

Suicide Rates and Predictive Factors

Omar Hussain
Wayne Lam

The Data

UN World Happiness Report:

- “Happiness” Metrics
 - Life Ladder aka Cantril Ladder
 - Social Support
 - Freedom to Make Life Choices
 - Generosity
 - Perceptions of Corruption
- Economic/Wellness Metrics
 - Log GDP/Capita
 - Healthy Life Expectancy

Various Sources including WHO:

- “Unhappiness” Metrics
 - Suicide Rates (per 100,000)
 - Alcohol Abuse Rates
 - Mental Disorder Rates
 - Depression Rates
 - Latitude

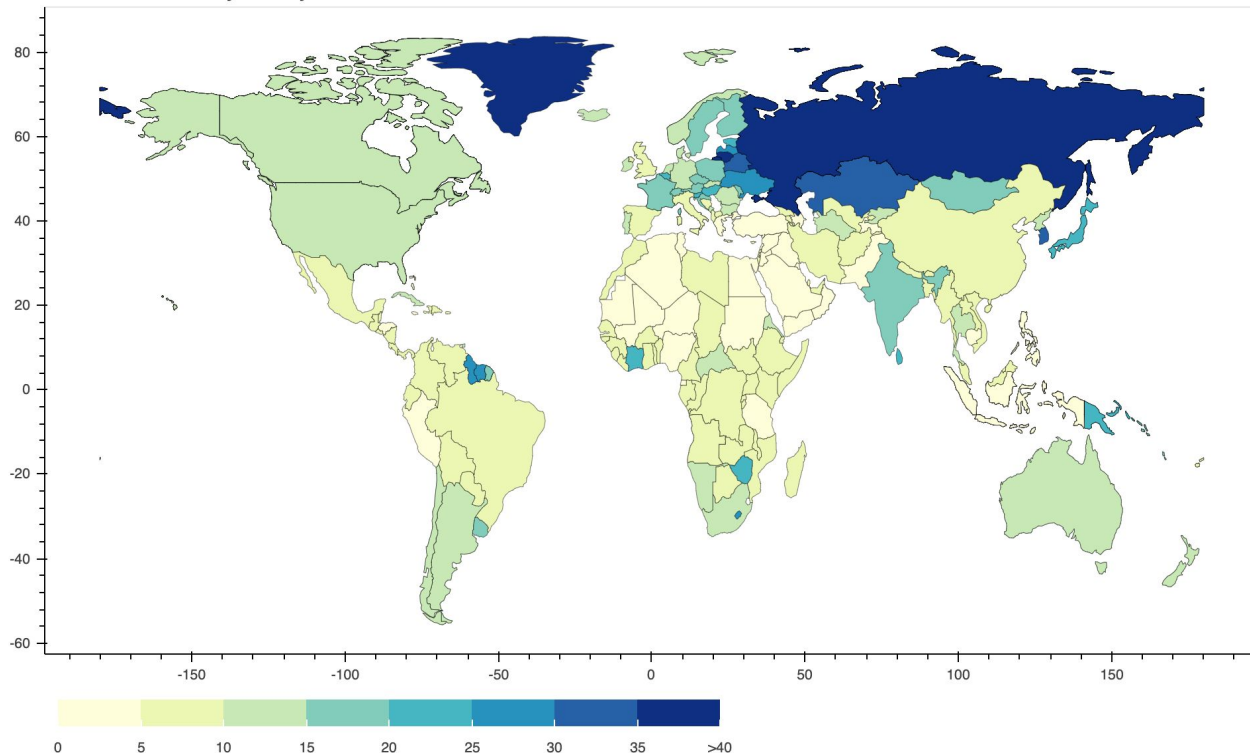
Countries: 151

Years: 2005 to 2016

Credit: Dilyan Kovachev, Global Health Data Exchange,
Alcides Oxa, jasom.net

Feature Engineering and Model Selection

Mean Suicide Rates by Country

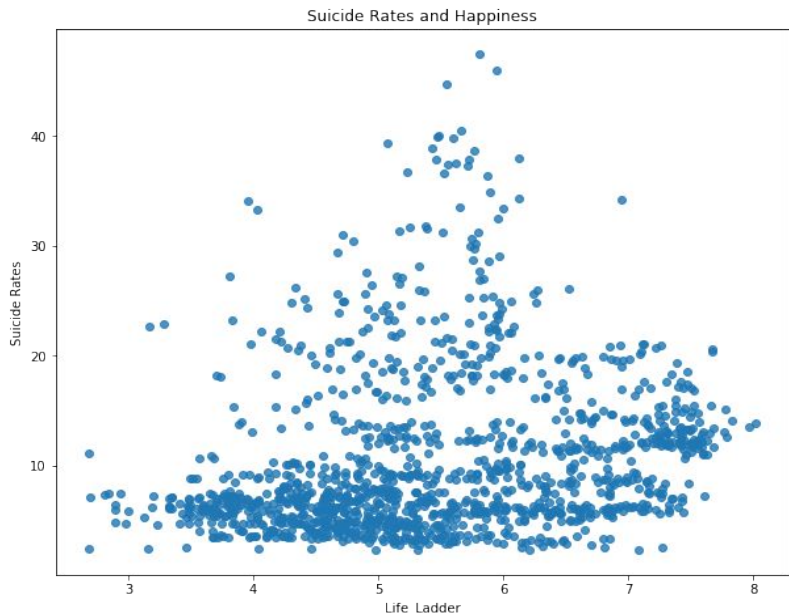


Methods:

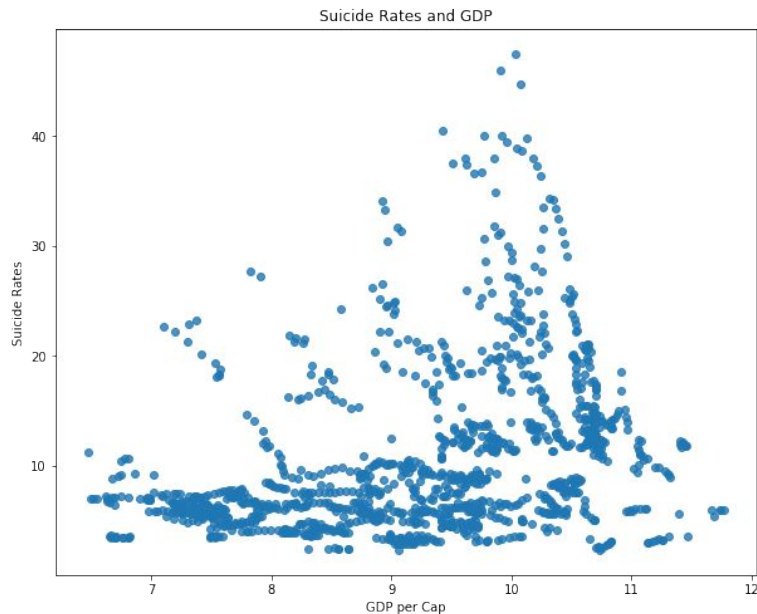
- Log Target Variable
- Polynomial features
- Log features
- Feature Interactions
 - Evaluation of all bivariable combinations and the R^2 values
- Wrapper Method
 - Recursive Feature Eliminator
- Embedded Method
 - Lasso
- Ridge Regression
 - Highest R^2

Wealth and Happiness, does it matter?

- Life Ladder of Happiness:
 - No real impact on Suicide Rates
 - R Squared of .042

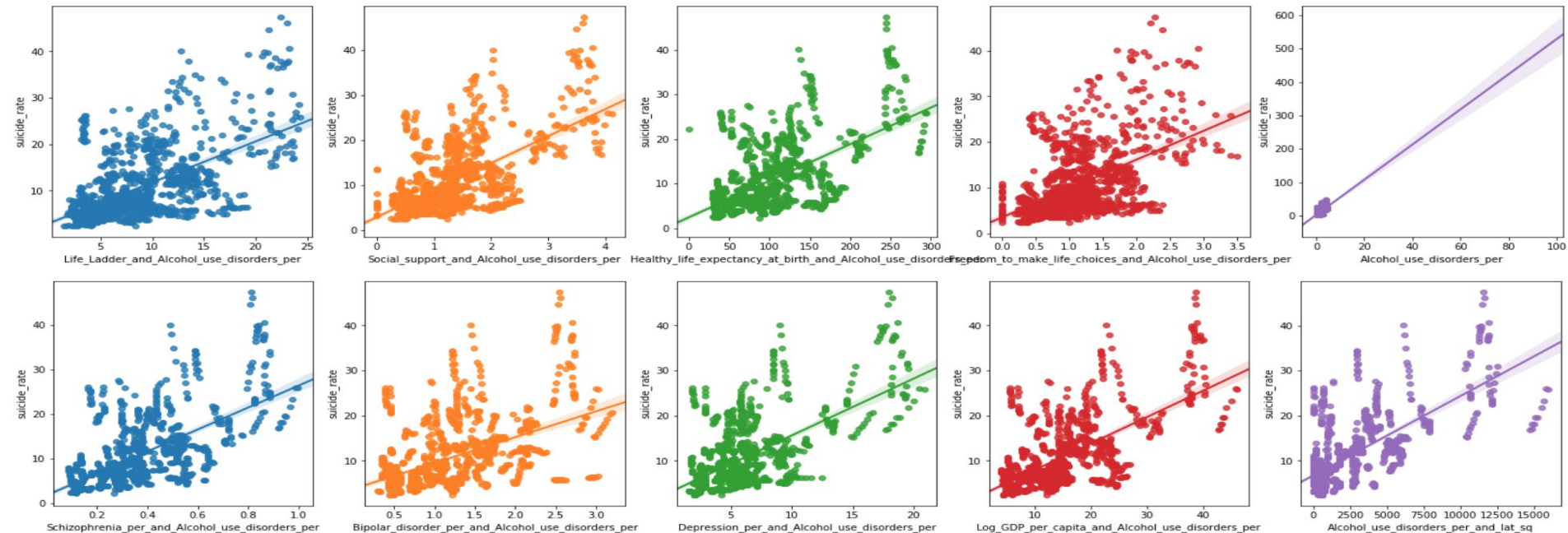


- GDP per capita:
 - No real impact on Suicide Rates
 - R Squared of .043



Interactions of Alcoholism and Everything Else

“Drunkenness is temporary suicide: the happiness that it brings is merely negative, a momentary cessation of unhappiness.”
-Bertrand Russell



13 of the 24 bivariable interactions with the highest R^2 values with respect to suicide rates involved alcohol abuse as 1 of the variables

Major Findings

Resource Allocation to Areas With:

- High alcoholism rates
- High alcoholism rates and mental health issues
 - Bipolar disorder
 - Depression
 - Schizophrenia
- Areas away from the equator
- Measures of happiness cannot predict suicide rates