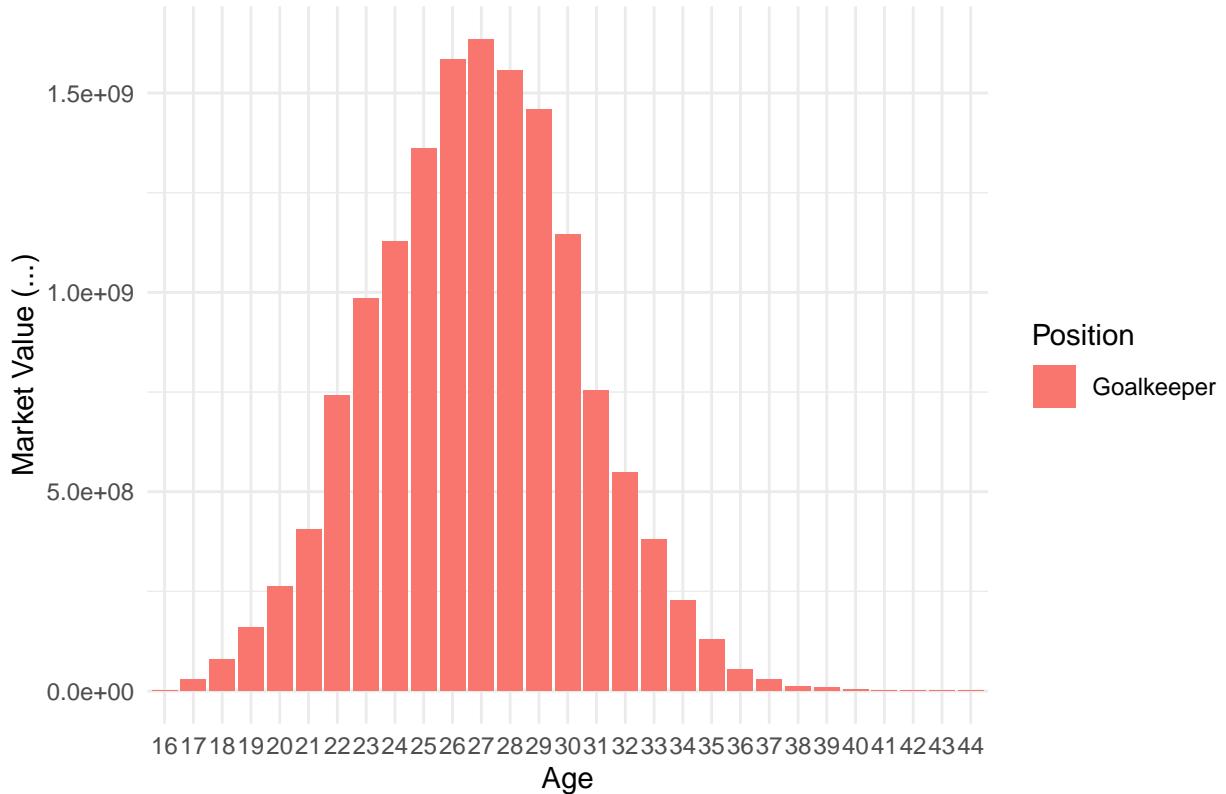
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```

## Market Value of Goalkeepers by Age



```
ggplot(df_defenders, aes(x = Age, y = Market.Value, color = Position)) +
  geom_point() +
  labs(title = "Age vs Market Value of Defenders", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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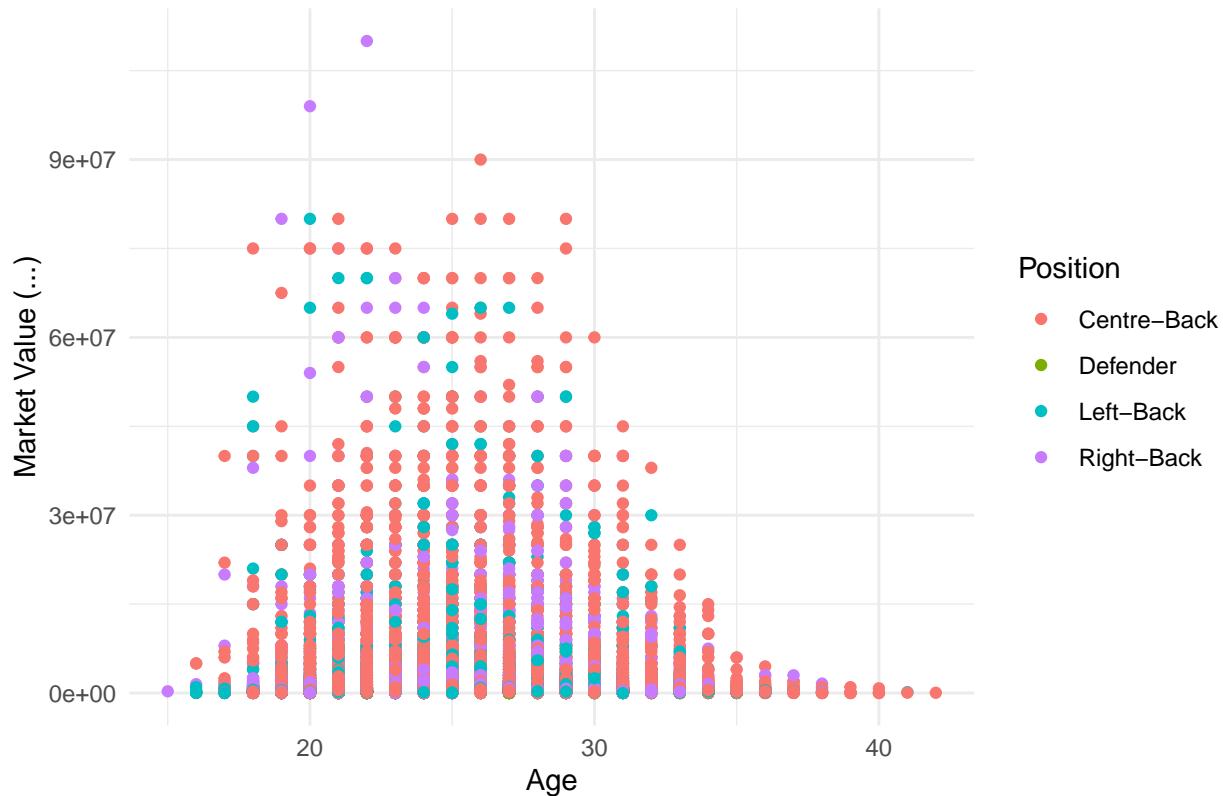
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## <ac>
```

## Age vs Market Value of Defenders



```
ggplot(df_defenders, aes(x = as.factor(Age), y = Market.Value, fill = Position)) +
  geom_bar(stat = "identity") +
  labs(title = "Market Value of Defenders by Age", x = "Age", y = "Market Value (€)") +
  theme_minimal()

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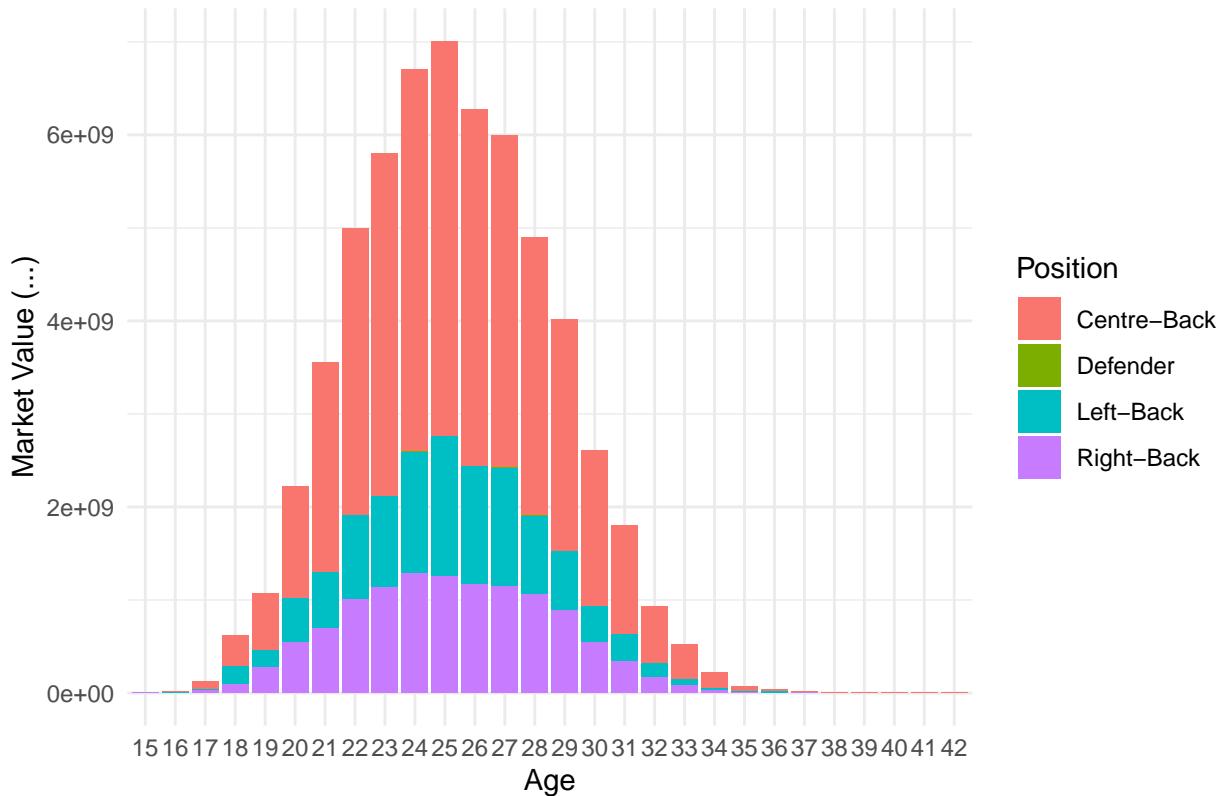
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## <ac>
```

## Market Value of Defenders by Age



```
ggplot(df_midfield, aes(x = Age, y = Market.Value, color = Position)) +
  geom_point() +
  labs(title = "Age vs Market Value of Midfielders", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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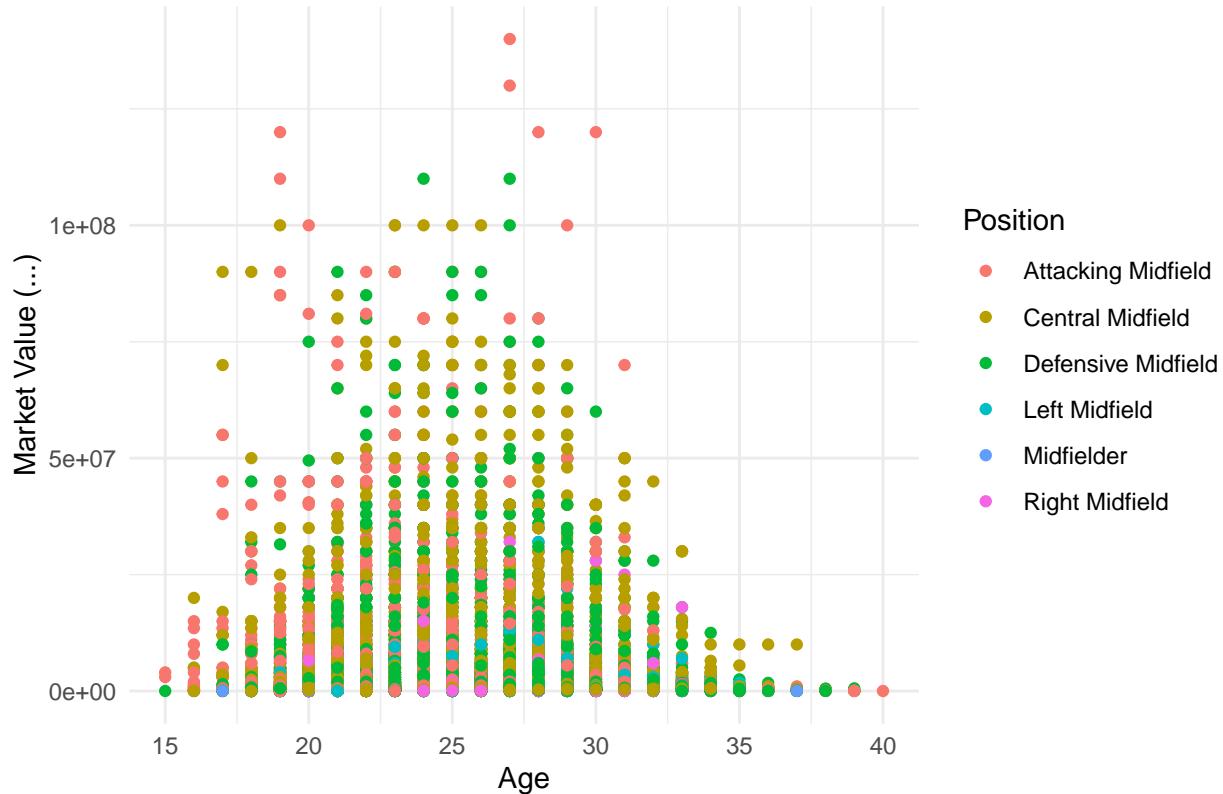
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## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <ac>
```

## Age vs Market Value of Midfielders



```
ggplot(df_midfield, aes(x = as.factor(Age), y = Market.Value, fill = Position)) +
  geom_bar(stat = "identity") +
  labs(title = "Market Value of Midfielders by Age", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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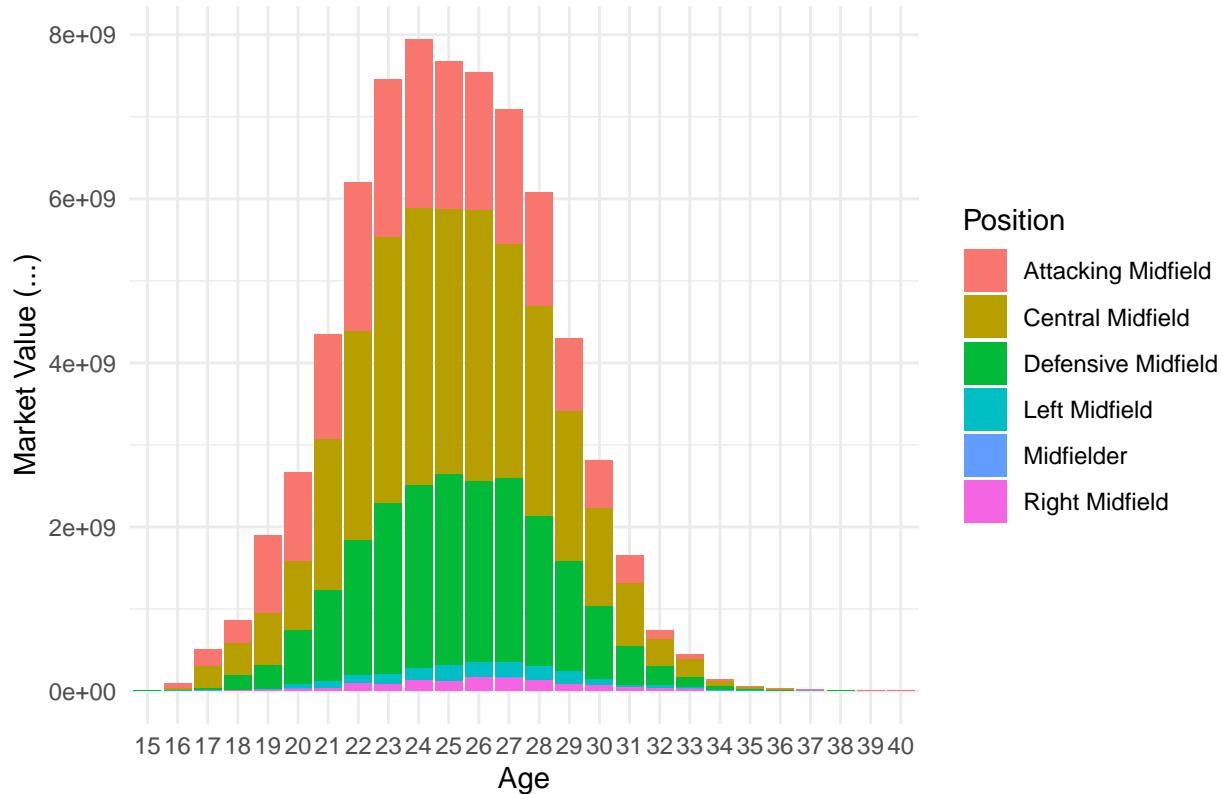
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## <ac>
```

## Market Value of Midfielders by Age



```
ggplot(df_attackers, aes(x = Age, y = Market.Value, color = Position)) +
  geom_point() +
  labs(title = "Age vs Market Value of Attackers", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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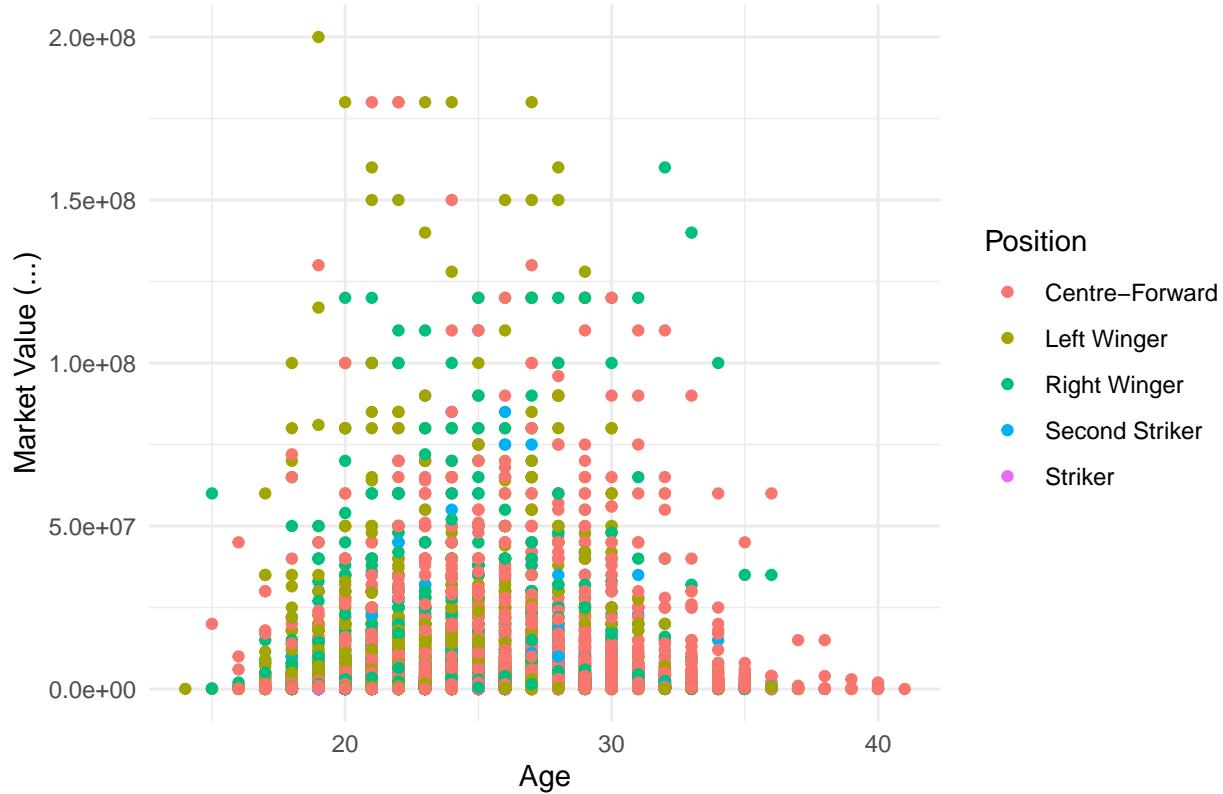
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## <ac>
```

## Age vs Market Value of Attackers



```
ggplot(df_attackers, aes(x = as.factor(Age), y = Market.Value, fill = Position)) +
  geom_bar(stat = "identity") +
  labs(title = "Market Value of Attackers by Age", x = "Age", y = "Market Value (€)") +
  theme_minimal()

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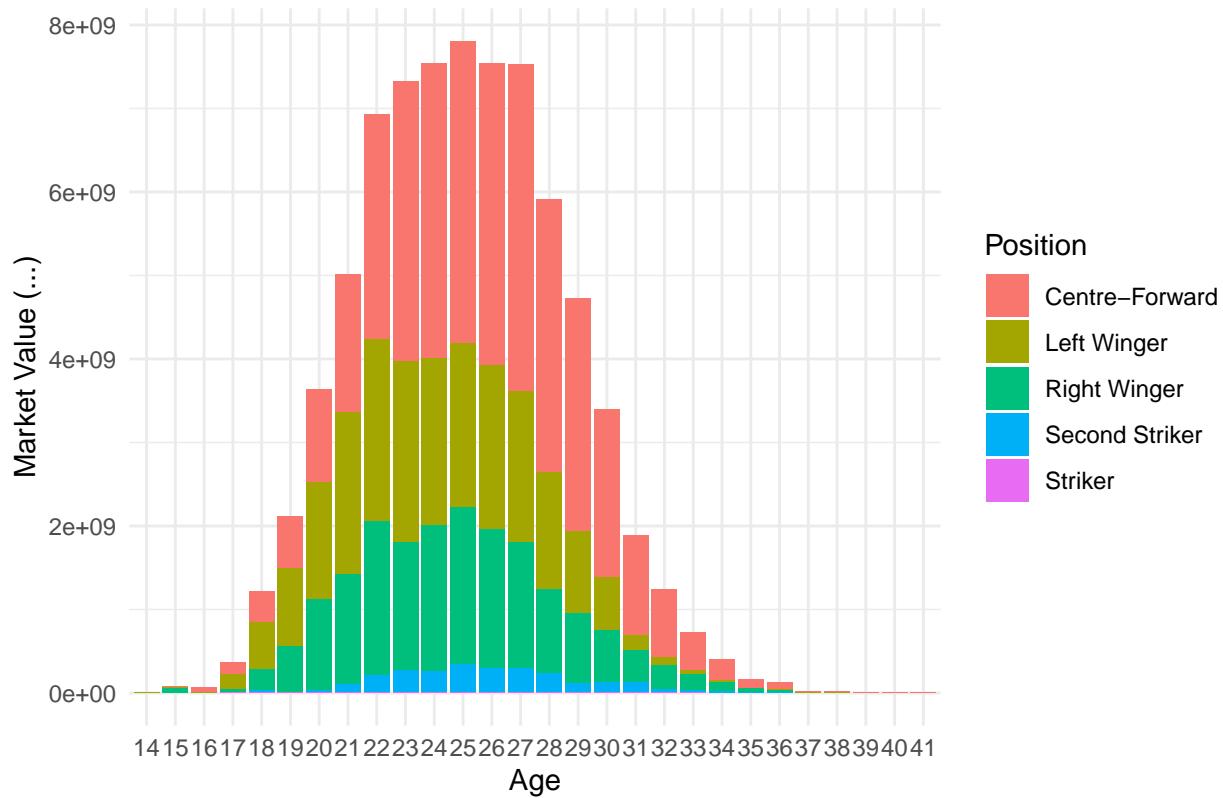
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## <ac>
```

## Market Value of Attackers by Age



```
ggplot(df_right, aes(x = Age, y = Market.Value, color = Position)) +
  geom_point() +
  labs(title = "Age vs Market Value of Right Side Players", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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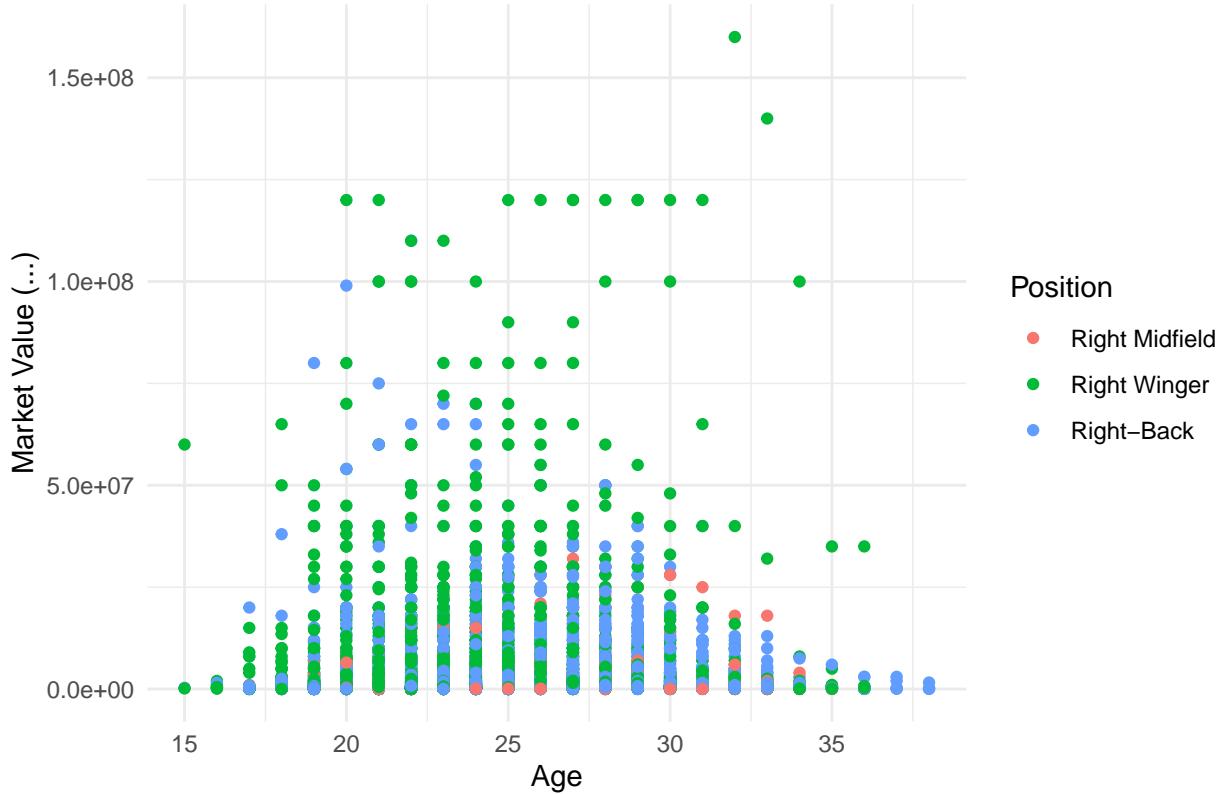
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```

## Age vs Market Value of Right Side Players



```
ggplot(df_right, aes(x = as.factor(Age), y = Market.Value, fill = Position)) +
  geom_bar(stat = "identity") +
  labs(title = "Market Value of Right Side Players by Age", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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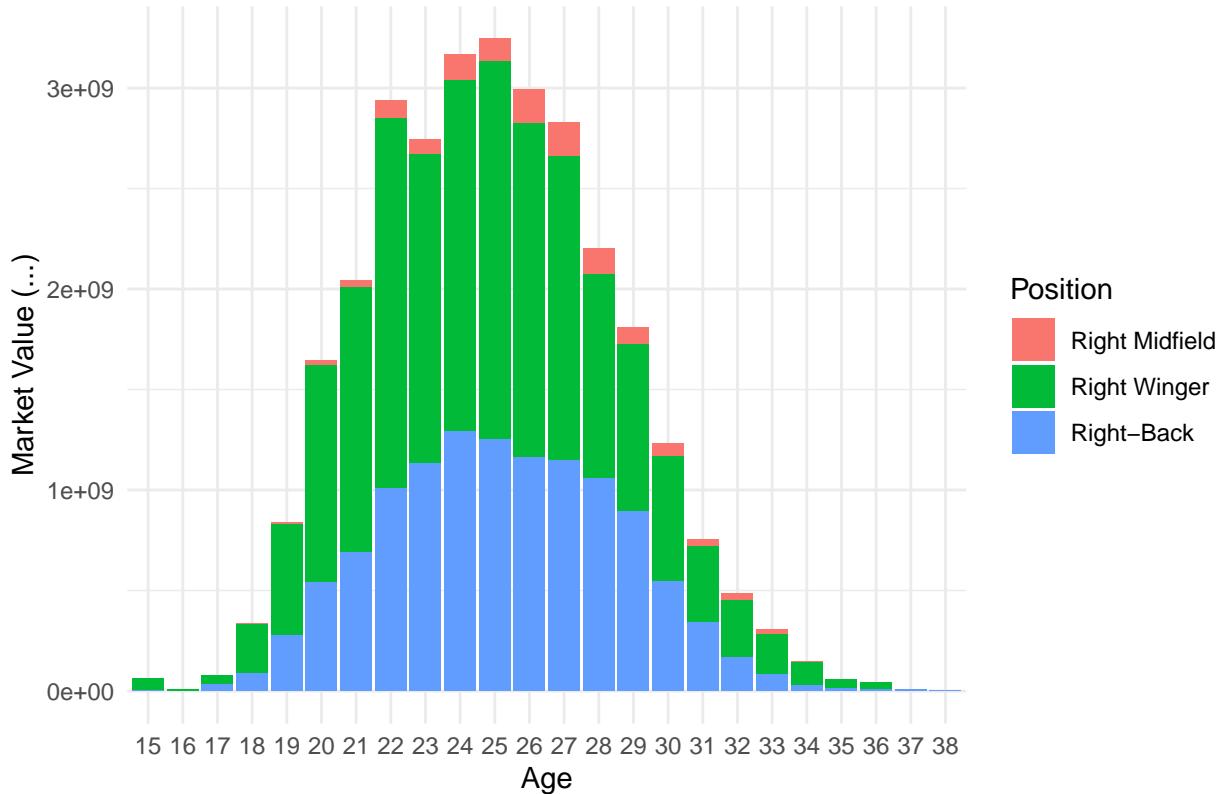
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## <ac>
```

## Market Value of Right Side Players by Age



```
ggplot(df_left, aes(x = Age, y = Market.Value, color = Position)) +
  geom_point() +
  labs(title = "Age vs Market Value of Left Side Players", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <82>

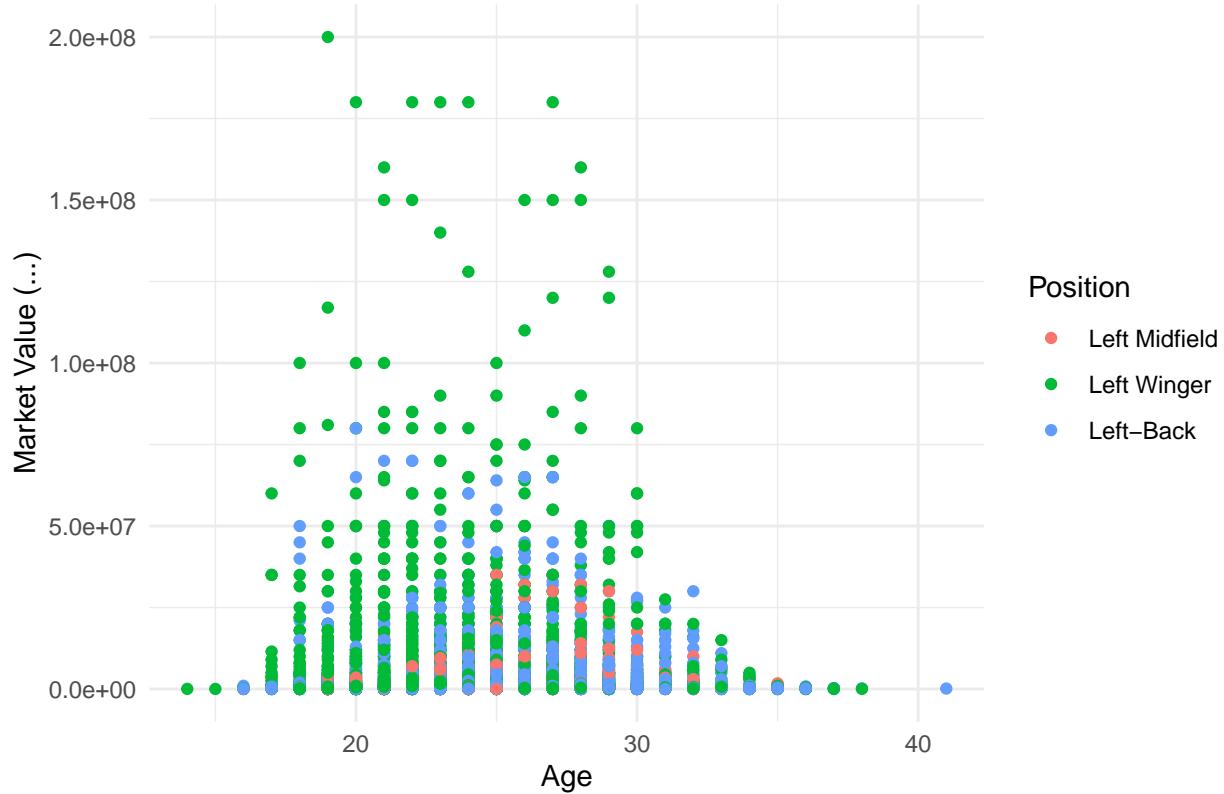
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## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
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## <82>

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <ac>
```

## Age vs Market Value of Left Side Players



```
ggplot(df_left, aes(x = as.factor(Age), y = Market.Value, fill = Position)) +
  geom_bar(stat = "identity") +
  labs(title = "Market Value of Left Side Players by Age", x = "Age", y = "Market Value (€)") +
  theme_minimal()

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <82>

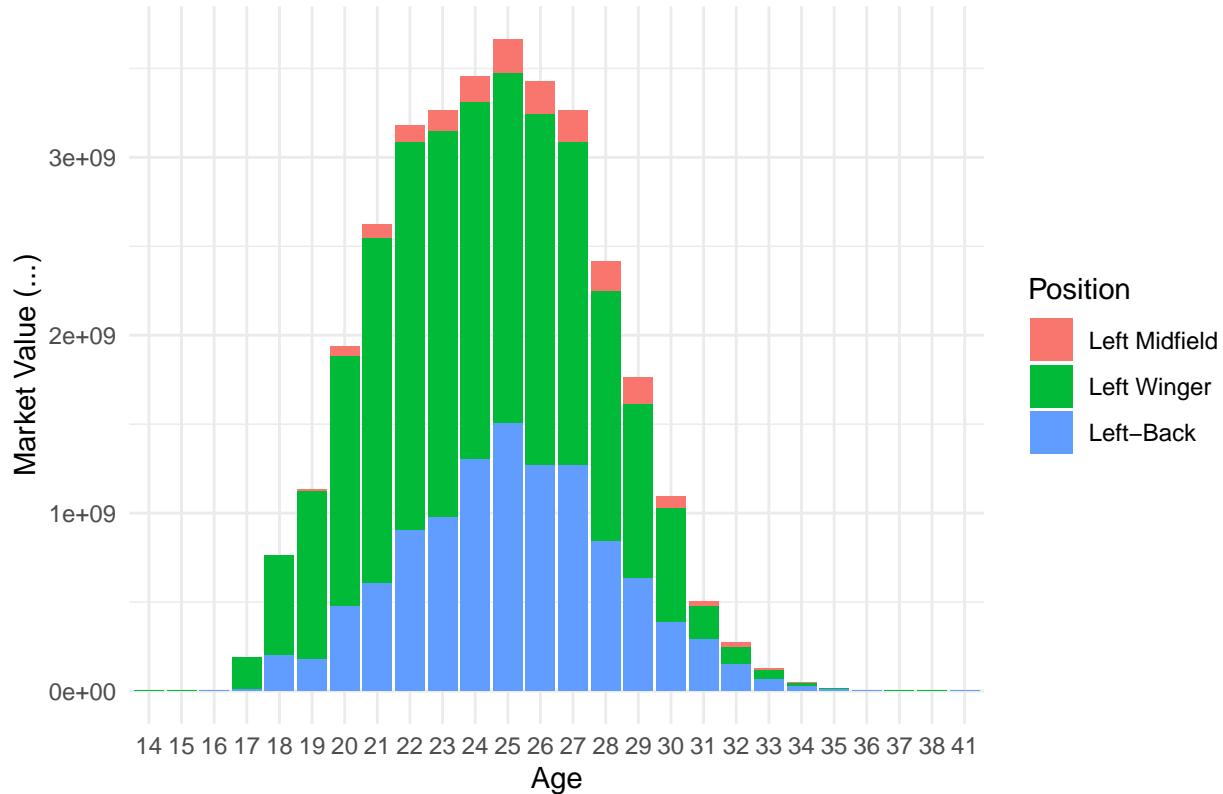
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <ac>

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
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## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <82>

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'Market Value (€)' in 'mbcsToSbcs': dot substituted for
## <ac>
```

## Market Value of Left Side Players by Age



```
#“{r} age_summary <- df %>% group_by(Age) %>% summarize(Average_Market_Value = mean(Market.Value, na.rm = TRUE))
```

## Plot the average market value by age

```
ggplot(age_summary, aes(x = Age, y = Average_Market_Value)) + geom_line() + geom_point() + labs(title = “Average Market Value by Age”, x = “Age”, y = “Average Market Value”) + theme_minimal()
```

## Group by age and season, then calculate the average market value

```
age_season_summary <- df %>% group_by(Season, Age) %>% summarize(Average_Market_Value = mean(Market.Value, na.rm = TRUE))
```

## Plot the ages and market values by season

```
ggplot(age_season_summary, aes(x = Age, y = Average_Market_Value, color = Season, group = Season)) + geom_line() + geom_point() + labs(title = “Average Market Value by Age and Season”, x = “Age”, y = “Average Market Value”) + theme_minimal()
```