# Do interactions with people from other ethnical backgrounds make people happier in the urban environment?

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## Introduction

The pursuit of a higher degree of happiness has been one of the most important goals in life for most people (Diener and Oishi, 2000). Surveys have revealed that people think about happiness more than once a day in North America (Freedman, 1978). As such, subjective happiness has been extensively investigated in various fields. Beck Depression Inventory (BDI) investigated the personal happiness level in an effort to diagnose maniac and depressive states of mind (Beck, Ward, Mendelson, Hock, and Erbaugh, 1961). In addition, moral philosophers have been attempting to understand and measure the individual happiness (Griffin, 1986). Furthermore, perceived happiness level is often taken into account in the field of economics with the aim of gaining insight into the consumer's value in the society (Frey, 2008). Similarly, happiness has gradually been considered in the context of urban development, with policy makers employing the level of subjective happiness of the citizens in the society as a measurement of its successful planning (Leyden, Goldberg, and Michelbach, 2011). It is important to investigate the factors that affect the happiness level of urban residents as they are "exposed to a relentless succession of stressful events" (Guerra, Huesmann, Tolan, Van Acker, and Eron, 1995). While sizeable literature focuses on the environmental factors such as green spaces (Van den Berg, Maas, Verheij, and Groenewegen, 2010), this paper investigates the effect of the interaction with other people, especially , people from other ethnic backgrounds, on the perceived happiness level. Due to the data source used, the targeted research area is in the US.

### ***Human interaction and happiness***

The feeling of connection between other people and engagement in a community plays a great role in enhancing happiness. Study has proved that the interaction with friends, spouses and parents have a positive impact on the level of perceived happiness (Glaeser, Laibson, Scheinkman, and Soutter, 2000). In addition, Kasser and Ryan (1996) demonstrated that happiness is increased when one is working to contribute to her community. In this sense, as the urban life is the most time about 'being together of strangers' (Young, 1990), it can be more difficult for people in the city to achieve a higher degree of happiness than those who reside in suburbs or farms. Extensive study in urban sociology argues that urban residents tend to suffer more from social isolation (Lewis, 1952;

Donaldson, 1969). As approximately 60% of the population is expected to live in the urbanised area by 2030 (Sadik 1999), the support and maintenance of happiness level of urban residents are arguably one of the most important problems policy makers need to address. Despite a sizeable literature that has investigated the relationship between human interaction and happiness, understanding of the long term effect of the human interaction on the subjective happiness is still inadequate. This paper aims to add the discussion by investigating the effect of the living environment in one's adolescence and the subsequent perceived happiness level with the specific focus on the interaction with the people from other ethnical backgrounds. In section one, the dataset for quantitative analysis is introduced. Section two introduces ordered logit model as a quantitative method to investigate the effect of human interaction on perceived happiness level. Next, results are presented in section three. Finally, the interpretation of the result is drawn out as conclusions, and the possible policy advice to enhance the happiness level of urban residents are provided in section four.

## 1. Dataset

The dataset is obtained from General Social Survey (GSS), which is conducted by National Opinion Research Centre in the U.S. annually to investigate the trends of American society. Extensive range of aspects of life has been investigated, with 5867 questions, although not all the questions are asked every year. In this paper, 47434 respondents from 1972 to 2016 are chosen to be investigated. In measuring the happiness level of respondents, the questionnaire does not define what the happiness is. Instead, GSS asked "Taken all together, how would you say things are these days? Would you say that you are very happy, pretty happy, or not too happy?" (GSS website). This approach is suitable to measure the happiness level as a daily feeling is more strongly correlated with the level of subjective happiness than the objective circumstances (Lyubomirsky and Ross 1999), and happiness is something, "the meaning of which everybody knows but the definition of which nobody can give" (Freedman,1978). To measure the relationship between the level of perceived happiness of citizens and the interaction with other people, following questions are selected as explanatory variables, as shown in table 1.

To measure the familiarity with the neighbourhood, the existence of different racial neighbours are employed. The question that examines if the respondents are born in the current residential country is selected as a variable to explain the familiarity with the current residential area. To measure the long-term effect of living environment in the perceived happiness level, the type of place the responders grew up at 16 years old is selected as an explanatory variable. Places are categorised based on the population in the area. With regards to the individual attributes, sex and race are selected

## 2. Methodology

The subjective happiness level has long been attempted to been investigated quantitatively (Kasarda and Janowitz 1974; Onibokun, 1976). Due to the mathematical simplicity, the most popular method has been multi-linear regression, with the personal happiness being the dependent variable.

| Question | Answers |
|---|---|
| Taken all together, how would you say things are these days? Would you say that you are very happy, pretty happy, or not too happy? | ・Not too happy (5942)<br>・Pretty happy (26776)<br>・Very happy (14716) |
| Are there any ("whites" for black respondents, "blacks" for non-black respondents) living in this neighbourhood now ? | ・Yes (29449)<br>・No (17985) |
| Were you born in this country? | ・Yes (43192)<br>・No (4242) |
| Which of the categories on this card comes closest to the type of place you were living in when you were 16 years old? | ・Country (5942)<br>・Farm (6883)<br>・Town less than 50000 (15187)<br>・50000 to 250000 (5942)<br>・Big-city suburb (5477)<br>・City greater than 250000 (7213) |
| What is your sex? | ・Male (20908)<br>・Female (26526) |
| What race do you consider yourself? | ・White (37981)<br>・Black (6714)<br>・Other (2739) |

Table 1: Explanatory variables

However, as Mckelvey and Zavoina (1975) pointed out, multi linear regression is not suitable for modelling ordinal variables such as personal happiness.

Multi linear regression likely to fail to model the non-linearity of the dependent variable: the happiness level = 3 does not necessarily mean that she is three times happier than ones with the happiness level = 1. The appropriate method to model the ordered variable is ordered logit model, which avoids to apply such arbitrary chosen values to dependent categorical variables. Lu (2002) compared multi linear regression and ordered logit model to model the residential satisfaction with the aim to demonstrate the problem of using the former. Therefore, in this study, ordered logit model is employed to model the perceived happiness level based on the explanatory variables introduced in the previous section.

***Ordered logit model***

In the ordered logit model, the categorical dependent variable $\delta$ is obtained from the latent continuous variable $Y$ that satisfies linear regression model $Y = \sum_k \theta_k x_k + \varepsilon$ , given explanatory variable $x$, its coefficient $\theta$ and the error term $\varepsilon$. Thereafter, the categories $\delta = j$ are determined based on the categories boundaries $u$ in $Y$.

$\delta = 1$ (Not too happy) if $-\infty \leq Y \leq u_1$

$\delta = 2$ (Pretty happy) if $u_1 \leq Y \leq u_2$

$\delta = 3$ (Very happy) if $u_2 \leq Y \leq \infty$

The categorical dependent variable $\delta$ is commonly analysed with proportional odds model, where a cumulative logit is defined as following.

$$log(\frac{P(\delta \leq j)}{P(\delta > j)}) = u_j - \theta x \quad \text{(a)}$$

, where $P(\delta \leq j)$ denotes the probability of having the level of happiness $j$ at most, and $P(\delta > j)$ is the probability of having the level of happiness $j$ at least. Therefore, the probability of being at each subjective happiness level is denoted as;

$$P(\delta = 1) = 1 - \frac{1}{exp(u_1 - \theta x)}$$

$$P(\delta = 2) = \frac{1}{1 + exp(u_1 - \theta x)} - \frac{1}{1 + exp(u_2 - \theta x)}$$

$$P(\delta = 3) = \frac{1}{1 + exp(u_2 - \theta x)}$$

The cumulative model for ordered logit (a) is implemented with “polr” package on R (R-documentation, 2018).

***Stepwise procedure***

The predictor variables in the model are selected through stepwise procedure (PSECS, 2018) with the use of “stepAIC” function (R-documentation, 2018). With the stepwise procedure, the set of the predictor variables from the five category of variables (existence of the opposite racial neighbour, born in the country, place where grown up, sex, race) are selected so that the value of the AIC is minimised. Specifically, the “direction” argument of the “stepAIC” function is set to “both” so that the AIC improvement is evaluated through dropping and adding the predictor variable at each step.

## 3. Results

| Variable category | Variable | Value | P value |
|---|---|---|---|
| Opposite race in the neighbourhood | Opp_race_yes | -0.16 | 1.45E-17 |
| Born in the country | Born_yes | 0.12 | 5.16E-04 |
| Place where grown up | Country | -0.03 | 3.35E-01 |
| | Farm | 0.11 | 4.98E-04 |
| | Town | -0.03 | 1.72E-01 |
| | Big_city_suburb | 0.03 | 3.82E-01 |
| | City | -0.09 | 5.53E-03 |
| Sex | Male | -0.03 | 4.20E-02 |
| Race | White | 0.53 | 1.26E-87 |
| | Other | 0.39 | 8.08E-17 |

Table 2: Summary of the predictor variables

| Boundaries | Value | P value |
|---|---|---|
| $u_1$ | -1.52 | 8.64E-206 |
| $u_2$ | 1.24 | 3.90E-140 |

Table 3: Summary of the boundary in the ordered logit model

Interestingly enough, all the predictor variables are selected through stepwise procedure. It is important to note that while all five types of the variables are evaluated as significant in explaining the happiness levels of the subjects, some individual variable is not significantly correlated with the happiness level. For instance, the variable that indicates the place where subjects are grown up are evaluated as the contributor to decrease AIC, individual variable such as "Big_city_suburb", "Country" and "Town" are not significantly correlated to the level of the happiness.

Based on the result, the level of the happiness of the chosen respondents is modelled as following:

$$Not\ too\ happy:$$

$$P(\delta = 1) = 1 - \frac{1}{exp(-1.52 - \theta x)}$$

$$Pretty\ happy:$$

$$P(\delta = 2) = \frac{1}{1 + exp(-1.52 - \theta x)} - \frac{1}{1 + exp(1.24 - \theta x)}$$

$$Very\ happy:$$

$$P(\delta = 3) = \frac{1}{1 + exp(1.24 - \theta x)}$$

, where $\theta x$ is described as;

$$\theta x = -0.16x_{opp-race} + 0.12x_{born} - 0.09x_{city} + 0.11x_{farm} - 0.03x_{male} + 0.53x_{white} + 0.39x_{other}$$

The result suggests that residing with racially different neighbours have a negative effect on perceived happiness level of the citizens. For one unit increase in the variable Opp_race, 0.16 decrease in the expected value of happiness level in the log odds scale are expected. It also shows that if the respondents are currently living where they are born, the subjective happiness level is enhanced. This perhaps illustrates the difficulty of adaptation to the local cultures, languages and communities. Among the variables explaining the type of environment where respondents grew up, City and Farm showed a significant effect on happiness. While growing up in the farm shows positive correlations to the happiness of the respondent in their later life, spending their adolescence in the urban environments has a negative effect. While there is no clear causal explanation, one likely explanation for this is that one who needed to encounter and interact with a number of unfamiliar people in their adolescence tend to fail to feel robust relationships, or "social glue" (Spencer and Pahl, 2006) with their friends or boyfriend. With regards to the personal attributes, the results are also consistent with the preceding studies (Lu, 2002). The gender effect is significant in affecting happiness level of the respondent, with females more likely to express higher levels of happiness. In addition, the result suggests that white people tend to feel happier than people of other ethnic backgrounds.

***Limitation to the model***

The effect of the type of the living environment in the young age on the happiness level is not conclusive, as most people stay where you were born; according to American community survey in 2010, more than 70 percent of people in the Middle West of United States were born in their state of residence. As such, the result may simply have illustrated the effect of current living environment on the happiness level. The dataset of the current residential area of the correspondent respondents can improve our model, enabling us to model more precisely the long-term effect of the place in her adolescence on the happiness level.

## 4. Discussion and Conclusion

Along with economic activities, happiness level of citizens is an important indicator to measure the performance of the city. The results of the quantitative analysis suggest that having the different racial neighbourhood, and spending its adolescence in the large city has a negative effect on the level of happiness one can feel. These findings are generally in line with the previous research, where people are known to feel uncomfortable when encountering different and unknown people (Allport, 1954). As Hall and Jefferson (1993) has pointed out, 'the capacity to live with difference is, in my view, the coming

question of the 21st century', and it is necessary for urban planners to address this problem. The possible solution is to organise events or activities to crate spaces where urban residents can interact with neighbours or people who have similar interests; it has been attempted, for example in London, at "Talk to me London day 2014" (Talktome, 2014). An intimate relationship with people "appears increasingly important in our urbanising, mobile and interconnected world" (Bunnell, Yea, Peake, Skelton, and Smith, 2012) as it keeps cities "resilient" (Thrift, 2005).

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