

## **Analysis of the relationship between elective courses' selections and the consistency of home address and workplace with employment status of graduates majoring in mathematics in normal universities of China**

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### **Abstract**

With the method of correlation analysis and survival analysis, the relationship between the elective courses' selections and employment status, and the relationship between the consistency of home address and workplace and employment status of 126 students of a normal mathematics major in a normal university was studied. The results showed that on the basis of learning professional courses, the electives of educational theory and practice courses had little effect on the employment of students, and there was a significant correlation between the consistency of home address and workplace and employment. Therefore, in order to improve the employment rate, it is recommended that teachers should help students to get the employment information of their hometowns, and advise students to go to their hometowns for employment.

**Keywords:** mathematics major, normal universities, employment, survival analysis, correlation analysis

### **1. Introduction**

Establishing a qualified and stable teaching group in sufficient quantities is a fundamental plan to improve the level of basic education. Normal universities are the "working machine" for training teachers, whose basic task is to make students love to be teachers, know how to be teachers and be good teachers (Chen & Chen, 1991; Mo, 1995) <sup>[1, 7]</sup>. However, due to the saturation of teachers' posts, the diversification of teachers' sources, the treatment of teachers, the threshold of entry, and the changes in ideas, the employment situation of normal universities' students is very severe (Wu, 2018) <sup>[9]</sup>. Therefore, assisting the normal universities' graduates with successful employment has become a top priority.

### **2. Literature Review**

In order to promote the normal universities' students to get a job, many researchers have started from the university curriculum reform and made many studies. For example, by analyzing the problems existing in elective courses in universities, Wu Huiyan proposed that colleges should construct independent courses of elective courses from the curriculum design and management, which provided useful reference and enlightenment for the reform of elective courses in universities. Xiao Chi believed that it was necessary to add a curriculum to cultivate the core literacy teaching skills of normal universities' students to meet the new requirements of the core literacy of Chinese students and the core literacy of high school subjects. Ma Liping proposed that the reform of teacher education courses in normal universities should be carried out to enrich students' pre-service teaching theories and improve their practice ability (Wu, 2015; Xiao, Zhao & Ke, 2016; Ma & Li, 2016) <sup>[6, 8, 10]</sup>. It is undeniable that the above researches provide a good idea. However, it is obviously not comprehensive. For example, there is no research on the relationship between elective courses' selections of students and the consistency

of home address and workplace and their employment status in the current studies. From these two aspects, on the one hand, by analyzing the selections of elective courses and the relevance of employment, we can put constructive opinions on the reform of university curriculum from the roots, and guide students to study elective courses selectively. On the other hand, we can clearly understand that the consistency of home address and workplace is an important factor affecting the employment of normal graduates so as to correctly guide the students to get a job.

### **3. Method**

#### **3.1 Sample**

A total of 202 graduates in mathematics and applied mathematics at the School of Mathematics and Statistics of a Normal University in China were selected as the initial sample. After that, the students who went to study postgraduate degree and went abroad were removed, and the remaining 126 students were sampled.

These graduates' information includes: (1) Basic personal information, including home address, etc.; (2) Elective courses' selections; (3) Employment status in June, including employment status, unit location, etc.

#### **3.2 Data Analysis**

With the help of SPSS software, the correlation analysis and survival analysis of the above variables were carried out (Deng, 2016; Li, 2017) <sup>[2, 5]</sup>.

First of all, the above-mentioned classmates were classified according to the kinds of elective courses' selections and whether they have studied educational theory and practice courses. They were divided into two categories: no-learned educational theory and practice courses and learned educational theory and practice courses. The students who learned educational theory and practice courses can be subdivided into three categories: only learned the educational theory courses, only learned the educational

practice courses, and learned both the educational theory and practice courses. We analyzed the student's home address information and employment situation as well as the location of the unit to integrate the variable as the consistency of home address and workplace. Then used the survival analysis and correlation analysis to analyze the above variables.

**4. Results**

**4.1 The Impact of the Elective Courses' Selections on Employment**

Regarding whether or not students have studied educational theory and practice courses as "elective courses' selections", 1, 2, 3 and 4 were respectively used to indicate that students have only learned educational theory courses, only learned educational practice courses, learned both educational theory and practice courses and learned neither educational theory nor practice courses. Then we analyzed the influence of students' elective courses' selections on employment.

**4.1.1 The Impact of Different Chooses of Elective Courses' Selections on the Employment in June**

Using the Cox function to analyze the survival of the above-mentioned "elective courses' selections" and the employment situations, the results are as shown in table 1.

**Table 1:** Regression of elective courses' selections

Variable in the equation						
	B	SE	Wald	df	Sig.	Exp(B)
elective courses' selections	-.062	.367	.028	1	.867	.940

It can be seen from the table 1 that the absolute value of the coefficient B of "elective courses' selections" was less than

**Table 3:** Relevance of the Consistency of Home Address and Workplace with Employment

Correlation coefficient				
			Employment	The consistency of home address and workplace
The rho of Spearman	Employment	Correlation coefficient	1.000	.676**
		Sig.(double test)	.	.000
		N	126	126
	The consistency of home address and workplace	Correlation coefficient	.676**	1.000
		Sig.(double test)	.000	.
		N	126	126

\*\* . When the confidence (double test) is 0.01, the correlation is significant.

As can be seen from table 3, the correlation coefficient between employment status and the consistency of home address and work place was 0.676\*\*, which indicated that when the confidence level (double test) was 0.01, the employment was significantly correlated with the consistency of home address and workplace (Han, Zhao, Yang & Yang, 2019; Han, Yang, Zhao & Zhou, 2019) [3, 4].

**5. Discussion**

**5.1 Elective Courses' Selections**

From the results of the above Cox regression calculation, it can be seen that the elective courses' selection has little effect on the employment situation in June, and the regression relationship with employment is not significant. This shows that the selection of elective courses has little effect on employment. From the results of the above K-M method, it can be seen that the different categories of

1, which indicated that the "elective courses' selections" had little effect on the employment status in June. And the accompanying probability was 0.867, which was greater than 0.05, indicating that the different elective courses' selections had no significant impact on the employment situation.

**4.1.2 The Impact of Different Categories of Elective Courses' Selections on Employment in June**

Using the K-M method to calculate the elective courses' selections on the employment situation, and the results obtained are as shown in table 2.

**Table 2:** Log rank test for elective course

Overall comparison			
	chi-square	df	Sig.
Log Rank (Mantel-Cox)	1.888	3	.596

It can be seen from the table 2 that the companion probability was 0.596, which was greater than 0.05, which indicated that the impact of different grades of the elective courses' selections was insignificant on employment status.

**4.2 Relevance of the Consistency of Home Address and Workplace with Employment**

We analyzed the student's home address information and employment situation as well as the unit location, and integrated the variable as the consistency of home address and workplace, and used 0,1 to indicate consistency or not. Then we used relevant analysis to calculate the relevance of the consistency of home address and workplace with employment in June and the results obtained are as shown in table 3.

elective courses' selections have little effect on employment, and the learning of educational theory and practice courses has no significant promotion or inhibition on students' employment.

**5.2 The Consistency of Home Address and Workplace**

From the results of the above correlation analysis, it can be seen that there is a significant correlation between the employment situation and the consistency of home address and workplace, which indicates that the hometown has a significant role in promoting employment.

**6. Conclusion**

It can be seen from the above analysis that the elective situations of educational theory and practice courses have little effect on the employment situation. It is suggested that in the course of university curriculum reform, the setting

types and class schedules of elective courses should be targeted. Teachers should instruct students to choose appropriate and beneficial courses for their knowledge and skills in employment. In addition, it can be seen from the analysis that the consistency of home address and workplace has a close impact on the employment situation. In order to increase the employment rate, the home area should be considered much more.

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### 8. References

1. Chen HW, Chen JB. On the Basic Tasks of Teachers Colleges. *Journal of Zhenjiang Teachers College* (Social Science Edition). 1991; 4:91-94+77.
2. Deng JJ. *Research on Risk Prediction Ability Evaluation Method of Survival Analysis Model and Its Application*. Nanjing: Southeast University, 2016.
3. Han Q, Yang ZZ, Zhao YL, Zhou HY. Analysis of the Relationship between Academic Achievements and Employment Status of Graduates Majoring in Statistics of China. *International Journal of Advanced Education and Research*, 2019; 4(1):59-61.
4. Han Q, Zhao YL, Yang XT, Yang ZZ. Analysis of the Relationship between Academic Achievements and Employment Status of Graduates Majoring in Information and Computing Science of China. *International Journal of Advanced Educational Research*. 2019; 4(1):39-41.
5. Li YF. *Study on Statistical Inference of General Deviation Data in Survival Analysis*. Changchun: Jilin University, 2017.
6. Ma LP, Li BX. The Reform and Practice of Teacher Education Curriculum in Higher Normal Colleges——Based on the Exploration of Teacher Education Curriculum Reform in Harbin Normal University. *Language Teaching Communication*. 2016; 7:11-13.
7. Mo LL. Cultivation Ability is the Main Task of Normal Colleges. *China Music Education*. 1995; 4:14-15.
8. Wu HY. Independent Course: A New Direction of College Elective Course Reform. *China Adult Education*. 2015; 4:120-122.
9. Wu XL. The Status Quo and Countermeasures of Employment of Physics Majors in Local Teachers Colleges. *Journal of Hanjiang Teachers College*. 2018; 38(03):128-134.
10. Xiao C, Zhao YC, Ke Z. Course Policy Based on Core Literacy. A Summary of the 13th Shanghai International Curriculum Forum. *Global Education*. 2016; 45(01):113-120.