

# ***Individual Factors Impacting on Chinese Students' Undergraduate Enrollment Opportunity from the Perspective of Educational Equity***

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**Abstract:** The educational equity of undergraduate enrollment opportunities has always been a public concern today. There are a diversity of individual factors impacting on Chinese students' undergraduate enrollment opportunities, including SES(socio economic status), parent educational level, parent educational participation, ethnic minorities and so forth. Through the correlation analysis of CFPS data, such as regression analysis, how these factors affect college admission opportunities has been deeply explored and discussed in this paper. The data includes 5055 samples, which can represent the characteristics and situations of Chinese family education to a certain extent. The results show that family SES is generally recognized as a key factor, and parents' participation could help disadvantaged students promote academic performance. Furthermore, ethnic minorities and gender have a impact on the undergraduate enrollment opportunity.

**Keywords:** Educational equity, Undergraduate enrollment opportunity, Family socioeconomic status, Parents' educational levels, Parents' participation.

## **1. Introduction**

Educational equity has always been a public concern nowadays. There is no doubt about the significant influence of family factors on educational outcomes. The family background factors may include socio economic status(SES), parents' educational level, and so forth. Students' educational opportunities Socio economic status generally plays a key role in the learners' educational results, and other factors such as parents' educational level, gender, and rural area are also influential on the students' academic performance. The correlation between these factors and undergraduate enrollment opportunity deserves further research. This essay will use data analysis to show relationships between students' academic performance and family backgrounds, including SES, parental educational level, and so forth. R language software will be used in the data analysis. This study enriches the relevant research content of educational equity, and is conducive to further understanding the influencing factors of college students' enrollment opportunities from the data level.

## **2. Literature Review**

Family background, including socioeconomic status(SES), parent literacy level, and so forth, is a vital factor influencing students' academic outcomes. Coleman et al. [1] proposed that SES was a

crucial factor influencing learners' academic achievement in 1966, and the impact of SES was greater than schools. Coleman Report has promoted research about SES and other family background factors. Socioeconomic status may be generally considered as a family's wealth, hierarchy, social status, and power [2]. Especially, wealth is an influential factor in students' educational outcomes in developing countries [2].

There is a conspicuous relationship between SES and students' attainments [3][4]. Students from lower social status attend schools where a considerable number of students come from similar families' SES, and their academic potential might be less likely to be realized. Thus, learners from lower SES backgrounds are more dependent on the educational materials or facilities of teachers and schools [3][4]. Moreover, [3] proposes that families with low SES could result in unfairness in educational performance. Furthermore, students in high SES schools are more likely than students in low SES schools to go to university [3]. In addition, financial support and human resources should be invested in disadvantaged students [4].

Cultural capital theory proposes that parents' educational level could greatly affect their children's educational results [5]. Cultural capital, including parents' educational level, is invisible and could be transformed into educational capital [6]. Parents with abundant cultural capital are very concerned about their children's learning and have access to more useful educational information, which can promote their children's academic attainment [6]. Parents' investment in cultural resources might significantly promote their children's scientific literacy so that children can obtain various advantages in the fierce educational competition [6]. The human capital theory also demonstrates that cost-benefit is the first principle to decide if investing in education. Students' academic results are different due to different educational investments. Low SES families can not offer sufficient educational resources, and can influence the students' academic outcomes [7]. There is a significant heterogeneity of distribution of educational resources between urban and rural districts. Experts usually consider the rural area as a crucial factor. The excellent educational resources in urban schools have significant effects on students' academic performances [7]. Families having higher SES might provide better education opportunities for the students. Experts propose recently that the parental SES can have a huge impact on the students' schooling quality [7].

[1] demonstrate that SES in less developed areas could affect students' academic performance greater than in developed areas. There is more issues of educational inequality in low SES districts, and a larger gap of students' performance exists in low SES districts than in high SES districts [8]. Schools could compensate for educational equity to some extent. For example, the central government provides financial aid, student loans, work study programs, and other support to help students complete their studies in China [1]. The relationship between language and SES' level academic performance is stronger than the relation between science/math and SES' level academic performance [1]. Family play a more vital role in language learning, including Chinese and English, than in science or mathematics. Schooling is more influential in science or mathematics than families [1][8].

Girls' academic results are more strongly affected by SES in comparison to boys' results. There are large gaps in educational results between girls and boys in developing countries [2]. Thus, girls' education needs to be supported from the financial perspective [2]. Educational policies might provide developing countries with significant support, especially for low SES families [2].

There are many studies on family SES, but there are few studies on the impact of combining SES with parents' education level, education participation, minority, gender and other factors on undergraduate enrollment opportunities. The factors affecting the fairness of college entrance opportunities are not isolated. They are interrelated and interact with each other. Therefore, this study provides further research results for the realization of education equity in the future.

### 3. Analysis

Chinese family panel studies (CFPS, later changed to “China family tracking survey”) is an important social scientific project implemented by Peking University’s China Social Science Research Center. Its goal is to show the real reflection of the changes and progress in China’s education, health and economy through collecting and analyzing data at the family and individual levels, and to supply academic researchers and policy makers with accurate data. CFPS focuses primarily on the non-economic and economic welfare of Chinese citizens, including economic movements, access to education, family dynamics and relations, human migration, mental and physical health, and other topics. The data in 2018 has been used in the essay, which includes 5055 samples.

#### 3.1. Descriptive Analysis

Descriptive analysis is the fundamental analysis process and method in statistics. Through the academic analysis, many statistical characteristics could be explored deeply, such as maximum, standard deviation, mean, and other data features. The standard deviation is a key and important evaluating indicator to depict data dispersion’s degree. The fundamental statistical analysis process is the most extensive and useful way of continuous data description of statistic.

Table 1: The basic statistics.

Name	Sample Size	Minimum Value	Maximum Value	Average Value	Standard Deviation	Median
Gender	5055	1.000	2.000	1.483	0.500	1.000
Only Child or not	5055	1.000	2.000	1.151	0.358	1.000
Registered Residence	5055	1.000	4.000	1.934	0.721	2.000
Socio Economic Status	5055	0.000	4.000	2.918	0.653	3.000
Educational level of parents	5055	2.000	10.000	4.680	2.189	3.000
Undergraduate Enrollment Rate	5055	0.000	0.730	0.202	0.056	0.210

According to the above table, the minimum value of two items of the undergraduate enrollment rate is less than three standard deviations of the average value, indicating that the data fluctuates greatly.

#### 3.2. Correlation Analysis

Correlation is generally recognized as the uncertain dependency relationship between variables. In other words, when one variable takes a specific value, the other variable cannot take only one uniquely determined value according to the specific function. However, according to a certain law or principle, it still changes in a certain scope. The correlation coefficient can depict precisely the direction and degree of a linear relationship between variables in a numerical way. To explore the

correlation degree, it is not necessary for correlation analysis to distinguish between independent variable and dependent variable.

Table 2: The correlation degree between variables.

	Average Value	Standard Deviation	Undergraduate Enrollment Rate	Gender	Only Child or not	Registered Residence	Socio Economic Status	Educational Level of Parents
Undergraduate enrollment rate	0.202	0.056	1					
Gender	1.483	0.500	0.012	1				
Only Child or not	1.151	0.358	-0.033*	-0.000	1			
Registered Residence	1.934	0.721	0.043**	-0.002	0.010	1		
Socio Economic Status	2.918	0.653	0.074**	0.017	0.011	0.033*	1	
Educational Level of Parents	4.680	2.189	0.045**	0.040**	0.029*	-0.032*	0.245**	1
* p<0.05 ** p<0.01								

When the correlation coefficient of Pearson is greater than 0.7, it is thought that the two variables are highly correlated. When the correlation coefficient of Pearson is between 0.3-0.7, it is thought that the two variables are moderately correlated. When it is lower than 0.3, it is thought that the two variables are correlated lowly. The prerequisite that have to be matched is that the importance is less than the evident and significance level of 0.01 or 0.05. The two variables are believed to be evidently and obviously correlated and statistically important.

From Table 2, it could be seen that the correlation degree between the variables is by the correlation coefficient of Pearson. The coefficient of correlation between the undergraduate enrollment rate and whether it is the only child, the type of household registration, the family economic situation, and the highest education level of parents is significant. Specifically, the coefficient of correlation between the undergraduate enrollment rate and whether it is the only child is -0.033, and demonstrates a significant and vita level of 0.05, which proves that there is an evident, significant, and conspicuous negative correlation between the undergraduate enrollment rate and whether it is the only child. The correlation coefficient between undergraduate enrollment rate and household registration type is 0.043, proving a significant high level of 0.01, which demonstrates that there is an essential positive correlation between undergraduate enrollment rate and household registration type. The correlation coefficient of undergraduate enrollment rate and family economic situation is 0.074, showing an important level of 0.01, which indicates that there is an obvious, significant, and critical positive correlation between undergraduate enrollment opportunities and family economic situation. The correlation coefficient between the undergraduate enrollment rate and the highest education level of parents is 0.045, showing a level of 0.01, which indicates that there is a significant and key positive correlation between the undergraduate enrollment rate and the highest education level of parents. In addition, the correlation between undergraduate enrollment rate and gender is not significant and obvious( $p>0.05$ ), which means that there is not much correlation between undergraduate enrollment rate and gender.

### 3.3. Regression Analysis

In the study, regression analysis is conducted, which is based on a great number of experiments or observations and so on of items, to look for normal or irregular connections between variables. It can be also described:

$$f(x) = E(y | x) \quad (1)$$

In practical issues, if it needs to reckon  $y$  from  $X$ , it can make use of the observed values of  $X$  and  $y$  to build a regression function. This paper primarily explores linear regression, therefore the author considers using a linear function to depict and prove it. Namely:

$$E(y | x) = \alpha + \beta x \quad (2)$$

Since what is  $\alpha$  and  $\beta$  in this equation is not known, it needs to use the sample data to estimate or assess. After parameter evaluation and estimation, the regression equation is got. Use  $\hat{\alpha}$ ,  $\hat{\beta}$  instead of the previous  $\alpha$ ,  $\beta$ .

$$\hat{y} = \hat{\alpha} + \hat{\beta} x \quad (3)$$

$\alpha$  is considered as the regression equation's constant,  $\beta$  is considered as this regression equation's coefficient, while  $\hat{\alpha}$ ,  $\hat{\beta}$  is recognized as the empirical regression constant and empirical regression coefficient. If there is a correlation between variable  $(x_1, x_2, \dots, x_p)$  and variable  $y$ , the general formation of the regression analysis model is as follows:

$$f(x_1, x_2, x_3, \dots, x_p) + \varepsilon \quad (4)$$

Based on the conclusion of the correlation analysis, the author uses regression analysis to further find the statistical regularity hidden in those seemingly uncertain and unknown phenomena. Furthermore, it is important to verify and discuss the impact of Chinese students' family background on higher education enrollment opportunities.

Table 3: Variance analysis.

	Regression Coefficient	95% CI	VIF
Constant	0.181** (33.811)	0.170 ~ 0.191	-
Gender	0.001 (0.717)	-0.002 ~ 0.004	1.002
Only Child or not	-0.005* (-2.512)	-0.010 ~ -0.001	1.001
Registered Residence	0.003** (3.043)	0.001 ~ 0.005	1.003
Socio Economic Status	0.006** (4.521)	0.003 ~ 0.008	1.066
Educational Level of Parents	0.001* (2.137)	0.000 ~ 0.002	1.068
Sample Size	5055		
R <sup>2</sup>	0.009		
Adjust R <sup>2</sup>	0.008		
Value F	9.563***		

Through the data of the variance analysis in Table 3, the F value is 9.563. According to the distribution of value F, if it is much bigger than the critical value, it is demonstrated that the F test is passed. The significance is 0.000, less than the vital significance level of 0.05, and the equation is considered to be evident and significant as a whole.

The regression coefficient of gender is 0.001( $t=0.717$ ,  $p=0.473>0.05$ ), which proves that gender may play a less important role in undergraduate enrollment opportunities. Whether the only child has a regression coefficient of -0.005( $t=-2.512$ ,  $p=0.012<0.05$ ) means that whether the only child has a significant and evident negative impact on the undergraduate enrollment opportunity. The regression coefficient of household registration type is 0.003 ( $t=3.043$ ,  $p=0.002<0.01$ ), which demonstrates that the household registration type will have a crucial positive impact on the undergraduate enrollment rate. The regression coefficient value of the family economic situation is 0.006( $t=4.521$ ,  $p=0.000<0.01$ ), which means that the family economic situation will have a significant positive impact on the undergraduate enrollment rate. The regression coefficient value of the highest education level of parents is 0.001( $t=2.137$ ,  $p=0.033<0.05$ ), which demonstrates that the highest education level of parents can have a great positive and vital impact on the undergraduate.

#### 4. Results

According to the data from CFPS (2018), family backgrounds, including gender, parents' SES, parents' educational level, types of household register system, and rural or urban areas, could significantly affect students' university enrollment opportunity.

Firstly, the educational level of parents has a significant effect on the undergraduate enrollment rate. Participation of parents could almost affect all respects of children's study. This is considered the cultural capital according to Coleman.

Secondly, SES is a vital factor influencing children's university enrollment opportunity. As shown in the tables, SES could determine whether children can attend a high-quality school and own a diversity of educational resources [8]. Moreover, if one student has high SES in his or her family, he or she will own more educational privileges such as expensive family tutors or expensive academic books, which will have a negative effect on educational equity. As a result, students in low SES generally lack sufficient educational resources like experimental facilities or experienced teachers [8].

From the perspective of educators, they need to promote critical thinking ability, improve their cognition about educational equity, and care for disadvantaged students' study, for example, by organizing effective and tolerant conversations with disadvantaged students [9][10]. Caring and tolerant surrounding is beneficial for all students, especially low SES students, to achieve educational equity in the classroom at least. According to [11], the quick expansion of tertiary education in China has not improved the plight of disadvantaged students. On the contrary, it has exacerbated the existing gap to some extent. For instance, disadvantaged students pay more for a poor higher education opportunity than advantaged groups. Advantaged students can obtain high quality higher education because they have rich educational resources, including high SES, higher parental educational level, and so forth [11].

Thirdly, data about rural household registrations in the tables obviously has a close connection with university enrollment opportunity. Due to its remote geographical location and small size, there are some structural disadvantages. For instance, the cost of transportation in rural districts may be higher than in urban districts, or rural teachers may have lower salaries than urban teachers [12]. The household registration system has become an administration system, which can result in an equality of job opportunities, medical care, and educational resources between rural and urban people [13]. Students in urban areas could go into universities more easily than students in rural areas. To a large extent, urban residents enjoy more privileges than rural residents. Moreover, a

child will inherit his parents' household registration instead of his birthplace. In other words, the child will own the same resources, such as the same educational resources, as his or her parents [13].

Furthermore, in China, students owning rural household registrations generally need to study harder than students in urban districts because they lack educational resources such as the Internet. The digital divide is caused by the inequality of technological resources, as the network hardware facilities in rural areas are relatively backward [14]. Nevertheless, the Internet can also close the gap and promote educational equity if it is popularized in rural areas in China [14]. If the Internet could be provided to the students, it would greatly enrich information, especially educational resources, so as to promote the realization of educational equity to a certain extent. Finally, gender does not have a close relationship with undergraduate enrollment.

Minorities as disadvantaged groups lack some educational resources than the majority, and need more relative policies or other supports to address the educational inequality. According to [15], minority bonus policy is beneficial and helpful for minorities' students to attend a high-quality university in China College Entrance Examination(CCEE).

## 5. Conclusion

In conclusion, these factors, such as SES, parents' educational level, have different degrees of impact on undergraduate enrollment equity, which could lead to inequality of students' university enrollment opportunity in China. Correlation analysis methods such as regression analysis are used in the essay. According to the data from CFPS(2018), SES has the greatest influence among all factors, and thereby students from rural areas generally are in disadvantaged places, which is included in educational inequality. Besides that factor, parents' educational level and participation can also determine if their children can attend universities to some extent. From the standpoint of educational equity, these factors may widen the gap of educational inequality, which society should value.

The data might be a certain lag from 2019. Some data is empty and may influence the accuracy of the result. Furthermore, family factors analyzed in the essay may be not comprehensive because factors of schools and society are not included in the analysis. In addition, some data of individual factors are null and will influence the result of analysis. Moreover, the number of families is 5055, which is not sufficient and can not stand for all the families. These are limitations of the research which could affect the results.

## Acknowledgement

Firstly, the author highly appreciates the help of the professor and teaching assistant. They have offered impressive academic guidance and useful advice to assist me. Secondly, I intend to thank my boyfriend for his support and understanding. In my writing process, he gave me lots of care and encouragement. Thirdly, thanks to my friends, they have inspired me kindly. Without their professional instructions and hearty encouragement, I could not have finalized my essay. Those help really gave me confidence in my whole writing process.

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