

# ***Research on the Relationship between Undergraduate Major and Income***

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**Abstract:** With the increase of the number of college graduates, the scale has gradually exceeded 10 million. With the influence of external environmental factors, more and more college students are facing employment problems, which has become the focus of social attention. This paper mainly uses the method of data analysis to explore the changes in the income of Chinese college students in the past five years. The researcher will discuss the differences in professional income caused by different factors such as professional division, year, university level, gender and region. Based on the project data of MyCOS's "MyCOS 2021 Employment Report for Chinese College Students," this research conducts an empirical analysis of the influencing factors of the monthly starting salary income of undergraduates. The results show that gender, major category, university level, gender and university location all affect the monthly income of college students six months after graduation to some extent.

**Keywords:** Undergraduate major; income; economy

## **1. Introduction**

With the increase of the number of college graduates, the scale has gradually exceeded 10 million. With the influence of external environmental factors, more and more college students are facing employment problems, which has become the focus of social attention. This paper mainly uses the data analysis method to discuss the changes in the income of undergraduate students in China in the past 5 years. The researcher will discuss the differences in professional income caused by different factors such as professional division, year, university level, gender and region. Based on the project data of MyCOS's "MyCOS's Employment Report of Chinese College Students in 2021," the research makes an empirical analysis of the influencing factors of the monthly starting salary income of undergraduates. Understanding the impact of college students' career income changes can help people better plan their career choices, and help people conduct more in-depth analysis and research, providing people with some reference for professional choices.

## **2. Classification**

### **2.1. Specialty Division**

We can draw from Table 1 that the salary of undergraduate computer majors in 2021 is generally higher, at 6886 yuan. Among them, the undergraduate major with the highest monthly income is

information security, amounting to 7439 yuan, and the monthly income of software engineering is more than 7000 yuan [1]. In addition, information engineering, computer science and technology, network engineering, Internet Engineering, electronic technology, microelectronics science and engineering, information management and information systems, and automation also entered the top ten. The top ten undergraduate majors with monthly income are basically related to the Internet and the digital economy. In the ranking list, computer majors are the most. In addition, among the top six undergraduate majors, except information engineering, the other five are computer majors [2].

Table 1: Major Majors with Higher Monthly Income of 2021 Graduates (Top 10) [1].

Serial number	Name of undergraduate major	Monthly income (yuan)
1	Information security	7439
2	Software Engineering	7205
3	Information Engineering	6871
4	Computer Science and Technology	6828
5	Network Engineering	6796
6	Internet of things project	6697
7	Electronic Science and Technology	6561
8	Microelectronics Science and Engineering	6420
9	Information Management and Information System	6420
10	Automation	6375

## 2.2. Particular Year

According to the analysis of employment data of college students in the past five years (2017-2021) by the MyCOS Research Institute, great changes have taken place in high-paid majors in the past decade, and information security has replaced architecture as the major with the highest monthly income [3]. Secondly, software engineering is the only major selected for five consecutive years. In addition, for five consecutive years, it ranked second only to information security as the highest-paid profession. For five consecutive years, information engineering ranked first as the highest-paid profession. It is easy to see from the above table that in recent years, computer science has become the most popular mainstream, high-paying major. Among the specialties on the list, information security, software engineering, network engineering, Internet of Things engineering, computer science and technology, digital media technology and other specialties belong to the computer specialty.

## 2.3. Institution

According to the latest ranking released by the compensation research institute China Payroll, Tsinghua University, Shanghai Jiaotong University and Peking University rank in the top three of the salary index of college graduates in 2021 [4], with average monthly salaries of 10992 yuan, 10602 yuan and 10690 yuan respectively. There are 31 universities with an average salary of 9000-10000 yuan, 24 universities with an average salary of 8000-9000 yuan, and 21 universities with an average salary of 7000-8000 yuan.

### 2.3.1. Ranking is Related to Urban Development Level

The top ten schools in the salary index are concentrated in the three top tier cities of Beijing, Shanghai and Guangzhou. Among the top 20 universities, except Zhejiang University, which ranked 11th, the rest are all located in three first tier cities in Beijing, Shanghai and Guangzhou, including 10 in Beijing,

Table 2: Top 10 undergraduate majors with higher monthly income six months after graduation in recent ten years [3].

Time	Undergraduate major and its monthly income (yuan)
Class of 2021	Information Security (7439)
	Software Engineering (7205)
	Information Engineering (6871)
	Computer Science and Technology (68828)
	Network Engineering (6796)
	Internet of Things Engineering (6697)
	Electronic Science and Technology (6561)
	Microelectronics Science and Engineering (6420)
	Information Management and Information System (6420)
	Automation (6375)
Class of 2020	Information Security (7396)
	Software Engineering (7082)
	Network Engineering (6757)
	Information Engineering (6694)
	Internet of Things Engineering (6643)
	Computer Science and Technology (6585)
	Digital Media Technology (6326)
	Electronic Science and Technology (6202)
	Information Management and Information System (6126)
	Electronic Information Engineering (6114)
Class of 2019	Information Security (7310)
	Software Engineering (7123)
	Network Engineering (6857)
	Information Engineering (6798)
	Internet of Things Engineering (6671)
	Computer Science and Technology (6633)
	Digital Media Technology (6267)
	Electronic Science and Technology (6191) Information Management and Information System (6068)
	Communication
	Information Engineering (6048)
Class of 2018	Information Security (6972)
	Software Engineering (6733)
	Network Engineering (6597)
	Internet of Things Engineering (6420)
	Information Engineering (6387)
	Computer Science and Technology (6219) French (6029)
	Digital Media Technology (5955)
	Microelectronics Science and Engineering (5872)
	Communication Engineering (5848)
Class of 2017	Information Security (6386)
	Software Engineering (6259)
	Network Engineering (6049)
	Information Engineering (5896)
	Computer Science and Technology (5855) Internet of Things Engineering (5826)
	French (5604)
	Electronic Science and Technology (5480)
	Information and Computing Science (5454) Electronic Information Science & Technology (5445)

8 in Shanghai and 1 in Guangzhou. Among the 24 universities with an average salary of more than 10000 yuan, except for 13 in Beijing, 6 in Shanghai and 2 in Guangzhou, the rest of Zhejiang University, Nanjing University and Southeast University are located in developed cities in the Yangtze River Delta.

### 2.3.2. Ranking is Related to the Types of Colleges and Universities

It can be seen from the statistical analysis of university types that among the top 100 universities, the top three in number are science and engineering, comprehensive and financial universities, among which 35 are science and engineering universities, accounting for 35%, the second is comprehensive universities, 25 in total, and the others are finance and economics, art, language, politics and law, teacher education, agriculture and forestry in order. The type of colleges and universities is related to majors to a certain extent. Therefore, it can reveal a general trend of choosing major types at present, that is, science and engineering majors, finance and economics majors, language majors, etc., and the employment situation and salary level will be relatively good.

### 2.4. Gender

A previous author used multiple linear regression model, Oaxaca method and other methods to explore the gender differences in starting salaries of college graduates and their influencing factor [5].

The study lists the gender differences in the starting salary of different groups of college graduates. It shows that except for ordinary college graduates, there are significant gender differences in the starting salary of all groups of college graduates. The scores of ordinary college graduates are less than 10% of the class, and their families are distributed in large and medium-sized cities, low-income families, public institutions, foreign-funded enterprises and the western region. Among all graduates, the starting salary of boys is higher than that of girls, and the average starting salary ratio of male and female graduates is between 0.746-0.976.

Moreover, it suggests that there are some differences in the impact of human capital variables, family pension variables and labor market employment characteristic variables on the starting salary of male and female graduates. It is primarily manifested in two ways: first, the variables that have a significant impact on the starting salary of male and female graduates and their impact on the starting salary of male and female graduates differ; and second, the variables that have a significant impact on the starting salary of male and female graduates differ. Secondly, some factors have different effects on the starting salary of male and female graduates. Some variables have a significant impact on the starting salary of male graduates, but have no significant impact on the starting price of female graduates, and vice versa. For example, in human capital variables, the type of major has no significant impact on the starting salary of male graduates, but has a significant impact on the starting price of female graduates; Internship experience has a significant impact on the starting salary of male graduates, but has no significant impact on the starting price of female graduates. In the family pension variables, family economic income has a significant impact on the starting salary of male graduates, but has no significant impact on the starting price of female graduates.

## 3. Cause Analysis

### 3.1. Policy

From the Ninth Five-Year Plan (1996-2000) to the Tenth Five-Year Plan (2001-2005), the national level only proposed to actively develop new energy from a macro perspective, without specific reference to photovoltaic and other new energy; since the 11th Five-Year Plan, the construction of solar photovoltaic power generation has been clearly mentioned. From the 12th Five-Year Plan to the

13th Five-Year Plan, the photovoltaic industry will be listed as a strategic emerging industry, focusing on the optimization and upgrading paths of energy structure. During the "14th Five-Year Plan" period, according to the "14th Five-Year Plan" and the long-term goal outline of 2035, building a modern energy system and vigorously improving the scale of photovoltaic power generation has become an important task during the "14th Five-Year Plan" period [6].

During the Eighth Five-Year Plan period, the state proposed to develop anti-tumor and antiviral biotechnology with good curative effect. During this period, the biomedical industry is in the exploratory stage; In the "Eleventh Five-Year Plan", the state proposed to focus on the development of biomedical industry and put biomedicine in an important position; At the beginning of the 13th Five-Year Plan, the state promoted the development of biomedical industry to a strategic position; According to the "14th Five-Year Plan" and the outline of long-term goals for 2035, the state proposes to build a new pillar of the industrial system, accelerate the development of biomedicine and other industries, and expand the bioeconomy [7].

The government also focuses on supporting the development of advanced manufacturing and high-tech service industries such as aerospace technology, new materials, information technology, energy conservation and environmental protection technology, marine exploration and development technology, etc [8].

### 3.2. Local Development of Economy

It is an indisputable fact that college graduates in economically developed cities have more employment opportunities and higher wages.

For example, among the 54 colleges and universities with a monthly salary of more than 10000 yuan, most of them are in the first tier cities of Beijing, Shanghai, Guangzhou and Shanghai, and some are also in the newly developed first tier cities such as Hangzhou and Nanjing.

The most striking example is Lanzhou University, one of the 985 universities. Although it has the title of 985, it is not on the top 100 list due to urban development, and is surpassed by many double non universities in first tier cities.

Geographically, the salary of employed graduates in the Yangtze River Delta and the Pearl River Delta is higher. There are obvious differences in salary levels in different regions. The Yangtze River Delta and the Pearl River Delta have a high degree of economic development. The salary level of fresh graduates in the Yangtze River Delta (2021 undergraduate 6484 yuan, higher vocational 4984 yuan) and the Pearl River Delta (2021 undergraduate 6431 yuan, higher vocational 4748 yuan) has always remained ahead.

### 3.3. Demand of Each Market

These factors include the market salary level, the supply and demand of market talents, the salary policy and salary level of competitors, the characteristics and competitive situation of the industry in which the enterprise is located, etc. After considering the above factors, enterprises can formulate their own salary plans. When determining the salary level, enterprises will be greatly affected by the supply and demand of the labor market. The wage level of labor market is the result of the interaction between labor supply side and labor demand side. In the labor market, if the types of employees needed by enterprises are in short supply, enterprises will face the pressure of wage increases, and enterprises must obtain higher wage labor. On the contrary, the corresponding salary level is low, and enterprises do not need to provide a very high salary level. In addition, when determining the salary level, we should not only consider the supply and demand relationship of the labor market, but also consider the salary policies and salary levels formulated by other enterprises in the industry, especially competitors for their employees. If these factors are not taken into account, enterprises will

not be able to hire the right candidates at the right salary level. For example, in the field of high technology, talents, as human capital, have become the most important factor of production in the knowledge economy. Due to the shortage of talents, the supply exceeds the demand. Therefore, in order to maintain the competitive advantage of the industry, many enterprises have implemented predatory talent strategies and provided very high salaries for the talents they need. Therefore, on the premise that financial resources permit, the salary level of general enterprises should not be lower than the average level of the relatively standardized labor market as far as possible.

According to the "Top Industry for College Graduate Recruitment Demand and Job Application in the Second Quarter of 2022" issued by Zhaopin Recruitment and China Employment Research Institute, the Internet, e-commerce, professional services, consulting industry, intermediary services, real estate, construction and computer software recruitment The most demand, the concentration of the first three industries is about 35.5%; from the perspective of supply, the industry with the largest supply ratio in this quarter is the Internet, consulting, construction industry, computer software industry, education and training industry, and the supply concentration of the first three industries. The degree is about 19.2%.

#### 4. Conclusion

The researcher discussed the differences in professional income caused by different factors such as professional division, year, university level, gender and region. Based on the project data of MyCOS's "MyCOS 2021 Employment Report for Chinese College Students," this research conducts an empirical analysis of the influencing factors of the monthly starting salary income of undergraduates. The results show that gender, major category, university level, gender and university location all affect the monthly income of college students six months after graduation to some extent. The income of different majors varies, and the year, institution, gender and region will all affect the income. With the increase of years, the income increases; The higher the ranking of colleges and universities, the higher the income may be; The income of men is generally higher than that of women; Income in developed regions is higher.

At present, the paper only discusses a few factors that may affect the monthly starting salary of college students after graduation. It is not perfect, and there may be other factors that significantly affect the income. Factors that can be discussed in the future.

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