Countries' Happiness vs. Alcohol Consumption

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Executive Summary

- Question
- Measures
- Data
- Methods
- Conclusion

Business Question

The drinking culture around the United States perpetuates a sense of enjoyment related to the consumption of alcohol. Around the world, alcohol consumption and culture may differ from that in the United States, and we would like to explore the relationship between alcohol consumption and happiness.

Does the alcohol consumption per capita of a country affect its overall happiness level?

Analytics Problem Framing

The happiness score is a metric calculated by taking the average score after asking a random sample of citizens, "How happy are you on a scale from 1 to 10 where 10 is the happiest?" This is thought to be a representative measurement of the average happiness of a country's citizens.

Beer, spirits, and wine consumed per capita is a measure of the average amount of beer, spirits, and wine consumed per person in liters in the year 2016.

Hypothesis: There is a positive linear relationship between alcohol consumption and a country's overall happiness.

Analytical Problem Framing Cont.

We will analyze the data to explore the following questions:

- Does increased alcohol consumption lead to higher level of happiness?
- If it does, is there a specific type of alcohol related to higher levels of happiness?

Assumptions:

- The sample of citizens used to obtain the average happiness score is representative of the entire country.
- The sample of citizens stated their average happiness level, not the current mood that they were in

Data

Data Description:
- 122 Countries
  - Beer consumption per-capita
  - Spirit consumption per-capita
  - Wine consumption per-capita
  - Average happiness score

Data cleaning was done to remove unnecessary data such as GDP per-capita, HDI, region, hemisphere, etc.

https://www.kaggle.com/marcospessotto/happiness-and-alcohol-consumption

Methodology

- Simple Linear Regression

- Multivariable Linear Regression

- T- Test

Model

- Overall happiness score as indication of a country's average happiness per citizen
- Considered using:
  - Consumption of Beer
  - Consumption of Wine
  - Consumption of Spirits
- Checking for multicollinearity
- Using P-Values as indicators of significance

Conclusion - Beer

Regression Statistics	
Multiple R	0.4933672
R Square	0.2434112
Adjusted R S	0.23710629
Standard Err	1.00334957
Observations	122

	Coefficients	Standard Error	t Stat	P-value
Intercept	4.78100915	0.15027504	31.8150591	2.517E-60
Beer_PerCap	0.00540701	0.00087021	6.21342337	7.7522E-09

Beer_PerCapita (Liters) Residual Plot

Happiness vs. Beer
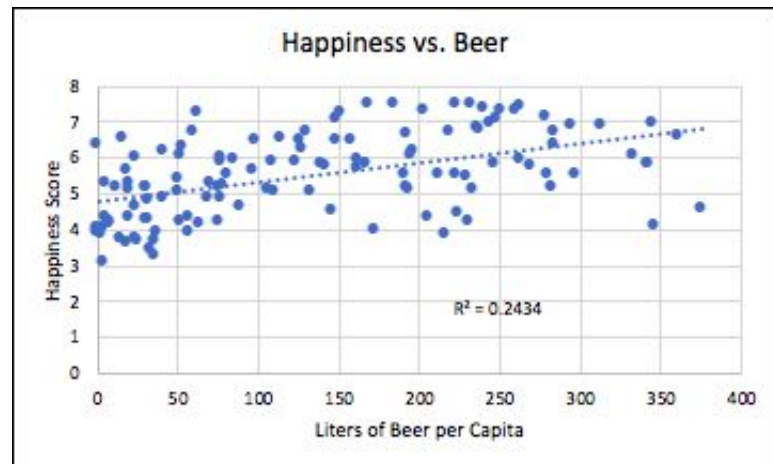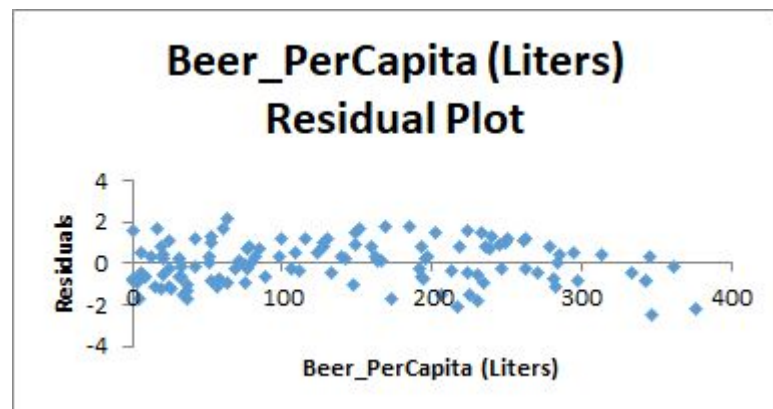
Conclusion - Wine

Regression Statistics	
Multiple R	0.45058864
R Square	0.20303012
Adjusted R Square	0.19638871
Standard Error	1.02977719
Observations	122

	Coefficients	Standard Error	t Stat	P-value
Intercept	5.13364292	0.117037753	43.8631364	9.9244E-76
Wine_PerCapita(Liters)	0.00587379	0.001062353	5.52904222	1.9106E-07

Wine_PerCapita(Liters) Residual Plot

Happiness vs. Wine
$R^2 = 0.203$

Conclusion - Spirits

Spirit_PerCapita (Liters) Residual Plot
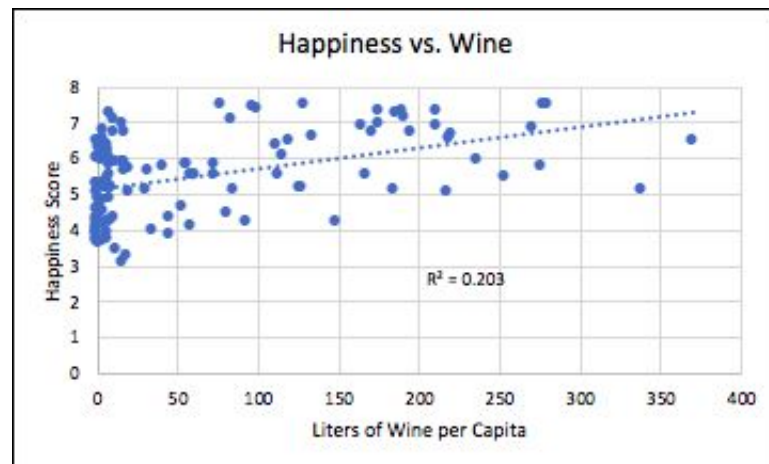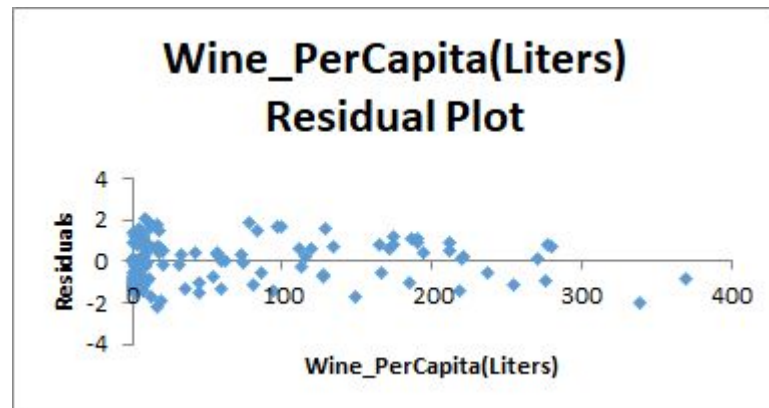
Regression Statistics	
Multiple R	0.25639895
R Square	0.06574042
Adjusted R Square	0.05795492
Standard Error	1.1149518
Observations	122

	Coefficients	Standard Error	t Stat	P-value
Intercept	5.17545032	0.156988358	32.9670964	5.444E-62
Spirit_PerCapita (Liters)	0.00361681	0.001244664	2.90584924	0.00436258

Happiness vs. Spirits

$R^2 = 0.0657$

Conclusion- Multivariate

Beer_PerCapita (Liters) Residual Plot

Wine_PerCapita(Liters) Residual Plot

Spirit_PerCapita (Liters) Residual Plot

Regression Statistics	
Multiple R	0.560050736
R Square	0.313656827
Adjusted R Square	0.296207424
Standard Error	0.963701629
Observations	122

	Coefficients	Standard Error	t Stat	P-value
Intercept	4.650863387	0.159928343	29.0809203	1.2062E-55
Beer_PerCapita	0.003491555	0.001014709	3.44094078	0.00080239
Spirit_PerCapita	0.00149667	0.001158016	1.29244261	0.19872907
Wine_PerCapita	0.003739895	0.001131762	3.30449014	0.00126034
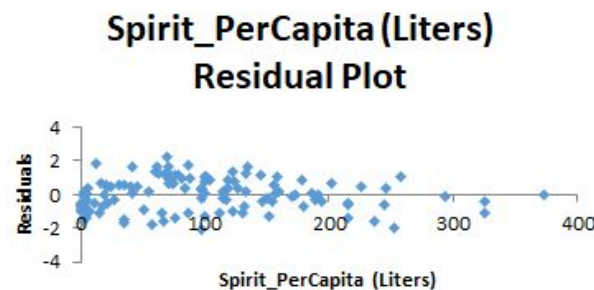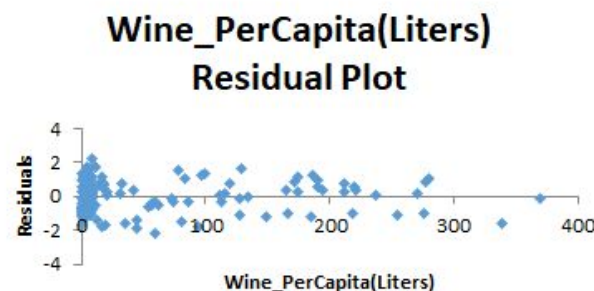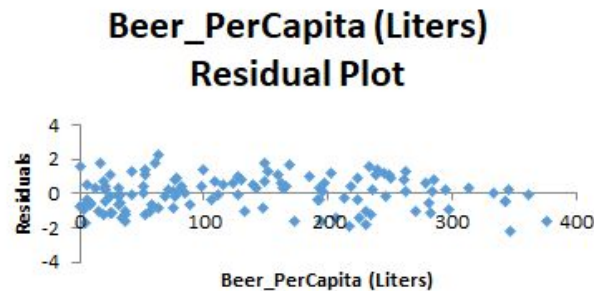
Conclusion- Multivariate

Regression Statistics	
Multiple R	0.551308401
R Square	0.303940953
Adjusted R Square	0.292242482
Standard Error	0.966412409
Observations	122

	Coefficients	Standard Error	t Stat	P-value
Intercept	4.738215488	0.145352859	32.59802	3.7E-61
Beer_PerCapita (Liters)	0.003954459	0.000952068	4.153549	6.19E-05
Wine_PerCapita(Liters)	0.003642956	0.00113245	3.21688	0.001669

Beer_PerCapita (Liters) Residual Plot

Wine_PerCapita(Liters) Residual Plot