

Are household members in Türkiye happy or not?: The generalized ordered logit model

Bensu Timur Erden 

PhD Student, Istanbul University, Social Sciences Institute, Türkiye, e-mail: bensutimurr@gmail.com

Abstract

The goal of individuals is to achieve happiness and live a happy life in general. However, there are many economic and socio-demographic factors that affect their happiness. This paper examines the happiness of household members from the perspective of socio-demographic and economic factors via 2009 and 2015 Turkish Statistical Institute's (TURKSTAT) Life Satisfaction Survey data. The econometric method employed is the generalized ordered logit model. The findings suggest that economic factors have a significant impact on individuals' happiness. For household members, while getting a job, owning a car, and saving money increase the happiness of individuals, being in debt, being married or single, and paying debts decrease happiness. These results are aimed to contribute to policy makers' practices in order to increase the happiness of individuals in the country.

Keywords: Happiness Economics, Economics, Household, Life Satisfaction, Generalized Ordered Logit Model,

JEL Codes: I31, G51, D63, D1

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Corresponding Author:

Bensu Timur Erden
E-mail: bensutimurr@gmail.com



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1. INTRODUCTION

The economics of happiness has entered the field of interest of economists in recent years. While psychologists in the literature examine the economics of happiness using well-being surveys, various new methods are developed by economists to this field. Economists have examined the concept of happiness by relating it to income in their studies. This situation might cause individuals to miss the basic elements that ensure their happiness. Individuals may prefer a personally rewarding but low-paying job over a well-paid job in the classical Walrasian sense. (Graham 2005: 41-42).

The concept of utility has entered the economic literature as a concept close to happiness. Although the two concepts are separated from each other, in recent years, the concept of benefit has begun to be included in happiness studies (Lane 2017: 62). Happiness economics is based on the concepts of utility and welfare, which also include the utility functions of factors that are effective in determining economic behavior. Richard Easterlin, who first examined the concept of happiness economy in 1974, defined the interaction between income and happiness with the Easterlin Paradox in his study titled "Does Economic Growth Improve Human Fortune? Some Empirical Evidence". Easterlin examined the interaction between happiness and income in three ways: differences between countries' happiness levels and gross domestic product; differences between income groups and happiness levels; and differences between income and happiness within countries in different time periods (Easterlin 1974: 100-111). Determining the economic and social factors that affect the happiness of individuals and measuring the direction of influence and economic values of these factors are also considered within the concept of happiness economics.

According to Perio (2006), research conducted in economics does not have sufficient knowledge of the concept of happiness and has not been given as much importance. As happiness begins to be measurable, over time happiness researchers have become interested in this subject. Nevertheless, there are different opinions about the methods used in measurement and this issue might lead to controversy. Especially in economic science, the fact that objective measurement methods are at the forefront has caused the findings to be obtained from these methods to be questioned (Veenhoven and Dumludağ 2015: 206). Laboratory experiments and field studies are the preferred methods to measure happiness. Additionally, phone software has been developed to facilitate happiness data analysis (Rutledge et.al. 2014: 12252). In Easterlin's paper, the happiness question is "In general, how happy would you say you are? Very happy, fairly happy, not very happy" (Easterlin 1974: 89-125). The happiness data of the countries are collected from General Social Studies (General Social Survey, GSS), Eurobarometer Survey (Eurobarometer Survey), and Russian Panel Observation Study (The Russian Longitudinal Monitoring Survey) and the happiness levels of countries are measured. In surveys, to measure the happiness levels of countries, individuals are asked a question scored from 1 to 4 or 1 to 10 about their happiness in life. A score from 1 to 10 is generally used, with 1 being very dissatisfied and 10 being very satisfied (Veenhoven and Dumludağ 2015: 206).

The aim of this paper is to examine the economic and socio-demographic factors affecting the happiness of Turkish households using the Life Satisfaction Survey data from 2009 and 2015. While examining these factors in this study, Life Satisfaction Surveys from 2009 and 2015 were used, and both years were combined and included in the model as a year variable. Recent years were not included in the analysis because the economic difficulties experienced in Türkiye, especially in 2015 and after, affected every individual greatly, the concept of happiness was mostly linked to the economic situation, and the importance of other factors decreased. In studies conducted with cross-sectional data, the causal relationship between variables might only provide information about that period and not about the general situation. Therefore, two different years were considered, and the causal relationships between the variables were compared. Happiness level was categorized as the dependent variable, and independent variables were categorized as socio-demographic and economic. The happiness economics literature was examined, and it was seen that in some of the studies, the ordered logit model was generally used, but the parallel regression assumption was violated. In this study, estimation is proceeded with the generalized ordered logit model, which does not require the parallel regression assumption. This model is more advantageous such that it provides detailed information about each category of the dependent variable and is a less restricted model compared to the ordered logit model (Akay and Timur 2017). Due to these advantages, it is expected that the use of this model in happiness studies would become widespread.

The first part of the article provides an introduction. The literature on happiness economics studies is mentioned in Section 2. Section 3 gives information about the data and the generalized ordered logit model. The findings and conclusion are reported in Sections 4 and 5, respectively.

2. LITERATURE

The concepts of life satisfaction and happiness have been examined by social scientists since the 1940s through survey studies, the most common of which are the “General Social Survey” in the USA and the “Euro-barometer” survey in the European Union.

The Easterlin paradox by Richard Easterlin, who introduced the concept of happiness to literature, suggested that governments should focus on gross happiness products. Because after the point where basic needs are met, governments’ focus on gross domestic product would not increase the happiness of individuals. Following Easterlin’s study, many studies have been conducted in the literature on the economics of happiness. The previous literature examining happiness economics is summarized in Table 1.

Table 1. Happiness Economics Literature

Authors	Data	Results
Easterlin (1974)	AIPO (American Institute of Public Opinion) 1946-1970. 19 Countries from Asia, Africa and Latin America (England, USA, India, Dominican Republic, Thailand, Japan, Philippines, Malaysia, France, Italy, Cuba, Egypt, Israel, Yugoslavia, Panama, Nigeria, Brazil, Poland, West Germany)	Income increases do not affect happiness after a specific point.
Veenhoven (1994)	India, Greece, Belarus, Portugal, South Korea, Italy, Philippines, Hungary, Spain, Japan, West Germany, Switzerland, South Africa, Luxembourg, Singapore Brazil, France, Finland, Norway, USA, Belgium, Sweden, Netherlands, Denmark, N. (South), England, Australia, Canada, Ireland, Iceland, Mexico	Increasing income does not increase happiness at the same rate.
Winkelmann and Winkelmann (1998)	GSOEP (German Socio-Economic Panel Study) Germany data from 1984-1989	Unemployment negatively affects life satisfaction.
Carbonell (2005)	GSOEP Germany Data	Increasing income does not increase the happiness of the rich. Low incomes of poor people cause unhappiness.
Boes and Winkelmann (2006)	GSOEP Germany Data from 1992 and 1997	Happiness buys money.
Peiro (2006)	World Values Survey (1995-1996)	Single (-), Married (+), Age (+), Income (+), Unemployment (-)

Şeker (2009)	Life Satisfaction Survey Türkiye data from 2003-2007	TURKSTAT's Life Satisfaction Survey data is presented with explanations, and it is stated in the study that there is insufficient research on happiness.
Bülbül ve Giray (2012)	Life Satisfaction Survey Türkiye data 2008	There is a stronger relationship between married people's private life satisfaction and work life. Income (+), Education (+)
Atay (2012)	World Values Survey (1994-1999) Türkiye (1996), Bulgaria (1997), Czech Republic (1998), Hungary (1998), Poland (1997), Romania (1998), Slovakia (1998), Slovenia (1995).	Age (-), Woman (+), Economic Freedom Index (+), Religious (+), Married (+), Unemployment (-), Urban (+), Education (+), HDI (+)
Caner (2014)	Life Satisfaction Survey Türkiye data from 2003-2011	In years of crisis, earning a high absolute income is more important for happiness. Being Unemployed (-), Male (-), Age (u)
Dumludağ et al. (2015)	Life Satisfaction Survey Türkiye data 2011	Increased income increases happiness. Education level has no significant effect on happiness. Age (u), Rural (+), Marriage (+)
Eren ve Aşıcı (2015)	Life Satisfaction Survey Türkiye data from 2004-2013	The rating of hope is the strongest determinant of happiness. Female (+), Education (?), Hope Level (+), Health (+), Income Ranking (+), Age (u)
Akay ve Timur (2017)	Life Satisfaction Survey Türkiye data from 2009 and 2015	The factors of well-being were examined separately for men and women, and as a result, it was revealed that economic well-being and meeting basic problems were important factors in happiness.

Note: (-) opposite direction relationship. (+) same direction relationship u) Happiness first decreases, then remains unchanged for a while, then increases. (?) a meaningless relationship.

3. DATA and METHODOLOGY

This section provides information concerning the data and econometric methodology employed in the study.

3.1. Data and Variables

In the happiness economics studies, many factors other than income affect happiness, such as the individual's quality of life, status, age, goals, hopes, expectations, and living standards (Eren ve Aşıcı 2015:8; Caner 2014:1331). While examining these factors in this study, Life Satisfaction Surveys from 2009 and 2015 were used, and both years were combined and included in the model as a year variable. The Life Satisfaction Survey is TURKSTAT's first survey with subjective elements and social content. In the research, individuals' expectations, happiness, satisfaction with living conditions, and satisfaction with public services related to basic living areas have been measured. In the study, in which TURKSTAT's Life Satisfaction Surveys from 2009 and 2015 were used, economic factors such as individuals' income, indebtedness, car ownership and employment opportunities as well as gender, age, education and marital status were examined. In the 2009 and 2015 Life Satisfaction Surveys, individual happiness levels were evaluated as follows: "How happy are you when you think of your life as a whole?" The question was answered by ticking one of the options given on a 5-point Likert scale (very unhappy, unhappy, fairly happy, happy, and very happy). The variables found to be significant in the estimated models and their definitions are given in Table 2.

Marital status, education and income group variables are created by the author. Education level options are as follows: 0. Did not finish a school, 1. Primary school, 2. Secondary school, 3. Vocational or technical secondary school, 4. High school, 5. Vocational or technical high schools, 6. Colleges, 7. Faculty 8. Master's/PhD (including 5 or 6-year faculties). However, it was used in the study by creating it as follows: 1. Primary school (Primary school-Secondary school-Vocational or technical secondary school) 2. High school (High school-Vocational or technical high schools), 3. Bachelor degree (Colleges-Faculty), 4. Postgraduate (Master's-PhD). Marital status options are as follows in the Life Satisfaction Survey; 1. Single 2. Married 3. Divorced 4. Spouse died 5. Separated. However, it is used in the study by creating it as follows: 1. Single, 2. Married, 3. Divorced - Spouse died -Separated. In the Life Satisfaction Survey, the options for the income group variable are created as very low, low, middle, and high income groups according to the hunger line, poverty line, and high income line. According to the data obtained from TURKSTAT, hunger and poverty limits are as follows: Hunger line is 287 TL and 1329 TL for 2009 and 2015 respectively. Poverty line is 825 TL and 4329 TL for 2009 and 2015 respectively. High-income limit is 2440 TL and 10100 TL for 2009 and 2015 respectively. According to the data obtained from the TURKSTAT, the high-income limit was calculated as 8.5 times the poverty line in 2009 and 7.6 times the poverty line in 2015 (Kolukısa, Sağbaş 2020: 212). Accordingly, income group options have been created for very low, low, middle, and high-income groups¹. In addition, interaction terms related to education level, employment, or marriage variables are examined but not included in the study as they are not statistically significant.

Table 2. Variables and Descriptions

Variables	Descriptions	
Happiness	How happy are you when you think of your life as a whole? 1. Very Happy 2. Happy 3. Fairly Happy 4. Unhappy 5. Very Unhappy	
Year	1. 2015 0. 2009	
Age	Individual's age (18 years+)	
Gender	1. Male 0. Female	
Marital Status	What is your marital status? 1. Single 2. Married 3. Divorced - Spouse died - Separated	
Education Level	What level of education did you last complete? 1. Primary school 2. High school 3. Bachelor degree 4. Postgraduate	
Saving money	I started saving last year. 1. Yes 0. No	
Owning a car	I bought a car last year. 1. Yes 0. No	
Get a job	I got a job last year (for job seekers) 1. Yes 0. No	
Borrowing	I got into a debt last year. 1. Yes 0. No	
Servicing Debt	I paid off my debts last year. 1. Yes 0. No	
Income Group	2009	2015
	1.0-630 TL (Very low-income group) 2.631-990 TL (Low-income group) 3.991-2 750 TL (Middle income Group) 4.2 751-3 851+ TL (High-income Group)	1. 0-1 264 TL (Very low-income group) 2. 1 265-2 540 (Low-income group) 3. 2 541 – 3 721 TL (Middle income Group) 4. 3 722+ TL (High-income Group)

3.2. Generalized Ordered Logit Model

Ordered qualitative choice models are employed when the dependent variable has an ordinal structure with two or more categories. The ordered logit model is one of the most used ordered qualitative preference models. However, it has been seen in the literature that the parallel regression assumption of this model could be violated (Long 1997:116-118; Borooah 2002: 7-8).

This assumption assumes that the regression functions for different options are parallel to the logit scale. To examine the validity of the assumption, Wald Test (Brant, 1990) is used. The parallel regression assumption, which explains that the relationship between the independent variables and the dependent variable does not change according to the categories of the dependent variable, is important for the reliability of the results obtained from ordered logit models. If the assumption does not hold, then the alternative models should be utilized (Amemiya 1985: 293).

The generalized ordered logit model is a less restrictive model that does not require the parallel regression assumption (Williams 2006a: 1). This model is used as an alternative to the ordered logit model. The generalized ordered logit model estimates a set of coefficients and a constant for each of $m-1$ points at which the dependent variable Y , which takes the values $0, 1, 2, \dots, m$, can be divided into two. These sets of β_k coefficients correspond to a set of cumulative distribution functions. For the probability of any category (m) in the generalized ordinal model is shown as follows (Williams 2005: 2):

$$P(Y_i < k) = F(-X\beta_k) \quad k = 1, \dots, m \tag{1}$$

$$Pr(y = m|x) = \begin{cases} F(\tau_1 - x\beta_1) & m = 1 \\ F(\tau_m - x\beta_m) - F(\tau_{m-1} - x\beta_{m-1}) & 1 < m \leq M - 1 \\ 1 - F(\tau_{M-1} - x\beta_{M-1}) & m = M \end{cases} \tag{2}$$

F is defined as the logistic cumulative distribution function. β is a vector of logit coefficients; m is the logit equation and τ is the cut point and x is a vector of independent variables. In addition, for the category (m) of the generalized ordered logit model cumulative probability value is shown in Equation (3) and $F(\tau_m - \sum_{k=1}^K \beta_{mk} - x_k)$ refers to the distribution function (Fullerton 2009: 315):

$$Pr(y \leq m) = F(\tau_m - \sum_{k=1}^K \beta_{mk} - x_k) \quad m = 1, 2, \dots, M - 1 \tag{3}$$

Model interpretation is as follows: Option 1 compares with options 2, 3, 4, and 5; Options 1 and 2 are compared with options 3, 4, and 5. Options 1, 2, 3, and options 1, 2, 3, 4 are compared with options 4,5 and 5 in a similar way, respectively (Williams 2006b: 63).

4. FINDINGS

This section provides information concerning the initial and empirical results employed in the study.

4.1. Initial Findings

In this section, some statistics and tables are included, using the Life Satisfaction Survey that has been conducted regularly since 2004. The rates of values that are a source of happiness for the period from 2009 to 2015 are given in Table 3, and the level of happiness by gender, age group, and marital status is given in Table 4.

According to the results of the Table 3, health ranks first among the values that are the source of happiness, while love and success are ranked second and third, respectively.

Table 3. Values as Source of Happiness

Years	Values as source of happiness (%)					
	Health	Love	Success	Money	Job	Other
2009	70.7	13.2	6.6	5.2	3.5	0.8
2010	71.2	13.0	6.9	4.6	3.5	0.9
2011	72.8	13.1	6.9	4.3	2.4	0.5
2012	70.8	13.8	6.7	5.1	3.1	0.6
2013	68.0	15.2	8.6	4.1	2.3	1.8
2014	68.8	15.4	8.5	4.2	2.2	0.9
2015	68.8	15.8	8.6	3.9	2.0	1.0

Source: TURKSTAT Life Satisfaction Survey, 2009-2015.

Table 4 shows the level of happiness by gender, age group, and marital status for 2015. According to the results of Table 4, while 59.6% of married individuals are happy, this rate is 49.5% for single individuals. According to age groups, the lowest happiness rate was in the 45–54 age group with 51.7%, while the highest happiness rate was seen in the 18–24 age group with 63.8%. Finally, the rate of individuals who stated that they were happy is 56.6%.

Table 4. Level of Happiness by Gender, Age Group and Marital Status (2015)

	Happy	Fairly Happy	Unhappy
Total	56.6	32.0	11.4
Male	52.9	34.3	12.8
Female	60.2	29.8	10.0
Age group			
18-24	63.8	28.4	7.8
25-34	58.6	31.9	9.5
35-44	54.2	34.0	11.8
45-54	51.7	34.7	13.7
55-64	55.1	30.7	14.2
65+	56.8	30.7	12.4
Marital Status			
Married	59.6	30.9	9.5
Single	49.5	34.6	15.9

Source: TURKSTAT Life Satisfaction Survey, 2015

4.2. Empirical Findings

This paper aims to determine factors affecting the happiness of household members with a generalized ordered logit model using the Life Satisfaction Survey data. Table 5 shows the model estimations and report that the coefficients of the generalized ordered logit models are statistically significant. According to LR test result, it is seen that the hypothesis that explanatory variables do not affect the dependent variable is rejected. To interpret the coefficient estimates of generalized ordered logit models, odds ratios are calculated, and the direction of the effects of explanatory variables on individual happiness levels is determined by looking at the signs of β coefficients.

Table 5. Generalized Ordered Logit Estimation Results

Dependent Variable:

Happiness (1. Very Happy 2. Happy 3. Fairly Happy 4. Unhappy 5. Very Unhappy)

Variables	1.Very Happy			2.Happy			3.Fairly Happy			4.Unhappy		
	Coefficient	Odds Ratio	P-Value	Coefficient	Odds Ratio	P-Value	Coefficient	Odds Ratio	P-Value	Coefficient	Odds Ratio	P-Value
Year	0.027	1.027	0.649	-0.082**	0.920	0.012	-0.356*	0.699	0.000	-0.290*	0.747	0.003
Age	0.014*	1.014	0.000	0.004 *	1.004	0.001	0.011 *	1.011	0.000	0.008**	1.008	0.022
Gender	-0.315*	0.729	0.000	-0.215*	0.806	0.000	-0.240*	0.785	0.000	0.012	1.012	0.898
Marital Status (Married)	-0.707*	0.492	0.000	-0.684*	0.504	0.000	-0.887*	0.411	0.000	-0.974*	0.377	0.000
Marital Status (Single)	-0.249	0.779	0.151	-0.294*	0.745	0.000	-0.300*	0.740	0.003	-0.408**	0.664	0.030
Education Level (Bachelor degree)	-0.267*	0.765	0.001	-0.285*	0.751	0.000	-0.510*	0.600	0.000	-0.809*	0.445	0.000
Saving Money	0.270*	1.310	0.000	0.221*	1.248	0.000	0.296*	1.345	0.000	0.175	1.191	0.200
Owning a car	0.651*	1.919	0.000	0.358*	1.431	0.000	0.757*	2.131	0.000	0.626**	1.870	0.020
Get a job	0.079	1.082	0.531	0.184*	1.203	0.007	0.285*	1.330	0.003	0.298	1.348	0.101
Borrowing	-0.438*	0.644	0.000	-0.647*	0.523	0.000	-0.914*	0.400	0.000	-1.278*	0.278	0.000
Servicing Debt	-0.344*	0.708	0.000	-0.177*	0.837	0.000	-0.432*	0.648	0.000	-0.457*	0.632	0.000
Income Group (Low-income)	-0.048	0.952	0.435	-0.017	0.982	0.602	-0.107**	0.897	0.038	-0.162	0.849	0.119

Number of obs=16,943
 LR chi2(48) = 1189.39
 Prob>chi2= 0.0000
 Log Likelihood= -20481.831
 Pseudo R2= 0.0282

Note: *Significant at 1% level, **Significant at 5% level.

Demographic and economic factors used in the analysis are reported to be affecting happiness. The odds of reporting levels of happy are 0.92 times lower for 2015 compared to 2009. Economic reasons such as increases in exchange rates, increasing inflation, and unemployment may have negatively affected the happiness of individuals. The odds of reporting very happy level are 1.01 times higher with an increase in age. It is thought that the increase in the possibility of being happy as you get older is due to reasons such as increasing experiences, gaining different perspectives on life, and learning to cope with stress. The odds levels of happy are 0.80 times lower for men compared to women. In Turkish society, men are defined as the breadwinners of the house who must provide a good life for their spouses and children. This responsibility can sometimes make men be more unhappy compared to women.

Being married reduces the odds of happiness by 0.50 times compared to other categories (single, divorced-spouse, widowed-separated), while being single decreases it by 0.74 times. Being a university graduate reduces the odds of happiness by 0.75 times compared to other situations (primary school, high school, postgraduate). In Turkish society, the dominant view of marriage is that the woman is responsible for cleaning the house, and the man is responsible for providing for the household. Individuals with a high level of education may also feel inadequate and unhappy in the face of such responsibilities. The reason why singles are not happy may be that they feel spiritually lonely and want someone to share life with. In addition, economic, social, and environmental pressures can also negatively affect the happiness of single people.

Saving money, which is one of the economic factors, increases the odds of happiness by 1.24 times, and owning a car increases it by 1.43 times. Having a job increases the odds of happiness by 1.20. Borrowing and servicing debt reduce the odds of very happy by 0.64 and 0.70 times, respectively. The low-income groups reduce the odds of fairly happy by 0.90 times compared to other income groups. Economic factors always affect the happiness of individuals, positively or negatively. As can be seen here, while saving money, having a job, and owning a car increase the happiness of individuals whereas borrowing and servicing debt decrease their happiness as it would put more economic pressure on them.

5. CONCLUSION

Individuals would like to live a happy life throughout their lives, from the past to the present. There are many factors affecting a happy life. In this study, social, demographic, and economic factors affecting individuals' happiness are examined. The 2009 and 2015 data from the Life Satisfaction Surveys conducted by TURKSTAT every year are utilized to estimate the generalized ordered logit model.

While some of the findings are in line with the studies in the literature, some of them are different from the results obtained in the literature. For example, while married individuals were happy in the studies of Perio (2006) and Dumludağ et al. (2015), this study shows that married individuals are not happy. The effect of the age variable on happiness is the same as in the study of Perio (2006). In addition, the results obtained in this study, which examined income-related variables (such as owning a car and saving) report a positive effect on happiness and these are in line with the findings of the Easterlin et al. (2010). Easterlin (2010) states in his study that more income also allows people to live fuller and happier lives compared to the poor. To summarize the results mentioned in the findings section; while age, get a job, owning a car and saving money increase the happiness of individuals, education level, being in debt, paying debts and being married or single decrease happiness.

Several suggestions could be made to the policymakers to increase the happiness of individuals. New policies might be developed to ensure that the income distribution is equal and fair, and the diversity and effectiveness of support programs for individuals in low-income groups can be increased. Thus, the happiness of individuals in low-income groups can be increased. Offering new business opportunities can increase economic freedom for individuals and thus make them happier. Rather than increasing the incomes of individuals, increasing their purchasing power at a level that meets their basic needs would make them even happier. It is worthwhile to replan and revise banking arrangements so that borrowing or paying debt does not prevent individuals from becoming happy. For married people to be as happy as other individuals, development policies that will enhance the importance of family relationships and allow for the children to be raised as qualified, happy, and healthy individuals should be created. Social support programs for families, children, and couples should be increased, and everyone should benefit from these programs. Instead of focusing only on a high level of education, efforts should be made to raise strong individuals who are well-educated, happy, and self-confident. In order to make the mentioned improvements at

national and international levels, contracted development, improvement, education and socialization programs could be developed with countries in similar situations.

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Submission Declaration Statement

I confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere.

Endnotes

¹Very low-income group: Income is below the hunger line.

Low-income group: Income is between the hunger line and poverty line.

Middle income Group: Income is between poverty line and high-income line.

High-income Group: Income is above the high-income line.

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