Gun Control Laws

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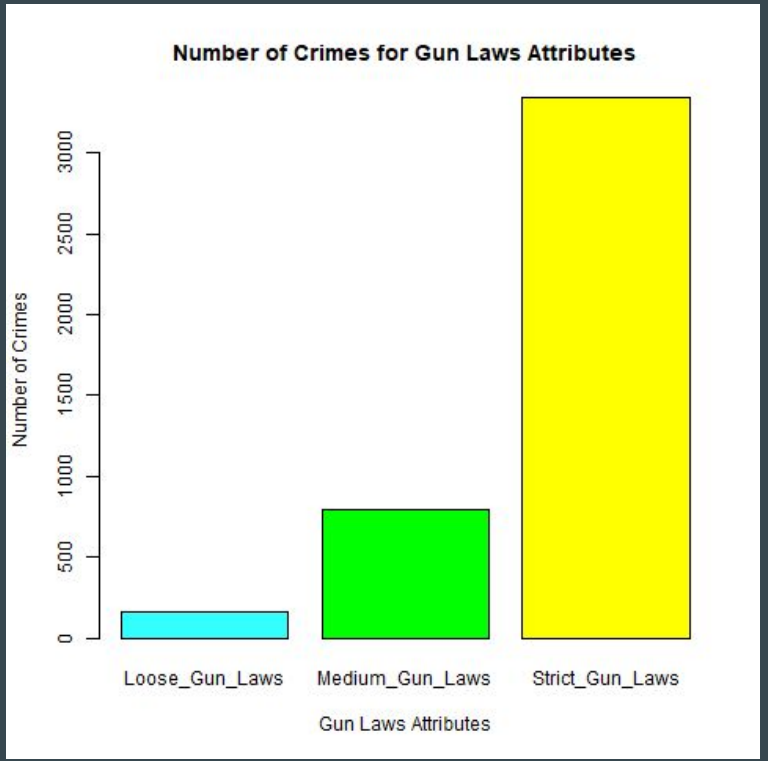
Number of Crimes for Each Level of Gun Laws Strictness - Bonus

- As you can see, even though strict gun laws are imposed the number of crimes is way higher than when medium or loose gun laws are imposed.
- This graph tells us that strict gun laws does not mean lower number of crimes. Hence, in terms of number of crimes, gun control is not effective.
- Although, this does not tell us the severity of the crimes we can see that people will always find an alternative way to break the law.

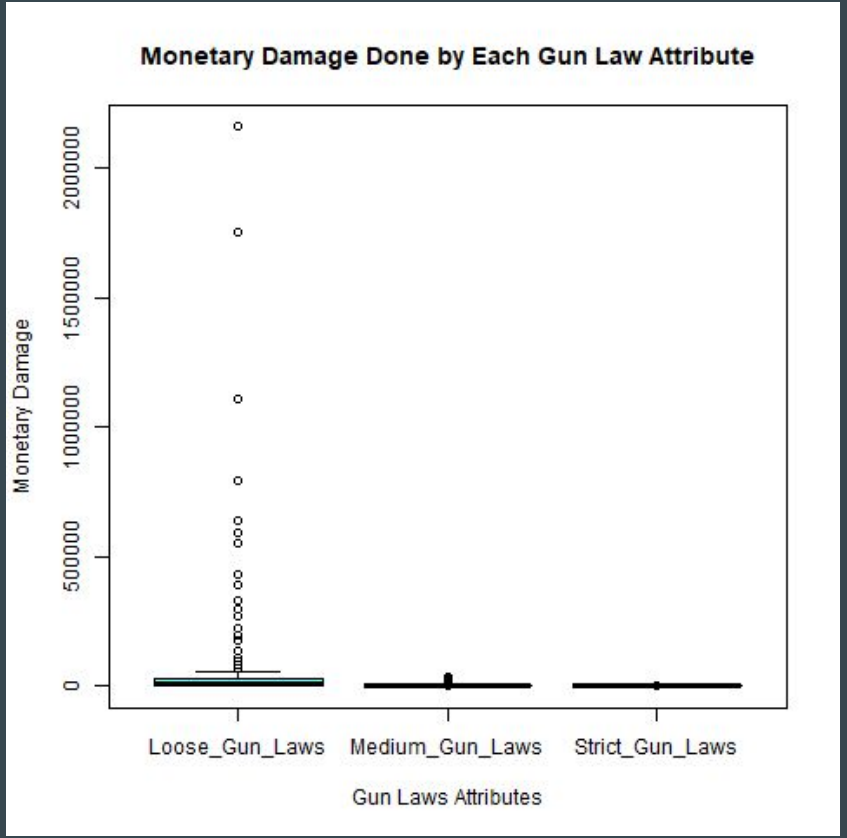



```
barplot(table(gun$Gun_Laws), main = "Number of Crimes for Gun Laws Attributes",  col = c("#33FFFF", "green", "yellow", "orange", "red"), xlab = "Gun Laws Attributes", ylab = "Number of Crimes")
```

Monetary Damage

- The boxplot on the right tells us that the range or outliers of loose gun laws is much higher than medium or strict gun laws.

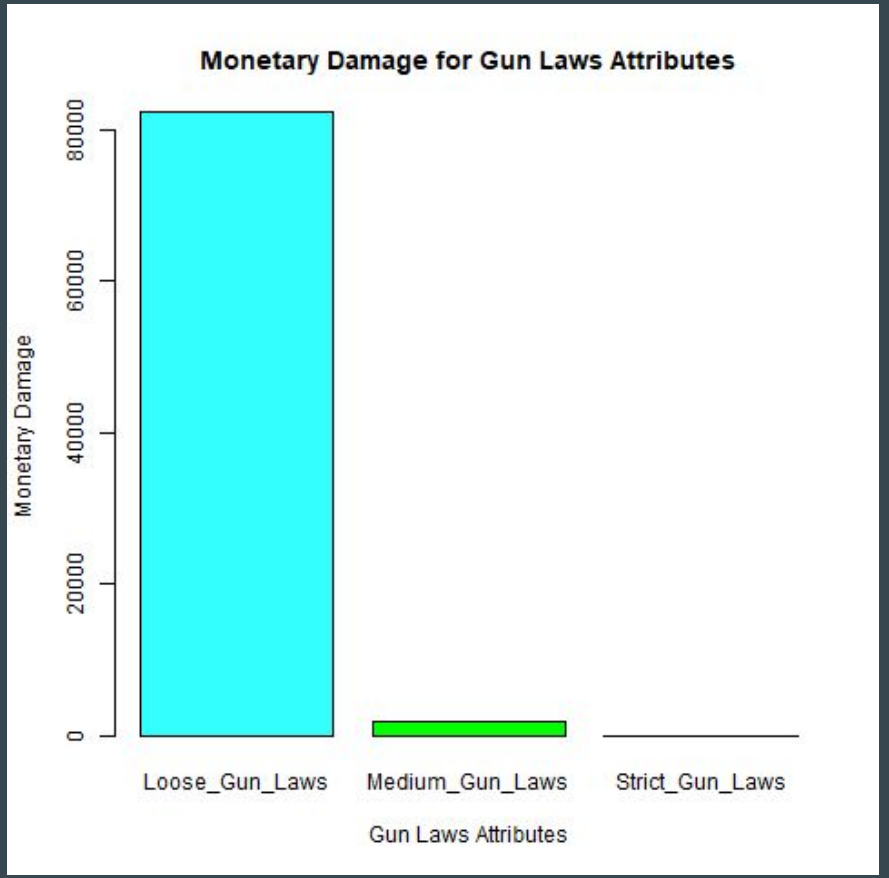
- This plot tells us something interesting is going on with the monetary damage. Even though, the number of crimes committed in the strict gun laws zone is higher, the monetary damage seems to be higher in regions that follow loose or medium gun laws. The next plot will help us understand this more clearly.



boxplot(gun$Monetary_Damage ~ gun$Gun_Laws, main = "Monetary Damage Done by Each Gun Law Attribute", col = c("#33FFFF", "green", "yellow", "orange", "red"), xlab = "Gun Laws Attributes", ylab = "Monetary Damage")

My Hypothesis

- The barplot on the right tells us the average monetary damage done by each gun law attribute.
- You can see loose gun laws have a much higher average than medium and strict gun laws.
- Based on this information my hypothesis is, the average monetary damage in regions that follow loose gun laws is higher than the average monetary damage in regions that follow strict gun laws.




```
barplot(tapply(gun$Monetary_Damage, gun$Gun_Laws, mean), main =
"Monetary Damage for Gun Laws Attributes", col = c("#33FFFF", "green", "yellow",
"orange", "red"), xlab = "Gun Laws Attributes", ylab = "Monetary Damage")
```

Permutation Test

- Let's calculate the mean of both datasets to see what we are dealing with. Then we can use the "Permutation()" function to find the p-value.

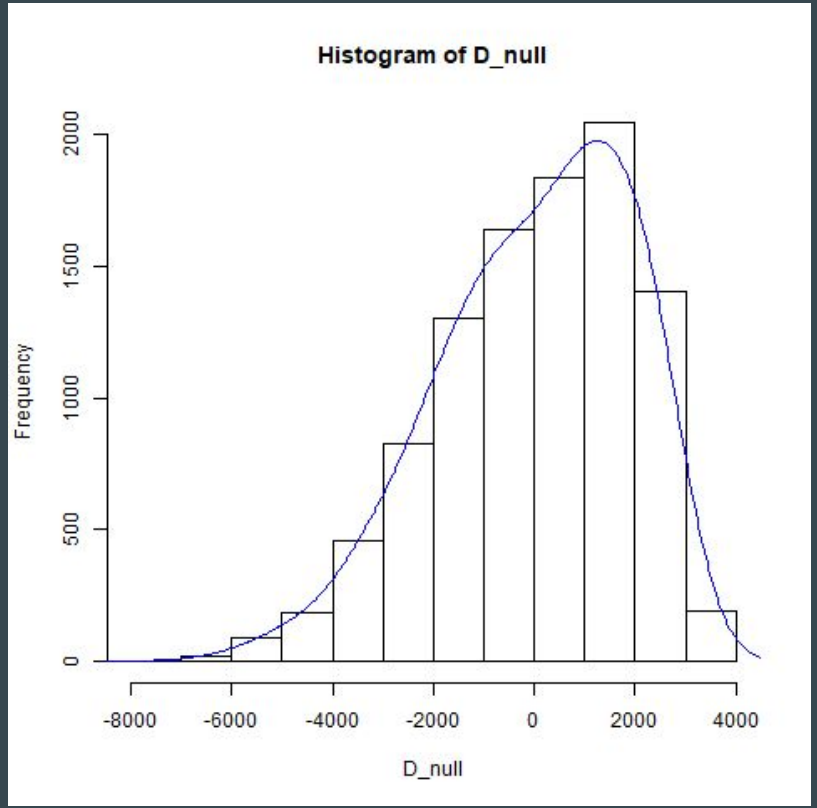
```
looseMonetary <- (subset(gun, gun$Gun_Laws=="Loose_Gun_Laws"))$Monetary_Damage
looseMean <- mean(looseMonetary)

strictMonetary <- (subset(gun, gun$Gun_Laws=="Strict_Gun_Laws"))$Monetary_Damage
strictMean <- mean(strictMonetary)

pValue <- Permutation(gun, "Gun_Laws", "Monetary_Damage",10000,"Loose_Gun_Laws",
"Strict_Gun_Laws")
```

- As you can see from the output, the difference in means is very high between the data sets and the p-value is lesser that 0.05. Hence, we can reject the null hypothesis.

Output:

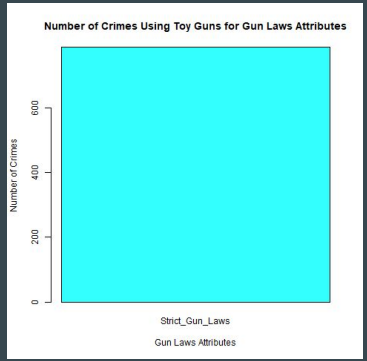
- looseMean : 82411.71
- strictMean : 23.65553
- pValue : 0

Histogram of the Permutation Test

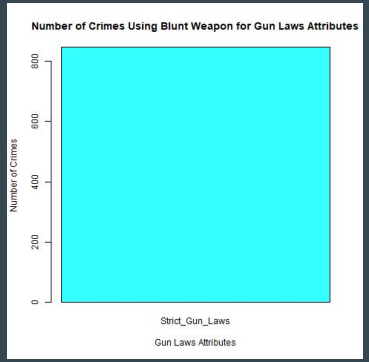


Weapons Used for Each Level of Gun Law Strictness - Bonus

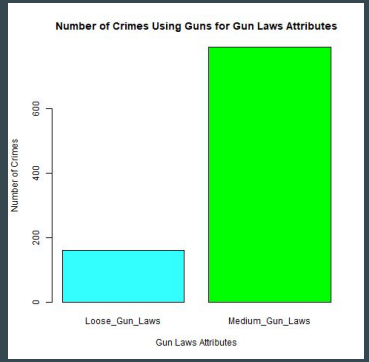
- As you can see, all plots except the weapon used attribute “Gun” are only present in regions that follow strict gun laws.
- The plot that includes “Gun” from the weapon used attribute is only seen in regions that follow loose or medium gun laws. However, loose gun laws have few gun related crimes than medium gun laws.
- This tells us that people from regions that follow stricter gun laws, have greater urges to commit crimes with any weapon they can find even if they can’t find a gun. Hence, gun control is not effective as crimes with other weapons are far greater in number in strict gun law regions.



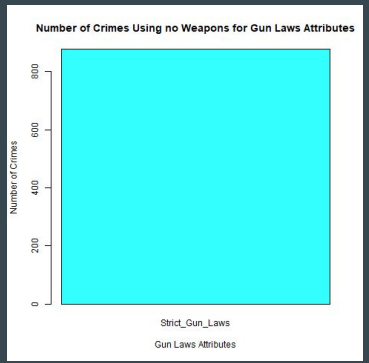
barplot(table(onlyTG$Gun_Laws), main = "Number of Crimes Using Toy Guns for Gun Laws Attributes", col = c("#33FFFF", "green", "yellow", "orange", "red"), xlab = "Gun Laws Attributes", ylab = "Number of Crimes")



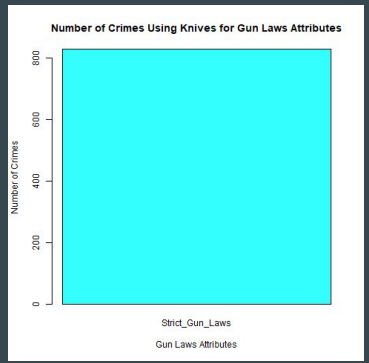
barplot(table(onlyBW$Gun_Laws), main = "Number of Crimes Using Blunt Weapon for Gun Laws Attributes", col = c("#33FFFF", "green", "yellow", "orange", "red"), xlab = "Gun Laws Attributes", ylab = "Number of Crimes")



barplot(table(onlyGun$Gun_Laws), main = "Number of Crimes Using Guns for Gun Laws Attributes", col = c("#33FFFF", "green", "yellow", "orange", "red"), xlab = "Gun Laws Attributes", ylab = "Number of Crimes")



barplot(table(onlyNW$Gun_Laws), main = "Number of Crimes Using no Weapons for Gun Laws Attributes", col = c("#33FFFF", "green", "yellow", "orange", "red"), xlab = "Gun Laws Attributes", ylab = "Number of Crimes")



barplot(table(onlyKnife$Gun_Laws), main = "Number of Crimes Using Knives for Gun Laws Attributes", col = c("#33FFFF", "green", "yellow", "orange", "red"), xlab = "Gun Laws Attributes", ylab = "Number of Crimes")

Conclusion From the Plots

- While the number of crimes is very high in regions that follow strict gun laws compared to regions that follow loose or medium gun laws, the severity in terms of monetary damage is lower in regions that follow strict gun laws compared to regions that follow loose or medium gun laws.

- Severity in terms of the weapon used is also dominated by regions that follow strict gun laws. Regions that follow strict gun laws, have 0 gun related crimes but many more crimes that use less fatal weapons.

- Regions that follow loose or medium gun laws have more severe crimes that use real guns and no crimes that use weapons such as toy guns, blunt weapons, etc.

Thank you!