

# A Comparative Analysis Of The Factors Affecting Happiness Index

Parul Oberoi, Shalu Chopra, Yukti Seth

**Abstract:** The concept of measuring happiness was introduced to the world by the government of Bhutan as Gross National Happiness which later was adapted by UN in the form of happiness index that measures the happiness and well-being of the population of the country. This paper aims to analyze the happiness index and its relationship with various factors by using survey method with the help of a questionnaire. Demographic features like age, gender, income, occupation and marital status have been used among which the comparison of the happiness index have been made. The results have been presented by using pie charts, graphs and tables. The tools of ANOVA and multiple regression have been used to measure the extent of dependence of the factors on happiness index.

**Keywords:** ANOVA, GNH, GDP, Happiness Index, Physical well-being, Questionnaire, Regression

## 1 INTRODUCTION

Happiness Index is a system of measuring the collective happiness and well-being of a nation. This term has been originated from the term "Gross National Happiness (GNH)" which was invented in 1972 and since then it has been the guiding principle of the government of Bhutan. In July 2008, GNH was also included in the constitution of Bhutan as a goal. GNH also served as a base of the UN Resolution "Happiness: towards a holistic approach to development" passed in 2011 and happiness was regarded as a fundamental human goal. The UN also issued the first World Happiness Report in 2012 and declared 20<sup>th</sup> March as to be International Day of Happiness. The Happiness Index prioritizes happiness over other factors like economic growth, GDP and it is measured by using following factors:

- 1 **Real GDP per capita-** It is the value of all the goods and services produced in a country in a given year divided by the total population of the country and adjusted for inflation. This is a widely accepted way of measuring a nation's wealth.
- 2 **Social support-** It is the perception of having a supportive social network and having people to depend upon in times of crisis. It raises the quality of life of an individual.
- 3 **Healthy life expectancy-** It is the estimate of the expected years of good health life of people at a particular age calculated by the World Health Organization (WHO).
- 4 **Freedom to make life choices-** It is the opportunity and liberty to choose and act from at least two options without the influence of any external factor.
- 5 **Generosity-** Often regarded as a virtue, it is basically an act of giving or sharing with others or it can be an act of a good deed.
- 6 **Perceptions of corruption-** It is a measure of the level of corruption in a country, especially in the public sector.
- 7 **Unexplained factors-** This includes all the factors that influence happiness index in one way or another

but are not mentioned separately in the World Happiness Report.

The rankings of happiness are based on the centril ladder survey and it lies in the range of 0-10 (10 being the best and 0 being the worst). All the nations' happiness index is then compared and they are positioned according to their value of index. According to the 2019 World Happiness Report, India is on the 140<sup>th</sup> position out of 155 countries with a happiness index of 4.015. The values of individual factors are as follows:

1. Real GDP per capita- 0.755
2. Social support- 0.765
3. Healthy life expectancy- 0.588
4. Freedom to make life choices- 0.498
5. Generosity- 0.200
6. Perceptions of corruption- 0.085

## Rationale of the Study

Happiness Index is the upcoming method of analyzing the development in a country. Countries like Bhutan consider this index a better way of measuring and comparing development across nations. United Nations has also started using this method extensively since 2012 when it published its first World Happiness Report. India obtains a very low rank in the global comparison of the nations based on this index. The primary objective of this paper is to calculate the happiness index of the sample selected for the research and identifying various challenges that exist in the economy towards obtaining a higher rank of happiness index globally and, thereby, offering a solution for the same.

## Research Questions

- 1 What is happiness index?
- 2 What is the origin of this index?
- 3 What are the various factors affecting the index?
- 4 What role does happiness index play in present scenario?
- 5 How is happiness index measured?
- 6 Why is happiness index a better measure of growth than GDP?
- 7 What is the relationship between GDP and happiness index?

### Research Objectives

- 1 To find the extent of dependence between the factors affecting happiness index and happiness index using multiple regression.
- 2 To find out the difference in the happiness index of males and females.
- 3 To find the relation of income of the respondents with their happiness index.

## 2 REVIEW OF LITERATURE

1. Advances in subjective well-being research by Ed Diener, Louis Tay and Shigehiro Oishi (2013)- The review describes the validity and biases of various scientific methods used in the researched areas of happiness or well-being. The paper has identified factors that are associated with subjective happiness like income, temperament, longevity, social relations etc. It also tries to find various unknowns in the field.
2. Towards a New Development Paradigm: Critical Analysis of Gross National Happiness by Gaurav Daga (May 2014)- The paper is an review of the shift of paradigm from GDP to its alternative i.e., GNH and it focuses on the analysis of GNH by explaining its advantages, limitations and future scope. It also lays stress on the need of this shift and suggests ways for countries to cope up with the dynamic environment of the economy.
3. Happiness Index Methodology by Laura Musikanski (2017)- The manuscript explains happiness index as a comprehensive tool to assess happiness, sustainability and well-being. It describes the index as a common tool of measuring quality of life over nations. The paper has recorded the development of the index from 2011-2015. In addition, it has pointed out various flaws and recommended suggestions that can be implemented for future improvements.
4. The concept of measuring happiness and how India can go the Nordic Way by Sangeeta Bhattacharyya, R Roy Burman and Sudipta Paul (January 2019)- The paper has used GNH and the World Happiness Report 2018 published by UN to provide evidence that India is among the Unhappy Nations of the World. The paper analyzes the trends in the Nordic countries that make them top the charts every year like Denmark and suggest ways for India to go the Nordic way.
5. Happiness among second year MBBS students and its correlation using Oxford Happiness Questionnaire by Shivam Kamtham (June 2019)- The paper has been based on a questionnaire that was circulated among various students of a MBBS college to find out the level of happiness of the students and the factors for the same. Demographic variables were used for comparisons between the level of happiness of the students and the results were used to identify the source of happiness for MBBS students.

## 3 RESEARCH METHODOLOGY

**Structure of the paper:** Quantitative research has been carried out to calculate and analyze the happiness index of the respondents, as well as to understand the various challenges which are being faced by them and further to offer suggestions to overcome these challenges.

**Sampling Method:** Purposive Sampling Method (Non-Probability Sampling Technique) has been used for the research work to collect the data.

**Selection of Sample Size:** The sample size was arrived by using the formula given by Cochran:

$$N = \frac{z^2 \cdot PQ}{e^2} \cong 385$$

where:

N = sample size

z = 1.96 (Z value for 95% confidence level)

P = estimated proportion of the population which has the attribute (0.5 used for the sample size needed)

Q = 1-P

e = desired level of precision

### Data Collection:

Primary data has been collected for the research by using the tool of questionnaire which was circulated using Google Forms. The questionnaire was circulated among a randomly selected sample of 150 (75 male and 75 female) people which was returned with a response rate of 76% i.e., 114 respondents (57 males and 57 females). The questionnaire was carried out using various multiple choice questions and it was divided into 2 parts:

1. The first part of the questionnaire included the questions regarding the demographic variables.
2. The second part of the questionnaire included the questions regarding the factors affecting happiness index.

### Scale:

Yes, No, Maybe- for the second part of the questionnaire

### Tools:

The data collected was inserted in a Microsoft Excel spreadsheet and further it was analyzed using the measures of central tendency- Mean and Median. The results were presented by using pie charts and graphs. In addition, the tools of ANOVA and multiple regression were also used to test the hypothesis generated for the first objective.

### Area of Study:

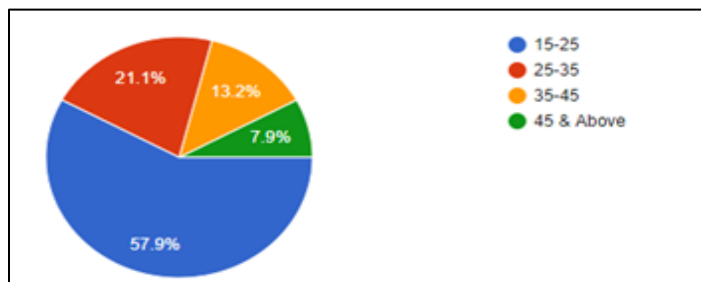
East Delhi and Delhi-NCR.

## DATA ANALYSIS

### Demographic Variables

The demographic variables are analyzed using the pie charts which are as follows:

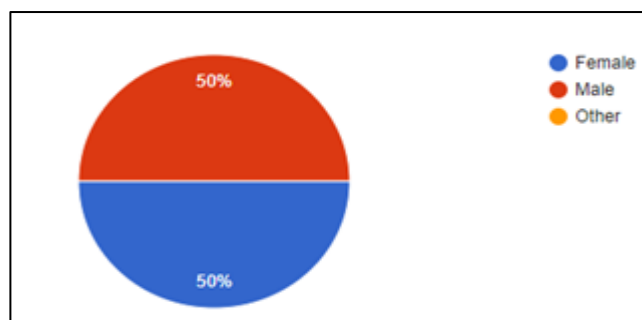
#### 1. AGE



**Figure 1:** Age of the respondents

It is represented in the above diagram that out of the 114 respondents 66 were of the age group 15- 25 (57.9%), 24 were of the age group 25- 35 (21.1%), 15 were of the age group 35- 45 (13.2%) and 9 were of the age group 45 & above (7.9%).

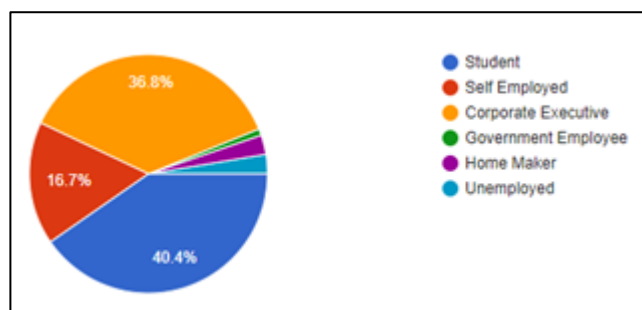
## 2. GENDER



**Figure 2:** Gender of the respondents

It is represented in the above diagram that out of the 114 respondents 57 were males (50%) and 57 were females (50%).

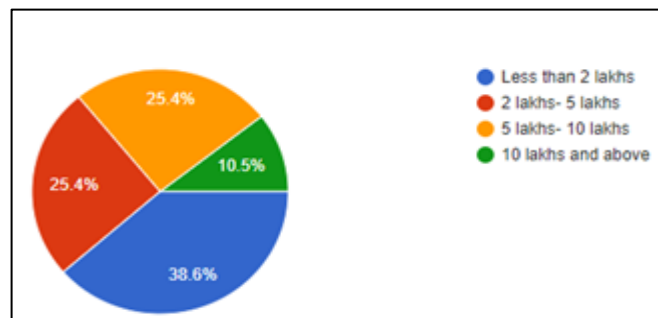
## 3. OCCUPATION



**Figure 3:** Occupation of the respondents

It is represented that out of the 114 respondents 46 were students (40.4%), 19 were self-employed (16.7%), 42 were corporate executive (36.8%), 1 was government employee (0.9%), 3 were home maker (2.6%) and 3 were unemployed (2.6%).

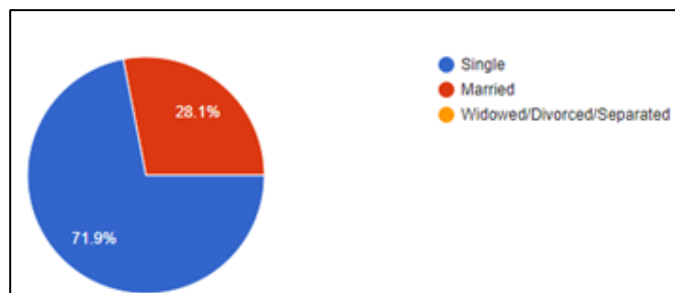
## ANNUAL INCOME



**Figure 4:** Annual Income of the respondents

It is represented in the diagram that out of the 114 respondents 44 were earning an annual income of less than 2 lakhs (38.6%), 29 were earning an annual income in the range of 2- 5 lakhs (25.4%), 29 were earning an annual income in the range of 5- 10 lakhs (25.4%) and 12 were earning an annual income of more than 10 lakhs (10.5%).

## 4. MARITAL STATUS



**Figure 5:** Marital Status of the respondents

It is represented in the diagram that out of the 114 respondents 82 were single (71.9%) and 32 were married (28.1%). Objective 1- To find the extent of dependence between the factors affecting happiness index and happiness index using multiple regression.

**The paper has undertaken the following factors that affect the happiness index of the individuals:**

- 1 Social Support
- 2 Freedom to make life choices
- 3 Generosity
- 4 Physical well-being and Personal safety has been introduced as 2 other factors under unexplained factors. These factors have been introduced by keeping in mind the area of the study. The factors incorporate the effect of pollution, crime rate and the stress level that the residents of Delhi and Delhi-NCR face which affects the happiness level of these people.

To attain the results of this objective, the statistical tool of multiple regression was applied under the following hypothesis:

**Null hypothesis:** Explanatory variables will have no or little significant relationship on happiness index of the individuals (i.e.  $R^2 = 0$ )

**Alternate hypothesis:** Explanatory variables have significant positive relationship on happiness index of the individuals. (i.e.  $R^2 > 0$ )

Regression Statistics	
Multiple R	0.663229
R Square	0.439873
Adjusted R Square	0.413941
Standard Error	0.169297
Observations	114

**Table 1: Regression Statistics**

ANOVA					
	df	SS	MS	F	Significance F
Regression	5	2.430878	0.486176	16.9627	2.38E-12
Residual	108	3.095437	0.028661		
Total	113	5.526316			

**Table 2: ANOVA**

	Coefficients	Standard Error
Intercept	0.102136	0.114377
Social support	0.108067	0.102863
Freedom to make life choices	0.175965	0.049332
Physical well-being	0.250496	0.040752
Personal safety	0.058347	0.047945
Generosity	0.102028	0.054105

**Table 3: Result Output**

At 5% level of significance the calculated F-value (16.9627) > tabulated F-value (2.3839). Thus, null hypothesis was rejected and all the 5 explanatory variables i.e., social support, freedom to make life choices, physical well-being, personal safety and generosity were found to have a significant positive relationship with happiness index.

**The model framed as per the above summary of the result output is:**

Happiness Index =  $0.102 + (0.108) \text{ Social support} + (0.175) \text{ Freedom to make life choices} + (0.25) \text{ Physical well-being} + (0.058) \text{ Personal safety} + (0.102) \text{ Generosity}$

Or, it can be written as:

$Y = 0.102 + (0.108) X_1 + (0.175) X_2 + (0.25) X_3 + (0.058) X_4 + (0.102) X_5$

Objective 2- To find out the difference in the happiness index of males and females.

**The data analysis for the second objective was carried out by following the given steps:**

1. The respondents were segregated into 2 groups on the basis of their gender i.e., Male and Female.

2. The responses given by them were converted into numerical form. This was done by assigning numbers to their responses.
  - For the factors social support, freedom to make life choices and physical well-being 1 was assigned to Yes, 0 was assigned to No and 0.5 was assigned to Maybe.
  - For the factor, personal safety 1 was assigned to No, 0 was assigned to Yes and 0.5 was assigned to Maybe.
  - For the factor generosity 1 was assigned to Yes and 0 was assigned to No.
3. The sum of all the numerical responses given to the 1<sup>st</sup> question on social support "Do you have relatives/friends to help you if you are in trouble or when you need them?" by the males and females were calculated separately which came out to be 55 and 54 respectively.
4. The sum of all the numerical responses given to the 2<sup>nd</sup> question on freedom to make life choices "Do you have the freedom to choose what to do in your life?" by the males and females were calculated separately which came out to be 44.5 and 47 respectively.
5. The sum of all the numerical responses given to the 3<sup>rd</sup> question on physical well-being "Do you think you have a balanced state of body, mind and spirit?" by the males and females were calculated separately which came out to be 36.5 and 30 respectively.
6. The sum of all the numerical responses given to the 4<sup>th</sup> question on personal safety "Do you feel you are a victim of hostility, aggression and harassment?" by the males and females were calculated separately which came out to be 46.5 and 44.5 respectively.
7. The sum of all the numerical responses given to the 5<sup>th</sup> question on generosity "Have you ever made a charity in your life?" by the males and females were calculated separately which came out to be 51 and 52 respectively.
8. The values obtained of the individual factors of both the male and female category were then divided by the total number of male (57) and female (57) respondents respectively to find out the average of each factor. The average values obtained were as follows:

Factors	Male	Female
Social Support	0.96	0.95
Freedom to make life choices	0.78	0.82
Physical well-being	0.64	0.53
Personal safety	0.82	0.78
Generosity	0.89	0.91

**Table 4: Average value of all factors (gender wise)**

9. The happiness index of males was calculated by adding the average values obtained in the 8<sup>th</sup> step. Similarly, the happiness index of females was calculated by adding the average values obtained in the 8<sup>th</sup> step.  
The happiness index of males came out to be 4.10 and the happiness index of females came out to be 3.99
10. Similarly, the happiness index of all the respondents was also calculated and the results were-



Factors	Sum of responses	Average of responses (Sum/114)
Social Support	109	0.96
Freedom to make life choices	91.5	0.80
Physical well-being	66.5	0.58
Personal safety	91	0.80
Generosity	103	0.90

**Table 5:** Average value of all factors (all respondents)

The happiness index of all the respondents came out to be 4.04 Objective 3- To find the relation of income of the respondents with their happiness index.

**The data analysis for the third objective was carried as follows:**

1. The respondents were segregated into 2 groups by finding the median of the income of the respondents

Class Interval of Income	Frequency (f)	Cumulative Frequency (cf)
Less than 2 lakhs	44	44
2- 5 lakhs	29	73
5- 10 lakhs	29	102
10 lakhs & above	12	114

**Table 6:** Frequency Table 1

The median class is chosen by dividing the total observations by 2 i.e.

$$(N/2) = 114/2 = 57$$

Since 57 lies in the cumulative frequency of class interval of 2- 5 lakhs. So, it becomes the median class.

$$\text{Median} = L + \frac{(N/2 - cf)}{f} \times i$$

where, N = number of respondents  
cf = cumulative frequency of the preceding class  
f = frequency of the median class  
i = class size of the median class

$$\text{Median} = 2 + \frac{(114/2 - 44) \times 3}{29}$$

**Median = 3.34 ≈ 3.5**

Thus, the respondents are divided into a group of 2 i.e., people having income below and above 3.5 lakhs respectively.

2. The median class is further divided into 2 parts by finding out the mid-point of the class.

$$\text{Upper limit} + \frac{\text{Lower limit}}{2}$$

$$= \frac{2 + 5}{2} = 3.5$$

Thus, the new table would be as follows:

Class Interval of Income	Frequency (f)
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Less than 2 lakhs	44
2- 3.5 lakhs	15
3.5- 5 lakhs	14
5- 10 lakhs	29
10 lakhs & above	12

**Table 7:** Frequency Table 2

3. Happiness Index of the respondents lying below and above the income of 3.5 lakhs is calculated by using the same method (used in Objective 2) and the results were as follows: The total number of respondents lying below the income level of 3.5 lakhs = 59 The total number of respondents lying above the income level of 3.5 lakhs = 55

Factors	Sum of response s (Income below 3.5 lakhs)	Sum of response s (Income above 3.5 lakhs)	Average value (Income below 3.5 lakhs) (Sum/59)	Average value (Income above 3.5 lakhs) (Sum/55)
Social Support	56.5	52.5	0.96	0.95
Freedom to make life choices	45.5	46	0.77	0.84
Physical well-being	32.5	34	0.55	0.62
Personal safety	47	44	0.80	0.80
Generosity	49	54	0.83	0.98

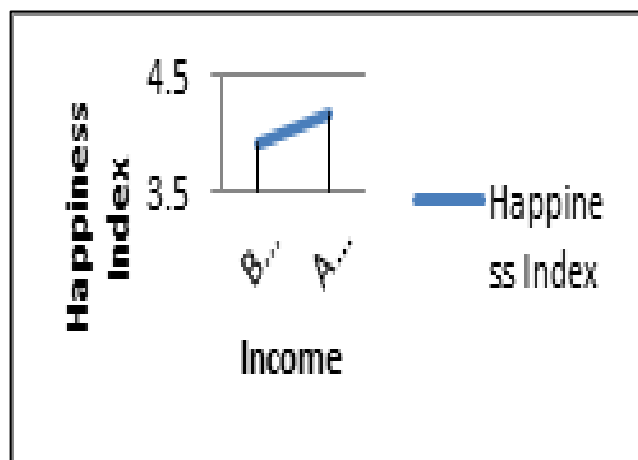
**Table 8:** Average value of all factors (income wise)

The happiness index of people lying below the income of 3.5 lakhs per annum came out to be 3.91 and the happiness index of above the income of 3.5 lakhs per annum came out to be 4.19.

## 4 RESULTS AND FINDINGS

1. The **demographic variables** suggest that the majority of the data collected was from the people who belonged to age group of 15-25 years which was divided between the genders equally. The majority of the respondents were either students or corporate executive with an income of less than 2 lakhs and 72% of the respondents were single.
2. After applying the **multiple regression**, it was found that explanatory variables/ factors affecting happiness index have a significant positive relationship on happiness index.
3. The **regression coefficient** i.e.  $R^2$  came out to be 43.9% (44% approx.). It implies that 44% of the variation in dependent variable i.e., happiness index is explained by the explanatory variables which are taken in consideration. There are so many other factors like GDP per capita, healthy life expectancy, perception of corruption etc. that have not been studied under the research but have the tendency to affect the happiness index.

4. As per the stated **regression model**, physical well-being had the highest coefficient (0.25) followed by freedom to make life choices (0.175), social support (0.108), generosity (0.102) and personal safety (0.058).
5. The **overall happiness index** of the research came out to be 4.04. Thus, it can be concluded that the people living in the demographic area stated in result 1 tend to have low happiness level. The factor which was found to be the most responsible for the same was low physical well-being as its average was 0.58 (as per the objective 2). This can be due to high stress level and poor quality of environment in the area of study.
6. The **comparison in terms of gender** between the happiness index showed that males have a higher level of happiness than females. The data exemplifies that even though females have more freedom in making their life choices and they are more generous than males but males have greater social support and they have a better physical well-being and they feel much more safer than females which contributes towards males having a higher happiness index.
7. A positive effect of income was found on happiness index as shown in the diagram below. As the data moved up from below 3.5 lakhs to above 3.5 lakhs, the happiness index also increased from 3.91 to 4.19.



**Figure 6: Happiness Index**

## 5 CONCLUSION

When it comes to happiness everyone has a different definition attached to it. Some may consider having a social circle or pursuing their habits and interests as a source of happiness while others may need comfortable living and good financial conditions as a source of happiness. In spite of such variations between people's idea of happiness UN has list down a variety of factors that affects the happiness of a person which are GDP per capita, social support, healthy life expectancy, freedom to make life choices, generosity and perceptions of corruption. In addition, there are some unexplained factors too which affect the happiness of an individual. On the basis of these factors each nations' level of happiness is calculated which is

known as happiness index of a nation. On the basis of World Happiness Report 2019, India ranks at 140<sup>th</sup> position out of 155 countries in the comparison of happiness index globally. With the development of this index as a better measure of growth than GDP, India needs to focus on increasing the happiness of its citizens. This study has been carried out to find the reasons behind the country's low happiness index. The factors taken under study for this research are

- Social Support
- Freedom to make life choices
- Physical well-being
- Personal safety
- Generosity

The factor that was found to be most influential in determining the happiness of the selected sample through multiple regression was physical well-being and it was also observed that it was the same factor with the least average i.e., low value of physical well-being among the sample in area of study undertaken is causing low value of happiness index too.

## 6 LIMITATIONS

- 1 The sample size of the study is too small due to which the results cannot be generalized and applied for the whole country.
- 2 The above mentioned study has been carried out in one particular area- Delhi NCR & East Delhi due to which the results cannot be compared with the studies that are carried out in other areas. It is comparable only with those studies which have been conducted in the same area.
- 3 The analysis results belong only to the observations within the sample. It does not forecast about the observations that lies outside the sample size or outside the model.
- 4 The study has excluded some factors like GDP per capita, healthy life expectancy and perceptions of corruption which affects the happiness index of a nation.

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NAME

AGE \*
  
☐ 15-25
  
☐ 25-35
  
☐ 35-45
  
☐ 45 & Above

GENDER \*
  
☐ Female
  
☐ Male
  
☐ Other

OCCUPATION \*
  
☐ Student
  
☐ Self Employed
  
☐ Corporate Executive
  
☐ Government Employee
  
☐ Home Maker
  
☐ Unemployed

## APPENDIX

### QUESTIONNAIRE

**ANNUAL INCOME \***

- ☐ Less than 2 lakhs
- ☐ 2 lakhs- 5 lakhs
- ☐ 5 lakhs- 10 lakhs
- ☐ 10 lakhs & Above

**MARITAL STATUS \***

- ☐ Single
- ☐ Married
- ☐ Widowed/Divorced/Separated

Do you have relatives/ friends to help you if you are in trouble or when you need them? \*

- ☐ Yes
- ☐ No
- ☐ Maybe

Do you have the freedom to choose what to do with your life? \*

- ☐ Yes
- ☐ No
- ☐ Maybe

Do you think you have a balanced state of body, mind and spirit? \*

- ☐ Yes
- ☐ No
- ☐ Maybe

Do you feel you are victim of hostility, aggression and harassment? \*

- ☐ Yes
- ☐ No
- ☐ Maybe

Have you ever made a charity in your life? \*

- ☐ Yes
- ☐ No

How occasionally do you feel happy? \*

- ☐ Always
- ☐ Never
- ☐ Sometimes