

2019 WORLD HAPPINESS REPORT

GROUP OKAPI



INTRODUCTION

THIS STUDY AIMS TO TEST IF THERE IS ANY SIGNIFICANT RELATIONSHIP BETWEEN COMPONENTS INCLUDING GROSS DOMESTIC PRODUCT (GDP) PER CAPITA, SOCIAL SUPPORT, HEALTHY LIFE EXPECTANCY, FREEDOM OF CHOICE, GENEROSITY, AND PERCEPTIONS OF CORRUPTION TO THE HAPPINESS SCORE.

HYPOTHESIS TESTING (1 SAMPLE TEST)

A SCORE OF PERCEPTION OF CORRUPTION HIGHER THAN 0.43 WILL RESULT IN A HIGHER COUNTRY HAPPINESS RANK.

Hypothesis Statement:

$$H_0 : \mu = 0.43$$

$$H_1 : \mu > 0.43 \text{ (high perception of corruption relates to high overall rank)}$$

SAMPLE
 $n=10$

\therefore T-VALUE = -3.95
CRITICAL VALUE =1.833



FAIL TO REJECT H_0 , THE T-SCORE FALLS OUTSIDE THE CRITICAL REGION. THERE IS NO SUFFICIENT EVIDENCE TO SUPPORT THE CLAIM THAT WHEN THE PERCEPTION OF CORRUPTION IS HIGHER THAN 0.43, THE HIGHER THE COUNTRY'S RANK IN TERMS OF HAPPINESS.

DEGREE OF FREEDOM
 $df=9$

SIGNIFICANCE LEVEL
 $\alpha=0.05$

MEAN
 $m=0.319$

STANDARD DEVIATION
 $s=0.088861$

CORRELATION TEST

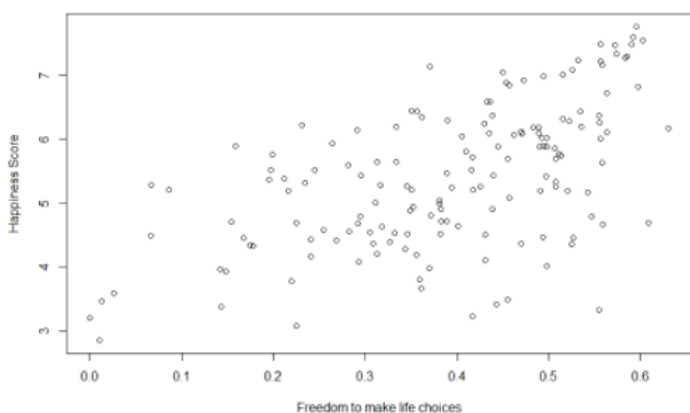


Figure 2: Scatter plot of Freedom to make life choices against Happiness Score

\therefore T-VALUE = 8.536375
LOWER TAIL CRITICAL VALUE =-1.976
UPPER TAIL CRITICAL VALUE =1.976



SINCE $T=8.5363 > 1.976$ UPPER-TAIL CRITICAL VALUE, WE REJECT H_0 . THERE IS SUFFICIENT EVIDENCE TO CONCLUDE THAT THERE IS A LINEAR RELATIONSHIP BETWEEN FREEDOM TO MAKE LIFE CHOICES AND HAPPINESS SCORE, AT A 0.05 SIGNIFICANCE LEVEL.

TO ANALYZE THE STRENGTH OF THE LINEAR RELATIONSHIP BETWEEN TWO VARIABLES:
 X = HAPPINESS SCORE
 Y = FREEDOM TO MAKE LIFE CHOICES

SAMPLE CORRELATION COEFFICIENT
 $r = 0.5667418$

MODERATELY STRONG POSITIVE LINEAR CORRELATION

Hypothesis Statement:

$$H_0 : \rho = 0 \text{ (no linear relationship)}$$

$$H_1 : \rho \neq 0 \text{ (linear relationship does exist)}$$

SIGNIFICANCE LEVEL
 $\alpha=0.05$

DEGREE OF FREEDOM
 $df=154$

REGRESSION TEST

$$\hat{Y} = 0.022 + 0.582X$$

$b_0 = 0.022$
 $b_1 = 0.582$

- 0.022 IS THE PORTION OF THE HEALTHY LIFE EXPECTANCY NOT EXPLAINED BY SOCIAL SUPPORT.
- THE AVERAGE VALUE OF HEALTHY LIFE EXPECTANCY RISES BY 0.582 FOR EACH ADDITIONAL UNIT IN SOCIAL SUPPORT.

STANDARD ERROR OF AN ESTIMATE
 $s=0.169$

STANDARD DEVIATION OF REGRESSION SLOPE
 $sb_1=0.045$

SCATTER PLOT COEFFICIENT OF DETERMINATION
 $R^2=0.517$

- SINCE $0 < R^2 < 1$, A WEAKER LINEAR RELATIONSHIP.
- 51.7% OF THE VARIATION IN HEALTHY LIFE EXPECTANCY IS EXPLAINED BY VARIATION IN SOCIAL SUPPORT.

Hypothesis Statement:

$$H_0 : \beta_1 = 0 \text{ (no linear relationship)}$$

$$H_1 : \beta_1 \neq 0 \text{ (linear relationship does exist)}$$

SIGNIFICANCE LEVEL
 $\alpha=0.05$

DEGREE OF FREEDOM
 $df=154$

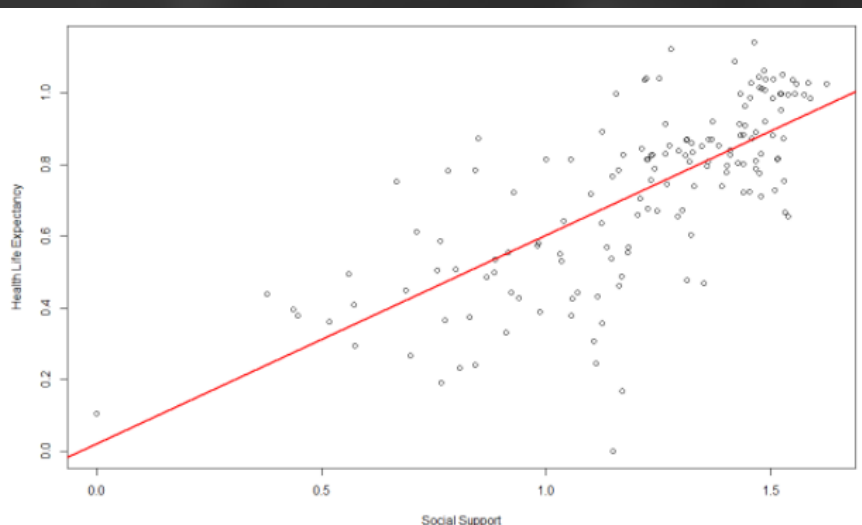


Figure 3: Scatter plot of healthy life expectancy against social support with the regression line

TO TEST WHETHER THE VALUE OF HEALTHY LIFE EXPECTANCY DEPENDS ON THE VALUE OF SOCIAL SUPPORT:

X = SOCIAL SUPPORT (INDEPENDENT VARIABLE)

Y = HEALTH LIFE EXPECTANCY (DEPENDENT VARIABLE)

\therefore T-VALUE = 12.838
LOWER TAIL CRITICAL VALUE =-1.976
UPPER TAIL CRITICAL VALUE =1.976



WE REJECT H_0 IF TEST STATISTICS, $T > 1.976$ OR $T < -1.976$. SINCE $T=12.838 > 1.976$ OF UPPER-TAIL CRITICAL VALUE, WE REJECT H_0 . THERE IS SUFFICIENT EVIDENCE THAT SOCIAL SUPPORT AFFECTS HEALTH LIFE EXPECTANCY.

CHI-SQUARE OF INDEPENDENCE

TO DETERMINES WHETHER THERE IS EVIDENCE OF A RELATIONSHIP BETWEEN THEM AT THE SIGNIFICANCE LEVEL OF 0.05

Hypothesis Statement:

H₀: No relationship between countries’ continents and income groups.
H₁: Countries’ continents and income groups are dependent and relationships exist.

DEGREE OF FREEDOM
fd=15

SIGNIFICANCE LEVEL
a=0.05

∴ T-VALUE = 95.975 WITH P-VALUE=7.519
CRITICAL VALUE = 24.996



SINCE THE TEST STATISTIC VALUE > THE CRITICAL VALUE X²=95.975 > 24.996. THIS SHOWS THAT THE TEST STATISTIC FALLS WITHIN THE CRITICAL REGION. THUS, THE NULL HYPOTHESIS, H0 IS REJECTED AT =0.05.THERE IS SUFFICIENT EVIDENCE TO CONCLUDE THAT THERE IS A RELATIONSHIP BETWEEN THE COUNTRIES' CONTINENT AND INCOME GROUP.

Population : 195 countries

Sample : 156 countries

Data Description:

Variables	Type of Variable	Measurement Level	Description
Overall Rank	Quantitative	Nominal	Happiness ranking from 1 to 156
Country or region	Qualitative	Nominal	Name of the countries
Happiness Score	Quantitative	Ratio	Cumulative addition of six components
GDP per Capita	Quantitative	Ratio	A country's economic output
Social Support	Quantitative	Ratio	Assistance, social network, or resources, etc. from others
Healthy Life Expectancy	Quantitative	Ratio	Average life in good health
Freedom to make life choices	Quantitative	Ratio	Human’s right to decide
Generosity	Quantitative	Ratio	Willingness to offer help or support
Perceptions of corruption	Quantitative	Ratio	Index on perceived levels of public sector corruption

DATA:

HTTPS://WWW.KAGGLE.COM/UNSDSN/WORLD-HAPPINESS?SELECT=2019.CSV