

**Study on the employment of college graduates in the post-epidemic era based on
logistic model**

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Abstract: Under the situation of increasing economic downward pressure and increasing trade friction between China and the United States, and encountering the serious conflict of the new crown pneumonia epidemic, the employment situation of college graduates has changed more. This paper is based on logistic model to explore the analysis of factors affecting the employment of college graduates in the context of the epidemic, and put forward relevant problems and solutions to countermeasures, which is of great practical significance to reduce the impact of the epidemic on college graduates and relieve the employment pressure of college graduates.

Keywords: Post-epidemic era; College graduates; Logistic model; Employment stress.

1. INTRODUCTION

Currently, under the dual influence of economic downturn and epidemic prevention and control, the employment of college graduates in China is facing severe challenges. Li Chunyang, Bi Huina and others believe that because the new crown pneumonia epidemic is not yet over, the employment difficulties of graduates are affected by the global and social shock as a whole, the world economic downturn has triggered a sharp decrease in employment opportunities, the social demand crisis of some majors has started to spread to other majors, and the employment pressure of graduates in some regions has increased and spread to the whole country. Zhao Tianming and Huang Yueming et al. analyze from the perspective of market demand, pointing out that the continuous increase in the number of graduates and the decline in the number of jobs in demand lead to changes in the contradiction between employment supply and demand, the change in recruitment channels during the epidemic makes it more difficult for college graduates who already lacked experience in applying for jobs to find employment, and graduates and parents change in employment psychology due to the lack of preparation by the epidemic. Zhang Meiling and Zhao Zihanbing believe that in recent years, the number of college graduates has been rising year after year, industrial structure upgrading and economic downward pressure has increased, resulting in the existing problems have not been properly solved, and the impact and influence of the epidemic has triggered the increase of competition

pressure in the whole industry and the shrinkage of domestic and foreign market demand, so the difficulties of college graduates in finding jobs have increased this year and the employment situation is more complicated and severe. Luo Xiaoting analysis put forward after the epidemic era has emerged a new normal of employment, the new normal, new jobs more uncertain, technical career throughout the whole process, encourage entrepreneurship will be the new employment growth point, mobile Internet has become a new mode and new way to promote employment. Yan Feng pointed out from a dialectical view of the employment trend of college graduates that under the epidemic, new economic forms emerged through the Internet platform, online office, cloud recruitment, online education, live with goods and other new industries developed rapidly, new employment forms arose rapidly, flexible employment, flexible employment, multiform employment and other ways stand out, the epidemic crisis at the same time bred new employment opportunities, which became the post-epidemic era college students The epidemic crisis has at the same time bred new employment opportunities and become a new direction for college students in the post-epidemic era.

The epidemic brings tests and challenges to the employment work of college graduates, and also fully exposes the real dilemma of employment work of college graduates. Yang Wen believes that the change of external employment environment, enterprises and colleges and universities fail to adapt to the adjustment in time, resulting in structural contradiction in talent demand and recruitment mode; the shortcomings of serious lack of employability of college graduates are gradually exposed with the traditional concept of employment and the existence of obstacles in psychological expectation; the current situation that college graduates are difficult to achieve high-quality employment in a short period of time reflects that there are traditional college vocational education and precise employment guidance management The service system is not sound enough. From the perspective of college students, Hou Wenzhe believes that the external environment factors, the psychological quality of college students, the lack of career competence of college students and the lack of employment expectation of college students have brought difficulties to the employment work of colleges and universities and the employment level of college students. Liu Siguang analyzes from the graduates' own factors, employers' perspective and social environment, and believes that the environment in which college graduates grew up in recent years has created more diversified and open employment motives and distinctive employment characteristics, which have caused certain "confrontation" with the current employers and social demands. Under the influence of the epidemic, the employment situation of college graduates is even less optimistic than in previous years, and the difficulties of employment work are more prominent.

In summary, the current research literature on the employment of college graduates in the context of the epidemic, in terms of content, mainly focuses on several topics such as the impact of the epidemic crisis on the employment of college graduates, changes in the employment situation, employment dilemmas, employment countermeasures, etc. In terms of research methods, qualitative research is mostly used, and the overall research content is at the exploration stage. This paper has very important practical significance for reducing the impact of the epidemic on college graduates.

2. DESCRIPTIVE STATISTICAL ANALYSIS OF GRADUATE EMPLOYMENT

2.1 Sample size and sample validity data

Students in Anhui Province were selected as the respondents, and the proportion of college students' willingness to pass on tea was estimated based on the results of the completed pre-survey questionnaire, so the sample variance of the overall willingness to pass on was of concern. The optimal sample size before correction n_0 was calculated by the formula of

$$n_0 = \frac{\frac{u^2 PQ}{d^2}}{1 + \frac{1}{N} [\frac{u^2 PQ}{d^2} - 1]}$$

N is the overall number, taken at a confidence level of 95% of the u values. $u = 1.96$, u is the two-sided standard normal distribution α quantile, and p is the sample proportion, and d is the absolute permissible error, and $d = 0.04$. According to the pre-survey results $p = 0.4$, in practice, if the p is around 0.5, the overall variance can be estimated based on the overall variance at $P = 0.5$ reaches a maximum for the sample at time so take $p = 0.5$. The total number of general higher education students in Anhui Province $N = 195$ million, then the minimum sample size can be approximated as

$$n_0 = \frac{u^2 p(1 - p)}{d^2} = \frac{1.96^2 \times 0.5 \times 0.5}{0.04^2} = 600.25$$

With the design effect identified, it was determined that the sample after the inclusion of the design effect was n_1 , n_0 , d_{eff} , i.e. $n_1 = 600.25$, the final sample size to be distributed using the calculated null proportion of 40% was determined to be

$$n = \frac{n_1}{(1 - 40\%)} = 1000.42$$

That is, 1000 copies. In the actual survey, we actually sent 1250 questionnaires, and 972 valid questionnaires were returned, the effective rate of the questionnaire was 77.76%, and based on this, the actual limit error was calculated as 2.987%, and the questionnaires were entered into SPSS software for processing.

2.2 Sample distribution

This survey does not use majors as a criterion to distinguish the research subjects, so the sample size of each major is not strictly required. Post hoc stratification was also carried out according to the nature of the majors of the university students interviewed, and the specific sample majors were assigned as shown in the table.

Table 1 Distribution of sample majors

storey	stratum	Sample size
science and engineering as academic subjects	0.1955	190
politics and law	0.1811	176
literature and history	0.1770	172
be in charge of	0.1728	168
medical science	0.1523	148
artists	0.1152	112
other	0.0062	6
aggregate	1	972

We can see through the distribution chart of sample majors that the surveyed college students' majors

are more evenly distributed, which is more representative of the study population.

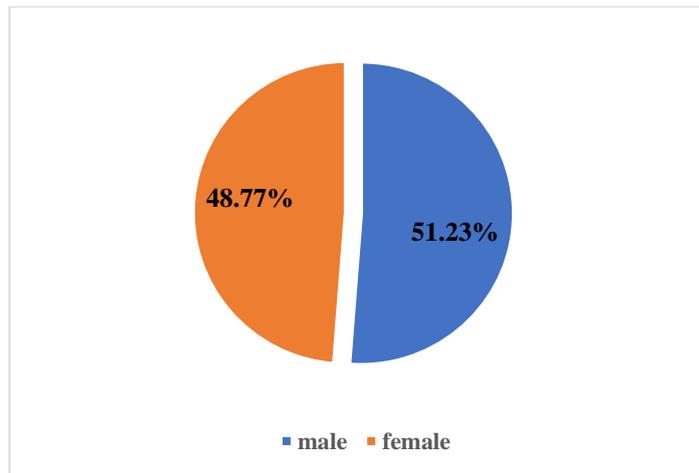


Figure 1 Gender distribution of university students interviewed

Of the 972 valid questionnaires, 498 were men, accounting for 51.23 per cent of the total sample, and 474 were women, accounting for 48.77 per cent of the total sample; the number of women was slightly lower than the number of men, and in general, the proportion of men and women was equal, and the sample was representative.

2.3 Conclusions of the descriptive statistical analysis

Fewer people were told to terminate their contracts or reduce their pay in response to the epidemic shock. The core of improving employment stability includes overall pay, overall feelings, development expectations, and cultural adaptation. In the case of the epidemic, the core of graduates' employment stability also comes from factors such as whether the employer terminated the contract, lowered the salary, and offered extensions to report to work. The data of this study shows that termination or reduction of salary is only a very small percentage, with 94.0% of graduates not being notified of termination or reduction of salary, 1.3% being informed of termination by the employer, and 4.7% being informed of reduction of salary. In addition, 31.1% of graduates have received notice that they can postpone their reporting to work, 7.7% have received notice that they can start work on time but can postpone submitting their diploma and degree, but 61.1% of graduates have not received any notice.

In terms of expected salary, the impact of the epidemic on the expected salary of unemployed graduates was generally insignificant. After-tax expected monthly salary in descending order: RMB 3001-5000 (40.1%→41.8%), RMB 5001-8000 (41.8%→39.9%), RMB 8001-10000 (9.5%→9.2%), RMB 3000 (4.5%→4.4%), RMB10,001-15,000 (2.2%→2.4%), and over 15,001 (1.9%→2.3%). It is noteworthy that nearly half (48.9%) of the employed graduates' actual salaries are concentrated in the income band of RMB 3001-5000, which matches the expected salary value of RMB 3001-5000 of 41.8% of the post-epidemic unemployed graduates group. Only 4.4% of the unemployed graduates expect a salary of less than \$3,000, which does not fit with 22% of the employed graduates whose actual salary is less than \$3,000, 39.9% of the unemployed graduates expect a salary of \$5001-8,000, but only 22.8% of the employed graduates can get an actual salary of \$5001-8,000 yuan, 9.2% of the unemployed group expects a salary of 8,001-10,000 yuan, but in reality only 5.1% of employed graduates can get 8,001-12,000 yuan in monthly salary after tax. The change in expected salary before and after the epidemic was relatively small and was generally higher than the actual salary and per

capita monthly disposable income received by employed graduates.

3. A LOGISTIC-BASED ANALYSIS OF THE FACTORS INFLUENCING THE EMPLOYMENT OF COLLEGE GRADUATES

3.1 Description of variables

Table 2 provides a description of the specific variables in the statistical analysis.

Table 2 Table describing the variables in the statistical analysis

Variable dimension	variable name	quantitative quality	Description of the value of the variable
physiological factor	sex	definite category	1. Male; 2. Female
Family factors	Family economic status	definite category	1. Students from economically disadvantaged families; 2. Students from non-economically disadvantaged families
Organizational factors	Type of Learning	definite category	1. science and technology; 2. medicine; 3. teacher training; 4. finance and economics; 5. general; 6. other
	School level	definite category	1. universities under the construction of first-class universities; 2. universities under the construction of first-class disciplines; 3. general universities; 4. high schools
	Type of discipline	definite category	1. science and technology; 2. politics and law; 3. literature and history; 4. economics and management; 5. medicine; 6. arts; 7. other
	Academic level	definite category	1. National double-class disciplines; 2. Provincial special high-level disciplines; 3. General disciplines
personal factor	Personal qualifications	definite category	1. college; 2. bachelor's degree; 3. master's degree or higher
	academic achievement	definite category	1. top 20%; 2. 20-60%; 3. bottom 40%
	foreign language level	definite category	1. failed all four and six levels; 2. passed only level four; 3. passed level four and six
	Expected salary	definite category	1. less than 3000; 2. 3001-5000; 3. 5001-8000; 4. more than 8000
	Job search expenses	definite category	1. under \$100; 2. \$101-\$300; 3. \$301-\$500; 4. \$501-\$1,000; 5. \$1001-\$2,000; 6. over \$2,001
	Entrepreneurial considerations	definite category	1. don't consider starting a business; 2. want to gain a few years of experience before starting a business; 3. want to start a business right after graduation

3.2 Model analysis

Pre-correlation analysis and chi-square test were conducted on the options of variables that may affect employment in the students' questionnaires, and then the variables with good correlation in the correlation analysis and chi-square test were screened as independent variables, which belonged to physical factors, family factors, organizational factors, and personal factors variable dimensions, and

logistic regression analysis was conducted with whether the graduates were employed in the sample as the dependent variable, and it was found that gender, place of origin, family economic status, school type, school level, discipline type, discipline level, personal education, academic achievement, foreign language level, expected salary, and job search expenditure variables have some differences on employment among different categories, respectively, with male, students with family economic difficulties, science and technology, first-class university construction colleges, humanities, national double first-class disciplines, college, top 20%, failed all four and six levels, less than 3000, less than 100, and not considering entrepreneurship as the reference group, due to the excessive model analysis and the limited space of the article, the following is the logistic model analysis of some of the intercepted results.

Table 3 Partial analysis of logistic model of factors influencing employment of fresh graduates from colleges and universities under the impact of the epidemic

Independent/dependent variables	Employment or not		
	coefficient estimate	standard error	advantageous ratio
Gender: Female	-0.518***	0.059	0.596
Family financial status: non-financially disadvantaged students	0.236***	0.055	1.266
Subject Level: Provincial Specialized High Level Subject	-0.087	0.142	0.917
Subject level: General subject	-0.508***	0.138	0.602
Academic performance: 20%-60% in the major	-0.101	0.054	0.904
Academic performance: post-professional 40%	-0.185*	0.085	0.831
Model significance level: 0.000			
Log-likelihood: -5289.74			
Pseudo-R-squared: 0.129			
***p<0.001, **p<0.01, *p<0.05, +p<0.1			

3.3 Model results

The results obtained through the logistic model analysis are as follows.

In terms of the dimension of the physiological factor variable, gender has a significant impact on employment. The probability of employment of female fresh university graduates is lower than that of male fresh graduates, and the female employment advantage is only 0.596 times that of male employment.

In terms of the dimension of the family factor variable, the presence or absence of financial hardship in the family has a significant impact on employment. Graduates with non-family financial difficulties are more likely to be employed than those with financial difficulties, with the former being 1.266 times more likely than the latter.

In terms of personal factor variables, personal education, academic achievement, foreign language proficiency, salary expectations, and job search expenses all have an impact on employment. In terms of personal education, the higher the education, the more significant the employment advantage, with

undergraduates and postgraduates with a master's degree or higher having a higher probability of employment than college graduates,. In terms of academic achievement, the employment probability of graduates in the top 20% of majors is higher than that of graduates in the bottom 40% of majors, and the employment advantage of graduates in the bottom 40% of majors is only 0.831 times that of graduates in the top 20% of majors. In terms of foreign language proficiency, graduates who passed Grade 4 but not Grade 6 are more likely to be employed than those who failed both Grade 4 and 6, which is 1.16 times their employment advantage. Graduates' expected salary has an extremely significant effect on employment, and it is evident that lowering graduates' expected salary is the most obvious potential intervening variable to increase employment under the epidemic shock. In terms of job search spending, the higher the job search spending, the higher the probability of employment, using graduates with a total spending of less than \$100 as the reference group.

In the survey sample, 50.4% of graduates do not consider entrepreneurship, 45.9% have entrepreneurial ideas and hope to accumulate several years of experience before starting a business, and only 3.7% of graduates hope to start a business after graduation. At present, the main difficulties faced by entrepreneurship from large to small are: lack of starting capital, lack of strong support, lack of technical support, no entrepreneurial partners, no entrepreneurial site, cumbersome administrative examination and approval procedures and no family support. Graduates with entrepreneurial ideas believe that the risk levels of entrepreneurship in the future are: market risk, capital risk, competition risk, cost management risk, investment decision-making risk, information risk, investment project expansion risk, product supply risk and social environment change risk. Different estimates of entrepreneurial risk will shape different entrepreneurial views, and the overall entrepreneurial view of graduates is more rational.

4. CONCLUSION

Since March 2020, the Chinese government has issued a series of preferential policies to stabilize and promote employment. Novel coronavirus pneumonia, the novel coronavirus pneumonia epidemic prevention and control measures, such as the implementation of the opinions on the new crown pneumonia epidemic impact and measures to strengthen steady employment, issued by the five ministries of the Ministry of human resources and social security, etc., were issued by the State Council General Office. The Ministry of Education issued the notice on the handling of the new crown pneumonia epidemic situation and the 2020 National College Graduates' employment and entrepreneurship work. Wait. In order to do a good job in the employment and Entrepreneurship of college graduates and accelerate the implementation of policies to hedge the impact of the epidemic, six departments and units including the Ministry of education, the Ministry of human resources and social security, the Ministry of industry and information technology, SASAC, China Central Radio and Television Corporation and the Central Committee of the Communist Youth League jointly implemented the "100 day sprint" action, focusing on organizing and carrying out "ten special actions" from May to mid August 2020 To promote employment. On this basis, based on the survey data, the research group suggests that attention should be paid to four easily neglected employment problems of graduates.

Under the influence of the epidemic, college graduates should establish a correct concept of

employment and career selection; they should activate their job-seeking situation and actively strive for employment; adjust their employment mentality and reduce anxiety; and sort out reasonable employment expectations. Cutting from the perspective of college students' conscious restraint of personal behavior, college graduates should plan their career development career scientifically and reasonably, clarify their personal career development goals, and enhance their sustainable employability in a planned manner.

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REFERENCES

- [1] Ma Qianru, Lin Yin. Research on the employment path of college students in the post epidemic era [J]. The road to success, 2021, (28): 26-27
- [2] Sun Jiayi, Liu Fangyu, Zhou Yudi, Wang Ruili. Analysis of big data helping college students' employment in the context of the epidemic: current situation, difficulties and countermeasures [J]. China business theory, 2021, (19): 182-185
- [3] Xiong Miao. Analysis of employment situation under epidemic prevention and control [a]. Sichuan Labor Security Magazine Publishing Co., Ltd. proceedings of Labor Security Research Conference (10) [C]. Sichuan Labor Security Magazine Publishing Co., Ltd.: Sichuan Labor Security Magazine Publishing Co., Ltd., 2021:2
- [4] Liu Hongliang. Research on employment status and Strategies of college students in the post epidemic era [J]. Time-honored brand marketing, 2021, (09): 149-150
- [5] Yang Yuzhi, Yuan Guang Hua, Ma Jing. Influence factors and Countermeasures of Agricultural College Students' Employment Intention under the impact of COVID-19. [J]. Anhui Agricultural Sciences, 2021,49 (17): 276-279.
- [6] Zheng Xiaomiao, Lin Yifan, Huang Yajing, Huang Jianjing, Li Yonghong, Chen Yi. Factors affecting the employment of university graduates under COVID-19 [J]. Journal of Guangzhou Open University, 2021,21 (04): 24-35+108.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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