MA615_919

Description

This data set contains statistics, in arrests per 100,000 residents for assault, murder, and rape
in each of the 50 US states in 1973. Also given is the percent of the population living in urban
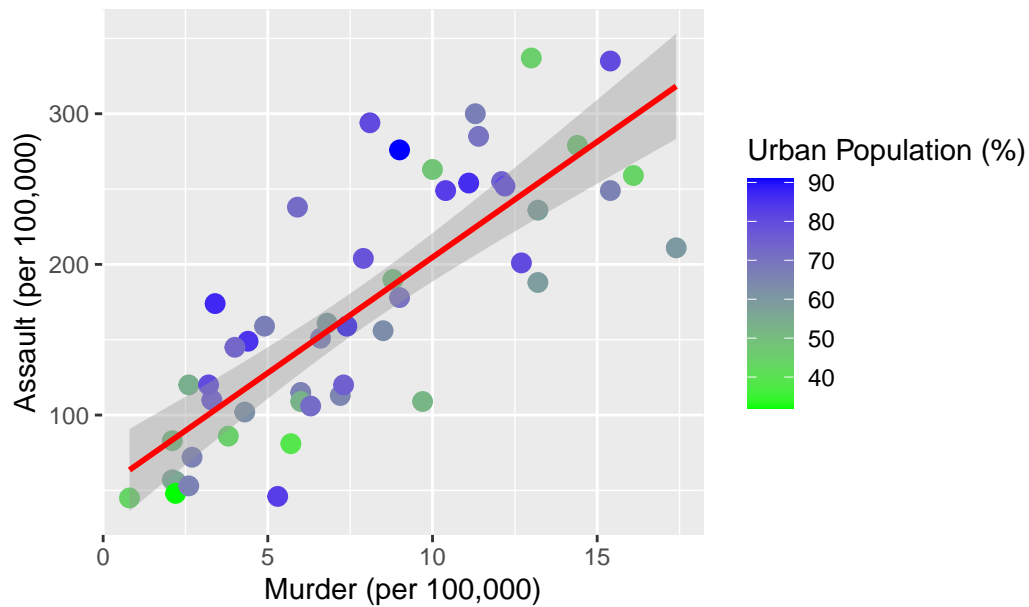areas.

```
library(datasets)
library(ggplot2)
library(tibble)
data("USArrests")
head(USArrests)
```

```
           Murder Assault UrbanPop Rape
Alabama      13.2     236       58 21.2
Alaska       10.0     263       48 44.5
Arizona       8.1     294       80 31.0
Arkansas      8.8     190       50 19.5
California     9.0     276       91 40.6
Colorado      7.9     204       78 38.7
```

```
arrests <- USArrests
ggplot(arrests, aes(x = Murder, y = Assault,color = UrbanPop)) +
  geom_point(size = 3) +
  scale_color_gradient(low='green',high = 'blue')+
  geom_smooth(method = "lm", color = "red") +
  labs(title = "Relationship Between Murder and Assault Rates",
       x = "Murder (per 100,000)",
       y = "Assault (per 100,000)",
       color = "Urban Population (%)")
```

`geom_smooth()` using formula = 'y ~ x'

Relationship Between Murder and Assault Rates

Conclusion

This scatter plot shows the relationship between murder and assault rates across the 50 US states in 1973. Each point represents a state, and the color intensity reflects the rate of the population living in urban areas. lighter green indicates lower urbanization, while darker blue indicates higher urbanization. The red trend line indicates a positive association: states with higher murder rates generally tend to have higher assault rates.Besides, from the scatter plot and trend line, states with higher urbanization (darker blue) tend to have higher expected assault rates.