

Impact of household income on satisfaction with public education: data analysis based on the 2013 China Comprehensive Social Survey

Zhiyi Zhang

Anhui Xinhua University, Fuyang, Anhui, China, 236309

ABSTRACT

This study explores the effect of household income on satisfaction with public education based on the 2013 China Comprehensive Social Survey (CGSS) data. By constructing regression model and controlling for related variables, the difference and influence of families with different income levels were analyzed. Control variables, such as gender, domicile, and education level, also have different effects on the satisfaction of public education, and show different manifestations in different education stages. The study found that people with different family income and different hukou had different satisfaction with public education. The larger the family income value, the lower the satisfaction of the respondents with public education. This research results provide an empirical basis for understanding the public's satisfaction with public education, improving the quality of public education service and promoting the equity of education.

KEYWORDS

Household income; Satisfaction with public education; Comprehensive Social Survey in China (CGSS)

1 Introduction

1.1 Research background

As the cornerstone of national development, the quality and equity of education have always been closely concerned. Satisfaction with public education is one of the important indicators to measure the quality of education and reflects the evaluation and expectation of the education system. Family income, as an important factor affecting individuals' quality of life and the ability to obtain social resources, may affect people's satisfaction with public education. With the rapid development of China's economy, the family income gap gradually expands, and people pay more and more attention to happiness. In this context, it is of great practical significance to study the influence of family income on the satisfaction of public education. This study explores the data of 2013 China comprehensive social survey on the satisfaction of household income on public education.

1.2 Purpose and significance of the study

1.2.1 Objective

To clarify the relationship between family income and public education satisfaction, reveal the differences and influences of families with different income levels on the satisfaction of public education, and provide theoretical support and practical guidance for optimizing the allocation of public education resources and improving the quality of public education services.

1.2.2 Significance

enrich the research on the relationship between family factors and educational satisfaction in the field of educational sociology from the theoretical level; provide empirical basis for the government to formulate reasonable educational policies and promote educational equity from the practical level, and help to improve the satisfaction of the whole society to public education.

2 literature review

Previous studies have shown that satisfaction with public education is influenced by multiple factors. Factors such as social status, gender, age, and education level are closely related to satisfaction with public education. For example, some studies have found that the behavior of children has a positive effect on the education satisfaction of migrant families, and the education satisfaction of migrant families is positively affected by enhancing the feasible ability of educational opportunity ability, educational payment ability and education quality assurance ability.^[1] Studies also show that residents' perception of public finance will have a significant positive impact on their educational satisfaction, and

residents' perception of government financial input and tax trust will significantly promote their satisfaction with the fairness, quality and cost of education.^[2] In recent years, rural compulsory education has developed rapidly, but its supply quality is far less than that of cities. However, the satisfaction evaluation of rural residents on the supply of compulsory education is higher than that of urban residents. The empirical results show that when evaluating the satisfaction evaluation of compulsory education supply, urban residents tend to compare with neighboring counties (districts), while rural residents are more inclined to compare with their own past.^[3] Some relevant studies have proved that the current class identity of the respondents has no obvious impact on the satisfaction of public education, but it has a significant positive impact on the satisfaction of public education between 10 years ago and 10 years later. From the perspective of all stages of public education, family income is an important factor affecting satisfaction.^[4] My innovation is that the inclusion of gender, education level, domicile and other variables participated in the regression, and the educational satisfaction was divided into four stages for regression analysis respectively.

3 Data sources and study methods

3.1 Data source and assumptions

Data of this study were obtained from the 2013 China Comprehensive Social Survey (CGSS). The survey covered 31 provinces, municipalities and autonomous regions, using a multi-stage stratified probability sampling method, collecting rich personal and family information, providing reliable data support for the study. In the annual CGSS survey, there is not always educational satisfaction in the annual survey, and the data from 2013 is selected as the sample of this study.

After removing missing values, valid samples [5034] were obtained.

Null hypothesis: Family income has no significant effect on the four stages of educational satisfaction.

Optional hypothesis: Family income has a significant positive impact on the four stages of educational satisfaction.

3.2 Variable selection and measurement

Dependent variable: satisfaction with public education. CGSS2013 By asking, "How are you satisfied with all aspects of China's current public education services?" To measure the satisfaction of public education, the answer options include "very dissatisfied", "not satisfied", "dissatisfied", "more satisfied" and "very satisfied", with 1-5 points, the higher the score, the higher the satisfaction with public education.

Independent variable: family income. The total annual total household income was used as a measure of household income.

Control variables: gender, education level, urban and rural household registration and other variables are selected as control variables to exclude the interference of these factors to the satisfaction of public education.

3.3 Research methods

Multiple linear regression model was used to analyze the effect of household income on the satisfaction with public education, and the model was set as follows:

Satisfaction = $\beta_0 + \beta_1$ family income + β_2 gender + β_3 education level + β_4 urban and rural household registration + ϵ . Where, Satisfaction represents public education satisfaction, β_0 is a constant term, $\beta_1 - \beta_4$ is the regression coefficient, and ϵ is the error term.

3.4 Empirical analysis

3.4.1 Descriptive statistics

It can be seen from the table:

```
. sum a62, detail
```

What was your family's total income for the whole year of last year (2012)					
Percentiles		Smallest			
1%	1000	0			
5%	5000	0			
10%	9000	0	Obs		5,034
25%	20000	0	Sum of wgt.		5,034
50%	40000		Mean		57003.7
		Largest	Std. dev.		75716.76
75%	70000	1000000			
90%	100000	1200000	Variance		5.73e+09
95%	150000	1800000	Skewness		9.377227
99%	300000	2000000	Kurtosis		174.4423

- 1% of households have an income of 1,000 yuan or less.
- 5% of households earn 5,000 yuan or less.
- 10% of households have an income of 9,000 yuan or less.
- 25% of households earn 20,000 yuan or less.
- 50% of households have an income of 40,000 yuan or less.
- 75% of households earn 70,000 yuan or less.
- 90% of households have an income of 100,000 yuan or less.
- 95% of households earn 150,000 yuan or less.
- 99% of households have an income of 300,000 yuan or less.

The minimum value was 0 and the maximum was 2000000, indicating that in the sample, the minimum annual income reported by households was 0 yuan, while the highest annual income reached 2 million yuan. The sample size was 5,034, and the mean annual household income was 57,003.7 yuan, which is the average annual income of all households. The standard deviation was 75,716.76 yuan, indicating a large degree of dispersion of household income. The variance was $5.73e + 09$, further indicating greater volatility in household income. The large standard deviation and variance indicates a large difference between household incomes. The skewness was 9.377227, indicating a severe right-skewed data distribution, meaning that there were more high-income households. The kurtosis was 174.4423, indicating that the data distribution had a very sharp peak, indicating that there are more extreme values in the income distribution.

How satisfied are you with various aspects of public education services in China at present? - Preschool Education					
Percentiles		Smallest			
1%	1	-3			
5%	2	-3			
10%	2	-3		Obs	5,034
25%	3	-3		Sum of wgt.	5,034
50%	4	Largest		Mean	3.288836
75%	4			Std. dev.	1.019581
90%	4			Variance	1.039546
95%	4			Skewness	-1.134412
99%	5			Kurtosis	5.939271
How satisfied are you with various aspects of public education services in China at present - nine-year compulsory education					
Percentiles		Smallest			
1%	1	-3			
5%	2	-3			
10%	2	-3		Obs	5,034
25%	3	-3		Sum of wgt.	5,034
50%	4	Largest		Mean	3.636472
75%	4			Std. dev.	.9261145
90%	4			Variance	.857688
95%	5			Skewness	-1.823782
99%	5			Kurtosis	10.25107
How satisfied are you with various aspects of public education services in China at present - high school education					
Percentiles		Smallest			
1%	1	-3			
5%	2	-3			
10%	2	-3		Obs	5,034
25%	3	-3		Sum of wgt.	5,034
50%	4	Largest		Mean	3.36909
75%	4			Std. dev.	.9466423
90%	4			Variance	.8961316
95%	4			Skewness	-1.704591
99%	5			Kurtosis	10.10052
How satisfied are you with various aspects of public education services in our country? - Vocational Education					
Percentiles		Smallest			
1%	-2	-3			
5%	2	-3			
10%	2	-3		Obs	5,034
25%	3	-3		Sum of wgt.	5,034
50%	3	Largest		Mean	3.207986
75%	4			Std. dev.	.9724232
90%	4			Variance	.9456068
95%	4			Skewness	-1.908544
99%	5			Kurtosis	11.53022

In the CGSS2013 questionnaire survey, the educational satisfaction was divided into four stages. In order to show the continuity of the educational satisfaction, a descriptive analysis was conducted below.

Satisfaction with preschool education.

There were 5034 samples with a mean of 3.288836, indicating an overall moderate satisfaction bias. The standard deviation was 1.019581, indicating a more scattered distribution of satisfaction. The skewness was -1.134412, indicating that the data distribution was slightly left-biased, meaning that the lower satisfaction scores were more frequent. The kurtosis was 5.939271, indicating that the satisfaction distribution was more peaked with more extreme values than the normal distribution.

Satisfaction with the nine-year compulsory education.

There were 5034 samples with a mean of 3.636472, indicating high overall satisfaction. The standard deviation was 0.9261145, indicating a relatively concentrated distribution of satisfaction. The skewness was -1.823782, indicating that the data distribution was left-biased, with more lower satisfaction scores. The kurtosis was 10.25107, indicating that the satisfaction distribution is very sharp peak, with more extreme values.

High school education satisfaction.

There were 5034 samples with a mean of 3.36909, indicating above average overall satisfaction. The standard deviation was 0.9466423, indicating a more scattered distribution of satisfaction. The skewness was -1.704591, indicating that the data distribution was left-biased, with more lower satisfaction scores. The kurtosis was 10.10052, indicating that the satisfaction distribution is more peaked with more extreme values than the normal distribution.

Satisfaction in vocational education.

There were 5034 samples with a mean of 3.207986, indicating moderate overall satisfaction with a standard deviation of 0.9724232, indicating a relatively scattered distribution of satisfaction. The skewness was -1.908544, indicating that the data distribution was left-biased, with more lower satisfaction scores. The kurtosis was 11.53022, indicating that the satisfaction distribution is very sharp peak, with more extreme values.

In general, the satisfaction of nine-year compulsory education was the highest, followed by high school education, and the relatively low satisfaction of preschool education and vocational education. The satisfaction distribution for all educational stages showed left bias and spike characteristics, indicating that the majority of respondents' satisfaction with public education services focused on above-average ratings, but a significant proportion of respondents gave lower ratings. Higher kurtosis values indicate the presence of a certain number of extremely high or extremely low satisfaction scores across all stages of education.

3.4.2 The correlation analysis

```
. correlate c1a1 c1a2 c1a3 c1a4 a62
(obs=5,036)
```

	c1a1	c1a2	c1a3	c1a4	a62
c1a1	1.0000				
c1a2	0.5212	1.0000			
c1a3	0.4780	0.5723	1.0000		
c1a4	0.4059	0.4288	0.6020	1.0000	
a62	-0.0735	-0.0388	-0.0382	-0.0252	1.0000

A 62 for total family income, cla 1, cla 2, cla 3, and cla 4 for preschool education, nine-year compulsory education, high school education and vocational education, respectively. The correlation coefficients between household income and them were -0.0735, -0.0388, -0.0382, and -0.0252, respectively, indicating that the correlation between household income and these educational satisfaction was very weak and almost negligible. Suggesting that household income has less influence on educational satisfaction.

However, there was a moderate to strong positive correlation between educational satisfaction in the four stages, indicating that they may influence or covary with each other to some extent.

3.4.3 Regression analysis

Source	SS	df	MS	Number of obs	=	5,031
Model	121.71539	4	30.4288476	F(4, 5026)	=	29.94
Residual	5108.06676	5,026	1.01632844	Prob > F	=	0.0000
				R-squared	=	0.0233
				Adj R-squared	=	0.0225
Total	5229.78215	5,030	1.03971812	Root MSE	=	1.0081

cla1	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
a62	-2.68e-07	2.03e-07	-1.32	0.186	-6.65e-07	1.29e-07
a18	-.0309498	.0152143	-2.03	0.042	-.0607765	-.0011232
a7a	-.0444365	.0052814	-8.41	0.000	-.0547904	-.0340826
a2	.0092339	.0286467	0.32	0.747	-.0469262	.065394
_cons	3.559304	.0553673	64.29	0.000	3.45076	3.667848

Source	SS	df	MS	Number of obs	=	5,031
Model	18.8723749	4	4.71809374	F(4, 5026)	=	5.52
Residual	4296.92886	5,026	.854940083	Prob > F	=	0.0002
				R-squared	=	0.0044
				Adj R-squared	=	0.0036
Total	4315.80123	5,030	.858012173	Root MSE	=	.92463

cla2	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
a62	-2.21e-07	1.86e-07	-1.19	0.234	-5.85e-07	1.43e-07
a18	-.0205349	.0139541	-1.47	0.141	-.0478911	.0068212
a7a	-.014353	.004844	-2.96	0.003	-.0238492	-.0048567
a2	.0028848	.026274	0.11	0.913	-.0486237	.0543932
_cons	3.749116	.0507814	73.83	0.000	3.649563	3.84867

Source	SS	df	MS	Number of obs	=	5,031
Model	25.6089921	4	6.40224802	F(4, 5026)	=	7.18
Residual	4482.21251	5,026	.891805116	Prob > F	=	0.0000
				R-squared	=	0.0057
				Adj R-squared	=	0.0049
Total	4507.82151	5,030	.896187178	Root MSE	=	.94435

cla3	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
a62	-1.61e-07	1.90e-07	-0.85	0.397	-5.33e-07	2.11e-07
a18	-.0172936	.0142518	-1.21	0.225	-.0452334	.0106461
a7a	-.0195913	.0049473	-3.96	0.000	-.0292901	-.0098924
a2	-.0105134	.0268345	-0.39	0.695	-.0631206	.0420939
_cons	3.518638	.0518647	67.84	0.000	3.41696	3.620315

Source	SS	df	MS	Number of obs	=	5,031
Model	17.226965	4	4.30674125	F(4, 5026)	=	4.57
Residual	4736.7138	5,026	.942442062	Prob > F	=	0.0011
				R-squared	=	0.0036
				Adj R-squared	=	0.0028
Total	4753.94077	5,030	.945117449	Root MSE	=	.97079

cla4	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
a62	-6.83e-08	1.95e-07	-0.35	0.726	-4.51e-07	3.14e-07
a18	.0093056	.0146508	0.64	0.525	-.0194164	.0380276
a7a	-.0194351	.0050858	-3.82	0.000	-.0294055	-.0094646
a2	-.0064835	.0275858	-0.24	0.814	-.0605637	.0475966
_cons	3.30121	.0533168	61.92	0.000	3.196685	3.405734

As shown in the figure, A 62 is the total family income, cla 1, cla2, cla 3, cla 4 respectively indicate preschool education, nine-year compulsory education, high school education and vocational education, A 18 is the domicile location, A 7 A is the education level, and A 2 is the gender.

The coefficient between preschool education and household income was -2.68e-07, and the p-value was 0.186, which was not significant. The coefficient of domicile was -0.0309498, and the p-value was 0.042, which was significant, indicating that the domicile has a significant negative influence on preschool education. The coefficient of educational attainment was -0.0444365, and the p-value was 0.000, significant, indicating a significant negative effect on preschool education. The sex coefficient of 0.0092339 and a p-value of 0.747 was not significant.

The household income coefficient of nine-year compulsory education was -2.21e-07, and the p-value was 0.234, which was not significant. The coefficient of household location was 0.0205349 and the p value was 0.141, which was not significant. The coefficient of educational attainment was -0.014353, $p = 0.003$, significant, indicating a significant negative impact on nine-year compulsory education. The sex coefficient of 0.0028848 and the p-value of 0.913 was not significant.

The coefficient of high school education and family income was -1.61×10^{-7} , and the p-value of 0.397 was not significant. The coefficient of household location was 0.0172936 and the p value was 0.225, which was not significant. The coefficient of education attainment was 0.0195913. The p value was 0.000, which was significant, indicating a significant negative effect on education attainment and high school education. The coefficient of vocational education and family income was -6.83×10^{-8} , and the p-value was 0.726, which was not significant. The coefficient of household registration was 0.0093056p value was 0.525, which was not significant. The coefficient of educational attainment was 0.0194351. The p-value was 0.000, significant, indicating a significant negative effect on vocational education. The sex coefficient was 0.0064835, and the p-value was 0.814, which was not significant. According to the regression, the null hypothesis supports that family income has no significant effect on the four stages of educational satisfaction.

3.4.4 Robustness test results

The following results show the results to show the reliability and stability of the research results. The results show that the impact of family income on education satisfaction is still insignificant.

Linear regression						Number of obs	=	5,031
						F(1, 5029)	=	15.34
						Prob > F	=	0.0001
						R-squared	=	0.0055
						Root MSE	=	1.017
c1a1	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]			
a62	-9.96e-07	2.54e-07	-3.92	0.000	-1.49e-06	-4.97e-07		
_cons	3.345738	.0199866	167.40	0.000	3.306556	3.38492		

Linear regression						Number of obs	=	5,031
						F(1, 5029)	=	7.11
						Prob > F	=	0.0077
						R-squared	=	0.0015
						Root MSE	=	.92567
c1a2	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]			
a62	-4.78e-07	1.79e-07	-2.67	0.008	-8.29e-07	-1.27e-07		
_cons	3.663871	.016537	221.56	0.000	3.631451	3.69629		

Linear regression						Number of obs	=	5,031
						F(1, 5029)	=	5.89
						Prob > F	=	0.0153
						R-squared	=	0.0015
						Root MSE	=	.94605
c1a3	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]			
a62	-4.86e-07	2.01e-07	-2.43	0.015	-8.80e-07	-9.34e-08		
_cons	3.397025	.0176292	192.69	0.000	3.362464	3.431586		

Linear regression						Number of obs	=	5,031
						F(1, 5029)	=	3.49
						Prob > F	=	0.0616
						R-squared	=	0.0007
						Root MSE	=	.97193
c1a4	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]			
a62	-3.38e-07	1.81e-07	-1.87	0.062	-6.92e-07	1.64e-08		
_cons	3.226956	.0177252	182.05	0.000	3.192207	3.261706		

4 Discussion and conclusion

This study empirically analyzed the effect of household income on public education satisfaction based on the 2013 China Comprehensive Social Survey data. Descriptive analysis, correlation analysis, regression analysis and other statistical methods were used to explore the relationship between family income and education satisfaction, by using the method of robust standard error to test the robustness of the results. Overall, there was a weak negative correlation between household income and education satisfaction, suggesting that families with higher household income may have relatively low satisfaction with public education.

Understanding the influence of family income on education satisfaction helps to show the current situation of education in China and reveal the possible unfair phenomena in the education system. The results can provide a basis for policy makers to develop more effective education policies to improve education quality and satisfaction. The education sector should pay attention to the needs and expectations of different income groups for public education, increase the educational support for low-income families, and narrow the difference in educational satisfaction caused by the family income gap. In addition, differentiated education policies should be formulated according to the characteristics of different genders, education levels and household registration groups, so as to improve the quality and fairness of public education services, so as to enhance the overall public's satisfaction with public education.

In conclusion, this study provides an empirical basis for understanding the relationship between family income and public education satisfaction, and also for the development of relevant educational policies. Future studies can further deepen the research on public education satisfaction on the basis of this study and contribute to improving the quality of public education and promoting educational equity.

References

- [1] Wang Suying, Shen Yafang. Influence of Children's relocation on education Satisfaction of Families working in Cities- -Analysis from the perspective of feasible ability (School of Education, Shanghai Normal University, 2024 (5) Shanghai 10270).
- [2] Zhang Yu. Study on residents' financial perception and Compulsory Education Satisfaction —— Taking Shanghai as an example (East China University of Political Science and Law, 2023 (2) Shanghai 10276).
- [3] Xue Jun, Wang Shengnan, Liu Jiali. Financial expenditure and satisfaction of urban and rural compulsory education under the reference point theory —— Data Analysis based on CGSS2015 (Public Policy Research Center of Yunnan University of Finance and Economics, School of Finance and Public Administration, Yunnan University of Finance and Economics, 2012 (11) Kunming 650221).
- [4] Li Xiang, Huang Jianxin, Chen Jingwen. Family income, social class and public education satisfaction —— Empirical analysis based on CGSS2013 data (School of Management, Fujian Agriculture and Forestry University, 2017 (10) Fuzhou 350002).