eda

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EDA

```
##
## 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
```

```
##                 name                  age               gender
##                    0                    0                    0
##        raceethnicity                month                  day
##                    0                    0                    0
##                 year        streetaddress                 city
##                    0                    1                    0
##                state             latitude            longitude
##                    0                    0                    0
##             state_fp            county_fp             tract_ce
##                    0                    0                    0
##               geo_id            county_id             namelsad
##                    0                    0                    0
## lawenforcementagency                cause                armed
##                    0                    0                    0
##                  pop          share_white          share_black
##                    0                    0                    0
##       share_hispanic             p_income             h_income
##                    0                    0                    0
##        county_income          comp_income        county_bucket
##                    0                    0                   30
##           nat_bucket                  pov                urate
##                    0                    0                    0
##              college
##                    0
```

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

```
## [1] "numeric"
```

```
## [1] 4
```

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

The indicator `age` contains missing values "Unknown". We choose to fill them with the average value.

```r
glimpse(new_data)
```

```
## Rows: 503
## Columns: 35
## $ name                  <chr> "Elton Simpson", "William Chapman II", "James Coo~
## $ age                   <dbl> 30, 18, 43, 50, 38, 35, 17, 24, 59, 32, 22, 46, 2~
## $ gender                <chr> "Male", "Male", "Male", "Male", "Male", "Male", "~
## $ raceethnicity         <chr> "Black", "Black", "White", "Black", "Black", "Whi~
## $ month                 <chr> "May", "April", "May", "May", "February", "Februa~
## $ day                   <int> 3, 22, 20, 31, 20, 13, 22, 13, 21, 12, 9, 12, 25,~
## $ year                  <int> 2015, 2015, 2015, 2015, 2015, 2015, 2015, 2015, 2~
## $ streetaddress         <chr> "4999 Naaman Forest Blvd", "1098 Frederick Blvd",~
## $ city                  <chr> "Garland", "Portsmouth", "Charleston", "Rochester~
## $ state                 <chr> "TX", "VA", "SC", "NY", "AL", "PA", "TX", "TX", "~
## $ latitude              <dbl> 32.95994, 36.82901, 32.85778, 43.14785, 33.48143,~
## $ longitude             <dbl> -96.63896, -76.34144, -80.07766, -77.63095, -86.8~
## $ state_fp              <int> 48, 51, 45, 36, 1, 42, 48, 48, 45, 6, 12, 15, 48,~
## $ county_fp             <int> 113, 740, 19, 55, 73, 11, 183, 201, 63, 37, 113, ~
## $ tract_ce              <int> 19027, 211500, 5700, 2700, 5000, 2000, 1100, 2401~
## $ geo_id                <dbl> 48113019027, 51740211500, 45019005700, 3605500270~
## $ county_id             <int> 48113, 51740, 45019, 36055, 1073, 42011, 48183, 4~
## $ namelsad              <chr> "Census Tract 190.27", "Census Tract 2115", "Cens~
## $ lawenforcementagency <chr> "Garland Police Department", "Portsmouth Police D~
## $ cause                 <chr> "Gunshot", "Gunshot", "Gunshot", "Taser", "Gunsho~
## $ armed                 <chr> "No", "No", "Knife", "Firearm", "Firearm", "Firea~
## $ pop                   <int> 4775, 1640, 8668, 1271, 3681, 4017, 4045, 4049, 3~
## $ share_white           <dbl> 34.7, 40.9, 85.5, 0.6, 44.4, 37.4, 44.8, 6.5, 71.~
## $ share_black           <dbl> 16.3, 53.8, 11.0, 95.6, 22.4, 10.7, 34.1, 31.8, 1~
## $ share_hispanic        <dbl> 14.6, 0.0, 0.7, 3.9, 28.9, 47.7, 19.7, 58.6, 2.7,~
## $ p_income              <int> 31009, 25262, 38810, 11558, 21908, 20761, 14332, ~
## $ h_income              <int> 49973, 27418, 80891, 18833, 35780, 29707, 26458, ~
## $ county_income         <int> 49481, 46166, 50792, 52394, 45429, 55170, 45525, ~
## $ comp_income           <dbl> 1.0099432, 0.5939003, 1.5925933, 0.3594496, 0.787~
## $ county_bucket         <int> 3, 1, 5, NA, 2, 1, 1, 1, 5, 1, 3, 2, 5, 2, 5, 3, ~
## $ nat_bucket            <int> 3, 1, 5, 1, 2, 1, 1, 1, 5, 1, 4, 4, 4, 2, 4, 3, 1~
## $ pov                   <dbl> 9.2, 35.2, 4.0, 49.9, 23.2, 36.6, 27.4, 40.9, 14.~
## $ urate                 <dbl> 0.09214891, 0.15204678, 0.09204239, 0.25925926, 0~
## $ college               <dbl> 0.31563891, 0.12055336, 0.49587195, 0.09653092, 0~
## $ age_num               <dbl> 30, 18, 43, 50, 38, 35, 17, 24, 59, 32, 22, 46, 2~
```

```r
####### Research question 1
## 1. Race/Ethnicity
race_counts <- table(new_data$raceethnicity)
race_percentages <- prop.table(race_counts) * 100

cat("Race/Ethnicity Distribution:\n")
```

```
## Race/Ethnicity Distribution:
```

```r
print(race_counts)
```

```
##
## Asian/Pacific Islander                 Black        Hispanic/Latino
##                      5                   156                    73
##        Native American               Unknown                 White
```

```
##                   5                  13                 251
```

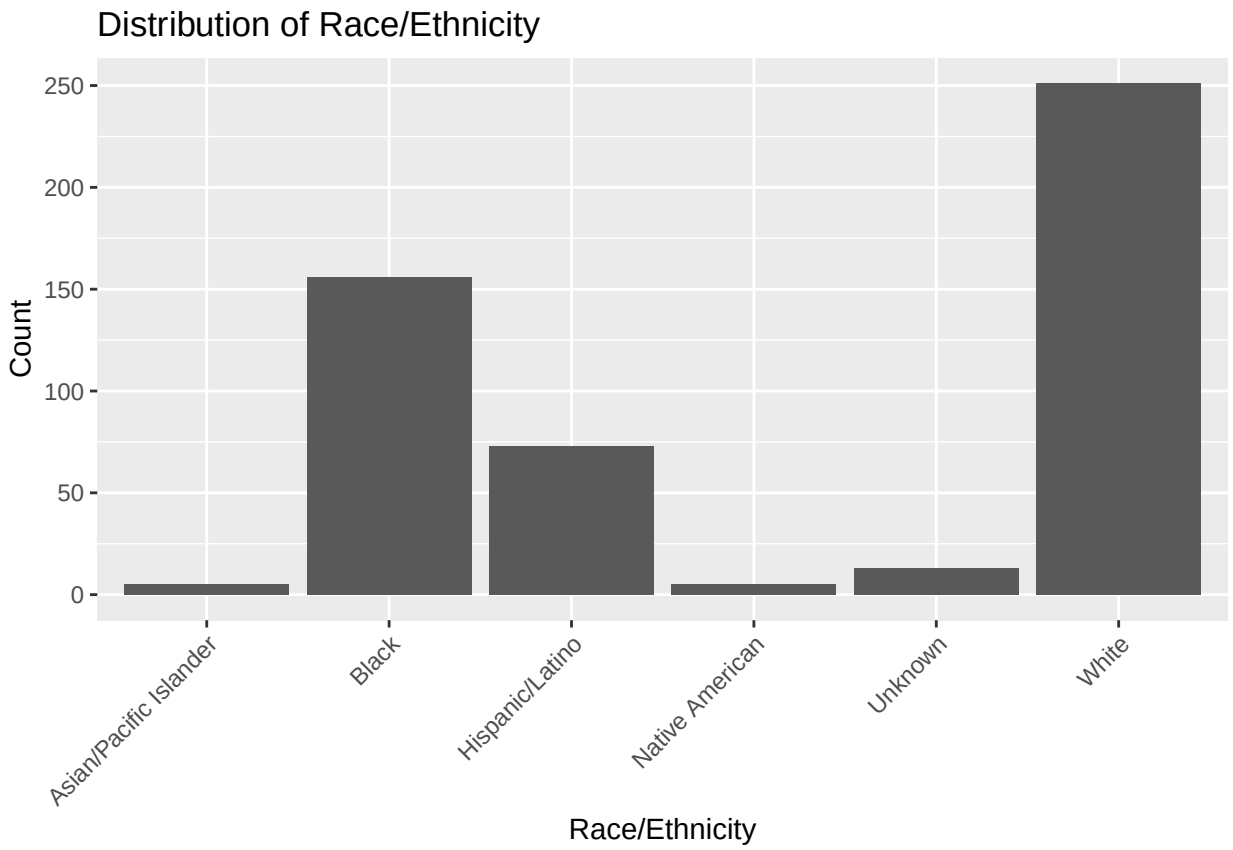
```
cat("\nPercentages:\n")
```

```
##
## Percentages:
```

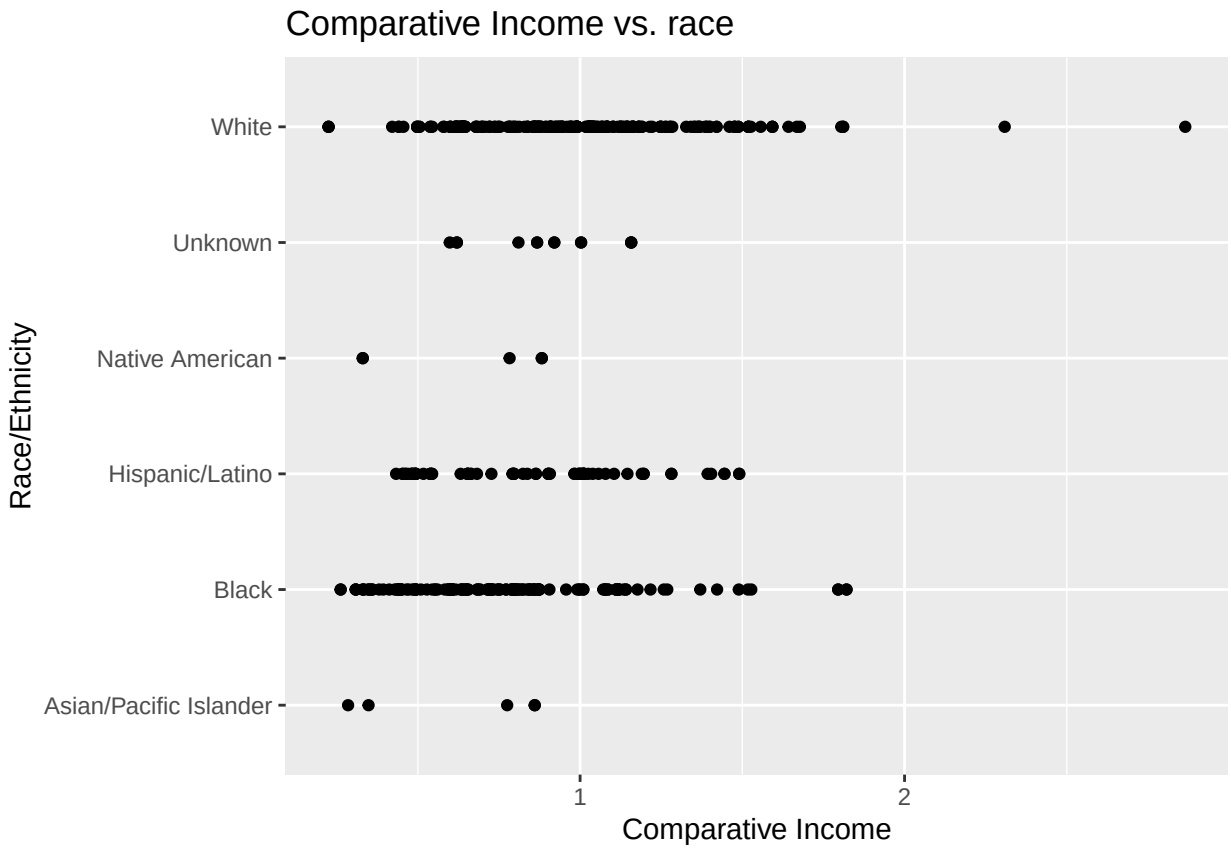
```
print(race_percentages)
```

```
##
## Asian/Pacific Islander                 Black        Hispanic/Latino
##              0.9940358            31.0139165            14.5129225
##        Native American               Unknown                 White
##              0.9940358             2.5844930            49.9005964
```

```
ggplot(new_data, aes(x = raceethnicity)) +
  geom_bar() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  labs(title = "Distribution of Race/Ethnicity", x = "Race/Ethnicity", y = "Count")
```




```
## 2. Comparative Income (comp_income)
ggplot(new_data, aes(x = comp_income, y = raceethnicity)) +
  geom_point() +
  labs(title = "Comparative Income vs. race", x = "Comparative Income", y = "Race/Ethnicity")
```




```
#### Research question 2

## 6. Armed Status
armed_counts <- table(new_data$armed)
armed_percentages <- prop.table(armed_counts) * 100

cat("\nArmed Status Distribution:\n")
```

```
##
## Armed Status Distribution:
```

```
print(armed_counts)
```

```
##
##           Disputed            Firearm              Knife                 No
##                  1                269                 67                104
## Non-lethal firearm              Other            Unknown            Vehicle
##                 16                 30                  5                 11
```

```
cat("\nPercentages:\n")
```

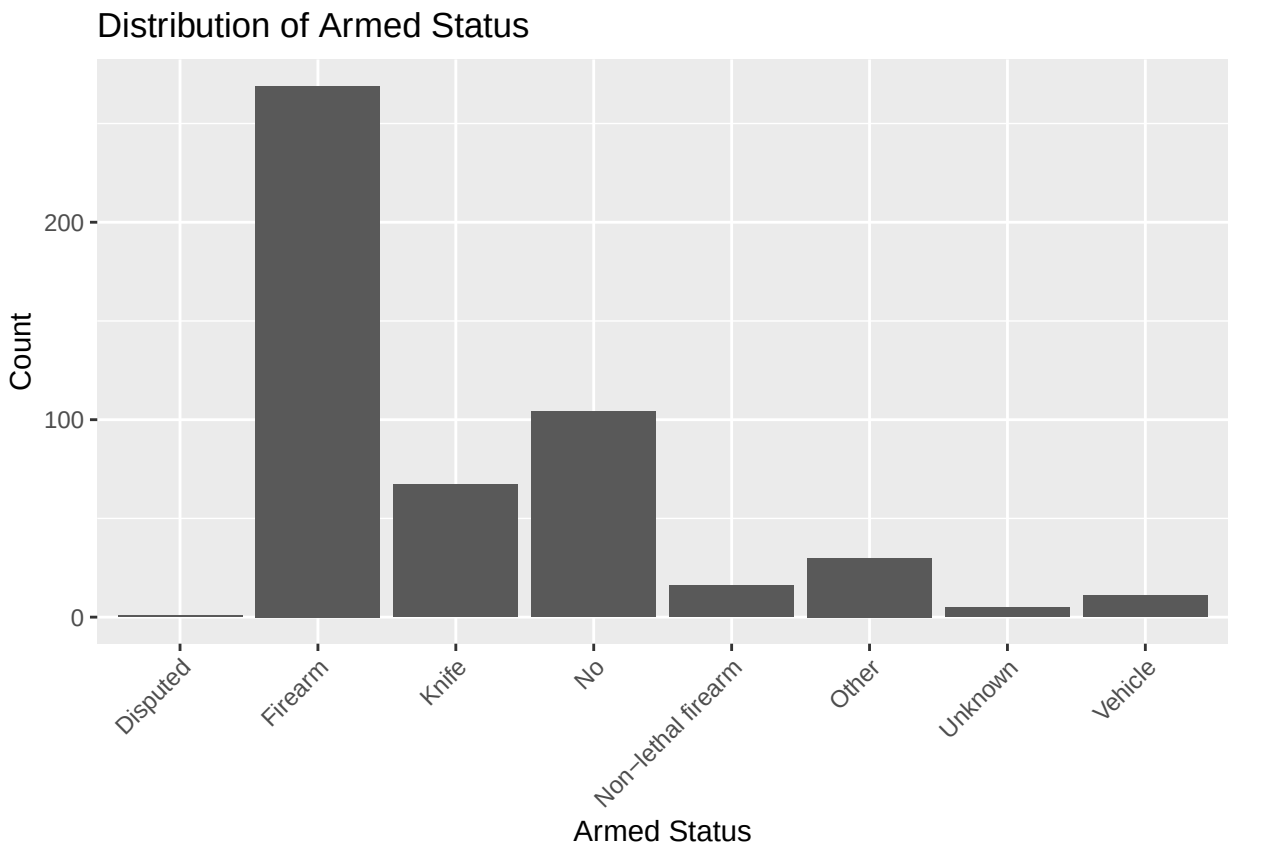
```
##
## Percentages:
```

```
print(armed_percentages)
```

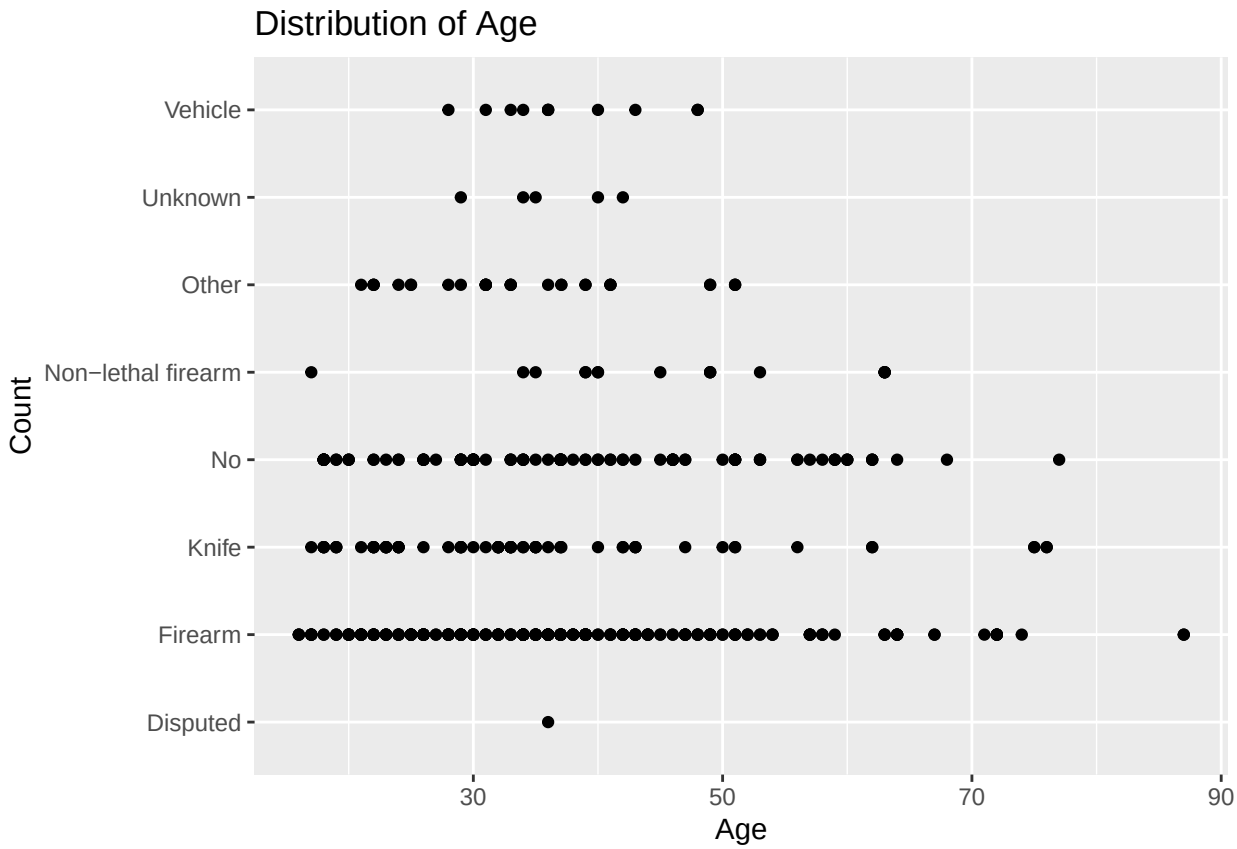
```
##
##           Disputed            Firearm              Knife                 No
##          0.1988072         53.4791252         13.3200795         20.6759443
## Non-lethal firearm              Other            Unknown            Vehicle
```

```
##          3.1809145          5.9642147          0.9940358          2.1868787
```

```
ggplot(new_data, aes(x = armed)) +
  geom_bar() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1)) +
  labs(title = "Distribution of Armed Status", x = "Armed Status", y = "Count")
```




```
## 4. Age
ggplot(new_data, aes(x = age, y = armed)) +
  geom_point() +
  labs(title = "Distribution of Age", x = "Age", y = "Count")
```

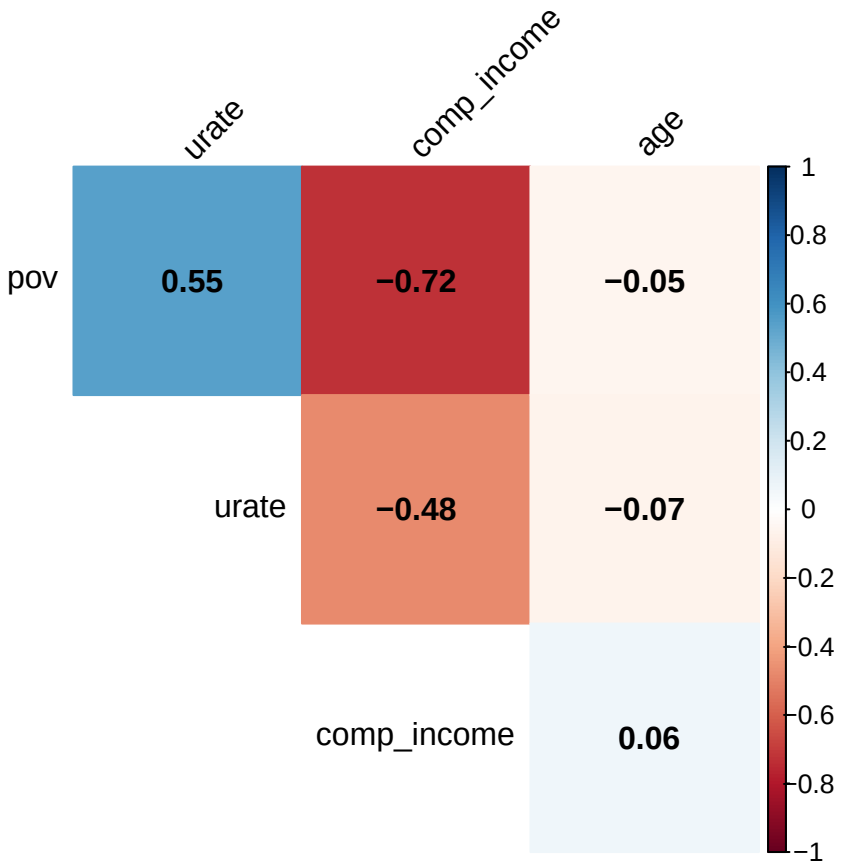



```
## Correlation matrix for numerical variables
numerical_vars <- new_data[, c("comp_income", "pov", "age", "urate")]
cor_matrix <- cor(numerical_vars, use="complete.obs")

library(corrplot)
```

```
## corrplot 0.95 loaded
```

```
corrplot(cor_matrix,
         method = "color",
         type = "upper",
         order = "hclust",
         addCoef.col = "black",
         tl.col = "black",
         tl.srt = 45,
         diag = FALSE)
```



There are mostly black and white in race/ethnicity in police killings. The rest distributions are right skewed. From the correlation plot, we observe that the poverty rate is highly correlated to comparative income. We would want to drop one in our research analysis.