

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.

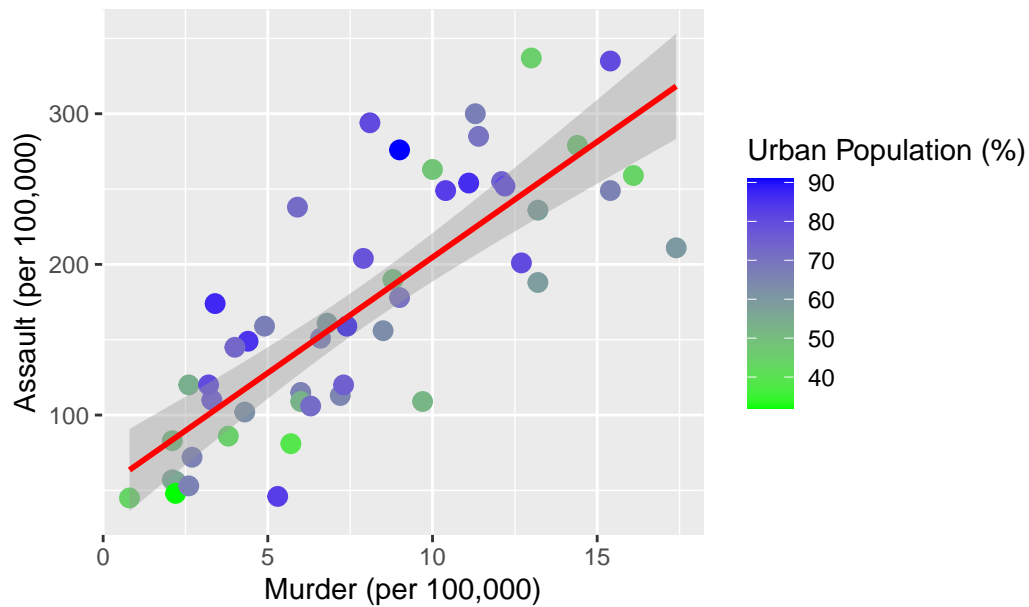
```
library(datasets)
library(ggplot2)
library(tibble)
data("USArrests")
head(USArrests)
```

	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.