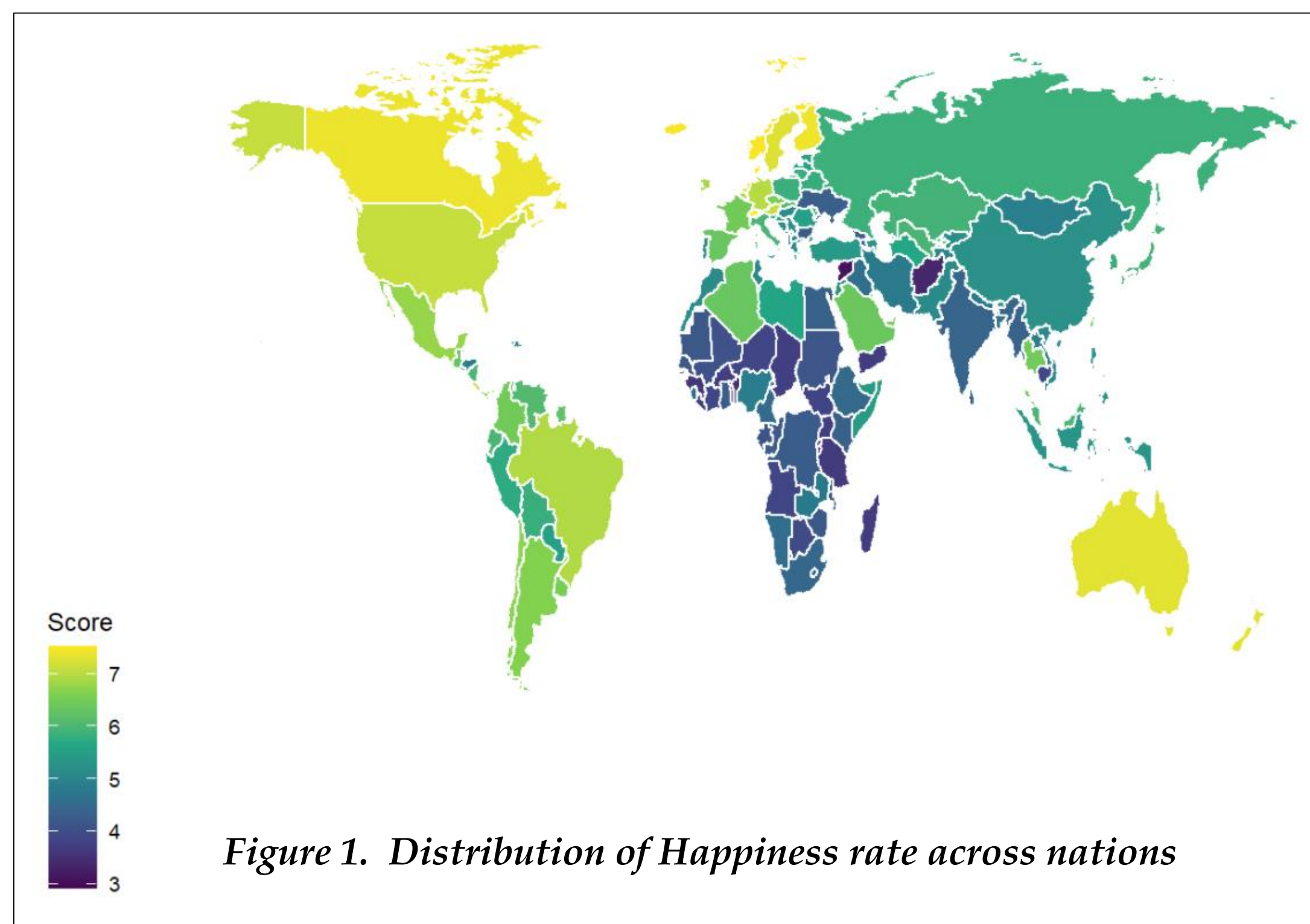


Happiness In Contemporary Society

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Abstract

Happiness is one of the ultimate goals that human seeks in the contemporary society. Happiness rate is distributed unevenly across different nations (Illustrated in Figure 1). The underlying factors determining happiness vary and are yet to be understood thoroughly. This research aims to look in such underlying factors and aims to yield the answer to the question: "What aspects could governments focus on to improve and/or maintain high happiness rate among their citizens?"



Acknowledgements

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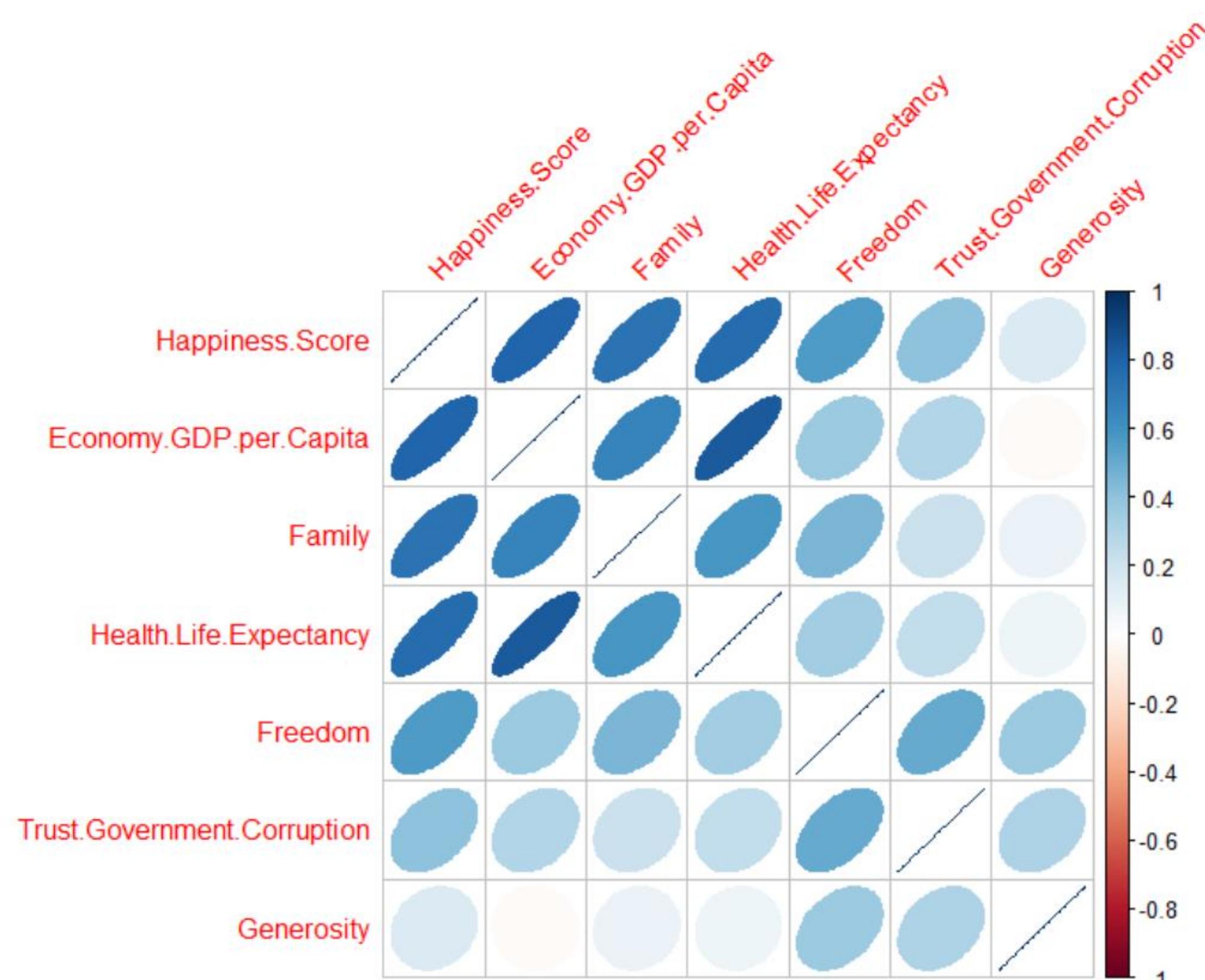
Introduction

Our dataset is taken from "The World Happiness in 2016". The scores are based on answers to the life evaluation questions asked in the Gallup World Poll. These questions ask respondents to rate their different aspects of lives based on a scale of 0-10, with 10 being the best possible life and 0 being the worst possible life.

The dataset has a total of 13 variables and 157 observations. In this report, Happiness Score will be the response variable while predictors will include 6 following variables: GDP per Capita, Family, Life Expectancy, Freedom, Generosity, and Trust Government Corruption.

Methodology

Step 1: Checking the correlation between given variables



➤ Economy GDP per capita, Family and Health Life Expectancy have fairly strong positive correlation with each other and with Happiness Score

➤ Other correlation values are somewhat positive but are not worth noticing

Step 2: Checking the correlation between Economy, Family, and Health vs. Happiness Score

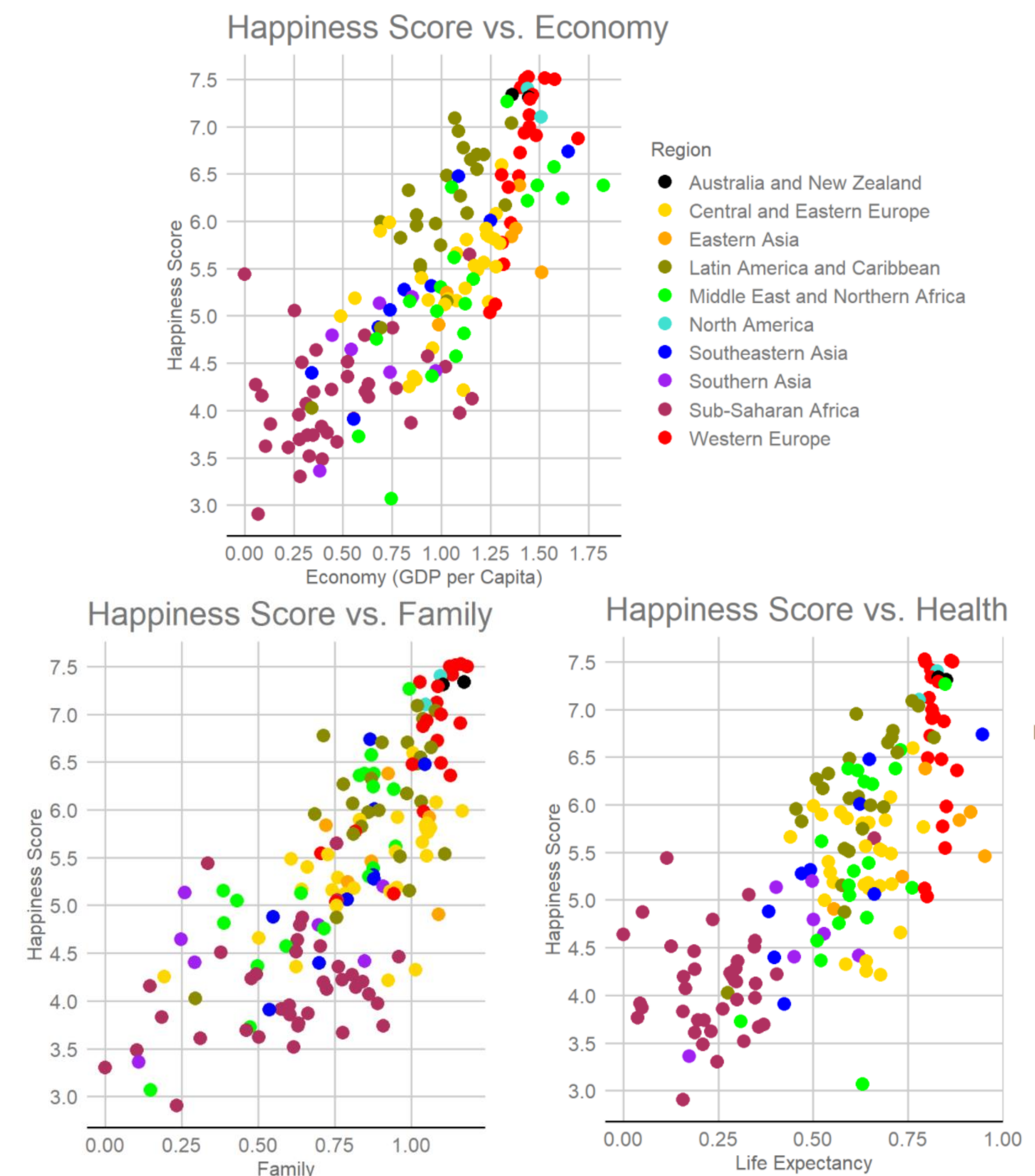


Figure 3. Scatter plots showing the correlation between Economy, Family, and Health vs. Happiness Score

Step 3: Reduce the number of dimensions by applying Principle Component Analysis (PCA) method on 6 given variables

	PC1	PC2	PC3	PC4	PC5	PC6
Standard deviation	1.706	1.1742	0.8205	0.73474	0.59715	0.37593
Proportion of Variance	0.485	0.2298	0.1122	0.08997	0.05943	0.02355
Cumulative Proportion	0.485	0.7148	0.8270	0.91701	0.97645	1.00000

The result shows that the first 2 Principle Components can explain about 71% of the entire database, these 3 components will be further analyzed. The remaining 4 components only account for less than 24% of the database, hence will be eliminated to simplify the next analysis process.

Step 4: Analyzing the chosen components

	PC1	PC2
Economy.GDP.per.Capita	-0.5004283	0.3389683
Family	-0.4647595	0.2012828
Health.Life.Expectancy	-0.4843327	0.2950494
Freedom	-0.4075787	-0.3793420
Trust.Government.Corruption	-0.3256714	-0.4496607
Generosity	-0.1637368	-0.6414331

➤ PC1 represents **Long-term Life Quality** because it is largely influenced by **Economy GDP per capita, Family, Health Life Expectancy, and Freedom**

➤ PC2 represents **Human Trust** because it is largely influenced by **Trust Government Corruption and Generosity**

Step 5: Fitting a multiple linear regression to represent the 2 chosen components

Coefficients:	PC1	PC2
(Intercept)	2.231	-0.380

The resulting regression gives the following equation:

$$\text{Happiness} = 2.231 - 2.412 \times \text{Long-term Life Quality} - 0.38 \times \text{Human Trust}$$

Conclusion

➤ **Long-term Life Quality** and **Human Trust** both contribute to the happiness rate across different nations

➤ More emphasis should be put on **Long-term Life Quality** because this component makes more impact and also because governments could do much to influence its main contributing variables (**Economy GDP per capita, Health Life Expectancy, and Freedom**)

Reference:

World Happiness Report, Happiness scored according to economic production, social support, etc.. <https://www.kaggle.com/unsdsn/world-happiness?select=2016.csv> (accessed 11/10/2020).