

R.Camp - Homework 1

Santiago López Álvarez

```
library(xtable)
```

```
## Warning: package 'xtable' was built under R version 3.5.2
```

```
library(stargazer)
```

```
##
```

```
## Please cite as:
```

```
## Hlavac, Marek (2018). stargazer: Well-Formatted Regression and Summary Statistics Tables.
```

```
## R package version 5.2.2. https://CRAN.R-project.org/package=stargazer
```

Homework 1

Problem 1

Theoretical question:

In this project, I am primarily interested in exploring the levels of domestic violence (national) and its relationship to the state of the economy, and the strength of the democracy (if it applies).

Conventional wisdom indicates that a good and healthy economy plus strong democratic institutions should lead to more stable and peaceful states. When the national economy thrives, it is expected to produce more jobs, increase or at least maintain purchase power, and incentivize the consumption of goods and services. In addition to attractive economic figures, states require strong and reliable institutions to run the administrative functions of the country. In the vast majority of the developed world, the democratic system is considered to be the most appropriate form of government to perform this task.

Economy and democracy are then seen as two critical elements for national stability, and although these goals seem to be clear for the governments, the strength and rate at which they develop vary from case to case. These national differences, however, do not prevent researchers from assessing the social stability stage of a country (understood here as low levels of violence), as a function of its economic and democratic development process. On the contrary, these differences should in fact serve as evidence to support or deny the conventional wisdom claim, according to which we should expect nations with better economies and stronger democratic institutions to display lower rates of domestic violence than countries with lower performances.

Data

To explore the impact of democracy and economy on the levels of domestic violence, I generated a data set of 167 observations. The unit of analysis are countries.

(Reading the dataset)

```
fdataset <- read.csv("R-camp final dataset.csv")
```

Variables

Dependent variable: Levels of domestic violence: measured as the number of murders per 100,000 citizens.

Descriptive statistics:

```
library("stargazer")

mod_stargazer <- function(...){
  output <- capture.output(stargazer(...))
  output <- output[4:length(output)]
  cat(paste(output, collapse = "\n"), "\n")
}

a <- data.frame(fdataset$homicideRate)
mod_stargazer(a, title="Homicide Rates")
```

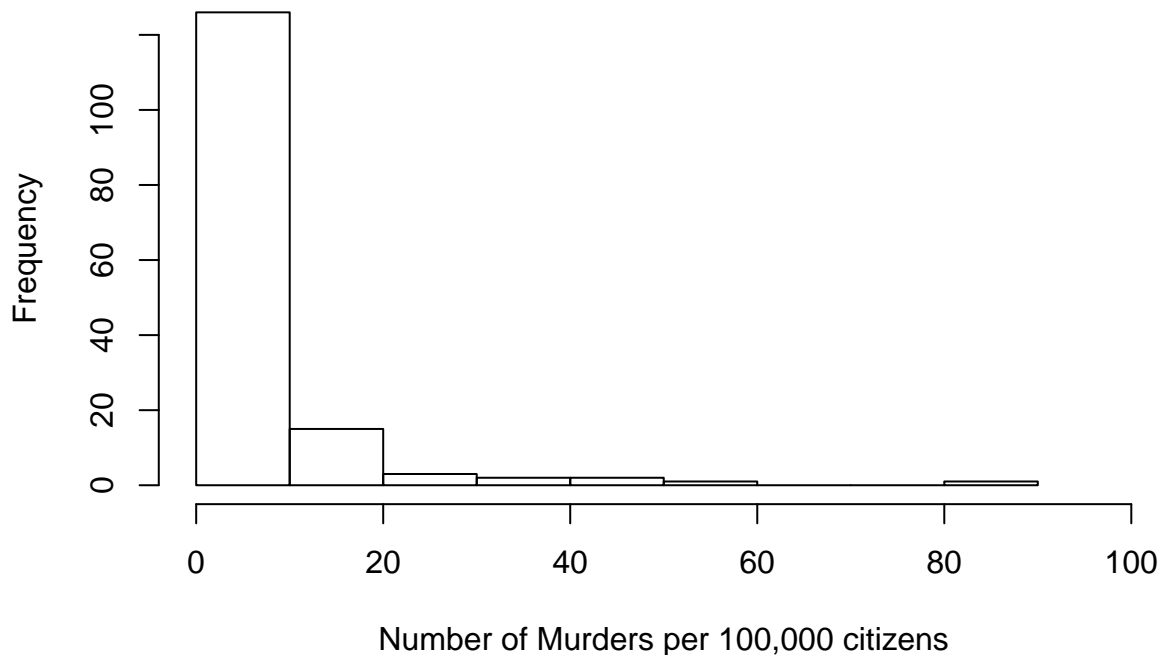
Table 1: Homicide Rates

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
fdataset.homicideRate	150	6.871	10.644	0.284	1.361	7.701	82.842

Histogram

```
hist(fdataset$homicideRate, xlab="Number of Murders per 100,000 citizens", ylab="Frequency", xlim=c(0, 100))
```

Homicide Rate



Main independent variables:

Economic performance: measured by the GDP per capita index.

Descriptive statistics:

```
library("stargazer")

mod_stargazer <- function(...){
  output <- capture.output(stargazer(...))
  output <- output[4:length(output)]
  cat(paste(output, collapse = "\n"), "\n")
}

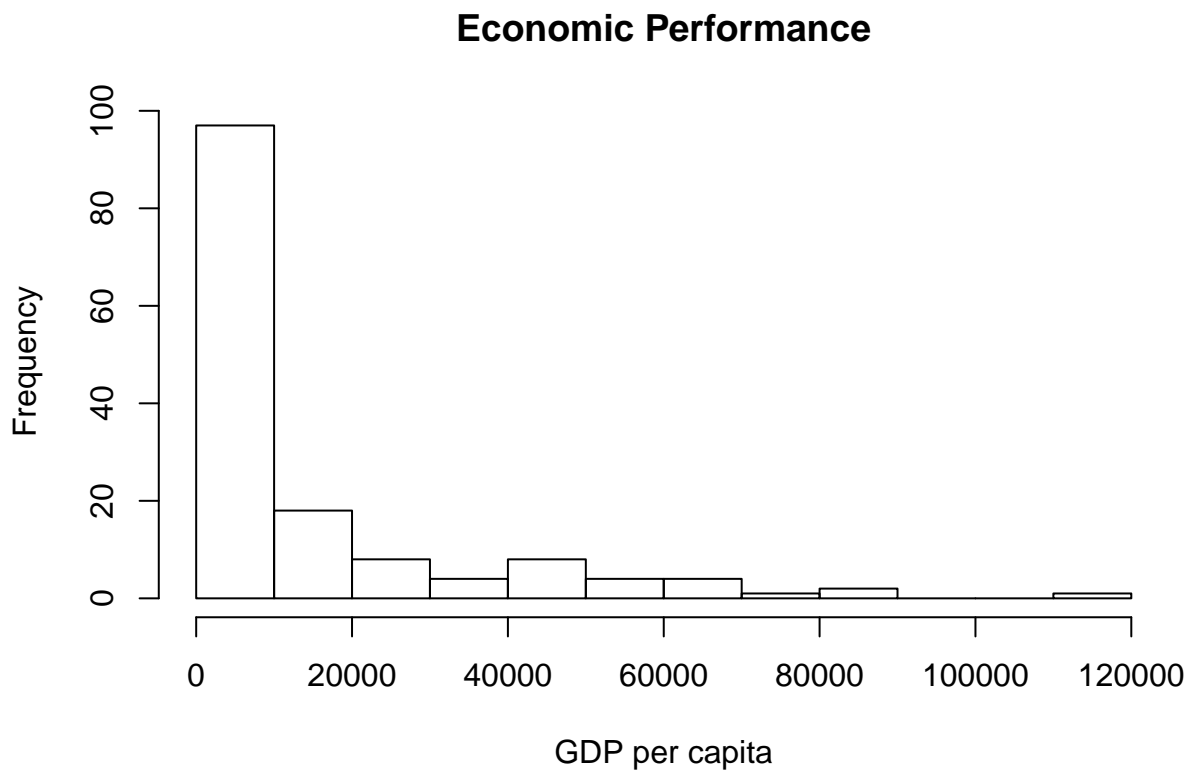
b <- data.frame(fdataset$X2018.GDP.per.capita..current.US..)
mod_stargazer(b, title="GDP per Capita")
```

Table 2: GDP per Capita

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)
fdataset.X2018.GDP.per.capita..current.US..	147	14,467.690	20,545.300	275.430	1,865.561	16,631.310

Histogram

```
hist(fdataset$X2018.GDP.per.capita..current.US.., xlab="GDP per capita", ylab="Frequency", main="Economic Performance")
```



Democracy strength: measured by the Polity IV score.

Descriptive statistics:

```
library("stargazer")

mod_stargazer <- function(...){
  output <- capture.output(stargazer(...))
  output <- output[4:length(output)]
  cat(paste(output, collapse = "\n"), "\n")
}

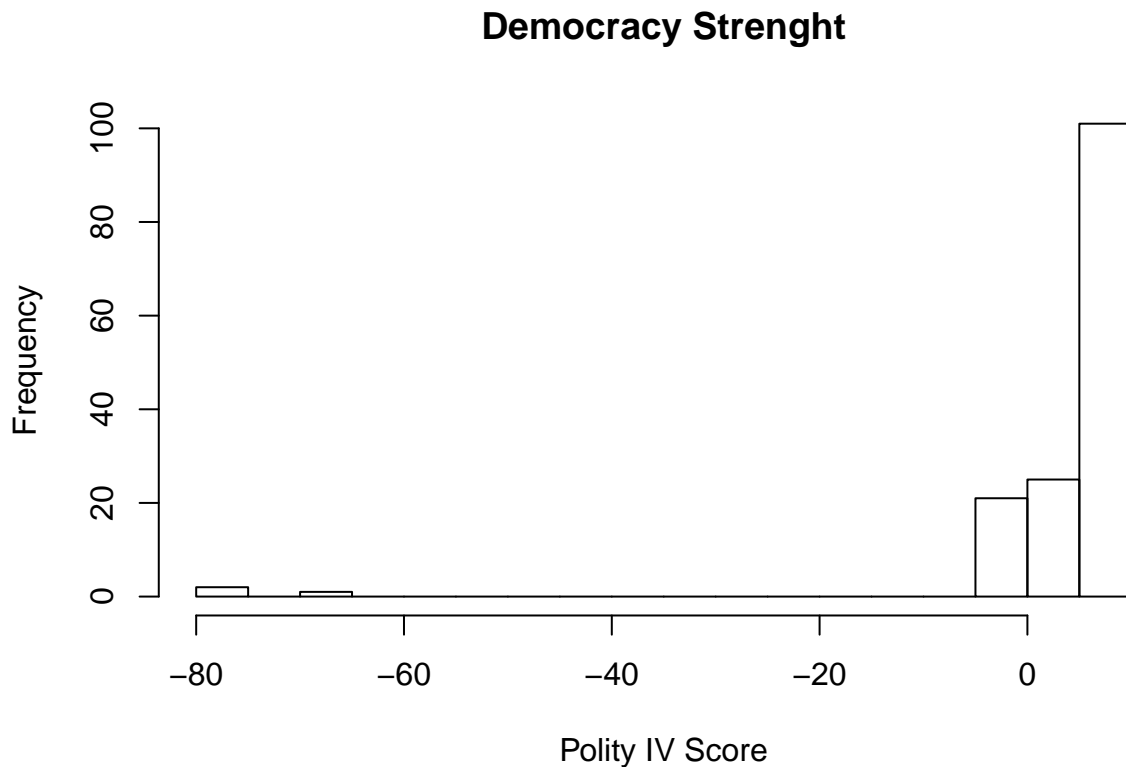
c <- data.frame(fdataset$polity.IV)
mod_stargazer(c, title="Democracy Score")
```

Table 3: Democracy Score

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
fdataset.polity.IV	150	4.693	11.753	-77	3	9	10

Histogram

```
hist(fdataset$polity.IV, breaks=20, xlab="Polity IV Score", ylab="Frequency", main="Democracy Strenght")
```



Control variables:

National income: measured categorically by the World Bank.

Descriptive statistics:

```
library("stargazer")
```

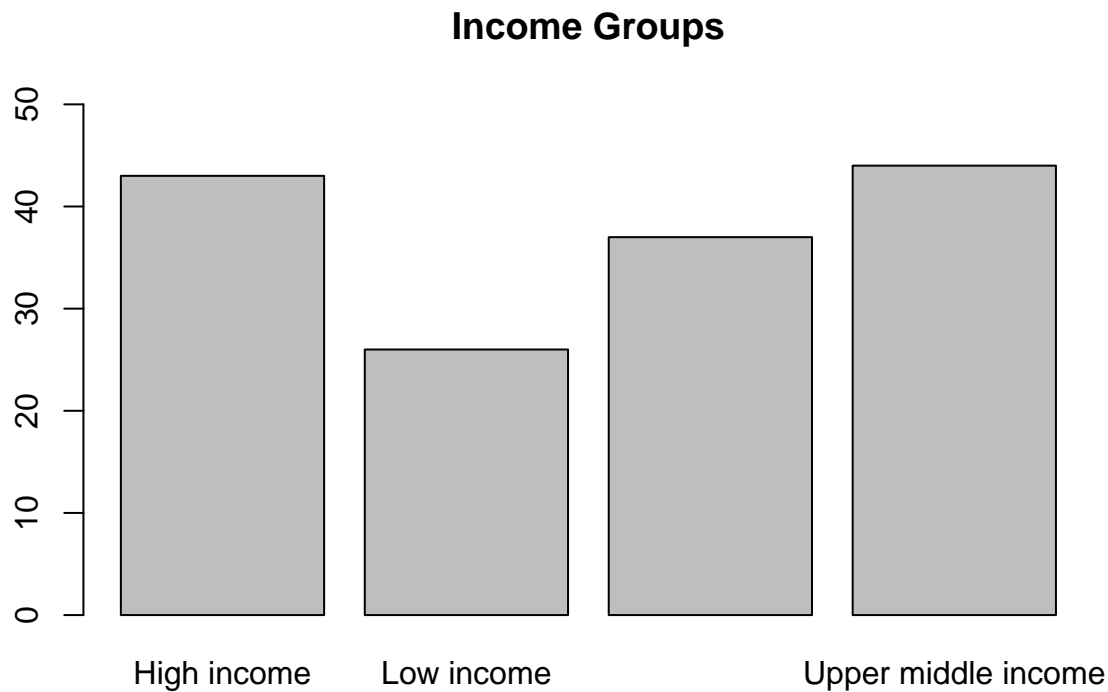
```
mod_stargazer <- function(...){
  output <- capture.output(stargazer(...))
  output <- output[4:length(output)]
  cat(paste(output, collapse = "\n"), "\n")
}
d <- data.frame(fdataset$IncomeGroup)
mod_stargazer(d, title="Income Groups")
```

Table 4: Income Groups

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
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Histogram

```
plot(fdataset$IncomeGroup, ylim=c(0,50), main="Income Groups")
```



Corruption level: measured by the CPI (Corruption Perceptions Index).

Descriptive statistics:

```
corrupt <- read.csv("Corruption.csv")
# mod_stargazer(corrupt)

library("stargazer")

mod_stargazer <- function(...){
  output <- capture.output(stargazer(...))
  output <- output[4:length(output)]
  cat(paste(output, collapse = "\n"), "\n")
}
```

```

}
e <- data.frame(fdataset$CPI.Score.2018)
mod_stargazer(e, title="Corruption Perceptions Index")

```

Table 5: Corruption Perceptions Index

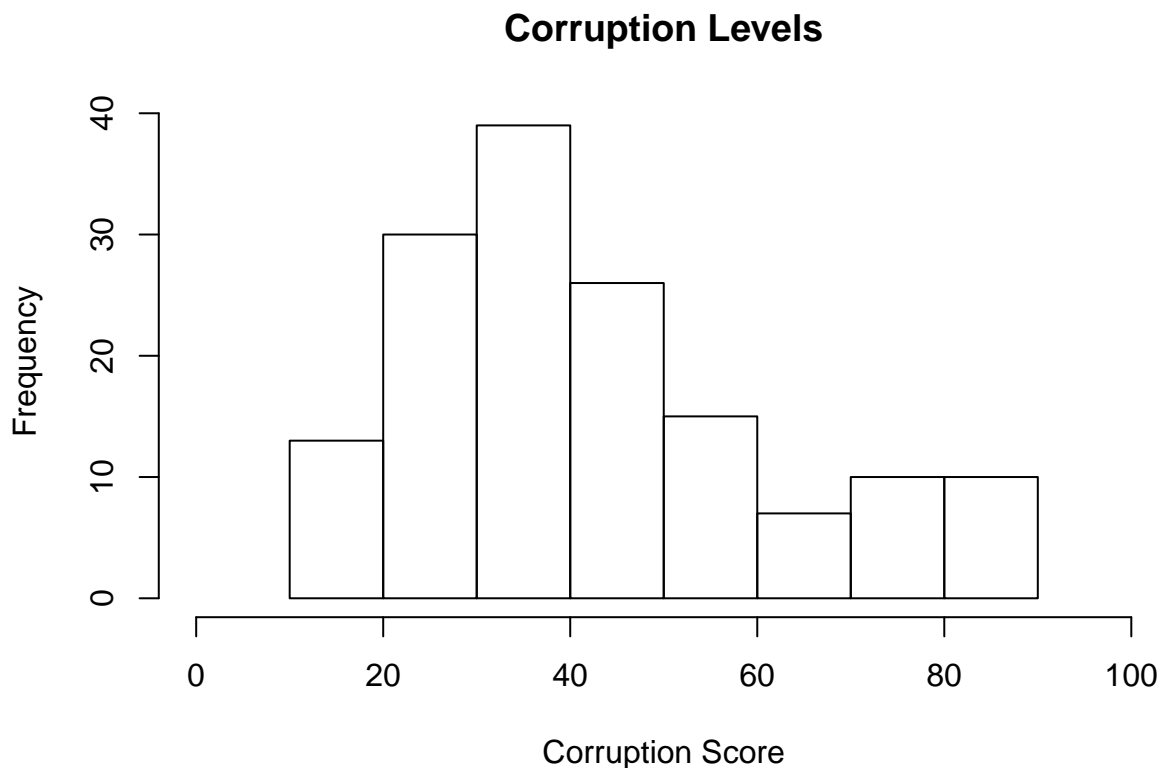
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
fdataset.CPI.Score.2018	150	42.933	18.948	10	29	55.2	88

Histogram

```

hist(fdataset$CPI.Score.2018, xlab="Corruption Score", ylab="Frequency", main="Corruption Levels", xlim=

```

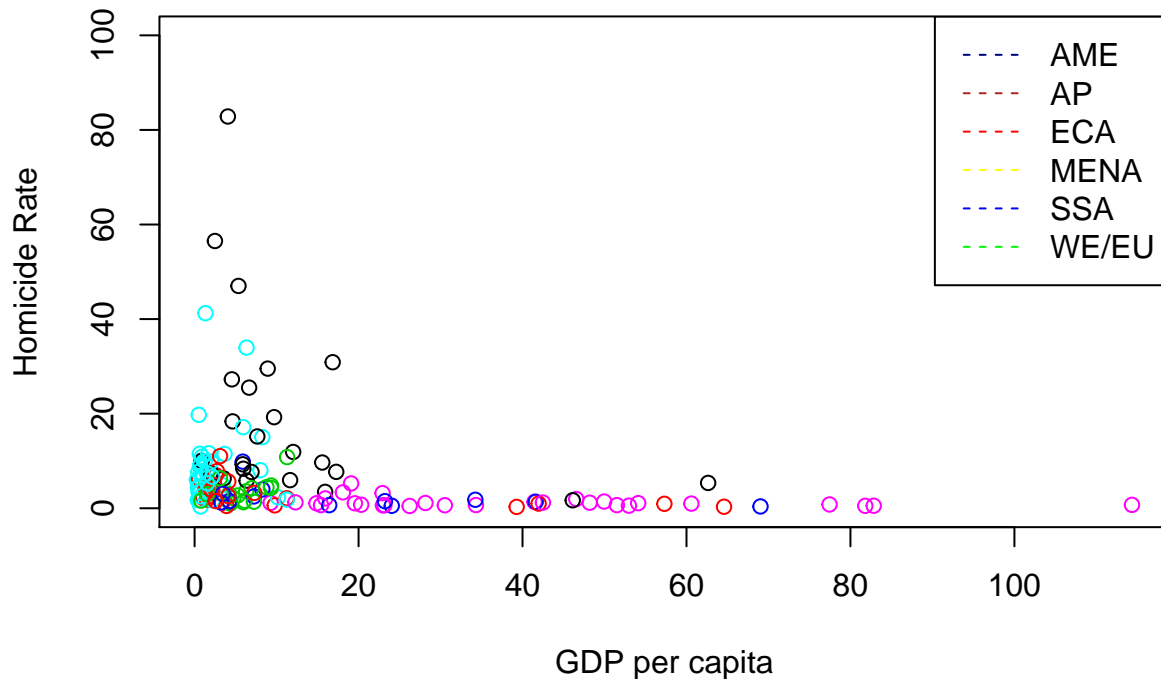


Problem 2

Since I am interested in the relationship between violence and the economy and democratic stages of the country, a scatter plot of the relationship between the variables seems appropriate. The plot presented below shows how the levels of violence in the countries in our data change at different levels of GDP. Higher values on GDP indicate a wealthier country, whereas high indices on the y axis shows a larger amount of murders.

Scatter plot 1 (Economy vs Homicide Rate) Exploring visually whether there is a linear relationship between violence and economy. Different colours indicate the six different regions in which the countries are divided:

Impact of Economy on Homicide Rates



As the plot indicates, the relationship looks exponential rather than linear. That said, one can clearly see a pattern in which higher values of murder rates are concentrated in the countries with the lowest GDP rates.

Regression Model

As stated above, the graph displays an exponential relationship rather than linear. However, for the sake of this activity, I will fit a linear model. The regression below measures the impact of the economy on the homicides rate. The conventional argument indicates that a healthier and stronger economy should contribute to reduce the levels of domestic violence; therefore we should expect a negative coefficient as a result. In other words, as the economy increases, the rate of homicides should decrease.

Code for the model fit:

```
fregm <- lm(X2018.GDP.per.capita..current.US..~ homicideRate, data = fdataset)
```

Regression table:

```
library("stargazer")

mod_stargazer <- function(...){
  output <- capture.output(stargazer(...))
  output <- output[4:length(output)]
  cat(paste(output, collapse = "\n"), "\n")
}

mod_stargazer(fregm, type="latex",
  omit.table.layout="n",
  digits=2,
  digits.extra=0,
  title="Impact of GDP on Murder Rate")
```

Table 6: Impact of GDP on Murder Rate

	<i>Dependent variable:</i>
	X2018.GDP.per.capita..current.US..
homicideRate	−472.30*** (154.01)
Constant	17,692.40*** (1,954.71)
Observations	147
R ²	0.06
Adjusted R ²	0.05
Residual Std. Error	19,978.32 (df = 145)
F Statistic	9.40*** (df = 1; 145)