

# Are Asian Americans happy?

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And if so, why are they happy?

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According to Pew, Asian Americans are better-educated, higher incomes, stronger family ties. Are these factors determinants of happiness among Asian Americans?

## **I. Purpose of Project**

The purpose of this paper is to understand the contributing factors of happiness among Asian Americans. This paper examines whether there are correlations with age/gender, income, and spirituality.

According to the Pew Research Center, Asian Americans are the highest-income, best-educated and fastest-growing racial group in the United States. They are more satisfied than the general public with their lives, finances and the direction of the country, and they place more value than other Americans do on marriage, parenthood, hard work and career success. These milestones of economic success and social assimilation have come to a group that is still majority immigrant. Nearly three-quarters (74%) of Asian-American adults were born abroad; of these, about half say they speak English very well and half say they don't.

But does this study reflect the views of the new generation of native born Asians ("Asian Americans")? Are native born Asian Americans enjoying the milestones of "economic success and social assimilation"? And does that success equate to happiness? And if they are happy, what contributes to their happiness?

This paper seeks to introduce this question with a glance into the quality of lives for Asian Americans. Specifically, this paper narrowed its focus of Asian Americans with the following criteria: 1) college educated; 2) employed; 3) ages 21-40.

## **II. Data Collection**

This data was collected with the help of the Happiness Alliance, a non-profit organization, based in Seattle, WA, that seeks to improve the well-being of society by reducing emphasis on economic growth and focusing on the domains that lead to life satisfaction, resilience and sustainability. The Happiness Alliance created a survey (Gross National Happiness Index) to assess the overall happiness of cities, campuses, communities, and other groups. From March 2011 to September 2013, over 25,000 have responded to the GNH Index.

This paper was conducted using the same questions from the GNH Index with permission from the Happiness Alliance. The Happiness Alliance provided an online link, or url, for this study's respondents. The survey link was advertised on Facebook and forwarded by email to friends with encouragement to continue forwarding to others. Instructions were included on Facebook and by the email that this survey was limited in scope to 1) Asian Americans 2) ages 21-40 3) Employed and college educated graduates.

The data was then downloaded and sorted by appropriate graphs and analytical methods. A total of 75 Asian Americans responded to the GNH survey. 18 respondents completed much of the survey but failed to complete the categorical data (gender, age, salary, nationality). And a result,

those respondents' answers were not included with the overall data. As a result, the final total had 57 respondents.

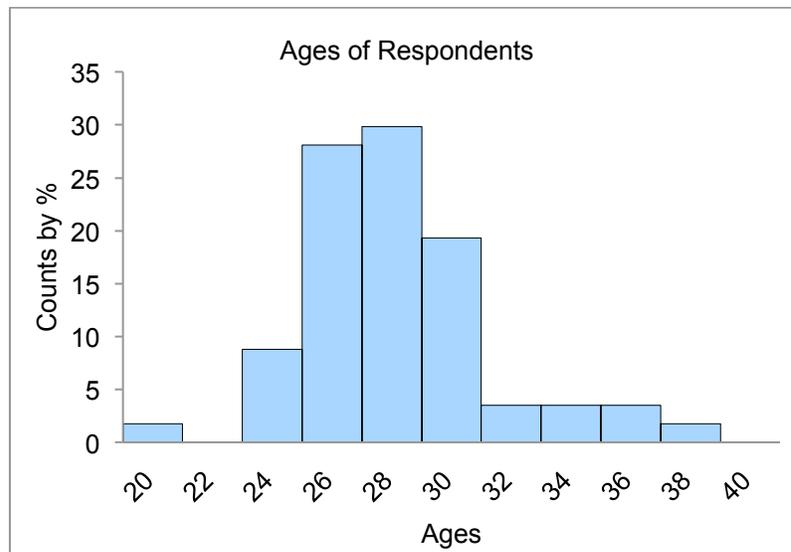
### III. Summary of Findings:

The survey was limited to Asian-Americans with a minimum of college education born in the "Generation-X" and "Millennial" generations (born from 1966 to 1987). All respondents met these criteria.

#### A. Categorical Data

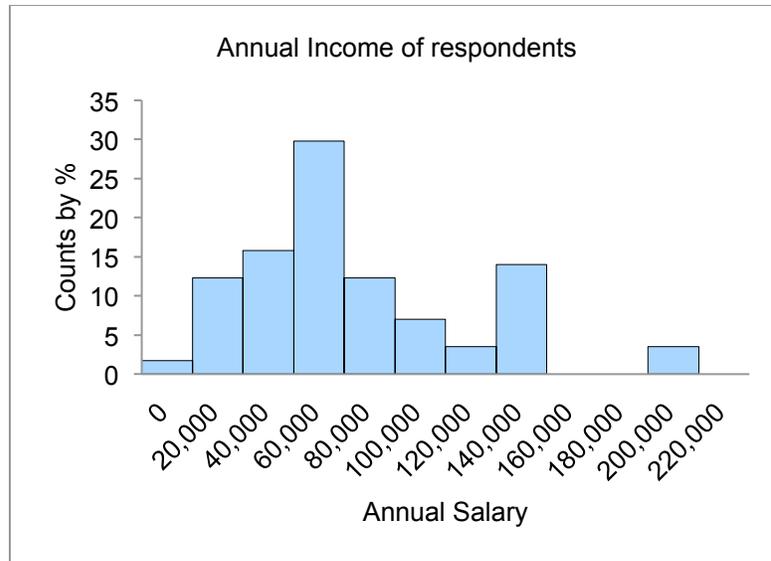
##### o Age

Survey respondents' ages ranged from 21 to 39 years of age, with a mean age of 28.7, sample standard deviation of 3.26 years, and a median of 29 years. The ages are unimodal and skewed to the right. There are three outliers to the left (ages 21 and 22). Survey participants were college educated, employed Asian Americans (ages 21-40) from New York, Los Angeles, and Toronto, Canada.



##### o Income

Survey respondents' income ranged from up to \$10,000 to \$125,000 and above. The mean salary was \$83,300. Median salary was \$63,000. The incomes ranged from \$15,000 to \$185,000. The income ranges is unimodal and skewed to the right with two high outliers from both ends of the income brackets.



o **Spirituality**

Survey respondents were asked to assess their spirituality, specifically whether 1) they considered themselves spiritual and 2) the importance of their spirituality. 3.5% (2) of respondents described themselves as very spiritual, 19.2% (11) viewed themselves as not at all spiritual, and the remaining 77% (44) saw themselves as “not very”, “somewhat”, or “moderately” spiritual. Although, only 3.5% respondents may not necessarily affiliate themselves as very spiritual, 14% of respondents viewed spirituality as very important in their lives.

| How spiritual do you consider yourself to be? |            |          |          |            |      |
|---|------------|----------|----------|------------|------|
|   | Not at all | Not very | Somewhat | Moderately | Very |
| Male  | 4          | 8        | 9        | 5          | 1    |
| Female  | 7          | 6        | 5        | 11         | 1    |
| Totals  | 11         | 14       | 14       | 16         | 2    |

| How important are your spiritual beliefs to the way you live your life? |            |          |          |            |      |
|---|------------|----------|----------|------------|------|
|   | Not at all | Not very | Somewhat | Moderately | Very |
| Male  | 4          | 10       | 4        | 8          | 1    |
| Female  | 6          | 7        | 7        | 3          | 7    |
| Totals  | 10         | 17       | 11       | 11         | 8    |

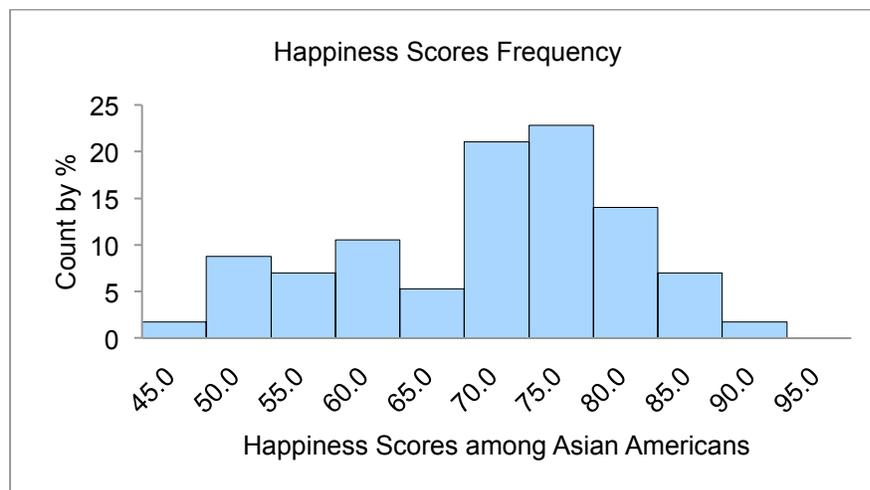
## B. Quantitative Data

|                           |          |
|---------------------------|----------|
|                           | # 1      |
| Count                     | 57       |
| Mean                      | 71.8412  |
| sample variance           | 117.8480 |
| sample standard deviation | 10.8558  |
| minimum                   | 49.75    |
| maximum                   | 91.5     |
| Range                     | 41.75    |
| 1st quartile              | 64.2500  |
| median                    | 72.2500  |
| 3rd quartile              | 79.2500  |
| interquartile range       | 15.0000  |
| mode                      | 71.5000  |

The quantitative section of the survey was broken down into 14 categories of happiness, equaling 62 questions. All questions were assigned a point total, on a scale of 0-100, with 0 being the worst and 100 the best. Satisfaction with Life and Negative and Positive Experiences survey questions were each scored on a scale of 0-10. The remaining category sections Psychological Well-being, Health, Time Balance, Community Vitality, Social Support, Access to Arts, Culture & Education, Environmental Quality, Government, Material Well-being, and Work were each scored on a scale of 0, 0.25, 0.5, 0.75, and 1, with 1 being very satisfied and 0 being not at all satisfied. All respondents' average is the average of everyone who has taken the happiness index survey, also on a scale of 0-100.

Respondents scored with a mean score of 71.8, a sample standard deviation of 10.86, and a median of 72.25. The scores were bimodal with a score of 60 and 75, suggesting two groups of respondents. The second tail is positively skewed with scores in the high 70s.

Respondents' scores were largely skewed to the right with some outliers to the left at 45.



#### **IV. Limitations of Survey**

- A. **Sample Size & Composition:** A sample size of 54 is not representative of the Asian American population.
- B. **Hypothesis Testing:** In this paper's hypothesis testing, student t-distribution is used to calculate the t-score for the difference of two sample means with the assumption that the samples selected are normally distributed.
- C. **Random Sample:** As a result of a small sample, random errors are more likely to occur. Deviations will appear, affecting the survey result.
- D. **Distribution of survey:** The survey was distributed through Facebook and email. Many of the respondents are friends and friends of friends. Many of the respondents are from two concentrated areas of New York and Los Angeles. The sample is limited in geography.
- E. **"Happiness"** is a subjective emotion and may not be quantifiable. A measure of one person's happiness can easily change moment to moment in a day.
- F. **Independent Groups Assumption:** There is a highly likelihood that the preferences and affiliations of men and women are not independent of one another.

## V. Linear Regression

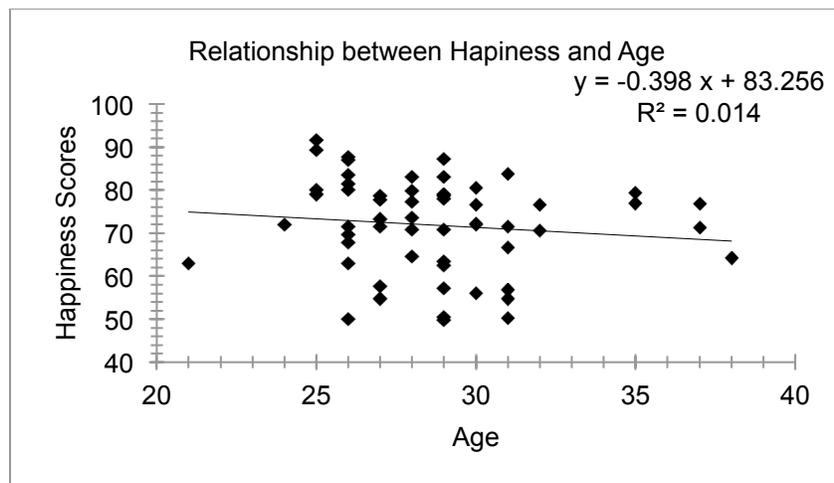
The question is whether there are relationships between happiness scores and age. From the data collected, linear regression is needed to consider a correlation between happiness and aging into one's 30s and happiness and increasing income.

### A. Assumptions

- o Linearity Assumption: The scatterplot is straight enough and the data is quantitative. The happiness scores (out of 100) and age are a quantitative variable.
- o Independence Assumption: The scatterplot appears to be randomized. Although, there are some residuals.
- o Equal Variance Assumption: There are some outliers in the scatterplot below and above the regression line.

### B. What the slope of the regression line means?

The slope of the line is -0.398. This means for every year one age, one's happiness score index will decrease by 0.398 points. To conceptualize this point, a 30 year that scores a 71 (above average) in their happiness score index, will only score 69.236 at age 35. And by age 50, one's happiness score would be 63.37.



**C. Whether the true population slope is statistically significantly different from zero?**

Is there a significant linear relationship between the independent variable, age, and the dependent variable, Happiness score? If there is a significant linear relationship between the two variables, the slope will not equal zero. The null and alternative hypotheses using beta,  $\beta_1$ , for the slope are:

$$H_0: \beta_1 = 0$$

$$H_a: \beta_1 \neq 0$$

$H_0$  (Null hypothesis) states that the slope is equal to zero, and the  $H_a$  (alternative hypothesis) states that the slope is not equal to zero and thus our two variables have a linear relationship.

To test  $H_0: \beta_1 = 0$ , we find

$$t_{n-2} = \frac{b_1 - 0}{SE(b_1)}$$

$t_{55} = (-0.3977 - 0) / 0.4455 = -0.893$ . The P-Value equals 0.3759.  $0.3759 > 0.05$ . As a result,  $H_0$  cannot be rejected, or failed to reject

The evidence does not suggest that there is a relationship between happiness scores and the age of respondents.

**D. MegaStat Results**

| Regression Analysis     |              |                         |           |                         |                     |           |          |
|-------------------------|--------------|-------------------------|-----------|-------------------------|---------------------|-----------|----------|
|                         | $r^2$        | 0.014                   | n         | 57                      |                     |           |          |
|                         | r            | -0.120                  | k         | 1                       |                     |           |          |
|                         | Std. Error   | 10.876                  | Dep. Var. | Y                       |                     |           |          |
| ANOVA table             |              |                         |           |                         |                     |           |          |
| Source                  | SS           | df                      | MS        | F                       | p-value             |           |          |
| Regression              | 94.2537      | 1                       | 94.2537   | 0.80                    | .3759               |           |          |
| Residual                | 6,505.2369   | 55                      | 118.2770  |                         |                     |           |          |
| Total                   | 6,599.4906   | 56                      |           |                         |                     |           |          |
| Regression output       |              |                         |           |                         |                     |           |          |
| variables               | coefficients | std. error              | t (df=55) | p-value                 | confidence interval |           |          |
|                         |              |                         |           |                         | 95% lower           | 95% upper |          |
| Intercept               | 83.2558      | 12.8677                 | 6.470     | 2.77E-08                | 57.4684             | 109.0432  |          |
| X1                      | -0.3977      | 0.4455                  | -0.893    | .3759                   | -1.2905             | 0.4951    |          |
| Predicted values for: Y |              |                         |           |                         |                     |           |          |
|                         |              | 95% Confidence Interval |           | 95% Prediction Interval |                     |           |          |
|                         | Age          | Predicted               | lower     | upper                   | lower               | upper     | Leverage |
|                         | 50           | 63.37099                | 44.13778  | 82.60421                | 34.30314            | 92.43885  | 0.779    |

## VI. Linear Analysis 2

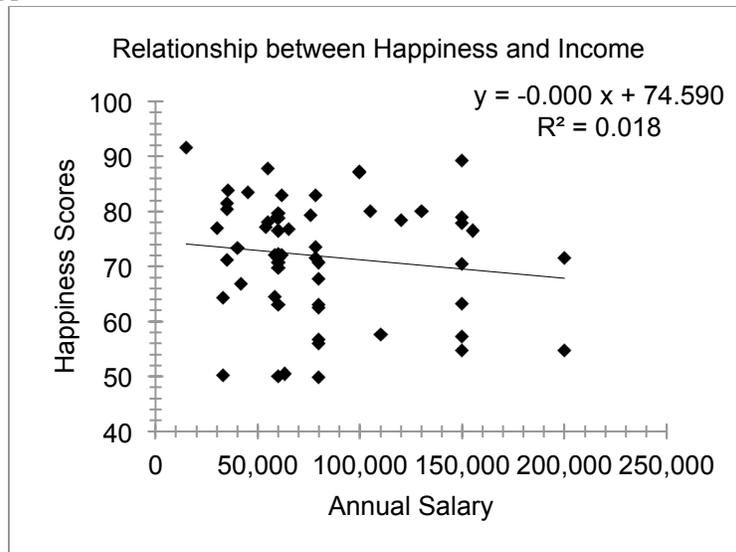
The second question is whether there are relationships between income and happiness scores. From the data collected, linear regression is needed to consider a correlation between happiness and aging into one's 30s and happiness and increasing income.

### A. Assumptions

- o Linearity Assumption: The scatterplot is straight enough and the data is quantitative. The happiness scores (out of 100) and age are quantitative variable.
- o Independence Assumption: The scatterplot appears to be randomized. Although, there are some residuals.
- o Equal Variance Assumption: There are some outliers in the scatterplot below and above the regression line.

### B. What the slope of the regression line means?

The slope of the line is -0.000. It does appear that it is not exactly 0 because the line is not absolutely straight. If the slope is zero, then there is no linear relationship between happiness scores and increasing salary, or annual salary. However, as stated, because the line is not straight, it is even more likely that the slope is a tiny decimal point that is close to zero. According to MegaStat, the actual slope is 0.00003369, this can be interpreted to mean that for every \$1 dollar of increased income, one would score 0.00003369 less points on the happiness test.



### C. Whether the true population slope is statistically equal to zero?

Is there a significant linear relationship between the independent variable, age, and the dependent variable, Happiness score? If there is a significant linear relationship between the two variables, the slope will not equal zero. The null and alternative hypotheses using beta,  $\beta_1$ , for the slope are:

$$H_0: \beta_1 = 0$$

$$H_a: \beta_1 \neq 0$$

$H_0$  (Null hypothesis) states that the slope is equal to zero, and the  $H_a$  (alternative hypothesis) states that the slope is not equal to zero and thus our two variables have a linear relationship.

To test  $H_0: \beta_1 = 0$ , we find

$$t_{n-2} = \frac{b_1 - 0}{SE(b_1)}$$

$t_{55} = (-0.0003369 - 0) / 0.0003324 = -1.014$ . The P-Value equals 0.3152  
 $0.3152 > 0.05$ . As a result, one fails to reject the  $H_0$ .

The evidence does not suggest that there is a relationship between happiness scores and income.

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### Regression Analysis

|            |        |           |    |
|------------|--------|-----------|----|
| $r^2$      | 0.018  | n         | 57 |
| r          | -0.135 | k         | 1  |
| Std. Error | 10.853 | Dep. Var. | Y  |

#### ANOVA table

| Source     | SS             | df | MS           | F    | p-value |
|------------|----------------|----|--------------|------|---------|
| Regression | 121.02519202   | 1  | 121.02519202 | 1.03 | .3152   |
| Residual   | 6,478.46542201 | 55 | 117.79028040 |      |         |
| Total      | 6,599.49061404 | 56 |              |      |         |

#### Regression output

| variables | coefficients | std. error | t (df=55) | p-value  | confidence interval |            |
|-----------|--------------|------------|-----------|----------|---------------------|------------|
|           |              |            |           |          | 95% lower           | 95% upper  |
| Intercept | 74.5897      | 3.0690     | 24.305    | 4.29E-31 | 68.4393             | 80.7400    |
| X1        | -0.00003369  | 0.00003324 | -1.014    | .3152    | -0.00010031         | 0.00003292 |

## VII. Comparing Means

Is there a difference among Asian American men and women's happiness. Individuals cannot escape societal gender differences and that can influence perceptions on one's self happiness. A hypothesis test was conducted to see whether happiness of men and women were the same.

### A. Assumptions

- o Counted Data Condition: The variables are categorical. Respondents were asked if they considered themselves spiritual and if they viewed spirituality as important.

- o Independence Assumption: This is likely to be independent. However, one cannot explicitly prove one way or the other that the happiness of men is independent of women (and vice-versa).
- o Randomization Condition: The survey was sent to friends and friends of friends through social media and email. The survey was not random.
- o Expected Cell Frequency Condition: This condition is met.

## B. Pooled t test

The two variables selected are one's happiness score and gender. Is there a difference in happiness among the sexes.

$$H_0: \mu_1 - \mu_2 = 0 \quad H_a: \mu_1 - \mu_2 > 0$$

In other words:

$H_0$ : Asian American male happiness scores are equaled that to of Asian American women

$H_a$ : Asian American male happiness scores are not equaled to Asian American women

Because our data testing for two means is with a small sample and without sigma, the t-distribution must be used to calculate the difference of two sample means. Here, the sample standard deviation must be used absent of the population standard deviation.

$$s_{\text{pooled}}^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{(n_1 - 1) + (n_2 - 1)}$$

Under the pooled variance, the result is 115.185. From here, standard error for the difference of means can be found.

$$SE_{\text{pooled}}(\bar{y}_1 - \bar{y}_2) = \sqrt{\frac{s_{\text{pooled}}^2}{n_1} + \frac{s_{\text{pooled}}^2}{n_2}} = s_{\text{pooled}} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

Standard Error is 2.84. Now you can solve for t-score.

$$t = \frac{(\bar{y}_1 - \bar{y}_2) - \Delta_0}{SE_{\text{pooled}}(\bar{y}_1 - \bar{y}_2)}$$

T score will equal the difference of sample means (-4.31) from hypothesized difference (0) divided by standard error (2.84). T score will equal -1.5148. The P-value of -1.5148 will become 0.1355. The P-Value (0.1355) will be tested against the level of significance (0.05). Here, 0.1355 is greater than 0.05. As a result,  $H_0$  cannot be rejected and it must be supported that the scores of males are equaled to that of women .

It is very likely that a Type II error has occurred. There is not enough evidence to accept the null hypothesis of claiming that Asian American males' scores are equaled to that of Asian American women. This test can only fail to reject the null hypothesis.

### C. MegaStat Results

| Data                      |            |
|---------------------------|------------|
| Hypothesized Difference   | 0          |
| Level of Significance     | 0.05       |
| Population 1 Sample       |            |
| Sample Size               | 30         |
| Sample Mean               | 69.7983333 |
| Sample Standard Deviation | 10.0679    |
| Population 2 Sample       |            |
| Sample Size               | 27         |
| Sample Mean               | 74.1111111 |
| Sample Standard Deviation | 11.4281    |

| Intermediate Calculations              |            |
|--|------------|
| Population 1 Sample Degrees of Freedom | 29         |
| Population 2 Sample Degrees of Freedom | 26         |
| Total Degrees of Freedom               | 55         |
| Pooled Variance                        | 115.1850   |
| Difference in Sample Means             | -4.3127778 |
| <i>t</i> Test Statistic                | -1.5148    |

| Two-Tail Test                     |         |
|-----------------------------------|---------|
| Lower Critical Value              | -2.0040 |
| Upper Critical Value              | 2.0040  |
| <i>p</i> -Value                   | 0.1355  |
| Do not reject the null hypothesis |         |

| Confidence Interval Estimate for the Difference Between Two Means |          |
|---|----------|
| Data  |          |
| Confidence Level  | 95%      |
| Intermediate Calculations   |          |
| Degrees of Freedom  | 55       |
| <i>t</i> Value  | 2.0040   |
| Interval Half Width   | 5.7056   |
| Confidence Interval   |          |
| Interval Lower Limit  | -10.0184 |
| Interval Upper Limit  | 1.3928   |

## VIII. Comparing Counts

Is there a difference among Asian American men and women in their affiliation with spirituality? A hypothesis test was conducted to see whether the spirituality affiliation of men and women were the same. A hypothesis test was not conducted for the question of “How important are your spiritual beliefs to the way you live your life?”

| How spiritual do you consider yourself to be? |            |          |          |            |      |
|---|------------|----------|----------|------------|------|
|   | Not at all | Not very | Somewhat | Moderately | Very |
| Male  | 4          | 8        | 9        | 5          | 1    |
| Female  | 7          | 6        | 5        | 11         | 1    |
| Totals  | 11         | 14       | 14       | 16         | 2    |

| How important are your spiritual beliefs to the way you live your life? |            |          |          |            |      |
|---|------------|----------|----------|------------|------|
|   | Not at all | Not very | Somewhat | Moderately | Very |
| Male  | 4          | 10       | 4        | 8          | 1    |
| Female  | 6          | 7        | 7        | 3          | 7    |
| Totals  | 10         | 17       | 11       | 11         | 8    |

### A. Assumptions

- o Counted Data Condition: The variables are categorical. Respondents were asked if they considered themselves spiritual and if they viewed spirituality as important.
- o Independence Assumption: This is likely to be independent. However, one cannot explicitly prove one way or the other that the happiness of men is independent of women (and vice-versa).
- o Randomization Condition: The survey was sent to friends and friends of friends through social media and email. The survey was not random.
- o Expected Cell Frequency Condition: This condition is met by combining some of the categories. Categories “Not very” and “Somewhat” were combined to one category as well as “Moderately” and “Very”.

### B. Chi-Square Goodness-of-Fit Test

$H_0$ : Asian American male consider themselves as spiritual as Asian American women

$H_a$ : Asian American male do not consider themselves as spiritual as Asian American women

In order to test the hypothesis test, the chi-square distribution must be used to test whether a frequency distribution fits the predicted distribution.

The degrees of freedom equals 2, where (Columns -1) \* (Rows -1) , (3-1) (2-1) = 2.

$$\chi^2 = \sum_{\text{all cells}} \frac{(\text{Obs} - \text{Exp})^2}{\text{Exp}}$$

The Chi-Squared Test can be applied by here and it is 4.1182. The P-Value of 4.1182 is 0.1276. Here, the P-Value must be tested against the level of significance.  $0.1276 > 0.05$ .

And as a result, one cannot fail to reject the null hypothesis. There is a likelihood of a type II error. Again, there samples are simply too small and not representative of the Asian American population.

### C. MegaStat Results

| Observed Frequencies                          |            |                   |                  |       | Calculations |         |    |
|---|------------|-------------------|------------------|-------|--------------|---------|----|
| How spiritual do you consider yourself to be? |            |                   |                  |       |              |         |    |
| Gender  | Not at all | Not Very/Somewhat | Moderate to Very | Total | fo - fe      |         |    |
| Male  | 4          | 17                | 6                | 27    | -0.7368      | 3.7368  | -3 |
| Female  | 6          | 11                | 13               | 30    | 0.7368       | -3.7368 | 3  |
| Total   | 10         | 28                | 19               | 57    |              |         |    |

| Expected Frequencies                          |            |                   |                  |       | (fo - fe)^2/fe |        |        |
|---|------------|-------------------|------------------|-------|----------------|--------|--------|
| How spiritual do you consider yourself to be? |            |                   |                  |       |                |        |        |
| Gender  | Not at all | Not Very/Somewhat | Moderate to Very | Total |                |        |        |
| Male  | 4.7368     | 13.2632           | 9                | 27    | 0.1146         | 1.0528 | 1.0000 |
| Female  | 5.2632     | 14.7368           | 10               | 30    | 0.1032         | 0.9476 | 0.9000 |
| Total   | 10         | 28                | 19               | 57    |                |        |        |

| Data   |        |
|--|--------|
| Level of Significance                        | 0.05   |
| Number of Rows                               | 2      |
| Number of Columns                            | 3      |
| Degrees of Freedom                           | 2      |
| Results                                      |        |
| Critical Value                               | 5.9915 |
| Chi-Square Test Statistic                    | 4.1182 |
| p-Value                                      | 0.1276 |
| Do not reject the null hypothesis            |        |
| <i>Expected frequency assumption is met.</i> |        |

## **IX. Conclusions**

Results of the initial Happiness Index survey were high. Mean score out of a 100 was 71.8 and median score was 72.25. The study did not compare its mean and median score with the Happiness Initiative's survey scores. Their national survey of 30,000 had a mean score of 66 out of 100.

This paper conducted a qualitative and quantitative analysis of the surveyed a specific group of Asian Americans. Educated and employed Asian Americans appear happy with little difference among men and women. Age and income did not appear statistically distinguishable with the happiness of Asian Americans.

There were many limitations associated with the survey. Specifically, the sample was not random and not representative of the Asian American population. A larger sample of the population is needed to have a better understanding of the happiness among Asian Americans.