THE INCIDENCE OF IMMIGRANT APPREHENSIONS IN THE UNITED STATES

BY ZAHEEN CHOUDHARY

Abstract:
This paper focuses on analyzing various factors which contribute to the incidence of immigrant apprehensions in the United States according to the country of origin by using a cross-sectional data. According to the statistics, 13.4% of the United States total population consists of immigrants. Also, there have been various studies which state that some immigrants are more vulnerable to illegal practices, while some are not. This paper examines the section of the immigrants which are susceptible of indulging in illegal practices and are arrested in the United States. The act of indulging in an illegal activity can be attributed to various factors which might have its root in the practices followed in the country of origin of the apprehended immigrant. Level of economic development and education is also likely to have an impact on immigrant apprehensions. For this reason, this paper examines factors such as Corruption, Homicide, Theft, Unemployment etc. on the basis of country of origin of the apprehended immigrants to test whether these factors have an influence on the immigrant apprehensions in the United States or not. This entire paper focuses on visualizing and interpreting the trend of every variable on the apprehensions ratio by visualizing all the countries together and then, focusing on four countries; out of which two have the highest number of immigrant apprehensions in the United States in the time period analyzed whereas, the other two have the lowest number of immigrant apprehensions in the United States.

Data and Variables:
Cross-sectional data covering 96 countries is utilized for the analysis.[1] The dependent variable in the analysis is APR which represents a ratio of the number of apprehended immigrants belonging to a particular country of origin to the total number of apprehended immigrants (multiplied by 100,000). Whereas, the independent variables for our study are: Corruption (level of corruption in a particular country), Income (Per capita income), Education (Average of the total schooling years of people aged 15 and above), Unemployment (As a % of total labor force), Homicide (Rate of homicide per 100,000 people), Theft (As a % of sales), Traffic (Estimated traffic deaths in a country, per 100,000 people), Prostitution (if prostitution laws are legal in the country then the variable has been assigned a value of 1, else 0), Alcohol (Per capita consumption of alcohol of people aged above 15 years), Distance (Distance from a particular country to the United States measured in kilometers), Tourism (Number of arrived tourists and tourist expenditures by international inbound visitors) and Investment (United States Direct Investment position to foreign countries).

[1] Bilol Buzurukov and Byeong Wan Lee (2015). Determinants of Immigrant Apprehensions: The Case of U.S. Immigration. Economics: The Open-Access, Open-Assessment E-Journal, 9 (2015-39): 1—25. http://dx.doi.org/10.5018/economics-ejournal.ja.2015-39

Key Words:
Apprehensions; Corruption; Homicide; Immigrant

Sources of the Variables:
APR: The dependent variable (APR - Annual number of apprehensions per 100,000 aliens) has been constructed by combining the data from two sources; Migration Policy Institute (MPI) of the United States and United States Department of Homeland Security (DHS).[2] To calculate the annual number of apprehensions per 100,000 aliens, let us suppose we want to calculate the APR variable for the country India then, the number of apprehended individuals belonging to India at a particular time is divided by the number of Indians residing in United States who are not United States residents when they were born but residents of India is multiplied by 100,000.

Corruption: The level of corruption is constructed according to the "The Worldwide Governance Indicators".[3] The corruption level has been scaled from -2.50 to 2.50 where, -2.50 represents the lowest level of corruption and 2.50 represents the highest level of corruption.

Theft: The variable theft includes loss due to theft, robbery, vandalism and arson as percentage of business sales. The information on this variable has been extracted from World Development Indicators; data released by World Bank (2014).[4]

Homicide: To calculate the homicide rate per 100,000 people, the information is extracted from the International Homicide Statistics database; "International Homicide Statistics" (2014).[5]

Alcohol: Alcohol represents per capita consumption taking into account the average daily intake as grams of pure alcohol by 15+ years of population for every country. The information has been used from "Global Status Report on Alcohol and Health" by the World Health Organization (2014).[6]

Distance: Distance (in kilometers) represents the distance of a particular country to United states and has been noted from the website Distance From To.[7]

Income: Income represents per capita Gross Domestic Product of every country which has extracted from World Development Indicators; data released by World Bank (2014).

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[2] http://www.migrationpolicy.org/programs/data-hub and http://www.dhs.gov/yearbook-immigration-statistics-2011-3 , http://www.dhs.gov/yearbook-immigration-statistics-2012-enforcement-actions , http://www.dhs.gov/yearbook-immigration-statistics-2013-enforcement-actions

[3] Kaufmann, D., Kraay, A. and Mastruzzi, M. (2014). "The Worldwide Governance Indicators," The World Bank Group. http://info.worldbank.org/governance/wgi/index.aspx#home

[4] http://data.worldbank.org/indicator/IC.FRM.CRIM.ZS

[5] http://www.unodc.org/unodc/en/data-and-analysis/statistics/data.html

[6] http://www.who.int/substance_abuse/publications/global_alcohol_report/msb_gsr_2014_3.pdf

[7] http://www.distancefromto.net/country-distance-from/United+States

Education: Education represents the average total schooling years of people aged 15 and over belonging to the country concerned. The data on the variable education has been extracted from "A new Dataset of Educational Attainment in the World".[8]

Traffic: The variable traffic represents the estimated traffic deaths per 100,000 people and the information has been taken from road traffic death data by country; released by World Health Organization (WHO).[9]

Prostitution: The legality of prostitution laws by country is a dummy variable where 0 is assigned if the prostitution is illegal whereas 1 has been assigned if the prostitution is legal. Before assigning a value to this dummy variable, it was crosschecked from two sources; Prostitution.Procon.org (2010) and Charts Bin statistics (2010).[10]

Tourism: The tourism variable includes the number of tourist arrivals and International tourism expenditures by international inbound and the values for this variable has been extracted from World Development Indicators; data released by World Bank (2014).[11]

Unemployment: The variable unemployment includes those people who don't have work but are available and are seeking for work. The data for the variable unemployment has been extracted from the key indicators for the labor market; released by International Labor Organization (2014).[12]

Investment: The U.S Direct Investment Abroad information has been extracted from the U.S Bureau of Economic Analysis (BEA) (2014).[13]

Time period:
Average from 2002 through 2013

Research Question:
Does social (level of corruption, theft, homicide, prostitution, alcohol, traffic) and economic (income, level of education, investment) factors of the apprehended immigrants' country of origin explain the incidence of apprehensions in the United States?

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8 Barro R. & Lee, J. (2014) http://www.barrolee.com/data/dataexp.htm

9 http://apps.who.int/gho/data/node.main.A997

10 http://prostitution.procon.org/view.resource.php?resourceID=000772 and http://chartsbin.com/view/snb

11 http://data.worldbank.org/indicator/ST.INT.ARVL and http://data.worldbank.org/indicator/ST.INT.RCPT.CD

12 http://www.ilo.org/stat/lang--en/index.htm

13 "U.S. Direct Investment Abroad, U.S. Direct Investment Position Abroad on a Historical-Cost Basis," Jan 23 2014. http://www.bea.gov/international/di1usdbal.htm

Hypothesis (H_a): Social factors like level of corruption, theft, homicide, prostitution, alcohol and traffic and Economic factors like income, level of education and investment have an impact on the incidence of Immigrant apprehensions in the United States from 2002 to 2013.

Null Hypothesis (H_0): Social factors like level of corruption, theft, homicide, prostitution, alcohol and traffic and Economic factors like income, level of education and investment do not have an impact on the incidence of Immigrant apprehensions in the United States from 2002 to 2013.

Descriptive Analysis:

From all the countries included in the dataset, it is observed that Nicaragua has highest Apprehension ratio of Immigrants(APR) followed by Costa Rica. Graph 1 in the appendix plots all the countries against the Apprehension ratio of Immigrants. Out of the top five countries in the dataset, four of them belong to the American Continent. Whereas, Japan and Germany are the countries with the lowest Apprehension ratio of Immigrants. Table 1 in the Appendix provides summary statistics of all the variables. It provides detail on the minimum, maximum, median and mean value of all the variables.

We first visualize the average annual number of apprehensions per 100,000 people for every continent. It is observed that the American continent has the highest average annual number of apprehensions of 361.53 whereas, Europe has the lowest average annual number of apprehensions of 100.52 amongst other continents[14]. We plot average apprehensions ratio instead of summing them up as there are more countries belonging to the American continent than in any other continent in our dataset which might have given us a biased picture.

In the following paper, we analyze the relationship of the apprehensions ratio with all the independent variables by plotting them individually against the apprehensions ratio and segregating them on the basis of the continent. We do so for the purpose of visualizing the trend including all the countries and the then look specifically for four countries in the trend; Nicaragua, Costa Rica, Germany and Japan. The reason for choosing these four specific countries is because Nicaragua and Costa Rica belong to the highest apprehensions ratio category and Germany and Japan belong to the lowest apprehensions ratio category. We use scatterplots to visualize the relationship as it allows us to view which countries have higher or lower apprehensions ratio and which countries belong to the higher or lower category related to the independent variable and also the relationship between the variables. Adding color to the plot enables to segregate those countries on the basis on their continents.

APR and Corruption

The scale of the variable corruption ranges from -2.5 to 2.5 where, -2.5 represents the lowest level of corruption and 2.5 represents the highest level of corruption. From graphs 3, we observe that none of the countries have their corruption level beyond the range of 2.

[14] Refer to Table 2

Afghanistan has the highest level of corruption (1.505) but, it does not belong to the high apprehensions ratio category. Looking closely, we observe that, there is almost a positive trend for American countries in comparison to other continents' countries. Whereas, countries belonging to Europe continent appear to have almost same level of Apprehensions ratio irrespective of their position on the corruption scale. Nicaragua has the highest annual number of apprehensions in the United States and also belong to high level of corruption countries whereas, Costa Rica belongs to moderate level of corruption countries. Japan and Germany belong to the lower levels of corruption countries as we would have expected. Therefore, Corruption does have an impact on the Immigrants Apprehensions ratio.

APR and Theft

From graphs 4, we observe that most of the countries belong to the range from o to 2 with some outliers. If we eliminate those outliers then Nicaragua might be included in the high level of theft countries whereas, Costa Rica and Germany belong to the same level of theft category and Japan belongs to the lowest level of theft category. Kenya and Nigeria, both belonging to the African continent have the highest level of theft in their countries in compassion to others in the dataset. If we exclude the outliers from the graph, we're unable to visualize any specific trend because of which theft appears to have less impact on the Immigrants Apprehensions ratio.

APR and Homicide

In graphs 5, if we split the graph into four quadrants, we observe that most of the countries fall into the lower-left quadrant which depicts that most of the countries having low apprehensions ratio have low homicide rate but, countries with high apprehension ratio do not have much greater value of homicide. For example, Nicaragua and Costa Rica, even after being the two countries with the highest annual number of apprehensions, do not have a high value of homicide although, Japan and Germany belong to the lower levels of Homicide countries as we would have expected. Most of the countries belonging to the American continent have high values of Homicide. Therefore, Homicide appears to have less impact on the Immigrants Apprehensions ratio.

APR and Alcohol

Consumption of Alcohol and incidence of apprehensions are assumed to have a relationship as pattern of consumption of alcohol in the country of origin and then, migration to the United States presuming the same level of alcohol consumption and committing alcohol-related crimes is reasonable. From graphs 6, we observe that there are almost equal number of countries in the low and high per capita consumption of alcohol because of which we are unable to see any significant pattern as countries with low apprehensions ratio have high and low per capita consumption of alcohol and countries with high apprehensions ratio also have high and low per capita consumption of alcohol. Observing the position of Nicaragua, Costa Rica, Japan and Germany, we observe that Nicaragua, Costa Rica and Japan have almost same level of per capita alcohol consumption whereas, Germany even after belonging to the lower level of apprehensions ratio country has per capita alcohol consumption than Nicaragua and Costa Rica. Therefore, Alcohol appears to have less impact on the Immigrants Apprehensions ratio.

APR and Income

From graphs 7, we observe a negative trend in the scatterplot. It is evident that most of the countries having lower apprehensions ratio have higher per capita income in comparison to the countries having higher apprehensions ratio. Nicaragua and Costa Rica have a lower per capita income in comparison to Japan and Germany. Income and APR were expected to depict this trend. Therefore, Income does have an impact on the Immigrants Apprehensions ratio.

APR and Unemployment

While taking the variable unemployment for analyzing the factors affecting the immigrants' apprehensions ratio, it was assumed that unemployment situation in a person's country of origin will have an impact on how well they follow rules and regulations in the United States. But, from graphs 8 we observe that there is no specific trend. Countries having high number of annual apprehensions have low as well as high unemployment rate and similar pattern is observed for countries having low number of annual apprehensions. For example, Nicaragua, Costa Rica and Germany have almost same unemployment rate whereas, japan has a marginally lesser unemployment rate.

APR and Distance

While taking the variable distance into the analysis it was thought that countries nearby have a tendency to migrate to United States more than the countries farther. As, the number of immigrants from countries nearby will be greater than the countries farther away, it was assumed that naturally apprehended immigrants will also be more. From graphs 9, it clear that the nearest countries belong to the American continent and then to Europe. The countries farthest away belong to the Asian Continent. We can observe a slight downward trend depicting that, countries which are the nearest have higher annual number of apprehensions and the countries farther away have lower number of apprehensions. Yes, there are outliers and it is not true for all countries but it is for some of them

APR and Tourism

Interaction with tourists or travelling to other countries or hosting foreigners is supposed to allow people to respect laws and regulations in other countries and therefore contribute to less apprehensions. But, in graphs 10, we are not able to observe this fact as most of the countries are clustered at very low levels of tourism. Nicaragua and Costa Rica do have less value for tourism and higher annual number of apprehensions in the United States is comparison to Japan and Germany but, this trend is not visible for other countries.

APR and Investment

It was assumed that if a country has good trade and investment situation with the United States, it might affect the perception of the United States amongst the citizen of that country leading to lesser immigrant apprehensions from that country. From graphs 11, we observe that because of the outliers we are unable to see any specific pattern but, Nicaragua and Costa Rica has low value of variable Investment in comparison to Japan and Germany. So, we are able to testify

our assumption between these countries but, we are not able to say this with confidence for other countries.

APR and Education

Education is believed to uplift the standard of living of every person in the country by opening economic opportunities for them. If the number of people who have attended school increases the, it is assumed that people will have less reasons or motivation to do something illegal. But, in graphs 12, Nicaragua and Costa Rica have moderate educational level and Japan and Germany have high educational level because of which it fits our assumption. However, we cannot see this trend for other countries. Also, there are many countries which have low annual number of apprehensions and low educational level. Therefore, Education appears to have less impact on the Immigrants Apprehensions ratio.

APR and Prostitution

We include prostitution into our analysis as lots of arrests in United States are because of Prostitution. So, it is assumed that if prostitution is legal in the country of origin of the apprehended person then it is likely for them to break laws related to Prostitution in United States. As Prostitution is a dummy variable which assumes a value of 1 if prostitution is legal in a country and 0 otherwise, we are unable to see its exact effect. There are countries in both the scenarios having high level of apprehensions ratio. Nicaragua, Costa Rica, Japan and Germany, all have legality of prostitution in their countries.

Conclusion of the descriptive analysis:

We observe significant trend in the scatterplots of some variables. It is possible that we might not have been able to observe the pattern for some variables as this dataset includes only 96 countries. If we are able to increase the sample size and include more countries into our analysis, we have a better chance of concluding results. The interpretations and conclusions stated above are entirely on the basis of visualizing the plots. Scatterplots have proven to be useful for our analysis in comparison to bar charts, pie charts etc. as they allow to depict more than one continuous variable.

Empirical Analysis:

We begin our analysis by conducting a simple linear regression assuming that all the assumptions of Ordinary Least Squares hold true. Regressing all the independent variables against the variable APR, we find out that only alcohol, income and distance have a significant impact on the Apprehension ratio of Immigrants as depicted in Table 2 in the Appendix. We obtain an R squared value of 0.43, which means that only 43% of the variation in the dependent variable is explained by the independent variables. Also, the standard errors look inflated.

It is imperative to test for heteroscedasticity also referred to as non-constant error variance, because if it occurs then, the variance of the residuals does not satisfy the classical linear regression model assumptions. We first plot the residuals against the fitted values of regression conducted above. We observe that the residuals are not evenly scattered above and below zero instead, there is a cone-shaped pattern in the residuals which depicts heteroscedasticity. In other

words, the variability of the residuals is unequal across the range of values of the residuals. Also, the scale of the spread of the residuals is too large (from -200 to 650). On average, there should be nearly identical number of values above and below.

We conduct Breusch-Pagen/ Cook-Weisberg test to test for heteroscedasticity and obtain a p-value of 0.000 indicating that heteroscedasticity is present. Presence of heteroscedasticity leads to inflated standard errors resulting in incorrect p-values which might have been happened in our case as most of the variables turn out to be insignificant.

We try to remove heteroscedasticity by taking the natural log of the dependent variable. We regress taking log(APR) as our dependent variable against all the independent variables. The results obtained are presented in table 4. In this case, the standard errors are lesser than any of the model used. We have an R squared of 0.6563 which means that 65.63% of the variation in the dependent variable is explained by the independent variables. We plot the residuals against the fitted values of this model and we observe that the range of the spread of the residuals has reduced to -0.6 to 0.4. The residuals are evenly scattered above and below the zero and they do not form a cone-shaped pattern as we observed before. Through the plot, it seems like that heteroscedasticity is no longer present in the model.

Interpretation and Conclusion of the empirical analysis:

Through our analysis, we observe that the best model for conducting our hypothesis is OLS using the natural logarithm of APR as the dependent variable. Per capita income, Alcohol, Tourism and, Distance have a negative significant impact on the Apprehension ratio of Immigrants whereas, Corruption and Traffic have a positive significant impact on the Apprehension ratio of Immigrants. Theft, Homicide, Unemployment, Prostitution, Investment and, Education turn to be statistically insignificant that is they do not have any impact on the Apprehension ratio of Immigrants.

Table 5 depicts the following interpretations of the variables,

Intercept- 5.99 is the expected mean log of the Apprehension ratio of Immigrants.

If the there is a one unit increase in the variable Alcohol then the Apprehension ratio of Immigrants will decrease by 1.12% keeping all other factors as constant.

A one unit increase in the variable Income (Weak Indicator) leads the Apprehension ratio of Immigrants to decrease by 0.006% keeping all other factors as constant.

If the there is a one unit increase in the variable Tourism then the Apprehension ratio of Immigrants will decrease by 124.1% keeping all other factors as constant.

A one unit increase in the variable Distance leads the Apprehension ratio of Immigrants to decrease by 0.007% keeping all other factors as constant.

If the there is a one unit increase in the variable Corruption then the Apprehension ratio of Immigrants will increase by 26.47% keeping all other factors as constant.

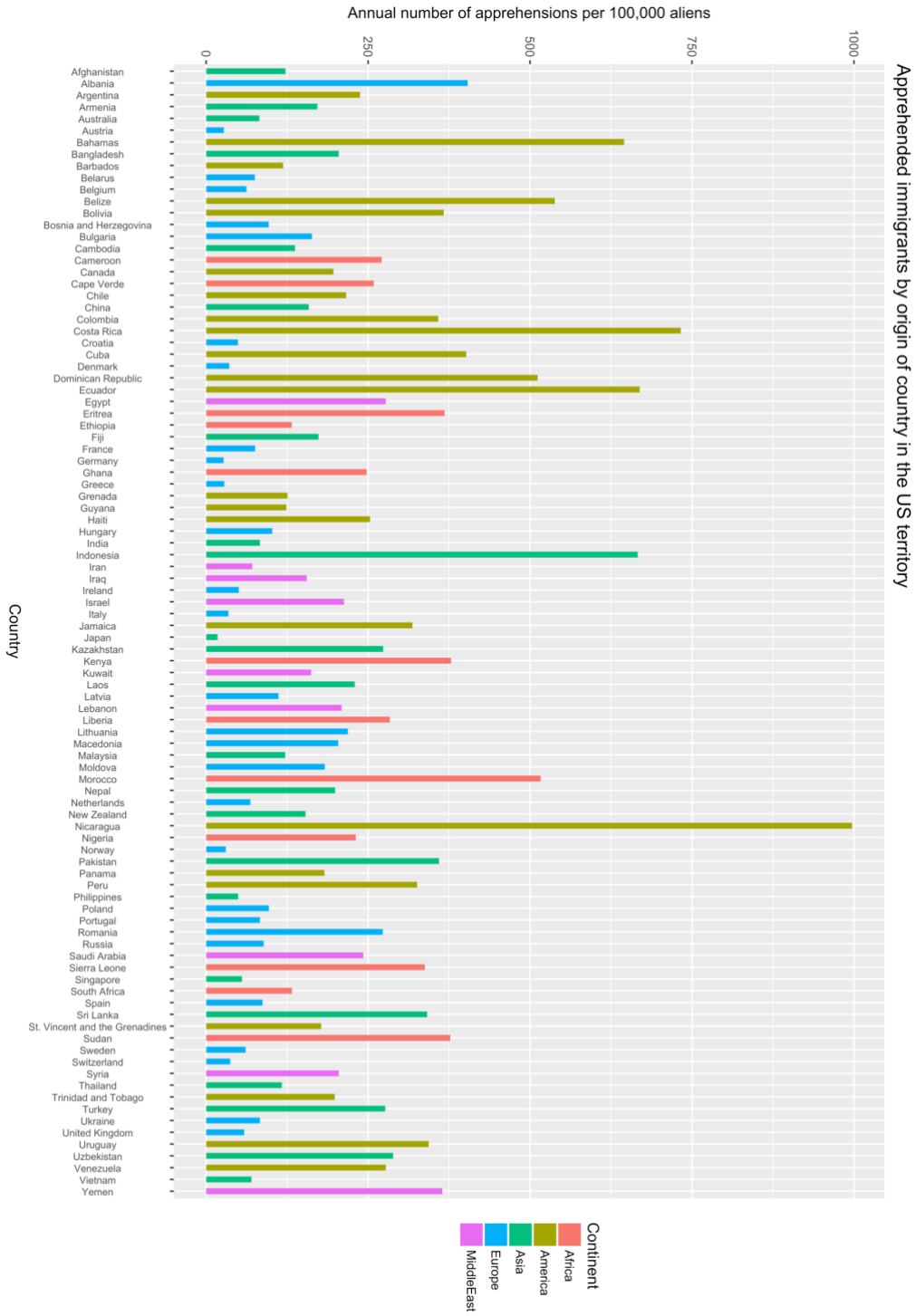
A one unit increase in the variable Traffic leads the Apprehension ratio of Immigrants to increase by 2.17% keeping all other factors as constant.

This proves that all the variables taken as explanatory variables of the apprehended immigrants' country of origin do not help in explaining the incidence of apprehensions in the

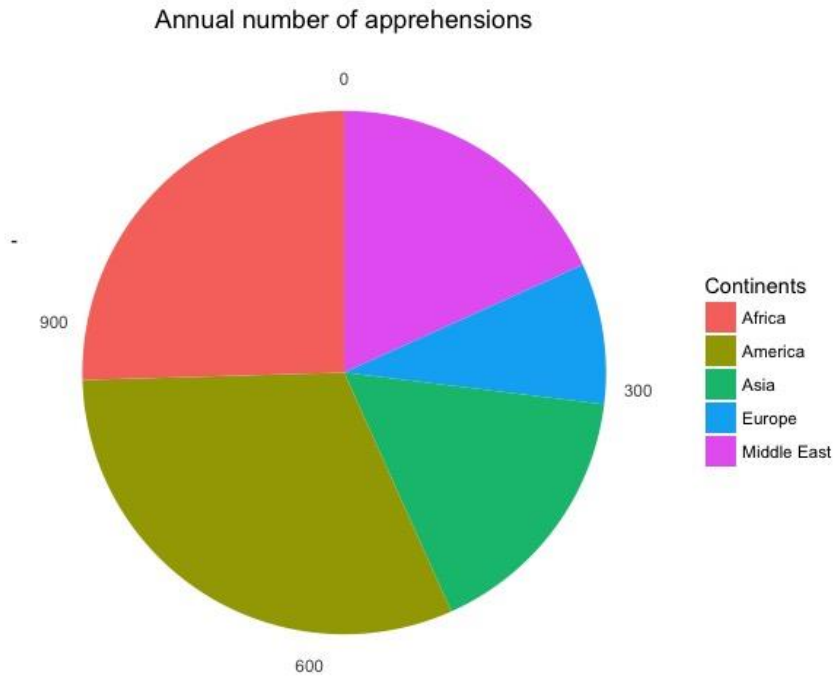
United States. If we drop some of the variables, then we have a better chance of explaining the impact on the dependent variable.

Appendix:

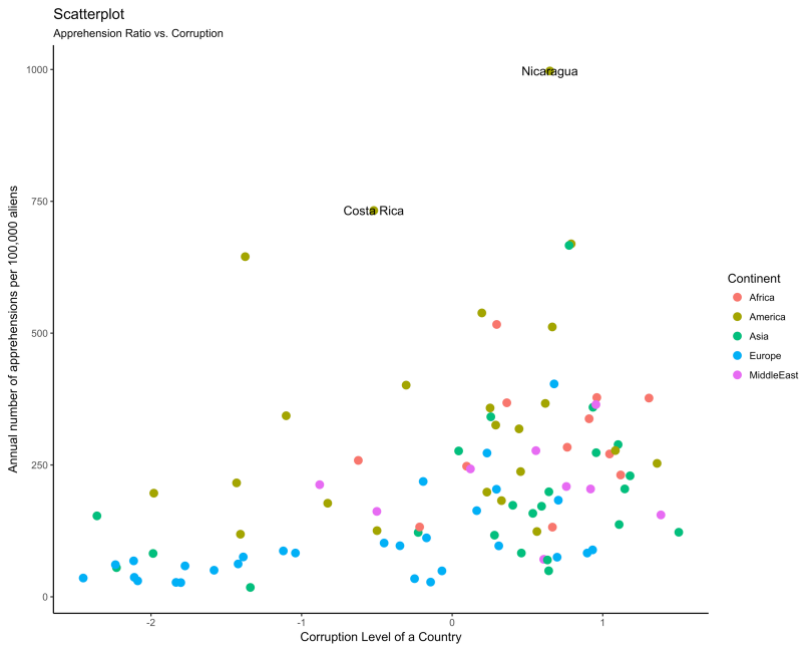
Graph 1:

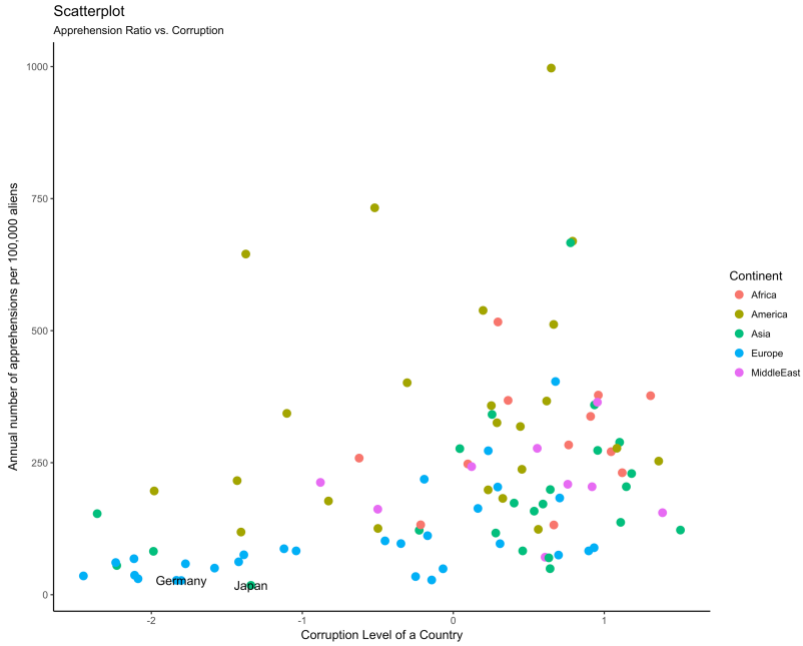


Graph 2:

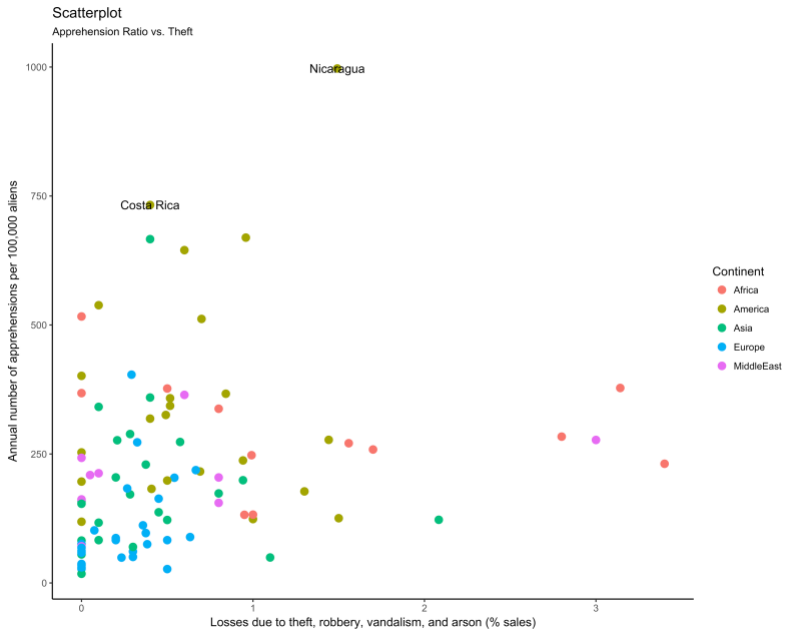

Annual number of apprehensions
0
900
300
600
Continents
Africa
America
Asia
Europe
Middle East

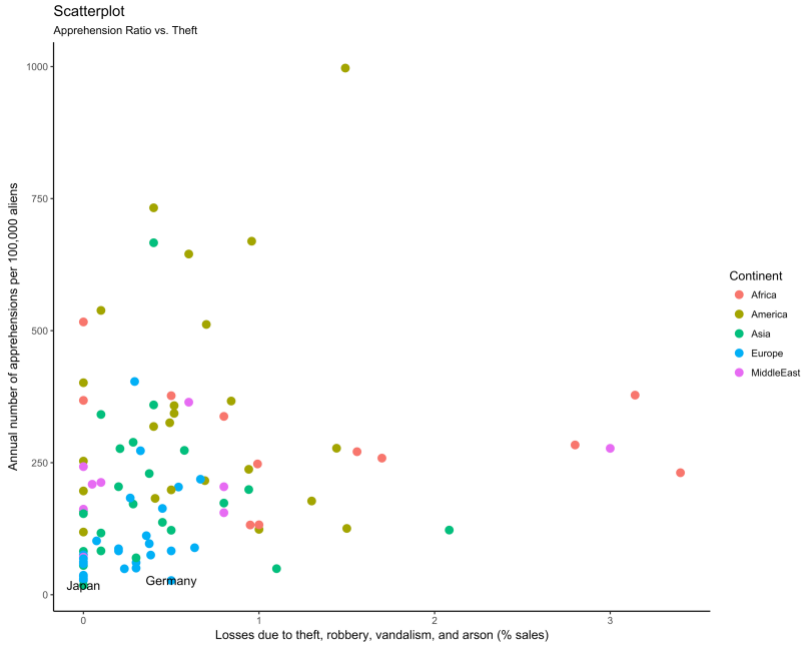
Graphs 3:


Scatterplot
Apprehension Ratio vs. Corruption
Nicaragua
Costa Rica
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
-2
-1
0
1
Corruption Level of a Country
Continent
Africa
America
Asia
Europe
MiddleEast

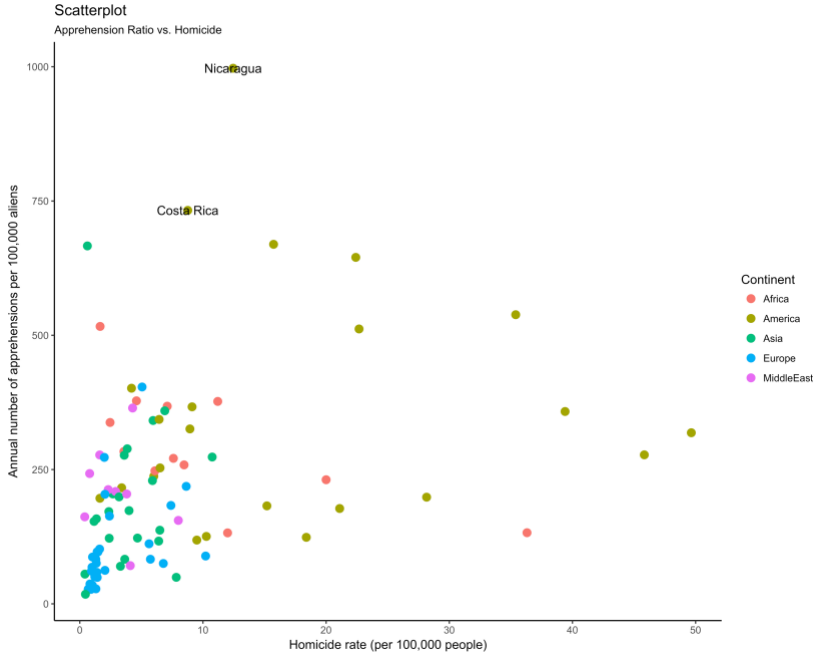

Scatterplot
Apprehension Ratio vs. Corruption
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Germany
Japan
-2
-1
0
1
Corruption Level of a Country
Continent
Africa
America
Asia
Europe
MiddleEast

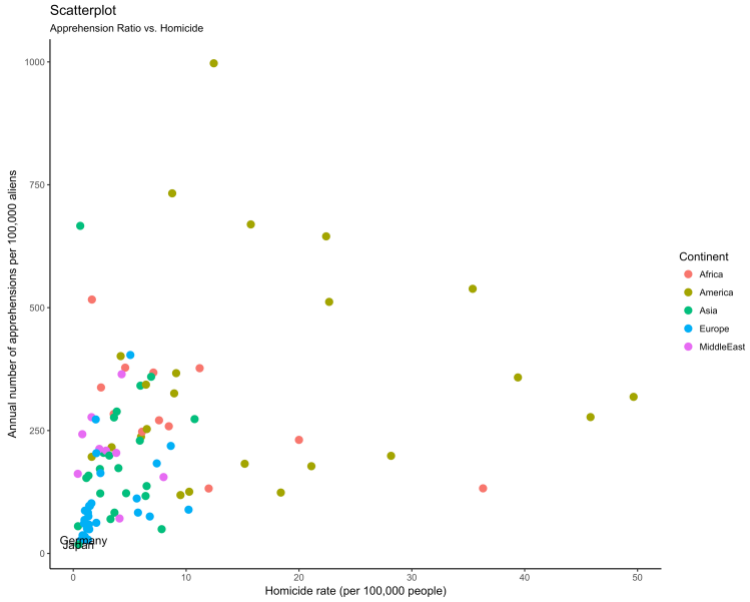
Graphs 4:


Scatterplot
Apprehension Ratio vs. Theft
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Nicaragua
Costa Rica
0
1
2
3
Losses due to theft, robbery, vandalism, and arson (% sales)
Continent
Africa
America
Asia
Europe
MiddleEast

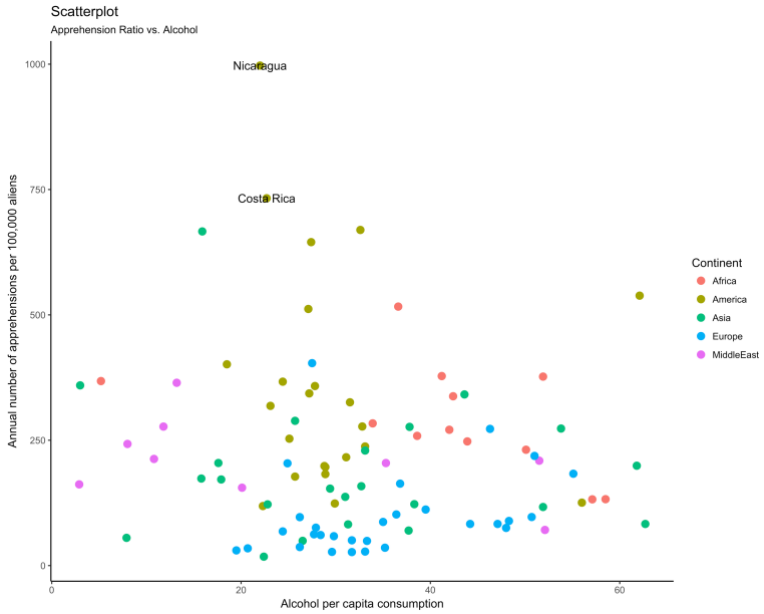

Scatterplot
Apprehension Ratio vs. Theft
Annual number of apprehensions per 100,000 aliens
Losses due to theft, robbery, vandalism, and arson (% sales)
Japan
Germany
Continent
Africa
America
Asia
Europe
MiddleEast

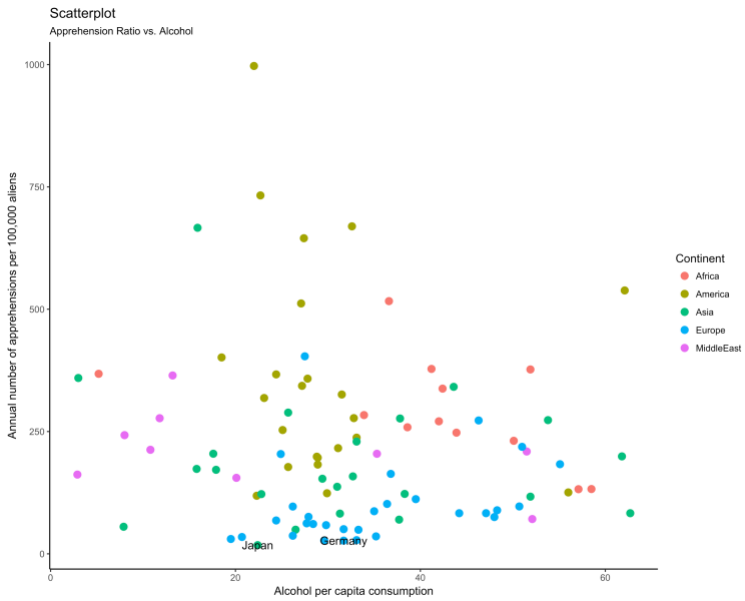
Graphs 5:


Scatterplot
Apprehension Ratio vs. Homicide
Annual number of apprehensions per 100,000 aliens
Homicide rate (per 100,000 people)
Nicaragua
Costa Rica
Continent
Africa
America
Asia
Europe
MiddleEast

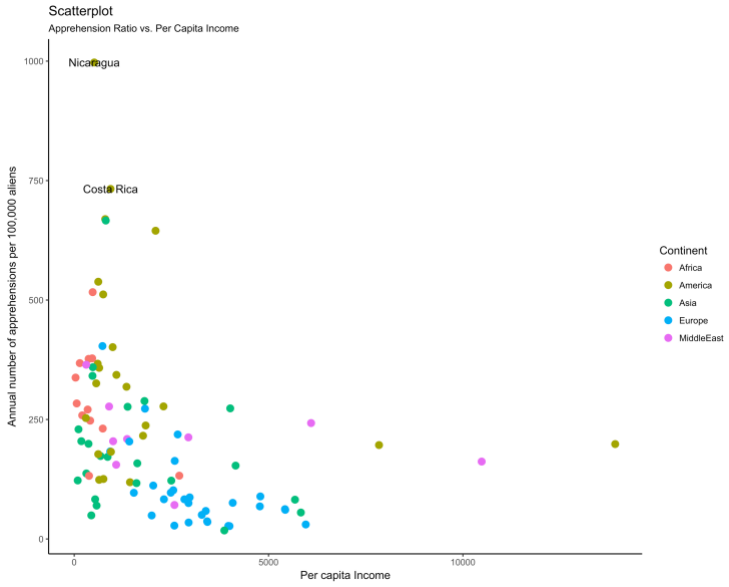

Scatterplot
Apprehension Ratio vs. Homicide
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Germany
Japan
0
10
20
30
40
50
Homicide rate (per 100,000 people)
Continent
Africa
America
Asia
Europe
MiddleEast

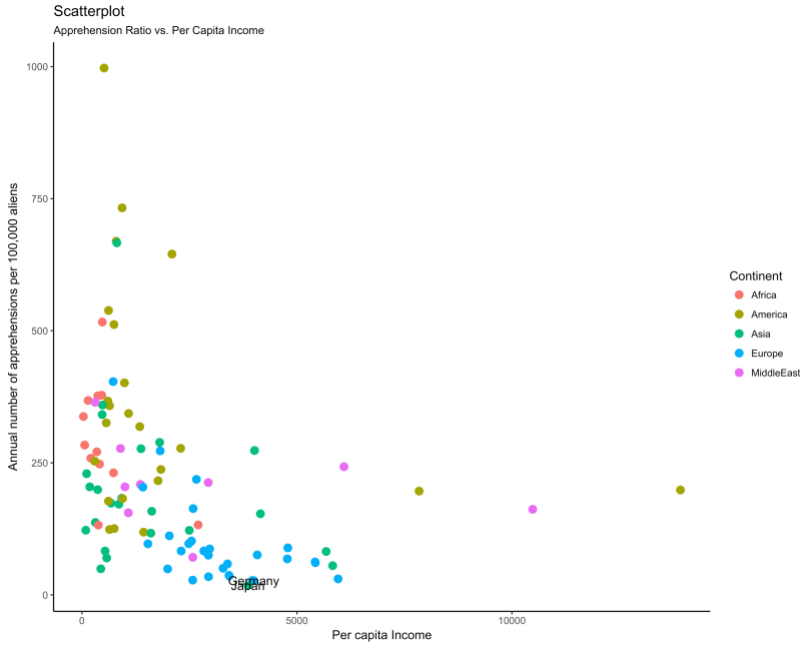
Graphs 6:


Scatterplot
Apprehension Ratio vs. Alcohol
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Nicaragua
Costa Rica
0
20
40
60
Alcohol per capita consumption
Continent
Africa
America
Asia
Europe
MiddleEast

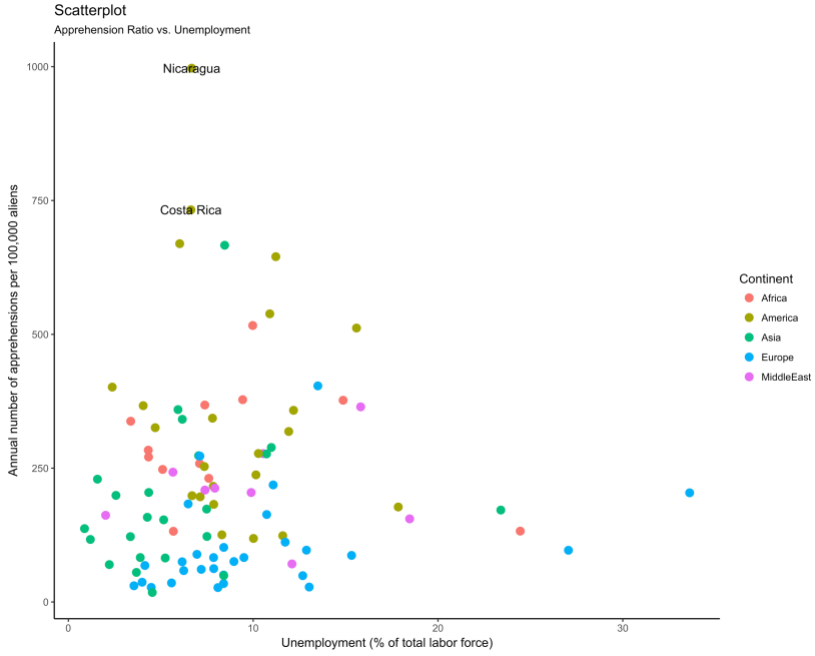

Scatterplot
Apprehension Ratio vs. Alcohol
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
0
20
40
60
Alcohol per capita consumption
Japan
Germany
Continent
Africa
America
Asia
Europe
MiddleEast

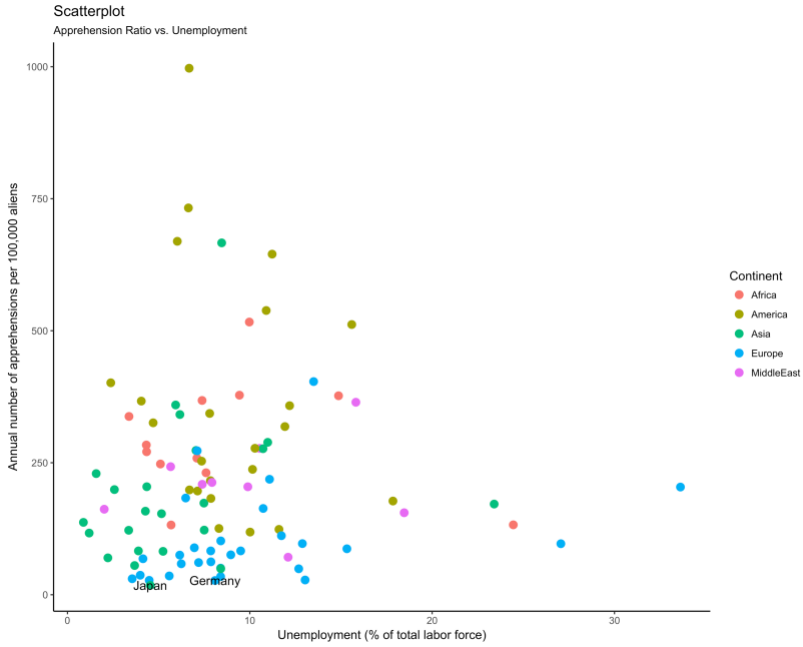
Graphs 7:


Scatterplot
Apprehension Ratio vs. Per Capita Income
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Nicaragua
Costa Rica
0
5000
10000
Per capita Income
Continent
Africa
America
Asia
Europe
MiddleEast

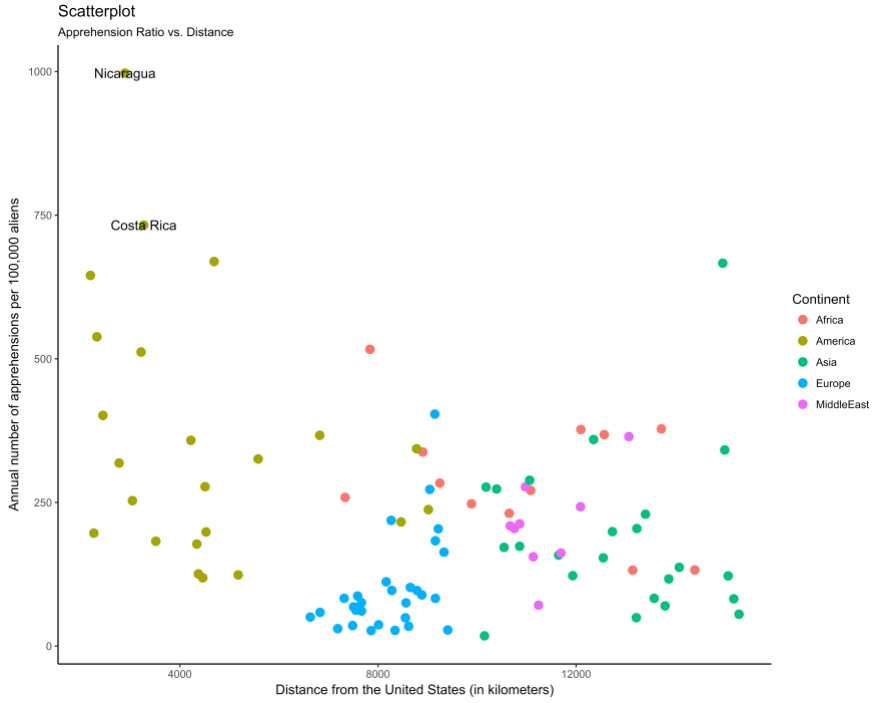

Scatterplot
Apprehension Ratio vs. Per Capita Income
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
0
5000
10000
Per capita Income
Germany
Japan
Continent
Africa
America
Asia
Europe
MiddleEast

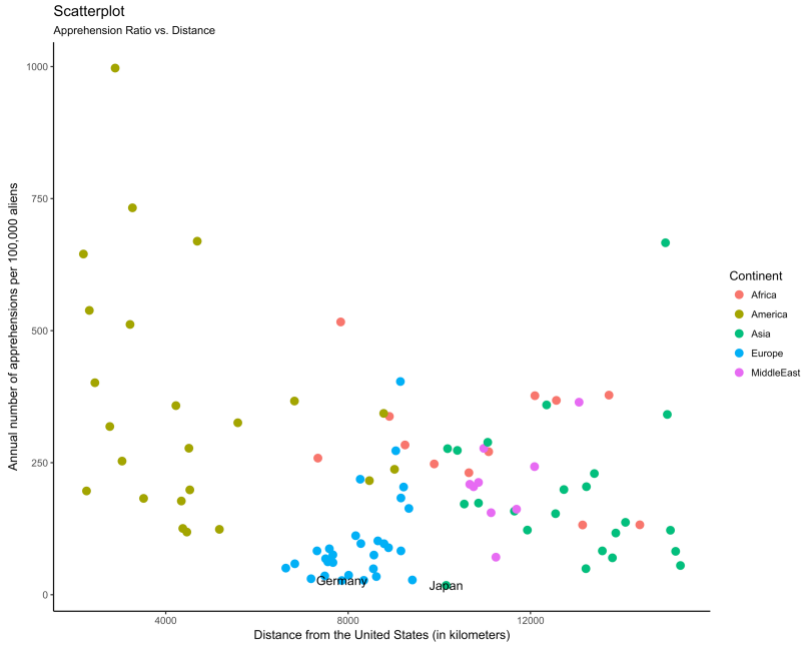
Graphs 8:


Scatterplot
Apprehension Ratio vs. Unemployment
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Nicaragua
Costa Rica
0
10
20
30
Unemployment (% of total labor force)
Continent
Africa
America
Asia
Europe
MiddleEast

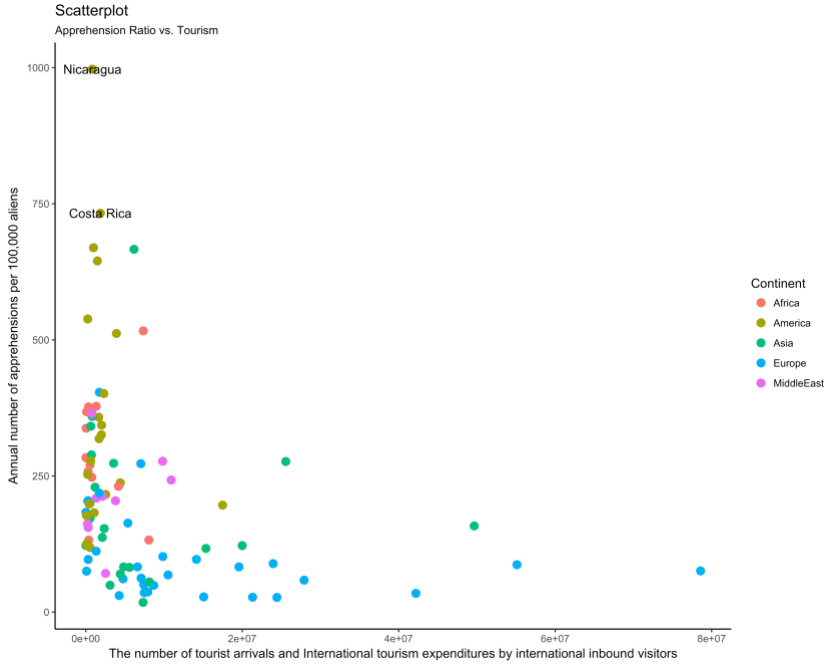

Scatterplot
Apprehension Ratio vs. Unemployment
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
0
10
20
30
Unemployment (% of total labor force)
Japan
Germany
Continent
Africa
America
Asia
Europe
MiddleEast

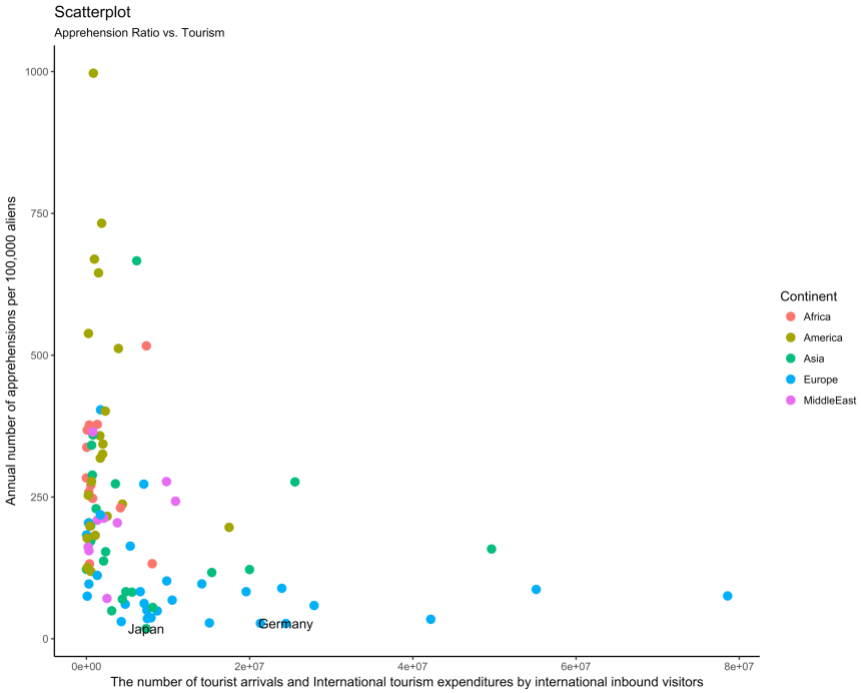
Graphs 9:


Scatterplot
Apprehension Ratio vs. Distance
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
4000
8000
12000
Distance from the United States (in kilometers)
Nicaragua
Costa Rica
Continent
Africa
America
Asia
Europe
MiddleEast

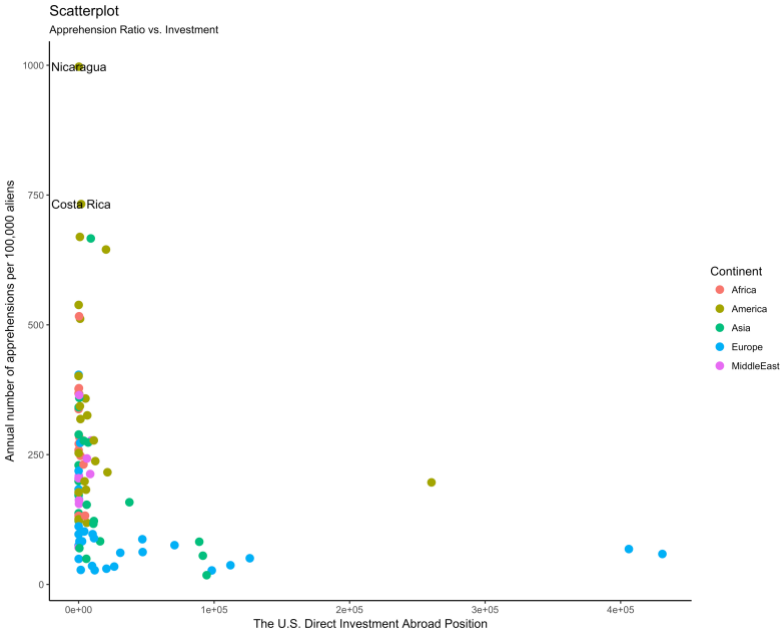

Scatterplot
Apprehension Ratio vs. Distance
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
4000
8000
12000
Distance from the United States (in kilometers)
Germany
Japan
Continent
Africa
America
Asia
Europe
MiddleEast

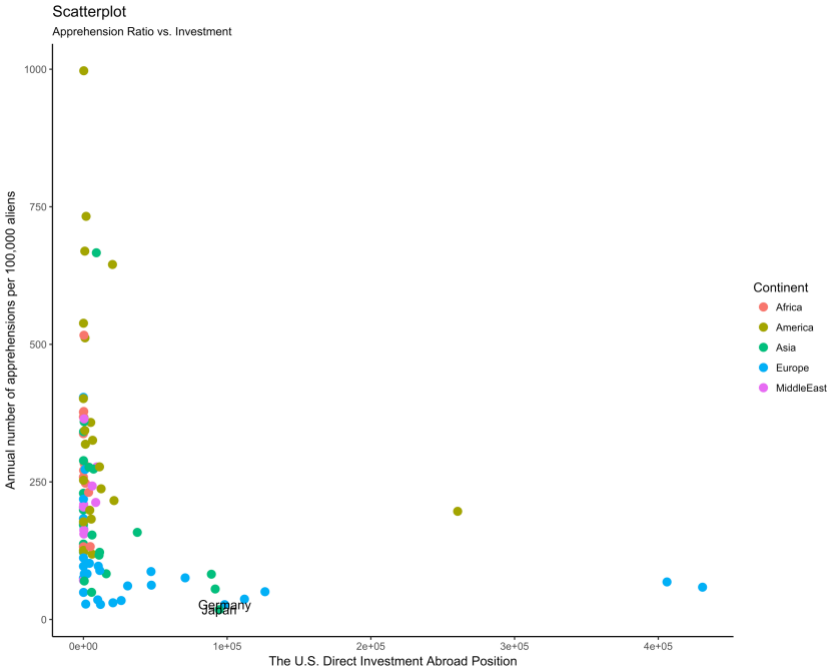
Graphs 10:


Scatterplot
Apprehension Ratio vs. Tourism
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Nicaragua
Costa Rica
0e+00
2e+07
4e+07
6e+07
8e+07
The number of tourist arrivals and International tourism expenditures by international inbound visitors
Continent
Africa
America
Asia
Europe
MiddleEast

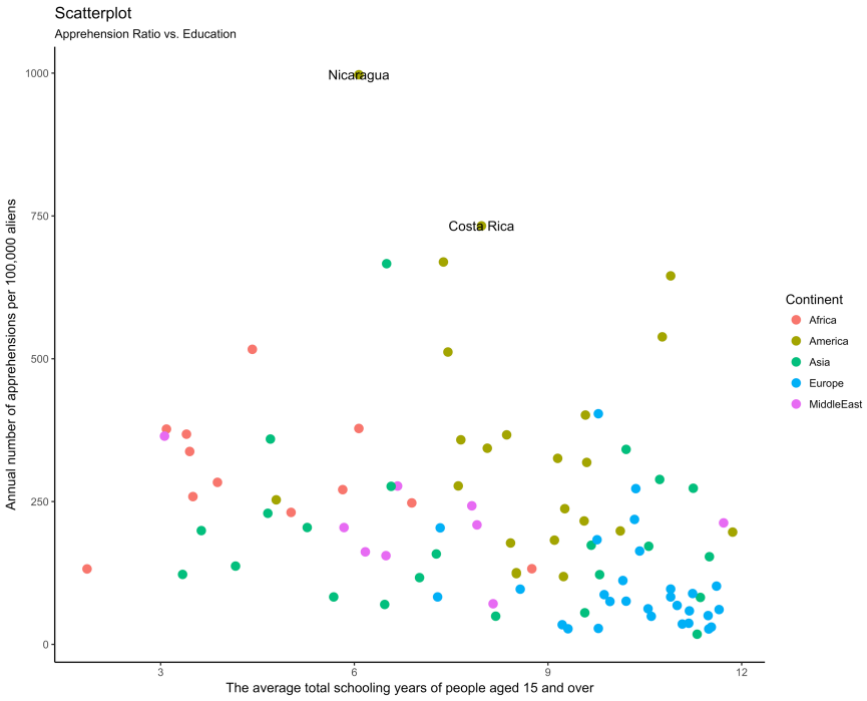

Scatterplot
Apprehension Ratio vs. Tourism
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Japan
Germany
0e+00
2e+07
4e+07
6e+07
8e+07
The number of tourist arrivals and International tourism expenditures by international inbound visitors
Continent
Africa
America
Asia
Europe
MiddleEast

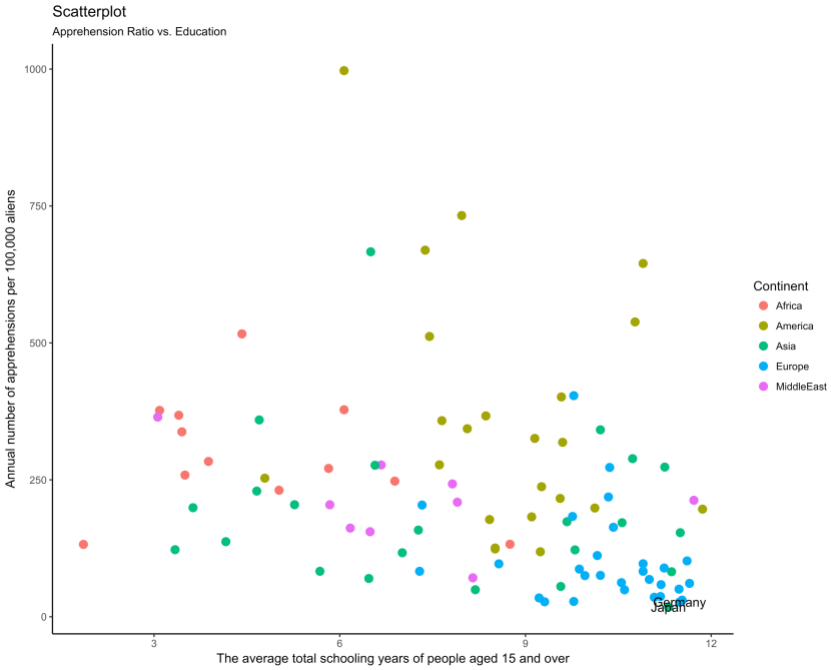
Graphs 11:


Scatterplot
Apprehension Ratio vs. Investment
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Nicaragua
Costa Rica
0e+00
1e+05
2e+05
3e+05
4e+05
The U.S. Direct Investment Abroad Position
Continent
Africa
America
Asia
Europe
MiddleEast

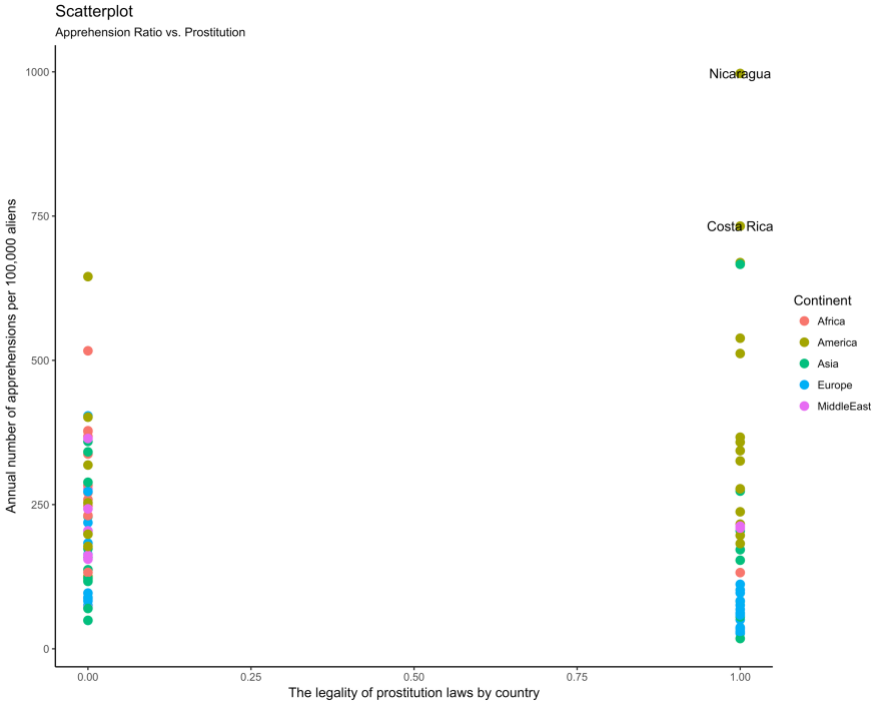

Scatterplot
Apprehension Ratio vs. Investment
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Germany
Japan
0e+00
1e+05
2e+05
3e+05
4e+05
The U.S. Direct Investment Abroad Position
Continent
Africa
America
Asia
Europe
MiddleEast

Graphs 12:


Scatterplot
Apprehension Ratio vs. Education
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
Nicaragua
Costa Rica
3
6
9
12
The average total schooling years of people aged 15 and over
Continent
Africa
America
Asia
Europe
MiddleEast


Scatterplot
Apprehension Ratio vs. Education
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
3
6
9
12
The average total schooling years of people aged 15 and over
Germany
Japan
Continent
Africa
America
Asia
Europe
MiddleEast

Graphs 13:


Scatterplot
Apprehension Ratio vs. Prostitution
Annual number of apprehensions per 100,000 aliens
1000
750
500
250
0
0.00
0.25
0.50
0.75
1.00
The legality of prostitution laws by country
Nicaragua
Costa Rica
Continent
Africa
America
Asia
Europe
MiddleEast

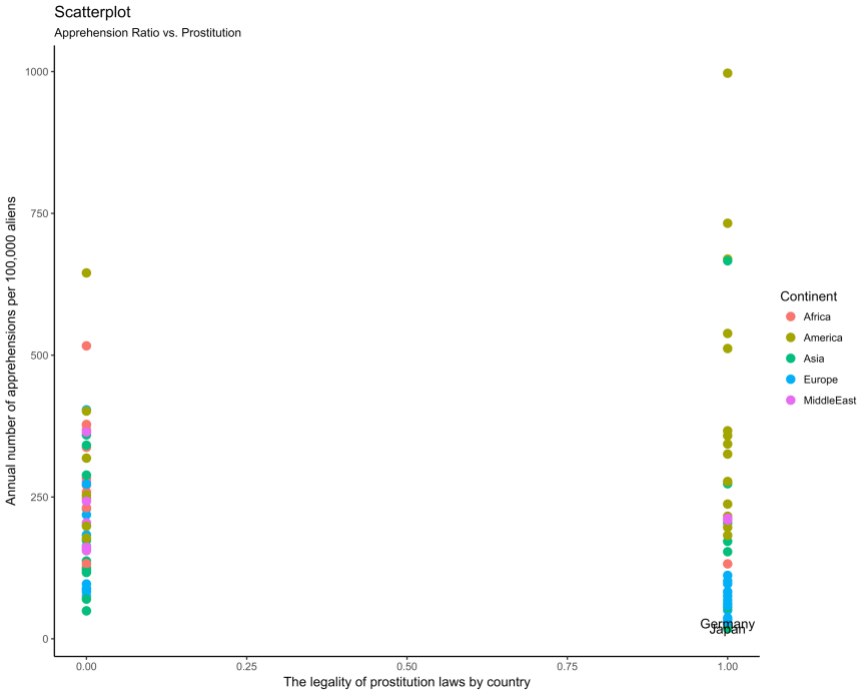


Table 1:

Summary of all the variables included in the dataset:

APR	Corruption	Homicide	Theft	Alcohol	APR	Income
Min. : 17.80	Min. :-2.45001	Min. : 0.400	Min. :0.0000	Min. : 2.90	Min. : 17.80	Min. : 35
1st Qu.: 86.06	1st Qu.:-0.67431	1st Qu.: 1.460	1st Qu.:0.0375	1st Qu.:24.77	1st Qu.: 86.06	1st Qu.: 597
Median :182.80	Median : 0.28518	Median : 4.050	Median :0.3792	Median :31.20	Median :182.80	Median : 1396
Mean :218.91	Mean :-0.05767	Mean : 7.482	Mean :0.5538	Mean :32.63	Mean :218.91	Mean : 2125
3rd Qu.:278.95	3rd Qu.: 0.69887	3rd Qu.: 8.510	3rd Qu.:0.7250	3rd Qu.:41.40	3rd Qu.:278.95	3rd Qu.: 2938
Max. :997.18	Max. : 1.50456	Max. :49.650	Max. :3.4000	Max. :62.70	Max. :997.18	Max. :13918

Unemployment	Tourism	Investment	Education	Traffic	Distance	Prostitution
Min. : 0.875	Min. : 500	Min. : -4.9	Min. : 1.860	Min. : 3.00	Min. : 2193	Min. :0.0000
1st Qu.: 5.221	1st Qu.: 554604	1st Qu.: 50.8	1st Qu.: 6.497	1st Qu.: 8.85	1st Qu.: 7332	1st Qu.:0.0000
Median : 7.550	Median : 2116958	Median : 1235.4	Median : 8.925	Median :13.80	Median : 9031	Median :0.0000

Mean : 8.632	Mean : 7087227	Mean : 23436.3	Mean : 8.313	Mean :15.66	Mean : 9065	Mean :0.4583
3rd Qu.:10.727	3rd Qu.: 7419458	3rd Qu.: 10974.8	3rd Qu.:10.453	3rd Qu.:20.43	3rd Qu.:11658	3rd Qu.:1.0000
Max. :33.617	Max. :78576583	Max. :430806.2	Max. :11.860	Max. :48.40	Max. :15289	Max. :1.0000

Table 2:
Average Annual number of Apprehensions per 100,000 people according to the continents:

Continent	**APR**
Asia	189.2251
Europe	100.52186
America	361.52967
Africa	294.44455
Middle East	211.00922

Table 3:
Regression results for:
formula = APR ~ Corruption + Homicide + Theft + Alcohol + Income + Unemployment+ Tourism + Investment + Education + Traffic + Distance + Prostitution

	Estimate	**Std. error**	**t value**	**Pr (> |t|)**
(Intercept)	525.5980	103.8298	5.06	0.0000
Corruption	30.1714	22.0249	1.37	0.1744
Homicide	1.0717	1.9979	0.54	0.5931
Theft	9.0248	24.4556	0.37	0.7130
Alcohol	-3.1130	1.1276	-2.76	0.0071
Income	-0.0159	0.0083	-1.91	0.0601
Unemployment	-2.8477	2.8920	-0.98	0.3276
Tourism	-0.0000	0.0000	-1.24	0.2191
Investment	-0.0002	0.0003	-0.68	0.5010
Education	-6.9228	8.4535	-0.82	0.4152
Traffic	3.4768	2.2465	1.55	0.1255
Distance	-0.0180	0.0052	-3.47	0.0008
Prostitution	51.7313	34.1228	1.52	0.1333

Table 4:
Regression results for:
formula = log(APR) ~ Corruption + Homicide + Theft + Alcohol + Income + Unemployment+ Tourism + Investment + Education + Traffic + Distance + Prostitution

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	6.2789	0.4832	13.00	0.0000
Corruption	0.2219	0.1025	2.16	0.0333
Homicide	0.0093	0.0093	1.00	0.3181
Theft	0.0382	0.1138	0.34	0.7380
Alcohol	-0.0114	0.0052	-2.18	0.0321
Income	-0.0001	0.0000	-1.45	0.1520
Unemployment	-0.0071	0.0135	-0.53	0.5981
Tourism	-0.0000	0.0000	-1.74	0.0853
Investment	-0.0000	0.0000	-0.34	0.7340
Education	-0.0371	0.0393	-0.94	0.3482
Traffic	0.0142	0.0105	1.36	0.1767
Distance	-0.0001	0.0000	-2.60	0.0112
Prostitution	0.0160	0.1588	0.10	0.9200

Table 5:
Regression results for:
formula = log(APR) ~ Corruption + Alcohol + Income + Traffic +
Tourism + Distance

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	5.9861	0.2851	20.99	0.0000
Corruption	0.2647	0.0881	3.00	0.0035
Alcohol	-0.0112	0.0050	-2.24	0.0275
Income	-0.0001	0.0000	-1.89	0.0626
Traffic	0.0212	0.0091	2.33	0.0221
Tourism	-0.0000	0.0000	-2.22	0.0290
Distance	-0.0001	0.0000	-3.59	0.0005