

DSC 530 Term Project

2023 World Happiness Report

Prepared by Carlos Cano

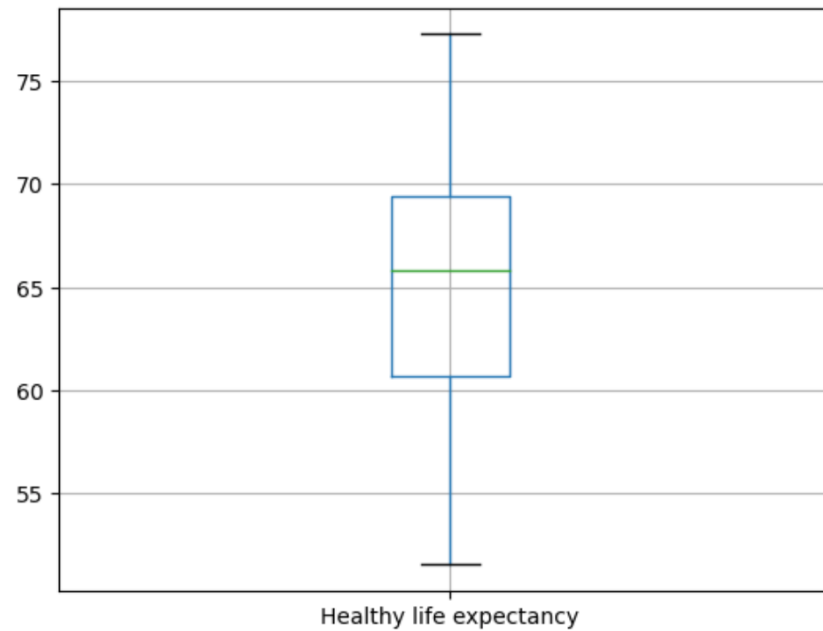
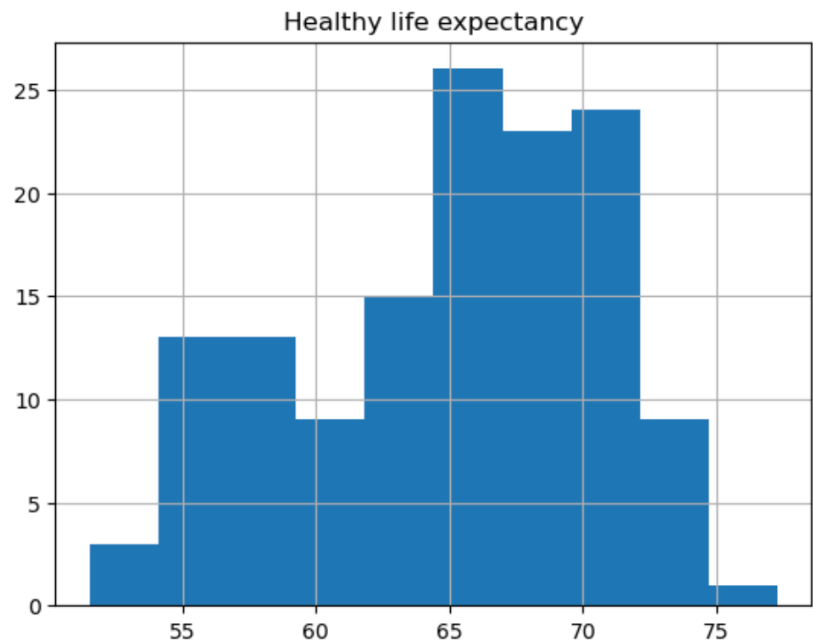
Prepared for Professor Matthew Metzger

Dataset Variables

- **Healthy Life Expectancy:** Mental health is a key component of subjective well-being and is also a risk factor for future physical health and longevity. Mental health influences and drives a number of individual choices, behaviours, and outcomes.
- **Perception of Corruption:** A measure of people's trust in their governments and trust in the benevolence of others
- **Social Support:** the ability to have someone to count on in times of trouble.
- **Freedom to Make life Choices:** This also includes Human Rights. Inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status.
- **Generosity:** A clear marker for a sense of positive community engagement and a central way that humans connect with each other.

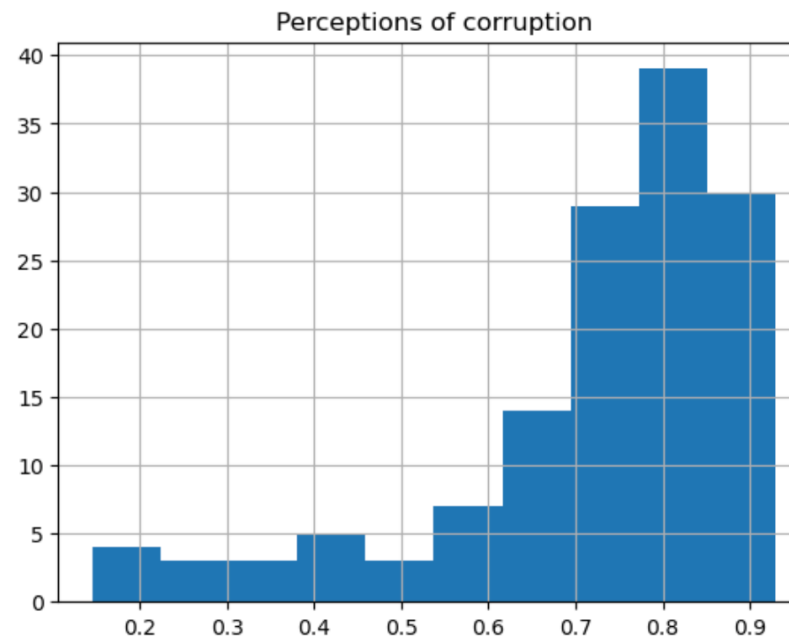
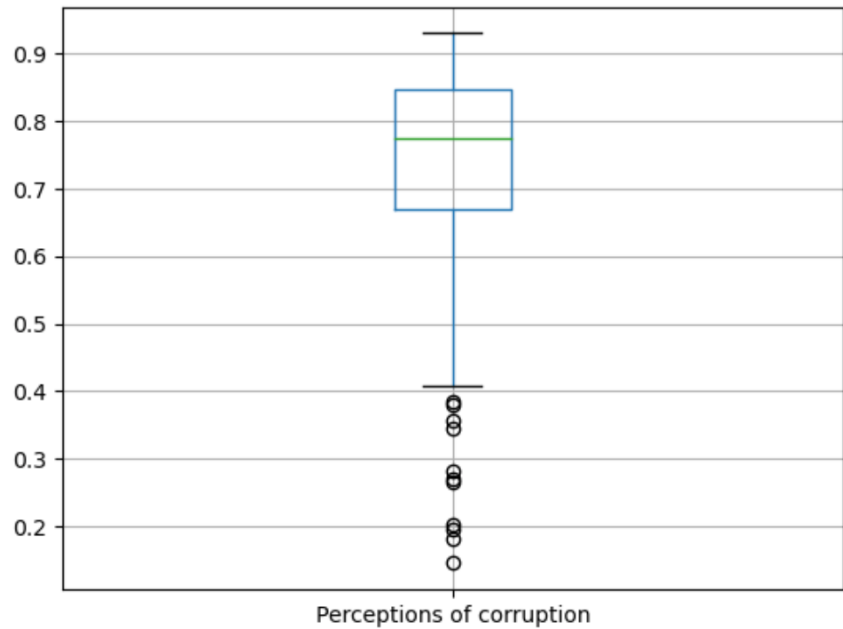
Dataset Histogram & Boxplot

Healthy Life Expectancy



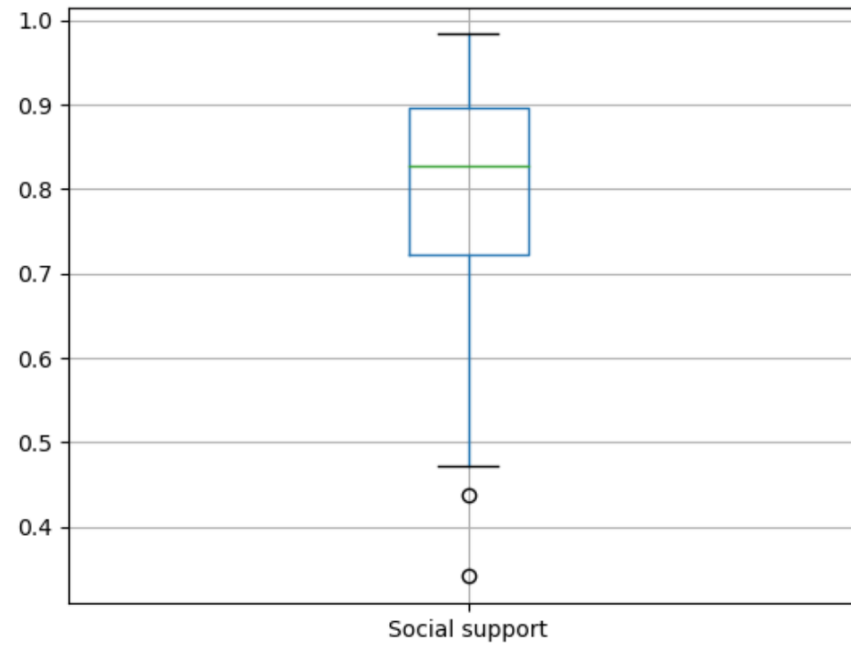
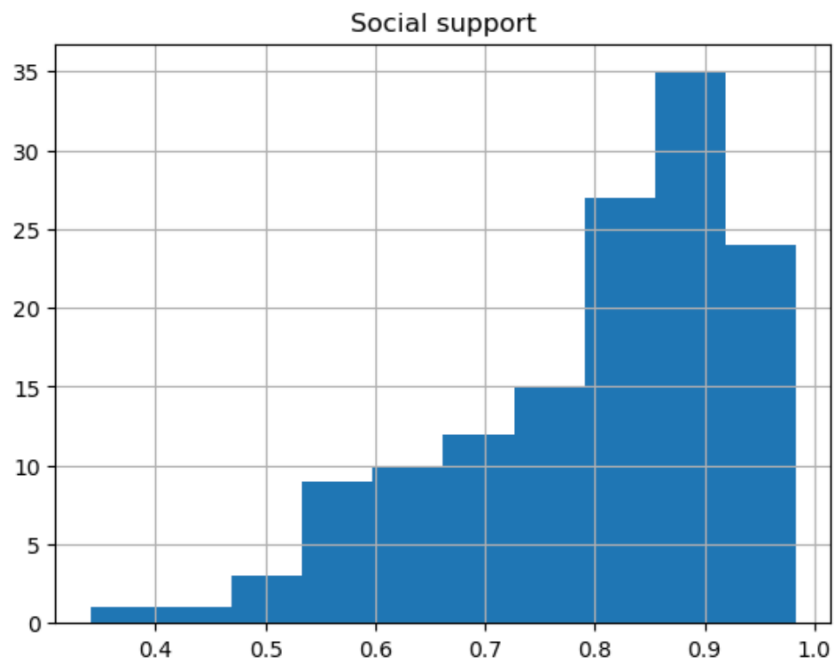
Dataset Histogram & Boxplot

Perception of Corruption



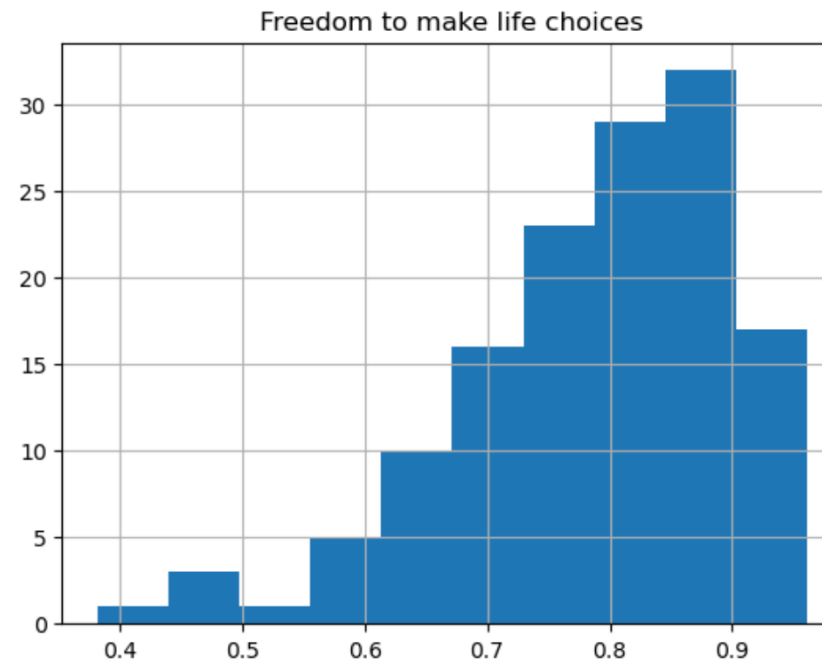
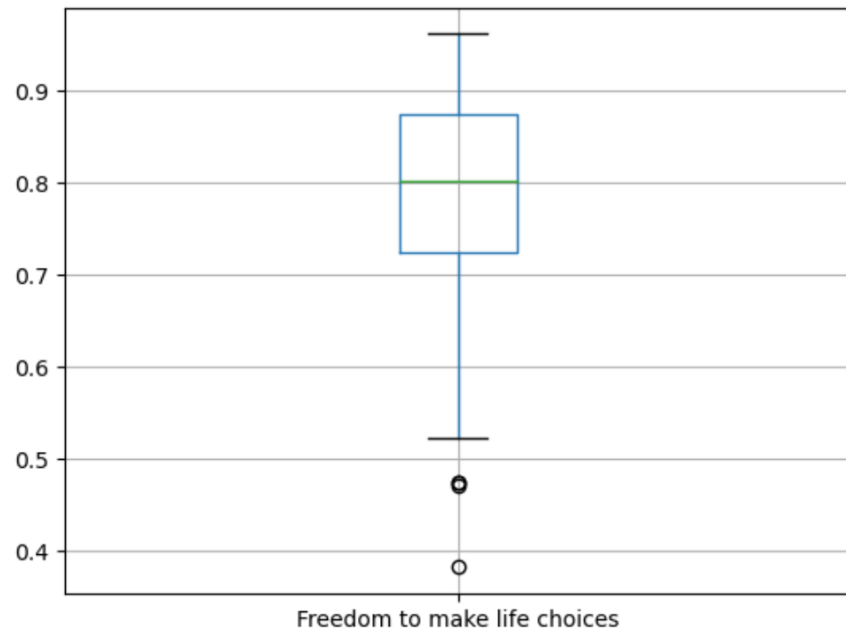
Dataset Histogram & Boxplot

Social Support



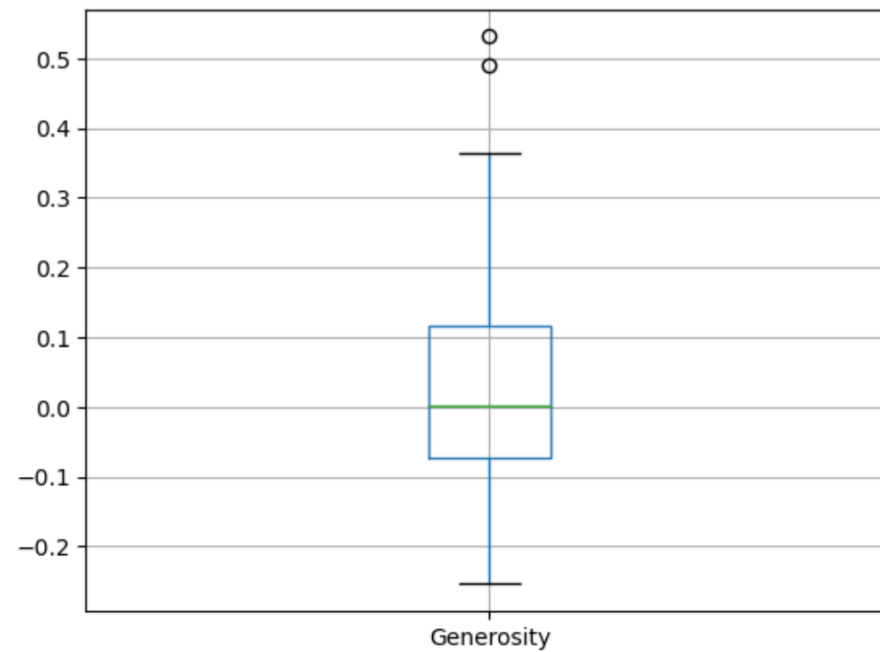
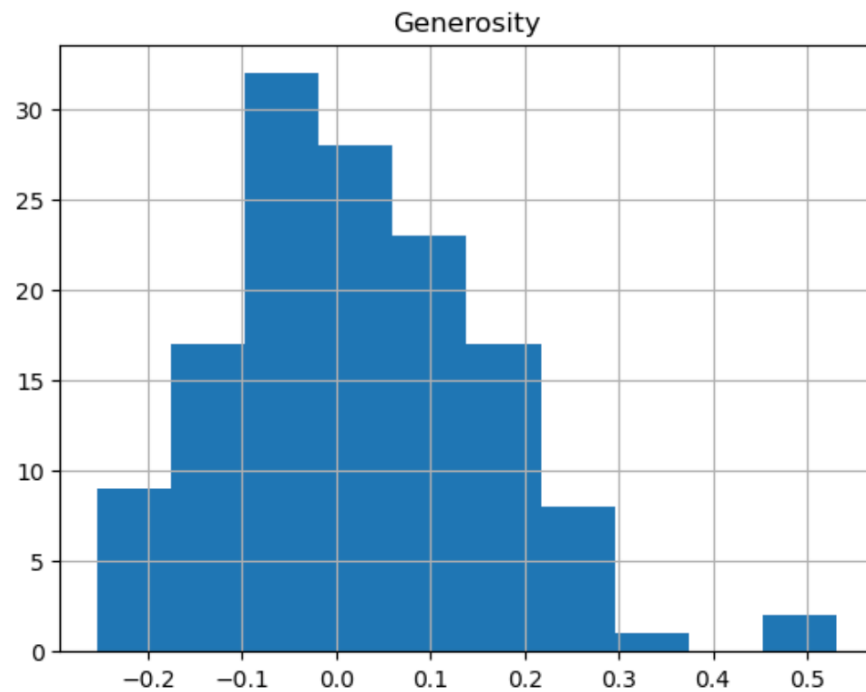
Dataset Histogram & Boxplot

Freedom to Make life Choices



Dataset Histogram & Boxplot

Generosity



Descriptive Characteristics

- Mean Data:
 - Healthy life expectancy 64.967632
 - Perceptions of corruption 0.725401
 - Social support 0.799073
 - Freedom to make life choices 0.787394
 - Generosity 0.022431

Descriptive Characteristics

- Median Data:
 - Healthy life expectancy 65.8375
 - Perceptions of corruption 0.7740
 - Social support 0.8270
 - Freedom to make life choices 0.8010
 - Generosity 0.0010

Descriptive Characteristics

- Variance Data:
 - Healthy life expectancy 33.066989
 - Perceptions of corruption 0.031313
 - Social support 0.016698
 - Freedom to make life choices 0.012627
 - Generosity 0.020081

Descriptive Characteristics

- Standard Deviation Data:
 - Healthy life expectancy 5.750390
 - Perceptions of corruption 0.176956
 - Social support 0.129222
 - Freedom to make life choices 0.112371
 - Generosity 0.141707

Descriptive Characteristics

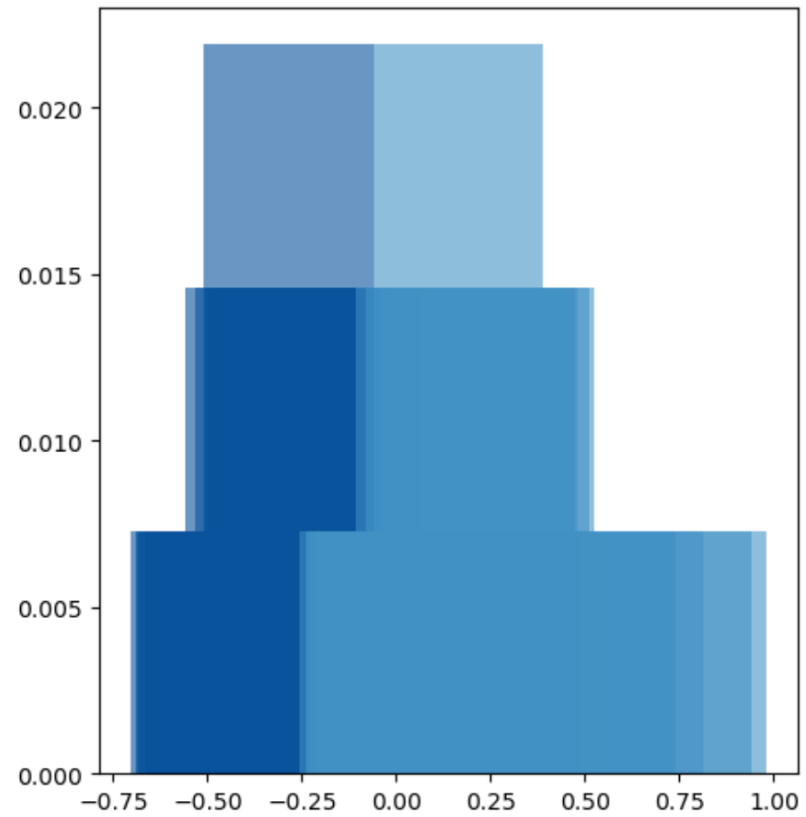
➤ Tail Data:

```
<bound method NDFrame.tail of
0      71.150      0.182      0.969
1      71.250      0.196      0.954
2      72.050      0.668      0.983
3      72.697      0.708      0.943
4      71.550      0.379      0.930
..      ...      ...      ...
132     55.375      0.834      0.652
133     54.050      0.766      0.690
134     54.900      0.858      0.555
135     66.149      0.891      0.530
136     54.712      0.847      0.341

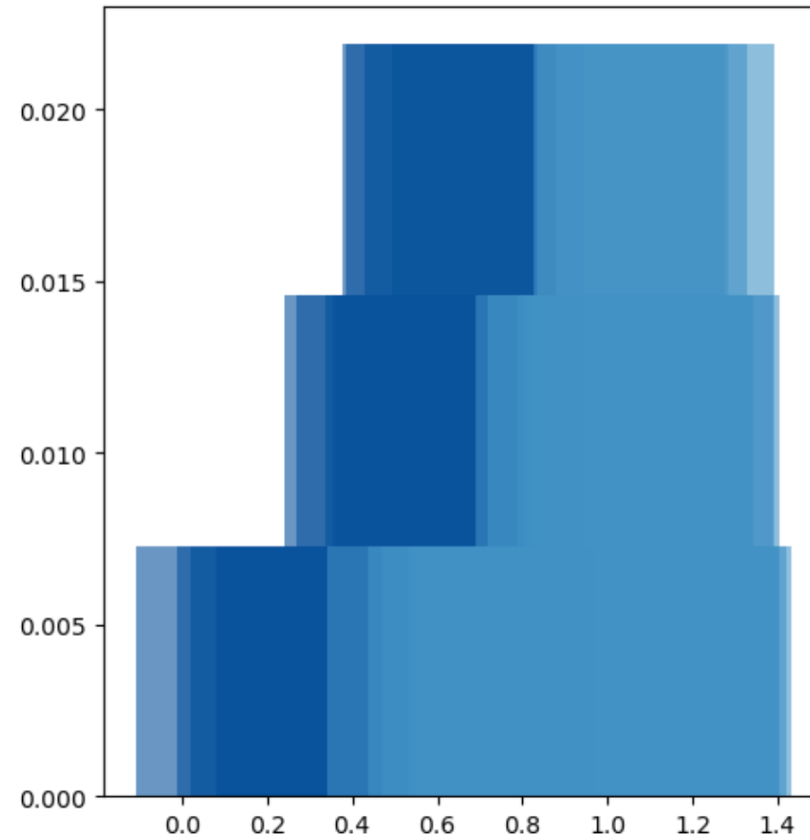
      Freedom_to_make_life_choices  Generosity
0      0.961      -0.019
1      0.934      0.134
2      0.936      0.211
3      0.809     -0.023
4      0.887      0.213
..      ...      ...
132     0.664      0.086
133     0.654     -0.046
134     0.660      0.105
135     0.474     -0.141
136     0.382     -0.081

[137 rows x 5 columns]>
```

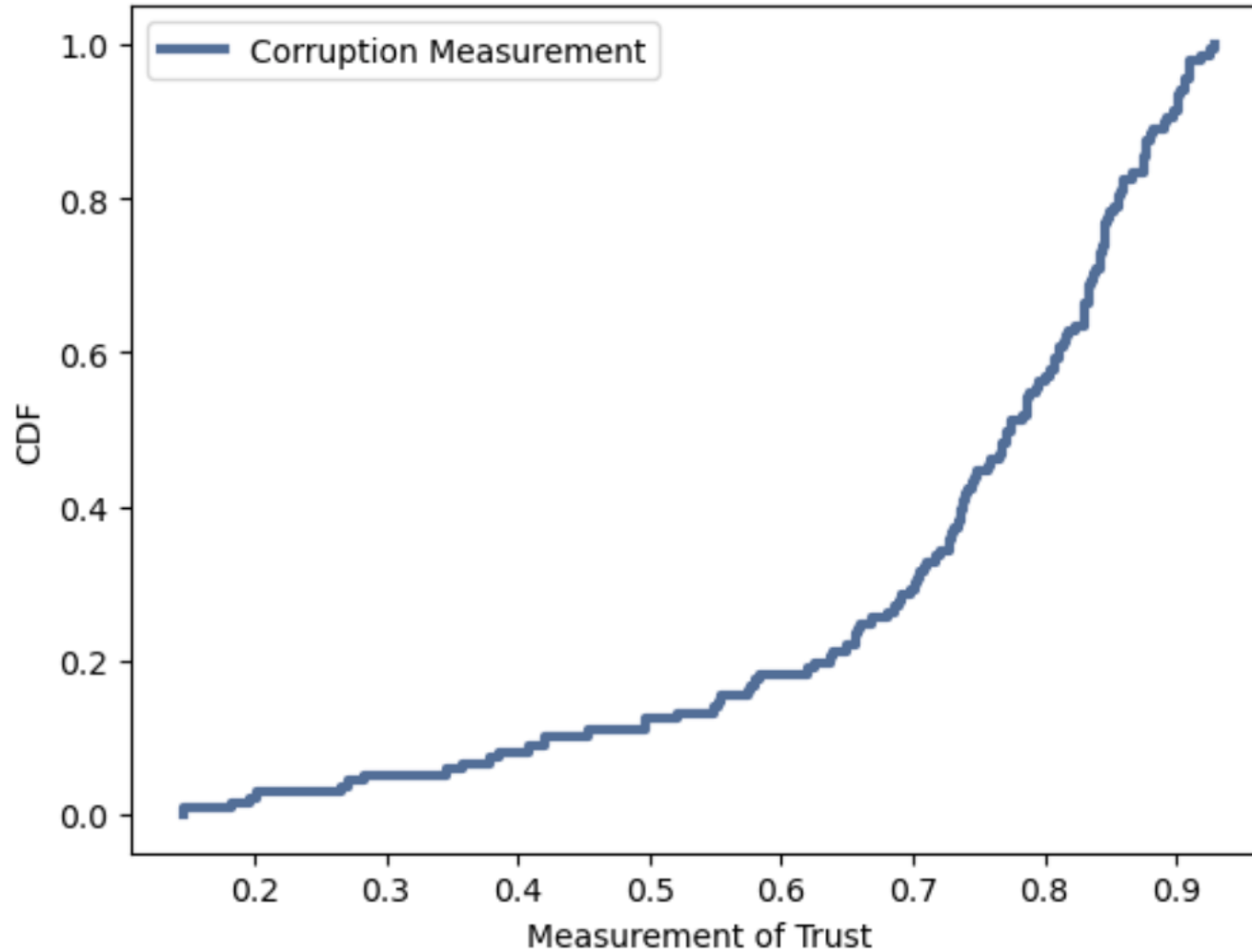
Generosity PMF



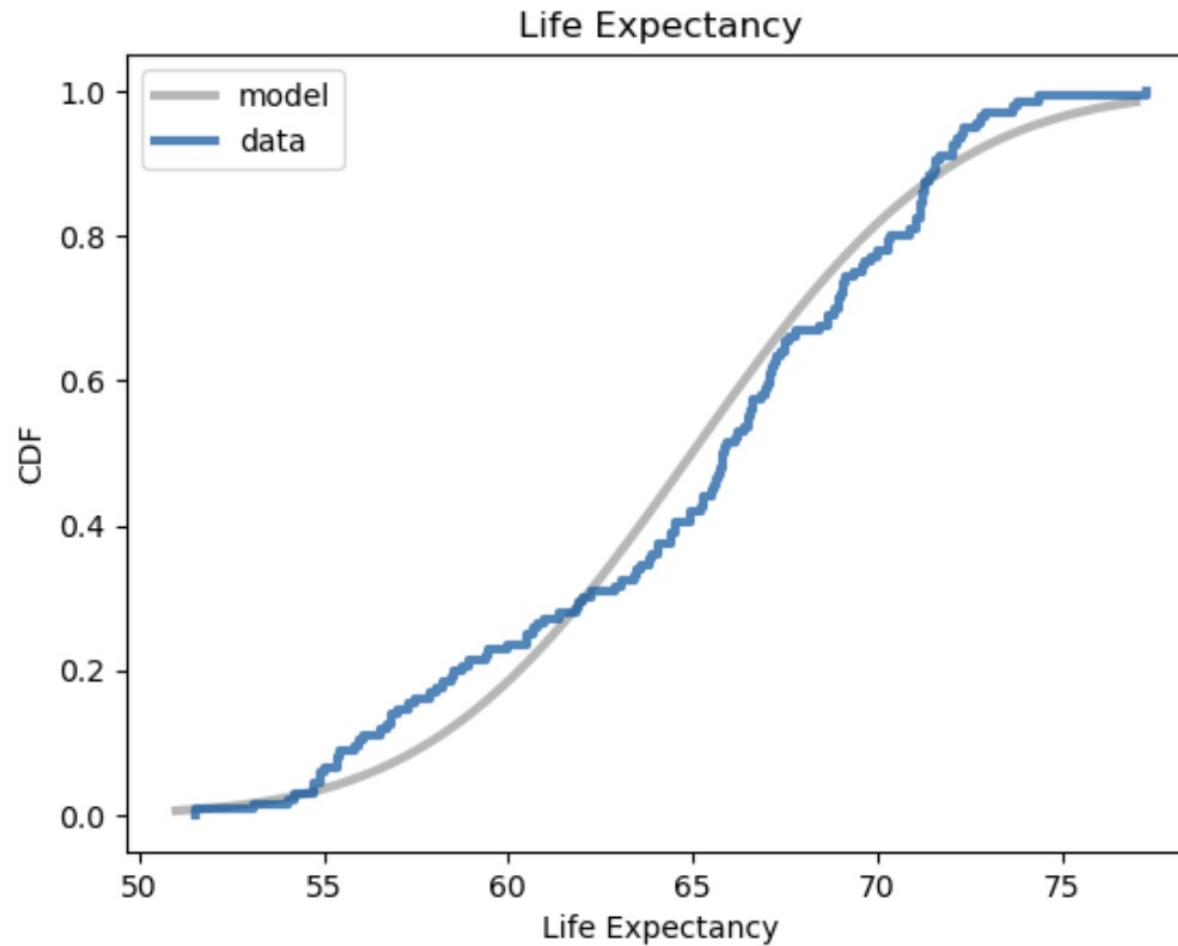
Social Support PMF



Perception of Corruption CDF

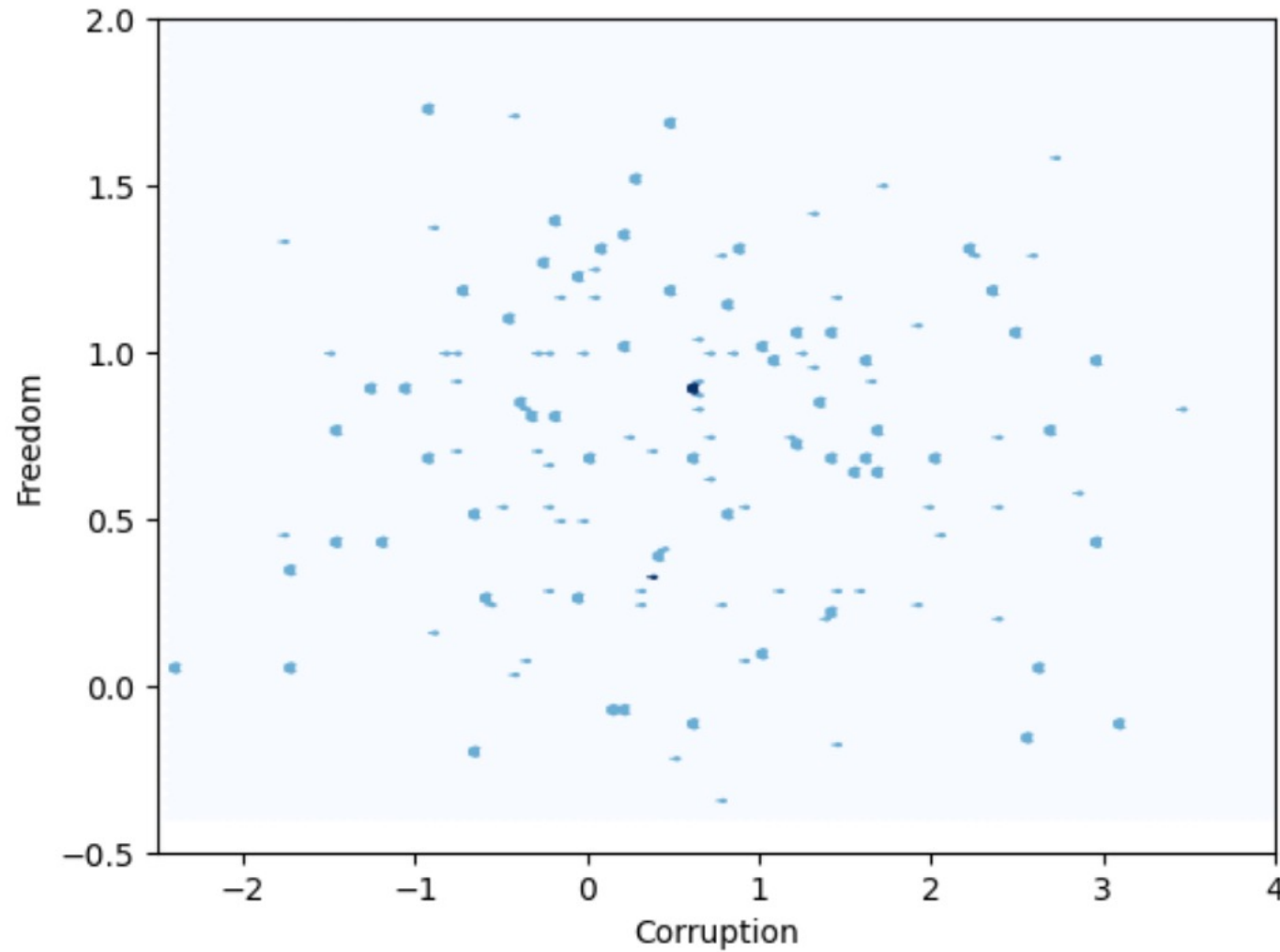


Analytic Distribution Ex.

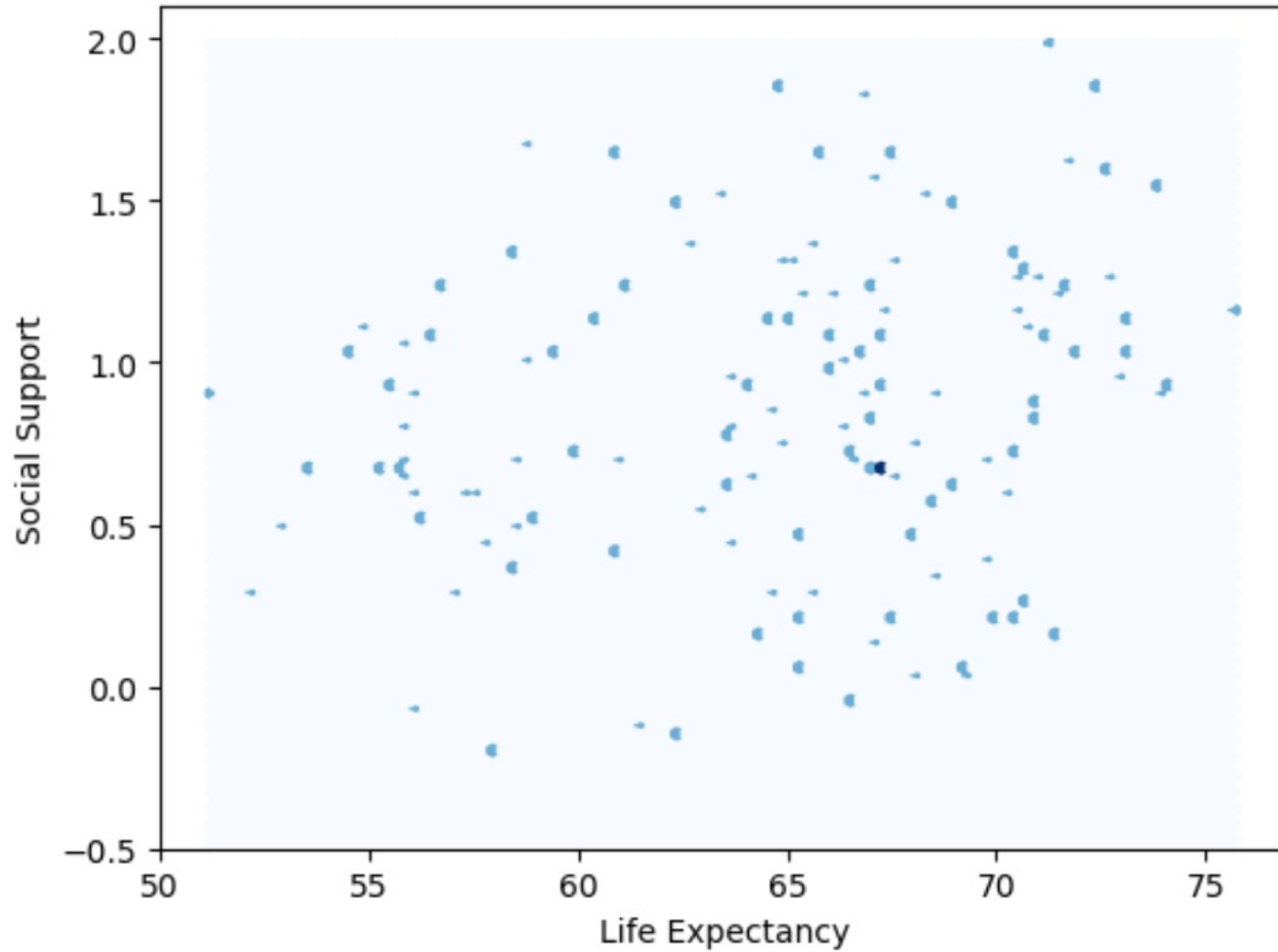


Mean, Var 64.97602985074627 30.83484877522834
Sigma 5.55291353932585

Scatterplot Ex: Freedom~Corruption



Scatterplot Ex: Life Expectancy~Social Support



Hypothesis Test

```
class CorrelationPermute(thinkstats2.HypothesisTest):  
  
    def TestStatistic(self, data):  
        xs, ys = data  
        test_stat = abs(thinkstats2.Corr(xs, ys))  
        return test_stat  
  
    def RunModel(self):  
        xs, ys = self.data  
        xs = np.random.permutation(xs)  
        return xs, ys
```

```
data = cleaned  
ht = CorrelationPermute(data)  
pvalue = ht.PValue()  
pvalue
```

P -Value: 0.044

Regression Analysis

OLS Regression Results

Dep. Variable:	Freedom_to_make_life_choices	R-squared:	0.293
Model:	OLS	Adj. R-squared:	0.288
Method:	Least Squares	F-statistic:	56.05
Date:	Fri, 02 Jun 2023	Prob (F-statistic):	8.24e-12
Time:	22:53:19	Log-Likelihood:	129.37
No. Observations:	137	AIC:	-254.7
Df Residuals:	135	BIC:	-248.9
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
Intercept	0.4110	0.051	8.072	0.000	0.310	0.512
Social_support	0.4710	0.063	7.486	0.000	0.347	0.595

Omnibus:	6.898	Durbin-Watson:	2.033
Prob(Omnibus):	0.032	Jarque-Bera (JB):	6.532
Skew:	-0.514	Prob(JB):	0.0382
Kurtosis:	3.295	Cond. No.	12.8