

Machine Learning Engineer Nanodegree

Capstone Proposal

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Proposal

Domain Background

According to The World Health Organization (WHO) close to 800 000 people die by suicide every year. Furthermore, for each suicide, there are more than 20 suicide attempts. Suicides and suicide attempts have a ripple effect that impacts on families, friends, colleagues, communities and societies. Suicides are preventable. Much can be done to prevent suicide at individual, community and national levels.

So, comes my intuition to inspect the similarities between the nations in committing suicides to give some indicator on how to prevent them

Similar project on the dataset to predict suicides rates

<https://github.com/olgaminguett/Suicide-Rates-Overview>

Problem Statement

Suicide Prevention., I want to inspect the reasons behind Suicides and how it evolved through the years and similarities between countries according to those reasons to give some indicator on the right direction to prevent suicides.

This a clustering problem where I find similarities in committing suicide between countries by clustering them according to chosen variables using k-means algorithm

Datasets and Inputs

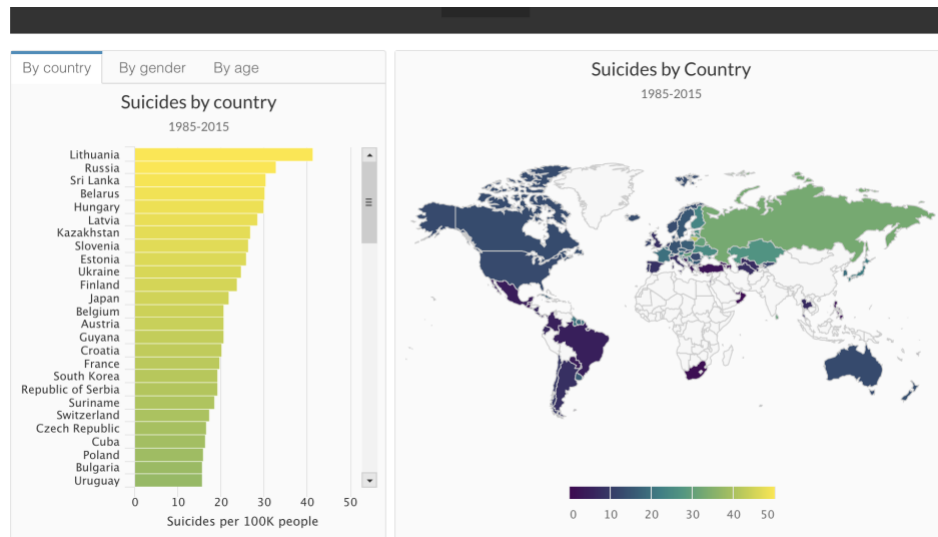
This compiled dataset pulled from four other datasets linked by time and place, and was built to find signals correlated to increased suicide rates among different cohorts globally, across the socio-economic spectrum.

Data set sample

country	year	sex	age	suicides_no	population	suicides/100k pop	country-year	HDI for year	gdp_for_year (\$)	gdp_per_capita (\$)	generation
Albania	1987	male	15-24 years	21	312900	6.71	Albania1987	NaN	2,156,624,900	796	Generation X
Albania	1987	male	35-54 years	16	308000	5.19	Albania1987	NaN	2,156,624,900	796	Silent
Albania	1987	female	15-24 years	14	289700	4.83	Albania1987	NaN	2,156,624,900	796	Generation X
Albania	1987	male	75+ years	1	21800	4.59	Albania1987	NaN	2,156,624,900	796	G.I. Generation
Albania	1987	male	25-34 years	9	274300	3.28	Albania1987	NaN	2,156,624,900	796	Boomers

features country , year , sex , age ,suicides_no , population , suicides/100k pop , country-year ,HDI for year ,gdp_for_year (\$) ,gdp_per_capita (\$) ,generation

this gives the intuition of similarities between countries



References

United Nations Development Program. (2018). Human development index (HDI). Retrieved from <http://hdr.undp.org/en/indicators/137506>

World Bank. (2018). World development indicators: GDP (current US\$) by country:1985 to 2016. Retrieved from <http://databank.worldbank.org/data/source/world-development-indicators#>

[Szamil]. (2017). Suicide in the Twenty-First Century [dataset]. Retrieved from <https://www.kaggle.com/szamil/suicide-in-the-twenty-first-century/notebook>

World Health Organization. (2018). Suicide prevention. Retrieved from http://www.who.int/mental_health/suicide-prevention/en/

Solution Statement

The main objective of the project is to build a model to Cluster the countries to show how the similarities evolved since 1985. Given data about the countries, the model can cluster the countries according to their similarities using K means

Benchmark Model

I will drop the population data at my solution

Then I'll make another model with the population data as a Benchmark Model to my solution

Evaluation Metrics

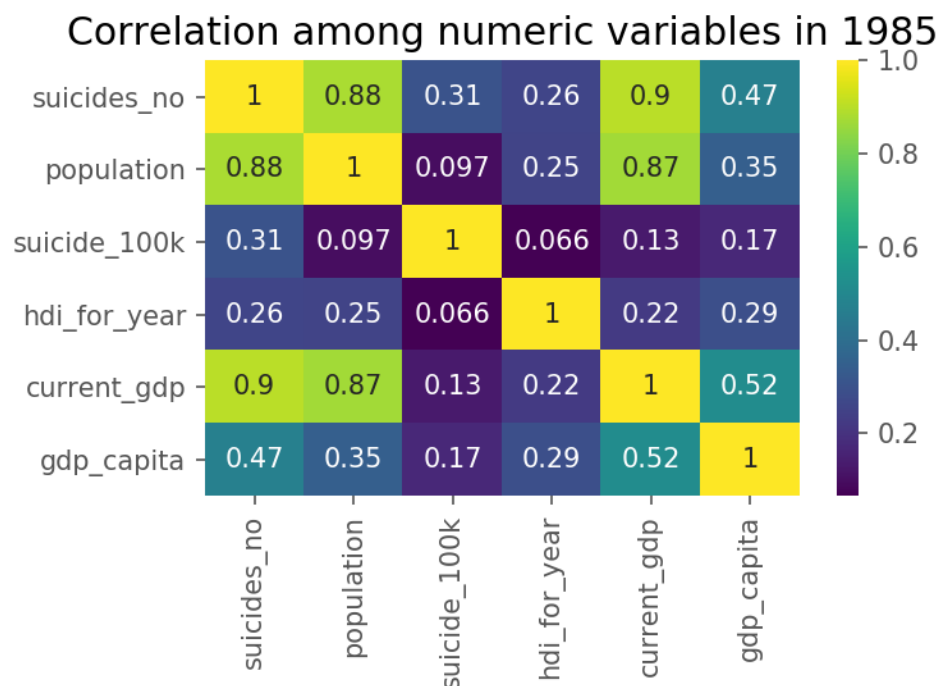
I'll use accuracy score as the Metrics to evaluate the model as the Benchmark Model is made from the dropped population data so I need to test the accuracy with and without it

Project Design

The project will consist of the following steps:

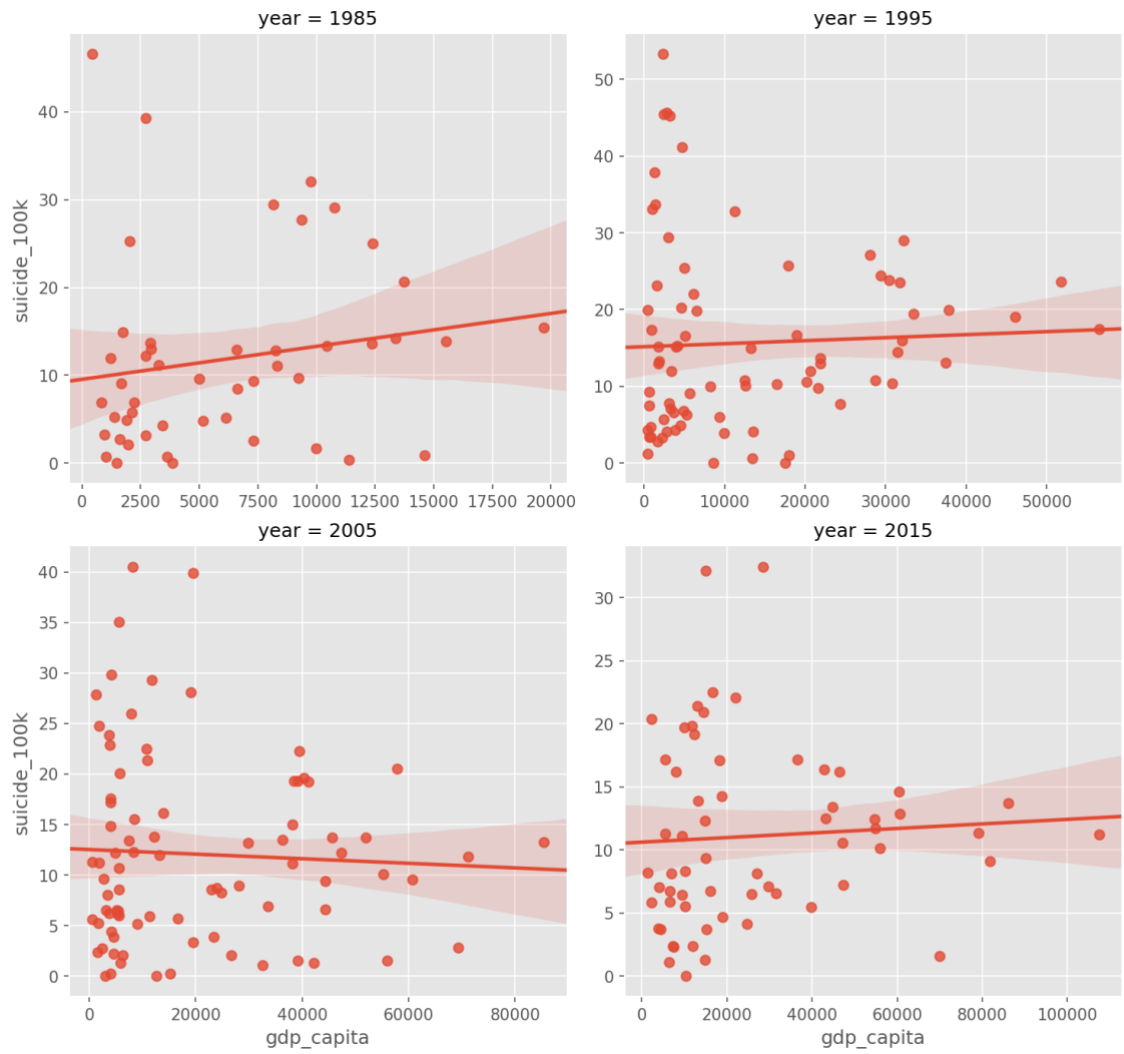
1) Data processing , Exploration and correlation

a) Correlation between data



b) From the correlation mentioned earlier I would indicate that's there's a relation between GDP_capita (a measure of a country's economic output that accounts for its number of people.

) and number of suicides



2) Cluster analysis using K-means to find similarities between countries .