Satisfaction with life and income: A Secondary Data Analysis Using the BRFSS 2010 Interview Survey

Abby Paden

National University

Community Health

ANA625

11/15/2016

**Objective**

The objective of this analysis was to investigate the association between satisfaction with life and income in a large, representative sample after controlling for gender, education level, and age.

**Introduction**

In 2012, the Marist Institute for Public Opinion performed a study on happiness (all facets of happiness) and income, concluding that the tipping point where Americans become happy related to annual income was $50,000 (Marist Institute of Public Opinion, 2012). Four years have passed in a second presidential term for Barack Obama, and as Americans are about to welcome a new president, the question arises: “Is $50,000 annual income still the point where happiness begins among American? If not, is it less, or is it more?” While the granularity for the Marist study was higher, focusing on several facets of happiness (e.g. family, neighborhood safety, and spiritual life), the Behavioral Risk Factor Surveillance System 2010 Survey (Centers for Disease Control and Prevention, 2010) centered around one question asked of responders: “*In general, how satisfied are you with your life*?”

The benefits of this study are a current analysis of the relationship between income and satisfaction with life, new results to compare with results from previous studies (that analysis is out of scope for this paper), and a snapshot of a large, representative sample categorized by age, college education, and gender by income that might provide insight into further, more in-depth studies about happiness and income. The objective of this study was to determine whether satisfaction with life was dependent on an individual’s annual income in a large, representative sample after adjusting for gender, education level, and age.

**Methods**

Data collected from the 2010 Behavioral Risk Factor Surveillance System indicated 261,026 respondents out of 451,075 who answered the question “*In general, how satisfied are you with your life?*” (Centers for Disease Control and Prevention, 2010). The model was built using five variables with the outcome variable *life satisfaction* (LSATISFY), the independent variable of interest *income* (\_INCOMG), and the rest of the independent variables *gender* (SEX), *age* (AGE),and *education level* (EDUCA). LSATISFY was categorized into two categories where the values 1 and 2 were considered satisfied and the values 3 and 4 considered *not* satisfied. The variable of interest \_INCOMG was categorized into two categories where values 1,2,3, and 4 were responders in the bracket < $50,000 annually and those who answered 5 were in the income bracket of > $50,000 annually. EDUCA was composed of two categories where the values 1,2,3, and 4 were those responders who had high school or less, and those who had attended some college or graduated college. SEX was categorized by males and females. Age was converted from a continuous variable to a categorical variable with three categories of responders between the ages of 18 and 35, responders between the ages of 36 and 50, and those between the ages of 51 and 60.

Univariate analyses (using PROC FREQ with CHISQ[chi-square method to test associations]), were used to examine unadjusted associations first of the independent variable of, smoking status, and demographic and military characteristics. Multivariable logistic regression models were used to compare the adjusted odds of the newly reported respiratory symptoms in relation to deployment status while simultaneously adjusting for gender, birth year, marital status, race/ethnicity, education, smoking status, service component, military pay grade, and occupational code. Because smoking may increase the risk for respiratory illness and certain service branches may experience different deployment-related respiratory exposures, two interaction terms were examined: deployment with smoking status and deployment with service branch. Collinearity was assessed using a variation inflation factor of greater than four to indicate a potential problem.34 Additional models were investigated to assess the association between the three outcomes with cumulative deployment length, while adjusting for the same covariates. Analyses among deployers were conducted to investigate deployment location as assessed by the Millennium Cohort survey. Adjusted odds ratios and 95% confidence intervals were calculated. All analyses were performed using SAS University software, version **9.04.01** (SAS Institute, Inc., Cary, North Carolina).

Life satisfaction is the outcome variable, where income is the variable of interest and education level, age, and gender are independent variables.

For Table 1, a univariate analysis was performed using the Pearson Chi-Square method which created 2x2 tables for *income by college education*, *income by age*, and *income by gender* where income is the exposure variable. The chi-square test was performed to determine statistical significance between the exposure variable and each of the independent variables in the model. Data from the BRFSS (Centers for Disease Control and Prevention, 2010) were used to perform a cross-sectional, secondary analysis on a population of 261,026 BRFSS 2010 respondents. Univariate analyses (using the Pearson Chi-Square test for independence) were also performed as well as a multivariable logistic regression to determine the odds of association between life satisfaction and income independent of gender, or education level, and age.

TABLE 1. Characteristics of 261,026 BRFSS 2010 Study Respondents between 18 and 65 years of age by Income.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Population  *n*(%) | | | Income < 50,000 Annually  *n*(%)  (n=129,603) | | Income > 50,000 Annually  *n*(%)  (n=131,423) | | *p* value\* |
|  |  |  |  | |  |  |  |  |
| Age in Years |  |  |  | |  |  |  | <.0001 |
| 18-35 | 39,164 | 15.0 | 22,679 | | 17.5 | 16,485 | 12.5 |  |
| 36-50 | 85,981 | 32.9 | 37,221 | | 28.7 | 48,760 | 37.1 |  |
| 51-65 | 135,881 | 52.1 | 69,703 | | 53.8 | 66,178 | 50.4 |  |
| Gender |  |  |  | |  |  |  | <.0001 |
| Male | 102,958 | 39.4 | 46,954 | | 36.2 | 56,004 | 42.6 |  |
| Female | 158,068 | 60.6 | 82,649 | | 63.8 | 75,419 | 57.4 |  |
| Education level |  |  |  | |  |  |  | <.0001 |
| Did not graduate college | 87,346 | 33.5 | 64,048 | | 49.4 | 23,298 | 17.7 |  |
| Graduated college | 173,680 | 66.5 | 65,555 | | 50.6 | 108,125 | 82.3 |  |

\* *p-*values based on Pearson chi-square test of association.

Table 2 describes the univariate statistics of age, gender, income, and college education by life satisfaction.

TABLE 2. Characteristics of 261,026 BRFSS 2010 Study Respondents between 18 and 65 years of age by satisfaction with life.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Population  *n*(%) | | | Satisfied with Life  *n*(%)  (n=244,738) | | Not Satisfied with Life  *n*(%)  (n=16,288) | | *p* value\* |
|  |  |  |  | |  |  |  |  |
| Age in Years |  |  |  | |  |  |  | <.0001 |
| 18-35 | 39,164 | 15.0 | 37,157 | | 15.2 | 2,007 | 12.3 |  |
| 36-50 | 85,981 | 32.9 | 80,805 | | 33.0 | 5,176 | 31.8 |  |
| 51-65 | 135,881 | 52.1 | 126,776 | | 51.8 | 9,105 | 55.9 |  |
| Gender |  |  |  | |  |  |  | <.0001 |
| Male | 102,958 | 40.3 | 96,679 | | 39.5 | 6,279 | 38.6 |  |
| Female | 158,068 | 59.8 | 148,059 | | 60.5 | 10,009 | 61.5 |  |
| Education level |  |  |  | |  |  |  | <.0001 |
| Did not graduate college | 87,346 | 33.5 | 79,965 | | 32.7 | 7,381 | 45.3 |  |
| Graduated college | 173,680 | 66.5 | 164,773 | | 67.3 | 8,907 | 54.7 |  |
| Income (annually) |  |  |  | |  |  |  | <.0001 |
| < $50,000 | 129,603 | 49.7 | 116,283 | | 47.5 | 13,320 | 81.8 |  |
| > $50,000 | 131,423 | 50.3 | 128,455 | | 52.5 | 2,968 | 18.2 |  |

\* *p-*values based on Pearson chi-square test of association.

Table 3 describes the logistic regression analysis comparing the odds of life satisfaction by income and other characteristics.

TABLE 3. Logistic Regression Analysis comparing the Adjusted Odds of Life Satisfaction Among 216,026 Behavioral Risk Factor Surveillance Study Participants by Income and Additional Characteristics, 2010.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Satisfied w/Life  *n*(%)  (*N*=244,738) | | Not Satisfied w/Life  *n*(%)  (*N* =16,288) | | AOR\* | 95% CI† | p-value‡ | |
|  |  |  |  |  |  |  | |  | |
| Age in Years |  |  |  |  |  |  | | <0.0001 | |
| 18-35 | 37,157 (15.2) 2,007 (12.3) | | | | 1.00 | -- | |  | |
| 36-50 | 80,805 (33.0) 5,176 (31.8) | | | | 1.46 | 1.387 – 1.544 | |  | |
| 50-65 | 126,776 (51.8) 9,105 (55.9) | | | | 1.47 | 1.399 – 1.547 | |  | |
| Gender |  |  |  |  |  |  | | <0.0001 | |
| Male | 96,679 (39.5) 6,279 (38.6) | | | | 1.00 | -- | |  | |
| Female | 148,059 (60.5) 10,009 (61.5) | | | | 0.95 | 0.920 – 0.984 | |  | |
| Education Level |  |  |  |  |  |  | | <0.0001 | |
| Did not graduate college | 79,965 (32.7) 7,381 (45.3) | | | | 1.00 | -- | |  | |
| Graduated college | 164,773 (67.3) 8,907 (54.7) | | | | 1.08 | 1.044 – 1.117 | |  | |
| Income (annually) |  |  |  |  |  | <0.0001 | | | |
| < $50,000 | 116,283 ( | (47.5) | 13,320 | (81.8) | 1.00 | -- | | | |
| > $50,000 | 128,455 | (52.5) | 2,968 | (18.2) | 0.20 | 0.194 – 0.211 | | | |

\* Odds ratios are adjusted for all other variables in the table.  
† 95% confidence intervals are for reported odds ratios.  
‡ p-value based on the Wald chi-square test statistic.

**Results**

Data collected from the 2010 Behavioral Risk Factor Surveillance System indicated 261,026 respondents who answered the question “*In general, how satisfied are you with your life?*” (Centers for Disease Control and Prevention, 2010). Females represented 60.6% of the total population while males were at 39.4%. The study population, which accounted for 58% of the total number of BRFSS responders (451,075), were divided into two categories with 49.7% of responders reporting making less than $50,000 annually and 50.3% making more than $50,000 annually. The source of the data was the 2010 Behavioral Risk Factor Surveillance System study. Conducted every year, this study is performed using land-line and cell phone data nationally. Data collected in the study focus on adults between the ages of 18 and 99, asking various questions about current or recently past behaviors and demographical information such as age, location, and race. For this study, age, education level, gender, income, and life satisfaction were used on adults between the ages of 18 and 99. The formula for the final model is shown below.

**Strengths and Limitations**

**Conclusion**

# References

Centers for Disease Control and Prevention. (2010). *Behavioral Risk Factor Surveillance System.* Retrieved from Centers for Disease Control and Prevention: http://www.cdc.gov/brfss/

Marist Institute of Public Opinion. (2012, April 13). *Generation to Generation: Money Matters.* Retrieved from maristpoll.marist.edu: http://maristpoll.marist.edu/wp-content/misc/Home%20instead/Money%20Matters\_April%202012\_FINAL.pdf