

# College Application Consulting (CAC) Analysis: Influence on Post-Graduation Employment and Transmission Pathways Exploration

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**Abstract.** *Purpose:* This study investigates the influence of College Application Consulting (CAC) on the employment prospects of undergraduate graduates and its potential transmission pathways. *Methodology:* Utilizing a dataset comprising 430 survey responses collected through online and local distribution channels, we conducted OLS regression analyses to examine the relationship between CAC utilization and post-graduate individual employment. *Findings:* Our findings reveal that CAC exerts a statistically significant positive effect on post-undergraduate employment, with an estimated increase of 17.3%. This effect remains robust after controlling for confounding variables, including individual personality, family income, and Gaokao academic performance, etc. The study of potential transmission pathways of CAC indicates that it substantially mitigates the risk of admission slippage and enhances self-awareness, ultimately exerting a positive influence on employment. *Value:* This study sheds light on the multifaceted impact of CAC, offering valuable insights into its role in shaping educational and employment prospects of high school graduates in mainland China.

**Keywords:** Gaokao; College Admission; College Application Consulting; Undergraduate Study; Individual Employment; Transmission.

## 1 Introduction

Traditionally, Chinese students have been striving for premier educational institutions, demanding years of rigorous academic preparation and excellent college application planning. In recent years, however, there's been a noticeable shift towards turning to external support, primarily in the form of College Application Consulting (CAC), to enhance the chances of securing spots in famous universities. CAC services provide insights into majors, and evolving admission requirements, guiding students to make sensible academic decisions aligned with Gaokao grades and personal aspirations.

Simultaneously, shifts in parent-student perspectives on college choices, the heightened complexities of college application following the 2014 Gaokao reform, and the abundant

higher education options have increased the willingness to purchase CAC and fuel the CAC boom. The rapidly emerging demands for CAC have created a huge market, emphasizing CAC's role in harmonizing academic aspirations with actual conditions.

This paper aims to explore the efficacy of CAC on individual post-graduate employment through survey distribution and OLS regressions, critically examining its tangible impact on optimizing Gaokao results, improving students' academic performance and benefiting students' future development. Through the analysis, we seek to reveal the reality and effects of CAC services to contribute to the evolving Chinese higher education system.

## **2 Research Background**

### **2.1 Popularity of College Application Consulting (CAC)**

For Chinese students, Gaokao and college admissions have always been of paramount importance, as they dedicate years of rigorous study to gain access to prestigious universities. Receiving College Application Consulting (CAC) is one popular way to help them with college application process. CAC primarily serves to help students analyze majors, gain insights into college, and understand recent admission rules, providing guidance and advice based on students' Gaokao scores and individual conditions.

The CAC market can be categorized into two main segments based on pricing and usage patterns. One type is the offline one-on-one consultation with professional counselors, featuring longer service duration, stronger targeting, and higher prices. The unit price of this type of service in first tier cities such as Beijing, Shanghai, Guangzhou, and Shenzhen ranges from 15000 yuan to 50000 yuan. The other type comprises online reporting systems based on Big Data or emerging AI technologies, assisting users in decision-making through intelligent tools, possessing functions such as massive information search and intelligent recommendation and attracting more and more consumers' preference [7].

In recent years, college application consulting service has gained substantial traction and evolved into a thriving industry. According to the Analysis Report on China's College Application and Employment Prospects in 2023 of iiMedia Research [5], 88.1% of high school students express a willingness to choose CAC service; China's college application consulting market in 2022 is valued at 880 million RMB, with expectation of reaching 950 million RMB in 2023.

At present, several Internet giants, educational institutions, and start-ups have entered the CAC market. Internet giants such as Baidu, Tencent, NetEase, and Zhihu have launched application services based on extensive models; Basic telecommunication operators like China Unicom offer intelligent reporting services driven by computing power and data advantages; Intelligent application software such as Quark apps are emerging endlessly [12]. In addition, some top universities and renowned teachers have released themed courses after Gaokao [7].

### **2.2 Reasons Behind Popularity**

The surge in the popularity of CAC can be attributed to several factors. First, parents and students often possess differing preferences when it comes to college application. While

students tend to prioritize their interests, placing employment prospects second, parents take a more practical approach, drawing from their own experiences and social circles to guide their children's choices of majors and colleges [3]. CAC can serve as a coordinator between parents and children.

Second, the college application process has become increasingly challenging following the 2014 Gaokao reform, which granted students more autonomy in selecting colleges. The heightened complexity and difficulty of college applications have become focused points [14]. Moreover, by June 15, 2023, there are totally 3072 higher education institutions in China [9]. Researching extensive information about numerous colleges and majors, as well as grasping the intricacies of the application process, is time-consuming and arduous.

Third, high school students usually lack comprehensive knowledge about careers and sources of information on college application. In 2023, the number of Gaokao applicants reached 12.91 million, an increase of 980,000 compared to the previous year, and the number of national college graduates reached 11.58 million [5]. This heightened competition in the job market increases the demand for personalized CAC services.

Comparatively, professional counselors tend to access new and massive information about rankings in specific areas and college admission requirement. They can provide more stable and appropriate college application choices to avoid mismatches. Besides, the counselors may also consider personalities and interest of students to make analysis, providing the most reasonable recommendations. In other words, CAC seeks to maximize the impact of Gaokao results by aligning admission criteria, college needs, personal interests, rankings, and expectations [7].

### **2.3 Potential Effects of CAC on Employment**

Generally, the possible effects of CAC can be analyzed from the perspective of colleges, students, and the society.

On an individual level, CAC possibly exert influence on students. It equips students with a better understanding of college requirements, increasing their chances of gaining admission to superior universities and majors. Additionally, it helps students clarify their interests and competencies, enabling better alignment between their academic pursuits and career goals. These factors collectively enhance students' motivation to excel academically and improve their competitiveness in the job market.

From a broader perspective, CAC potentially influence both the colleges and the society. The mismatch between college majors setting and industry demands is a significant contributor to low employment rates. The rapid evolution of industries has led to a disconnect between the courses offered by colleges and the skills required by employers. This results in numerous job vacancies in high-tech sectors, while certain fields like finance, accounting, and law face oversaturation and oversupply, leading to fierce market competition [5].

Recommending students to avoid overloaded majors and opt for higher demanded majors through CAC may reversely motivate the reform in major settings of colleges. Consequently, social overall employment rate increases with the resources allocated more efficiently and economy efficiency promoted.

## 2.4 Potential Confounding Factors

With the existence of certain factors influencing both the choice of CAC and the employment prospects, it can be hard to figure out and define the casual relationship between purchasing CAC and better employment. While we assume that receiving CAC can enhance individual competency and employment prospects, it's important to acknowledge potential confounding factors that may contribute to higher possibility of choosing CAC and better employment outcomes for some individuals.

**Individual Personality.** Personal traits, such as assertiveness, confidence, and goal orientation, can directly impact one's choice of purchasing CAC and then future career development. Some students may exhibit higher levels of purposefulness, assertiveness, and determination compared to their peers, leading to differences in confidence and anxiety levels. Faced with the pressures of college application and future career, these students may proactively research colleges and majors, even identifying their dream schools, leading to higher possibility of choosing CAC. Consequently, they are more inclined to gather comprehensive career information and formulate early career plans, potentially outperforming their peers who may feel uncertain and uneasy about the college application process. In addition, certain students may rely more on their own aspirations rather than merely following parental guidance, peer recommendations, or societal perceptions of career prospects. Such self-reliance can foster a more independent character and may contribute to their future career success.

Chapman's model of college choice highlights that students' college choice behavior is influenced by family socioeconomic status, educational expectations, high school performance and other personal and family characteristics [2]. Therefore, we propose the below three assumptions.

**Family Income.** Disparities in family income may affect a student's development. Wealthier families may invest more in a student's development, affording opportunities such as tutorial classes, interview coaching, participation in study exchange programs, as well as CAC services, which are beneficial for employment. Excluding the effects of family income is crucial to assess the influence of CAC on employment.

**Parental Education and Attitudes.** Parents' educational backgrounds and attitudes can influence their children's future employment. More educated and open-minded parents may be more inclined to support their children's education and engage in the CAC process, thus exerting a positive effect on employment.

**Academic Performance.** Academic performance throughout high school and the Gaokao can impact future career options. Students with strong academic records may have more choices in terms of colleges and majors, possibly contributing positively to their eventual career advancement. Conversely, students with comparatively modest academic records may encounter narrower selections in terms of colleges and majors, potentially leading to comparatively lower willingness to purchase CAC and uncertainty and pessimism about future career prospects.

**Information Sources.** Some students may obtain relevant information through high schools, relatives, friends, and teachers, beneficial to future selection of colleges, majors and careers.

Easy access to more information channels may undermine students' intention and demand for CAC. Currently, various regions have established public service systems for college application composed of examination institutions, colleges, and high schools. The Ministry of Education holds the "National College Entrance Examination Online Consultation Week" activity every year; Colleges will organize on-site consultation, online consultation, telephone consultation, online live streaming, and other activities [10].

**Regional Disparities.** The region where students reside can directly impact future employment prospects. Larger cities with robust economies tend to offer more educational resources and job opportunities, which can be advantageous for CAC receiving and career developing. The regional variances usually exist among northwest, central, northeast, and south, east areas of China.

## **2.5 Potential Impact Transmission Pathways**

Employment prospects and salary of majors are the primary considerations for students when choosing a major [5]. However, whether CAC can improve employment chance of students needs researching and analyzing, as there is no obvious data evidence indicating the real impact. To assess whether CAC can improve students' competitiveness and employment prospects, we propose several potential impact transmission pathways based on the following hypotheses:

***h<sub>0</sub>: College Application Consulting can improve individual competency and employment rate.***

As we assume, CAC can better align students' abilities and interests with major requirements, thereby decreasing learning depression and pressure, as well as increasing satisfaction and individual major match, which is an important factor affecting learning engagement, academic persistence, degree completion rate, and employment prospects [1] [4] [8] [11].

***h<sub>1</sub>: College Application Consulting can improve individual student major match to improve competency and employment.***

Meanwhile, we assume CAC can stimulate students' interest in their chosen majors by providing comprehensive insights into majors and curricula, motivating students to achieve higher academic performance out of their own interest. In job hunting, several employers value academic grades as indicators of strong learning abilities and overall competency.

***h<sub>2</sub>: College Application Consulting can improve individual major learning interest and grades to improve competency and employment.***

School comprehensive ranking and major ranking are the most important aspects that students attach to when choosing a college [13] [6]. CAC can elevate the individual ranking of colleges, which can, in turn, boost students' employment competency. The prestige and recognition of colleges at the national level also influence students' employability.

***h<sub>3</sub>: College Application Consulting can increase college levels individually to improve competency and employment.***

As Gaokao grades and rankings in one province are different each year, college admission bottom lines are set according to the yearly rankings and enrollment numbers. Great

uncertainty exists in college application process as students may experience no admission or transfer to a non-chosen or unpopular major. We assume that CAC can mitigate the risks of application rejection or major transfer for students by providing professional recommendations, ensuring smoother admissions and enrollment.

***h<sub>4</sub>: College Application Consulting can undermine slippage or major transfer risks individually to improve competency and employment.***

CAC, by offering insights into major prospects and career development paths, facilitates career planning, serving as a foundational guide for individual career development.

***h<sub>5</sub>: College Application Consulting can provide fundamental individual career development planning to improve competency and employment.***

We assume that through CAC, students can enhance self-awareness, including advantages and disadvantages, personality, aspirations, and competency, helping students make suitable major and career choices.

***h<sub>6</sub>: College Application Consulting can enhance individual self-awareness to improve competency and employment.***

### **3 Methodology**

#### **3.1 Dependent Variables**

For the first part of regression analysis, we aim to examine the relationship between CAC utilization and future employment prospects using the dependent Variable: Employment status (variable: *Employ*). Respondents answered whether they were employed within six months of undergraduate graduation, with the value 1= "Yes" and 0= "No".

For the second part, we investigate the effectiveness of purchasing CAC on individuals focusing on six dependent variables:

Undergraduate career plan building (variable: *Career2Year*). Participants were required to share details pertaining to their career planning condition in the first two years of undergraduate study, with the value 1= "Yes" and 0= "No".

Self-recognition improvement (variable: *InhanReco*). Inquiries were made to ascertain if participants witnessed advancements in their self-awareness. Especially, in our survey, the participants were required to rank their self-recognition improvement level from 1 to 5 after receiving CAC. We have categorized the responses of 1 and 2 as "no improvement" which is equal to the value 0= "No" of the variable *InhanReco*, and the answers higher than 2 of improvement levels as obvious improvement in self-recognition representing the value 1= "Yes" of the variable *InhanReco*.

College level (variable: *SchLevel*). They were asked about the college's categorization (including safety, target, dash).

Admission slippage & major transferal (variable: *Slippage & TransUnpopu*). The variable examined whether they encountered any admission slippages or major transfers during college application process to assess the risk decrease function of CAC.

Accumulative GPA (variable: *GPA*). Respondents were asked to provide four-year cumulative GPA as reference for personal development in the form of categorical choices with the values 1= “1.7 or Below”; 2= “1.7-2.6”; 3= “2.7-3.5”; 4= “3.6-4.0”.

Individual major match (variable: *FreChanMajor*). The variable assesses the frequency with which participants contemplated changing their major, to examine the major suitability.

### 3.2 Independent Variables

The main independent variable, Whether Purchasing CAC before applying for college (Variable: *Buy\_CAC*), was used to evaluate the effectiveness of CAC and its relationship with all six dependent variables in the second part of data analysis, as well as with one dependent variable related to employment in the first analysis part.

For each dependent variable in the transmission pathway analysis part, other independent variables are introduced:

The times of career path changing consideration during college (variable: *FreChanCareer*), with the value 1= “0 times”; 2= “1-3 times”; 3= “4-6 times”; 4= “7-9 times”; 5= “10 or Above times”.

The self-recognition improvement variable incorporates the independent variable of receiving customized CAC service based on experience and personal conditions (variable: *Tailor\_CAC*).

Another independent variable is the confidence for applying for a better college (variable: *BetterSch*), participants rates from a scale of 1 to 5, 1 being not confident and 5 being very confident, for their confidence to enter a more prestigious college.

Respondents are prompted to report the numerical amount for independent variables: times of experiencing disinterest in major (variable: *MajorUninterest*), times of feeling burdened in studying major (variable: *MajorBurden*), and degree of recognizing major as resourceful and promising (*AgreeMajor*), that are all associated with accumulative GPA within 4 years.

Additionally, a new independent variable named *MajorUnsuit* has been generated as the plus of *MajorUninterest*, *MajorBurden*, and *MajorDepress*, referring to the frequencies of experiencing depression about major. To measure the individual major match, the determination of considering changing major (variable: *ChangeMajor*) and *MajorUnsuit* are introduced as dependent variables.

Furthermore, students' Gaokao rankings (variable: *Rank*), and students' willingness to receive major transferal during college application process (variable: *Transferal*) have also been included as dependent variables in regression models influencing the possibility of admission slippage and major transferal.

### 3.3 Control Variables

When we trying to examine the relationship between CAC utilization and future individual employment situations, to reduce the effect of potential confounding factors, we incorporated six control variables.

**Regional Disparity** (variable: *Province* 1-4 indicates provinces are getting richer in development 1(Imperished region)="Xinjiang, Tibet, Qinghai, Gansu, Inner Mongolia,

Ningxia, Yunnan, Guangxi, Guizhou"; 2(Less impoverished region)="Heilongjiang, Jilin, Liaoning, Shanxi, Shaanxi, Anhui, Shandong, Hebei, Hubei, Henan"; 3(Less affluent regions)="Sichuan, Chongqing, Hunan, Jiangxi, Fujian"; 4(Affluent regions)="Beijing, Tianjin, Jiangsu, Shanghai, Zhejiang, Guangdong").

**Academic Performance** incorporates Gaokao ranking within province (variable: *Rank* 1 = "50% or below", 2 = "Top 50%", 3 = "Top 30%", 4 = "Top 10%", 5 = "Top 5%", 6 = "Top 1-3%") and high school average GPA ranking (variable: *Ave\_Rank* 1 = "50% or below", 2 = "Top 50%", 3 = "Top 30%", 4 = "Top 10%", 5 = "Top 5%").

**Family Income** (variable: *FamilyIncome* 1 = "5000 RMB or below", 2 = "5000 - 15000 RMB", 3 = "15000 - 25000 RMB", 4 = "25000 - 35000 RMB", 5 = "35000 RMB or above").

**Parental Education and Attitudes** takes account for parents' highest education level (variable: *Parents\_HighestEdu* 1 = "None", 2 = "Primary school", 3 = "Middle school", 4 = "High school or technical secondary school", 5 = "Junior college or technical colleges", 6 = "Bachelor's degree", 7 = "Master's degree", 8 = "Phd or above"), critical decision made by parents (variable: *FamilyDecision* count of selection among high school, financial expenditure limits, marriage, extracurricular activities, career path, college and major, and other), ratio of parental expectations and personal interests (variable: *Per\_FamilyIntention* parental expectations plus personal interests equals 100%).

**Individual Personalities** include high school study type (variable: *StudyType* 1 = "Spontaneous", 2 = "Flexible", 3 = "Planning"), preparedness for future (variable: *Prepare* 1 = "Yes", 2 = "No"), change answer based on trend (*Answer\_Change* variable: 1 = "Yes", 2 = "No"), purchase base on trend (variable: *Product\_Buy* 1 = "Yes", 2 = "No"), change major based on trend (variable: *Intention\_Change* 1 = "Yes", 2 = "No"), anxiety level (*AnxietyLevel* variable: 1-5 indicates increasing anxiety).

**Information Sources** contains effectiveness of information rating (variable: *Info\_Effec* 0 = "Not effective" to 5 = "highly effective), information source (variable: *Info\_Source* count of selection: NA, teacher, peer, family, internet, social media, official organization, and other), CAC peer understanding rating (variable: *CAC\_Understand* 1 = "No understanding" to 5 = "knowledgeable").

### 3.4 Survey Respondent and Survey Producer

An electronic survey was administered to individuals just graduating from undergraduate colleges or already employed in Mainland China via Tencent Survey through online and offline distribution, spanning from August 11th to August 22nd, 2023. The sampling method primarily utilized convenience random sampling.

Participants were prompted to respond based on their best recollection and comprehension. For questions involving numerical data, predefined ranges were offered to minimize potential inaccuracies. Of the 453 total responses gathered, 430 were deemed valid for the research, with the remaining being excluded due to incomplete data or inconsistencies.



## 4 Results and Discussion

### 4.1 Data Definition and Description

Table 1 presents the data definition and corresponding description for variables in the survey.

**Table 1.** Data Definition and Description.

| Categories                       | Data Tags  | Definition Explanation   | Data Type  | Assignment Description   |
|----------------------------------|--|--|--|--|
| Trans<br>mission<br>Pathw<br>ays | Spend_CAC  | Expected Cost of CAC   | Categorical  | 1="1000 RMB or Below"; 2="1000 - 3000 RMB"; 3="3000 - 5000 RMB"; 4="5000 - 10000 RMB"; 5="10000 -20000 RMB"; 6="20000 RMB Above" |
|                                  | Buy_CAC  | Whether One has Bought CAC   | Dummy  | 1=Yes; 0=No  |
|                                  | Change_AftCAC  | Whether CAC Changes Original Career/ Major Choice                          | Dummy  | 1=Yes; 0=No  |
|                                  | Analyses_CAC   | Whether CAC Analyzes Major and Career Paths                                | Dummy  | 1=Yes; 0=No  |
|                                  | Tailor_CAC   | Whether CAC Provides Tailored Suggestions Based on One's Actual Conditions | Dummy  | 1=Yes; 0=No  |
|                                  | RecoInhan_CAC  | Level of Improvement in CAC's Perception of Self Strengths and Weaknesses  | Continuous   | Increasing Awareness Level from 1-5<br>1-2 Regarded as No Improvement, 3-5 Regarded as Awareness Improvement                     |
|                                  | InhanReco  | Whether CAC Increased Awareness of Oneself                                 | Dummy  | 1=Yes; 0=No  |
|                                  | SchLevel   | Undergraduate College Level  | Categorical  | 1="Safety Colleges"; 2="Targeted Colleges"; 3="Dashing Colleges"   |
|                                  | BetterSchool   | Confidence Level in Re-applying to a Better Level of Schools               | Continuous   | Increasing Confidence from 1-5   |
|                                  | Slippage   | Whether One Encountered Application Slippage                               | Dummy  | 1=Yes; 0=No  |
|                                  | Transferal   | Whether One Accepted Transferal in College Application                     | Dummy  | 1=Yes; 0=No  |
|                                  | TransUnpopu  | Whether One has been Transferred to an Unchosen or Unpopular Major         | Dummy  | 1=Yes; 0=No  |
|                                  | AgreeMajor   | Recognition Level of Major Richness and Good Employment Prospects          | Continuous   | Increasing Recognition Level from 1-5  |
|                                  | MajorUninterest                                      | Number of Times One Feels Uninterested in Major                            | Categorical  | 1="Never"; 2="Seldom"; 3="Once/Twice in Two Semesters"; 4="Once/Twice in One Semester"; 5="Many Times in One Semester"           |
| MajorBurden                      | Number of Times One has Difficulty in Learning Major | Categorical  | 1="Never"; 2="Seldom"; 3="Once/Twice in Two Semesters"; 4="Once/Twice in One Semester"; 5="Many Times in One Semester" |  |
| MajorDress                       | Number of Times One Feels Frustrated about Major     | Categorical  | 1="Never"; 2="Seldom"; 3="Once/Twice in Two Semesters"; 4="Once/Twice in One Semester"; 5="Many Times in One Semester" |  |

|                |  |             |   |
|----------------|--|-------------|---|
| FreChan Major  | Number of Times One Considers Changing Major   | Categorical | 1="0"; 2="1-3"; 3="4-6"; 4="7-9"; 5="10 or Above"                                   |
| Change Major   | Whether One Changes Major without Barriers   | Dummy       | 1=Yes; 0=No   |
| MajorUnsuit    | Major and Individual Incompatibility   | Continuous  | Increasing Unsuit Level from 3-15 Equal to MajorUninterest+MajorDepress+MajorDpress |
| Career2 Year   | Whether One has Career Development Established in the First Two Years of Undergraduate Studies | Dummy       | 1=Yes; 0=No   |
| FreChan Career | Number of Times One Considers Changing Career Development                                      | Categorical | 1="0"; 2="1-3"; 3="4-6"; 4="7-9"; 5="10 or Above"                                   |
| GPA            | Accumulated GPA for Four Years   | Categorical | 1="1.7 or Below"; 2="1.7-2.6"; 3="2.7-3.5"; 4="3.6-4.0"                             |

|                     |   |                                |  |  |
|---------------------|---|--------------------------------|--|--|
| Province            | The province where the Gaokao is taken                              | Categorical                    | 1-4 indicates provinces are getting richer in development 1(Imperished region)="Xinjiang, Tibet, Qinghai, Gansu, Inner Mongolia, Ningxia, Yunnan, Guangxi, Guizhou"; 2(Less imperished region)="Heilongjiang, Jilin, Liaoning, Shanxi, Shaanxi, Anhui, Shandong, Hebei, Hubei , Henan"; 3(Less affluent regions)="Sichuan, Chongqing, Hunan, Jiangxi, Fujian"; 4(Affluent regions)="Beijing, Tianjin, Jiangu, Shanghai, Zhejiang, Guangdong" |  |
| Rank                | Provincial Gaokao ranking   | Categorical                    | 1="below 50%"; 2="top 50%"; 3="top 30%"; 4="top 10%"; 5="top 5%"; 6="top 1-3%"   |  |
| Disturbance Factors | Ave_Rank  | Average ranking in high school | Categorical  | 1="top 50% or less"; 2="top 30%"; 3="top 20%"; 4="top 10%"; 5="top 5%" |
| FamilyIncome        | Monthly family income during high school and application period     | Categorical                    | 1="5000 RMB or below"; 2="5000 - 15000 RMB"; 3="15000 - 25000 RMB"; 4="25000 - 35000 RMB"; 5="35000RMB or above"   |  |
| Parents_HighestEdu  | Parents' highest education  | Categorical                    | 1="none"; 2="elementary school"; 3="middle school"; 4="high school and technical secondary school; 5="junior college and vocational technical college"; 6="undergraduate"; 7="master"; 8="PhD and above"   |  |
| FamilyDecision      | Major decisions made by parents on behalf of their children         | Continuous                     | Number ticked in selected high school, financial expenditure amount and purpose limit, marriage, opted in extracurricular activities, career path, college and major reporting, and the other options  |  |
| Per_FamilyIntention | Balanced ratio between parental expectations and personal interests | Continuous                     | Parental expectations + personal expectations = 100%   |  |

|                  |  |             |  |
|------------------|--|-------------|--|
| StudyType        | Types of Learning Style in High School   | Categorical | 1="Casual type"; 2="Flexible type"; 3="Planning type" (increasing degree of planning)  |
| Prepare          | Whether used to planning and making necessary preparations for the future in advance | Dummy       | 1=Yes; 0=No  |
| Answer_Change    | Whether follow the crowd and change the answers                                      | Dummy       | 1=Yes; 0=No  |
| Product_Buy      | Whether follow the crowd and buy the products  | Dummy       | 1=Yes; 0=No  |
| Intention_Change | Whether change the major choice in order to chase popular majors                     | Dummy       | 1=Yes; 0=No  |
| AnxietyLevel     | Anxiety level during applying for university   | Continuous  | 1-5 indicates increasing anxiety   |
| Info_Effic       | Evaluation about the validity of the information obtained                            | Continuous  | 1-5 indicates increasing information validity  |
| Info_Source      | The source of information for college application                                    | Continuous  | Number ticked in Not Collected, Teachers, Peers, Family Members, Internet, Social Media, Official Organizations, and other options |
| CAC_Understand   | Awareness of College Application Consulting (CAC)                                    | Continuous  | 1-5 indicates increasing awareness   |
| Employ           | Whether employed within six months of graduation                                     | Dummy       | 1=Yes; 0=No  |

## 4.2 Results and Discussion for six potential disturbance factors

### 4.2.1 Descriptive Statistics

Tables 2 presents the descriptive statistics for all related continuous variables and categorical variables for six potential disturbance factors mentioned in the section 2.4.

**Table 2.** Descriptive Statistics for Control Variables of Disturbance Factors.

| VARIABLES              | N   | mean  | sd    | min | max |
|------------------------|-----|-------|-------|-----|-----|
| Province               | 430 | 2.763 | 0.989 | 1   | 4   |
| Rank                   | 430 | 3.386 | 1.557 | 1   | 6   |
| Ave_Rank               | 430 | 2.965 | 1.424 | 1   | 5   |
| Employ                 | 430 | 0.528 | 0.500 | 0   | 1   |
| FamilyIncome           | 430 | 2.379 | 1.117 | 1   | 5   |
| Parents_HighestEdu     | 430 | 4.333 | 1.467 | 1   | 8   |
| FamilyDecision         | 430 | 2.179 | 1.184 | 1   | 6   |
| Per_FamilyIntention(%) | 430 | 29.73 | 19.19 | 0   | 100 |
| StudyType              | 430 | 2.170 | 0.733 | 1   | 3   |
| Prepare                | 430 | 0.472 | 0.500 | 0   | 1   |
| Answer_Change          | 430 | 0.500 | 0.501 | 0   | 1   |
| Product_Buy            | 430 | 0.193 | 0.395 | 0   | 1   |
| Intention_Change       | 430 | 0.544 | 0.499 | 0   | 1   |
| AnxietyLevel           | 430 | 3.142 | 1.229 | 1   | 5   |
| Info_Effic             | 430 | 3.133 | 1.048 | 1   | 5   |
| Info_Source            | 430 | 3.188 | 1.432 | 1   | 6   |
| CAC_Understand         | 430 | 2.774 | 1.057 | 1   | 5   |
| Buy_CAC                | 430 | 0.433 | 0.496 | 0   | 1   |

Tables 3 presents descriptive statistics for some key variables about potential disturbance factors mentioned in Section 2.4.

**Table 3.** Descriptive Statistics for Some Key Variables.

| Variables    |                          | Freq. | Percent |
|--------------|--------------------------|-------|---------|
| Buy_CAC      | No                       | 244   | 56.74   |
|              | Yes                      | 186   | 43.26   |
| Employ       | No                       | 203   | 47.21   |
|              | Yes                      | 227   | 52.79   |
| Province     | Impoverished region      | 41    | 9.53    |
|              | Less impoverished region | 150   | 34.88   |
|              | Less affluent regions    | 109   | 25.35   |
|              | Affluent regions         | 130   | 30.23   |
| FamilyIncome | 5000 RMB or below        | 79    | 18.37   |
|              | 5000 - 15000 RMB         | 211   | 49.07   |
|              | 15000 - 25000 RMB        | 74    | 17.21   |
|              | 25000 - 35000 RMB        | 30    | 6.98    |
|              | 35000 RMB or above       | 36    | 8.37    |
| StudyType    | Casual type              | 85    | 19.77   |
|              | Flexible type            | 187   | 43.49   |
|              | Planning type            | 158   | 36.74   |
| Info_Effec   | 1: Low Lev               | 41    | 9.15    |
|              | 2                        | 61    | 14.19   |
|              | 3: Median Lev            | 155   | 36.05   |
|              | 4                        | 146   | 33.95   |
|              | 5: High Lev              | 27    | 6.28    |

The major variables from a survey dataset are concisely summarized in this table, providing details on the traits and preferences of the surveyed population. It's worth noting that data show a balanced distribution in the 'Buy\_CAC' variable, with 43.26% of respondents having purchased CAC and 56.74% have not, showing a somewhat even split between the two options. Similarly, the 'Employ' variable shows that 52.79% of respondents are currently employed, compared to 47.21% who do not. Geographically, respondents are widely dispersed, with 30.23% living in 'Affluent regions' and 9.53% coming from 'Impoverished regions.' Most families had incomes below 15,000 RMB, and close to 50% of all respondents falling within the 5,000–15,000 RMB income range. Under the 'StudyType' variable, the 'Flexible type' category, which includes 43.49% of respondents, has the highest percentage, followed by the 'Planning type' and the 'Casual type'. When measuring efficacy of information related to CAC, more than 60% of respondents' ratings of 3 and 4 on a 1-5 scale, suggesting a "median level" of effectiveness.

#### **4.2.2 OLS Regression Analysis: Does purchasing a College Application Consulting (CAC) promote employment?**

The primary objective of this study is to investigate whether the acquisition of a College Application Consulting (CAC) enhances the employment prospects of undergraduate graduates. The acquisition of a CAC serves as the independent variable, while successful employment status serves as the dependent variable. The outcomes of this investigation are presented in Table 4.

In Model 1, the coefficient for 'Buy\_CAC' is positive, implying a favorable correlation between the purchase of College Application Consulting (CAC) services and employment outcomes. Specifically, this coefficient indicates that when students invest in CAC services, their employment prospects increase by 17.8%. This finding suggests that the introduction of CAC potentially augments the overall competencies of individual students, thereby positively impacting their future employability.

Nevertheless, it's imperative to recognize that our assumption regarding the potential enhancement of individual competence and employability through the receipt of College Application Consulting (CAC) services must be considered alongside the existence of various potential confounding factors. These factors could independently and positively affect an individual's future employability, even in the absence of CAC, and at the same time, it will also affect the choice of whether to purchase CAC, which might lead endogeneity bias occur. To address the potential impact of these confounding variables on employment outcomes to avoid endogeneity issue, Model 2 introduces several additional control variables. These control variables aim to account for potential enhancements in an individual's future employability without the necessity of CAC, and the change of willingness to purchase CAC simultaneously.

These control variables encompass the six potential sources of disturbance factors mentioned in the previous section, which include individual personality, family income, parental education and attitudes, information sources, academic performance, and regional disparities. The selection of these potential disturbance factors aligns with the rationale outlined in Section 2.4. Below, we specify which of the six potential disturbance factors correspond to the control variables:

- Province: Regional Disparities.
- Rank, Ave\_Rank: Academic Performance.
- FamilyIncome: Family Income.
- Parents\_HighestEdu, FamilyDecision, Per\_FamilyIntention: Parental Education and Attitudes.
- StudyType, Prepare, Answer\_Change, Product\_Buy, Intention\_Change, AnxietyLevel: Individual Personality.
- Info\_Effec, Info\_Source, CAC\_Understand: Information Sources.

**Table 4.** OLS Regression: Future Employment and the Purchase of CAC.

| VARIABLES           | Employ               |                       |
|---------------------|----------------------|-----------------------|
|                     | Model (1)            | Model (2)             |
| Buy_CAC             | 0.178***<br>(0.0479) | 0.173***<br>(0.0519)  |
| Province            |                      | 0.00603<br>(0.0249)   |
| Rank                |                      | 0.00127<br>(0.0195)   |
| Ave_Rank            |                      | 0.00417<br>(0.0213)   |
| FamilyIncome        |                      | 0.0141<br>(0.0242)    |
| Parents_HighestEdu  |                      | 0.0424**<br>(0.0183)  |
| FamilyDecision      |                      | -0.0132<br>(0.0235)   |
| Per_FamilyIntention |                      | 0.000687<br>(0.00140) |
| StudyType           |                      | -0.0226<br>(0.0360)   |
| Prepare             |                      | 0.0374<br>(0.0535)    |
| Answer_Change       |                      | 0.0155<br>(0.0506)    |
| Product_Buy         |                      | -0.0365<br>(0.0640)   |
| Intention_Change    |                      | -0.0377<br>(0.0520)   |
| AnxietyLevel        |                      | -0.0510**<br>(0.0207) |
| Info_Effec          |                      | 0.00417<br>(0.0261)   |
| Info_Source         |                      | 0.00756<br>(0.0184)   |
| CAC_Understand      |                      | 0.0147<br>(0.0267)    |
| Constant            | 0.451***<br>(0.0315) | 0.344**<br>(0.161)    |
| Observations        | 430                  | 430                   |
| R-squared           | 0.031                | 0.077                 |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In Model 2, where we have diligently incorporated these confounding variables, our aim is to offer a more comprehensive analysis that carefully considers the potential influence of these factors on employment outcomes, and whether these variables would change the willingness of buying CAC. Remarkably, even after accounting for these confounding variables, the results continue to reveal significant findings: the utilization of CAC maintains its noteworthy and meaningful relationship with the improvement of future employability. Specifically, when

students engage with CAC services, their future employment prospects are estimated to increase by 17.3%, as demonstrated by the statistically significant coefficients associated with CAC under these control variables. This consistent outcome aligns with the conclusions drawn from our previous simple regression analysis, which did not include these control variables. Furthermore, the adjusted R-squared value increases, indicating an enhanced explanatory power of the model.

In summary, our analysis suggests that CAC indeed plays a positive role in enhancing students' future employability, as evidenced by significant results within our sample of 430 respondents. In the upcoming section, we will delve into a discussion of the regression analysis concerning the Potential Impact Transmission Pathways.

### 4.3 Results and Discussion for Potential Impact Transmission Pathways

#### 4.3.1 Descriptive Statistics

**Table 5.** Descriptive Statistics for All Variables of Transmission Pathways.

| VARIABLES       | N   | mean  | sd    | min | max |
|-----------------|-----|-------|-------|-----|-----|
| Buy_CAC         | 430 | 0.433 | 0.496 | 0   | 1   |
| Change_AftCAC   | 430 | 0.312 | 0.464 | 0   | 1   |
| Analysis_CAC    | 430 | 0.328 | 0.47  | 0   | 1   |
| Tailor_CAC      | 430 | 0.356 | 0.479 | 0   | 1   |
| InhanReco       | 430 | 0.372 | 0.484 | 0   | 1   |
| SchLevel        | 430 | 1.891 | 0.683 | 1   | 3   |
| BetterSch       | 430 | 3.053 | 1.15  | 1   | 5   |
| Rank            | 430 | 3.386 | 1.557 | 1   | 6   |
| Slippage        | 430 | 0.195 | 0.397 | 0   | 1   |
| Transferral     | 430 | 0.586 | 0.493 | 0   | 1   |
| TransUnpopu     | 430 | 0.235 | 0.424 | 0   | 1   |
| AgreeMajor      | 430 | 3.105 | 1.105 | 1   | 5   |
| MajorUninterest | 430 | 3.712 | 1.161 | 1   | 5   |
| MajorBurden     | 430 | 3.495 | 1.166 | 1   | 5   |
| MajorDepress    | 430 | 3.551 | 1.226 | 1   | 5   |
| MajorUnsuit     | 430 | 10.76 | 3.019 | 3   | 15  |
| FreChanMajor    | 430 | 1.87  | 1     | 1   | 5   |
| ChangeMajor     | 430 | 0.533 | 0.5   | 0   | 1   |
| Career2Year     | 430 | 0.398 | 0.49  | 0   | 1   |
| FreChanCareer   | 430 | 2.119 | 0.942 | 1   | 5   |
| GPA             | 430 | 3.281 | 0.711 | 1   | 4   |

Table 5 presents the descriptive statistics for all variables pertaining to the transmission pathways of CAC. Out of the 430 respondents, 186 (76.23%) received CAC services during their college application process, while 244 (23.77%) did not utilize CAC services. In our investigation into the potential transmission pathways of CAC, we have considered several factors, including FreChanMajor, Career2Year, InhanReco, SchLevel, etc., as dependent variables to analyze the relationship with purchasing CAC services. Notably, among the 186 students who received CAC, 134 (72%) reported changes in their initial career or major choice, suggesting a potential influence of CAC on their career development. Additionally, 153 (82.2%) of the respondents who purchased CAC services indicated that they received tailored suggestions regarding their career and major choices based on their individual personality and academic performance, indicating that CAC might enhance self-awareness.

#### **4.3.2 OLS Regression Analysis: How College Application Consulting (CAC) improves the benefits of future employment?**

Given our previous regression results, which demonstrated a positive relationship between CAC and post-undergraduate employment, we'd like to further analyze in this part the impact of CAC on certain aspects; for example, college level, undergraduate GPA, and career plans, with the goal of improving students' employment. Totally, we propose 6 potential transmission pathways of CAC, including fundamental career planning provision, self-recognition enhancement, college level increase, slippage and transferal risk reduction, accumulative GPA increase, and major match improvement.

##### **4.3.2.1 Transmission Pathway 1: Fundamental Career Consulting**

As we hypothesized before, CAC can serve as fundamental career consulting through the analysis of potential career development paths of certain majors by consultants. To investigate the effects of CAC on career development, we have used Career2Year, which means whether one has established primary career planning in the first two years of undergraduate study, as the dependent variable, and Buy\_CAC, whether one has purchased CAC service after Gaokao, as the independent variable. Table 6 shows the result.

In Model 1, the coefficient of Buy\_CAC is positive with the value of 0.0572, suggesting that students who purchase CAC services are 5.72% more likely to have primary career plans in the first two years of undergraduate study compared to those who did not buy CAC. However, the coefficient is not significant at 90% confidence level, showing a low correlation between buying CAC and career plans in the first 2 years of undergraduate studies. Considering the influence of confounding factors on primary career planning, we incorporate an additional control variable, frequency of intentions of changing careers, in Model 2. The result shows a strong negative causal relationship between frequency of considering changing careers and the establishment of career planning in the first two years, which means that weaker intention and fewer times of considering about changing future career, in other words, higher career stability, lead to higher possibility of setting up career plans in the first two years. Despite the increased robustness of Model 2, with an R-squared of 0.022, the correlation between two variables remained statistically insignificant with a less than 90% confidence level. Therefore, CAC may not lead to better career plan setting up in the first two years, and possible reasons may include: 1) Insufficiency of CAC service. The career information provided by CAC is out of date, or the career consulting is not so explicit, not covering sufficient aspects of career



prospects for students to make specific career plans. Our survey data has shown that 141 (75.8%) of respondents have reported provision of analysis about major and career paths by CAC, but the service quality about career planning is questionable. 2) Existence of time gap. Career path may have changed over time. Although 134 (72%) of respondents reporting a change of career or major decision immediately after receiving CAC, their career plans may still change as they learn more about majors and career prospects during college.

**Table 6.** OLS Regression: Transmission Pathway 1: Career Consulting.

|               | Career2Year           |                         |
|---------------|-----------------------|-------------------------|
|               | Model 1               | Model 2                 |
| FreChanCareer |                       | -0.0712***<br>(-0.0249) |
| Buy_CAC       | 0.0572<br>(-0.0477)   | 0.0659<br>(-0.0474)     |
| Constant      | 0.373***<br>(-0.0314) | 0.520***<br>(-0.0602)   |
| Observations  | 430                   | 430                     |
| R-squared     | 0.003                 | 0.022                   |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### 4.3.2.2 Transmission Pathway 2: Self-recognition Improvement

We assumed that CAC could enhance one's self-recognition through analysis of abilities, personalities and strengths and provision of tailored suggestions of major or careers. Consequently, we have used InhanReco, representing whether one has increased self-awareness through CAC, as the dependent variable. Table 7 shows the result.

Model 1 reveals that the coefficient for Buy\_CAC suggests a 79.4% increase in self-recognition for students who purchase CAC services, with statistical significance at the 99% confidence level. The significant relationship persisted in Model 2, even after including Tailor\_CAC as a control variable, as the individual tailored suggestions is highly possibly related to the increase of self-cognition improvement. Model 2 exhibits higher Model Fit Degree shown as R-squared at 0.686, indicating a more robust correlation. Therefore, students having CAC are inclined to know better about themselves, such as competencies, advantages, personalities, assisting them in achieving better in employment, which is consistent with our premise.

**Table 7.** OLS Regression: Transmission Pathway 2: Self-recognition Improvement.

|              | InhanReco             |                       |
|--------------|-----------------------|-----------------------|
|              | Model 1               | Model 2               |
| Tailor_CAC   |                       | 0.300***<br>(-0.0521) |
| Buy_CAC      | 0.794***<br>(-0.0274) | 0.547***<br>(-0.0504) |
| Constant     | 0.0287<br>(-0.018)    | 0.0287*<br>(-0.0174)  |
| Observations | 430                   | 430                   |
| R-squared    | 0.662                 | 0.686                 |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### 4.3.2.3 Transmission Pathway 3: Higher School Level

We hypothesized that CAC could elevate one's studying college level, in other words, helping students enter colleges with higher rankings or better reputations. In our survey, we have categorized colleges into three levels: Safety Colleges, Targeted Colleges, and Dashing Colleges. Higher School Level refers to that CAC helps one enter dashing colleges instead of targeted colleges, or help one enter a better college within certain level of colleges. We have used Schlevel, the college level of students, as the dependent variable, and Buy\_CAC, whether one has purchased CAC service after Gaokao, as the independent variable. Table 8 shows the result.

Model 1 shows that buying CAC is associated with a 13.6% increase in the college level of students, but the coefficient of Buy\_CAC is statistically significant only at 95% confidence level, lacking robust statistical significance. Except buying CAC, Gaokao ranks and confidence levels of entering colleges with higher rankings or reputations in reapplication are also associated with school level and are introduced as control variables into regression model 2. The coefficient of Buy\_CAC is even significant with variables controlling, indicating a 21.9% increase in school level. Notably, in Model 2, students with higher Gaokao rankings tend to attend better colleges, while higher confidence levels in gaining admission to colleges with superior rankings in reapplication are associated with attending lower-ranked colleges. Model 2 remains statistically significant, with Buy\_CAC showing a 21.9% increase in college level and an R-squared value of 0.395. Consequently, we conclude that purchasing CAC services tends to help students enter better colleges with higher rankings or reputations, although the extent of this influence may vary for some students. While most CAC providers set reasonable school choices based on the principle of maximizing Gaokao scores utilization, a small number of CAC suppliers outweigh profits than students' benefits. To avoid risks of compensation in case of slippage, they possibly tend to provide school choices that are more stable and definitive for students, resulting in the dislocation of students and colleges.

**Table 8.** OLS Regression: Transmission Pathway 3: Higher School Level.

|              | SchLevel              |                        |
|--------------|-----------------------|------------------------|
|              | Model 1               | Model 2                |
| BetterSch    |                       | -0.360***<br>(-0.0226) |
| Rank         |                       | 0.0374**<br>(-0.0167)  |
| Buy_CAC      | 0.136**<br>(-0.0662)  | 0.219***<br>(-0.0523)  |
| Constant     | 1.832***<br>(-0.0435) | 2.769***<br>(-0.1)     |
| Observations | 430                   | 430                    |
| R-squared    | 0.01                  | 0.395                  |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### 4.3.2.4 Transmission Pathway 4: Lower Slippage and Transferal Possibility

We assumed that CAC could decrease one's risk of slippage and transferal in college application as CAC providers are inclined to learn more about college and major entrance score levels and requirements. Slippage and Transferal were treated as dependent variables, and Buy\_CAC, as the independent variable. Table 9 and 10 show the results.

In Table 9, Model 1 shows that buying CAC is positively associated with a reduced risk of slippage in college application, as the coefficient is statistically significant at 99% confidence level. Considering that students with higher Gaokao ranks may experience slippage less, ranks has been incorporated into Model 2. The result is consistent with the assumptions about ranks and slippage as the coefficient of -0.0773 is statistically significant. Buy\_CAC is still significantly lowering slippage possibility, with a higher Model Fit Level of R-Squared at 0.133. We conclude that buying CAC is induced to reduce 6.34% risk of slippage.

However, in Table 10, incorporating rank or not as the control variable, coefficients of transferal are not significant even at 90% confidence level, indicating a weak correlation between CAC and avoiding transferal to unchosen or unpopular majors. Possible reasons are as follows: 1) Greater focus of CAC providers and students on college rankings rather than major rankings, resulting in the agreement of transferal in college application. 2) Higher difficulty of CAC providers in predicting major admissions due to fluctuating number of applicants.

**Table 9.** OLS Regression: Transmission Pathway 4: Lower Slippage.

|              | Slippage               |                         |
|--------------|------------------------|-------------------------|
|              | Model 1                | Model 2                 |
| Rank         |                        | -0.0773***<br>(-0.0115) |
| Buy_CAC      | -0.164***<br>(-0.0379) | -0.188***<br>(-0.0362)  |
| Constant     | 0.266***<br>(-0.0249)  | 0.538***<br>(-0.047)    |
| Observations | 430                    | 430                     |
| R-squared    | 0.042                  | 0.133                   |

Standard errors in parentheses: \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 10.** OLS Regression: Transmission Pathway 4: Lower Transferal.

|              | TransUnpopu           |                       |
|--------------|-----------------------|-----------------------|
|              | Model 1               | Model 2               |
| Transferal   |                       | 0.340***<br>(-0.0385) |
| Rank         |                       | -0.00645<br>(-0.0122) |
| Buy_CAC      | -0.0634<br>(-0.0412)  | -0.0267<br>(-0.0384)  |
| Constant     | 0.262***<br>(-0.0271) | 0.0691<br>(-0.0558)   |
| Observations | 430                   | 430                   |
| R-squared    | 0.005                 | 0.16                  |

Standard errors in parentheses: \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**4.3.2.5 Transmission Pathway 5: Higher Accumulative GPA**

We assumed that receiving CAC can boost one's accumulative GPA over four years of undergraduate study through providing insights about chosen majors and stimulating interest in learning majors. To measure the extent of the effect, we have used accumulative GPA as the dependent variable. Table 11 shows the result.

Model 1 indicates the correlation of buying CAC and 14.8% of higher accumulative GPA at 95% confidence level, albeit not highly robust. We have considered that higher major interest and recognition, and smaller major learning burden, manifested as fewer frequencies of feeling uninterested and burdened in majors, contribute to higher motivation in learning and then higher GPA. By incorporating MajorUninterest, AgreeMajor and MajorBurden as control variables, we get regression model 2. Even with these controls, Buy\_CAC remains statistically significant at the 95% confidence level, indicating a modest improvement in GPA. The possible explanation may be that GPA is not only influenced by interest in major learning, but also by inherent individual learning ability and habits, which are not easy to be changed, hindering the effects of CAC.

**Table 11.** OLS Regression: Transmission Pathway 5: Higher GPA.

|                 | GPA                   |                      |
|-----------------|-----------------------|----------------------|
|                 | Model 1               | Model 2              |
| Buy_CAC         | 0.148**<br>(-0.0689)  | 0.153**<br>(-0.0692) |
| MajorUninterest |                       | -0.0321<br>(-0.0373) |
| AgreeMajor      |                       | 0.0025<br>(-0.0324)  |
| MajorBurden     |                       | -0.0353<br>(-0.0359) |
| Constant        | 3.217***<br>(-0.0453) | 3.450***<br>(-0.185) |
| Observations    | 430                   | 430                  |
| R-squared       | 0.011                 | 0.021                |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### 4.3.2.6 Transmission Pathway 6: Higher Major Match

As we assumed before, CAC could increase individual major match by combine one's actual conditions including interest, abilities, with major requirements better. To measure the matching degree, using one's frequencies of considering changing majors as the dependent variable, with Buy\_CAC as the independent variable. Table 12 shows the result.

Model 1 indicates that the coefficient for buying CAC is significant at 99% confidence level, but there is a positive relationship that buying CAC brings a 26.7% of higher frequencies of intentions about changing majors. Considering that stronger major changing determination and higher major unsuited level, presented as frequencies of feeling uninterested, burdened, and depressed in majors, contribute to higher frequencies of thinking about changing majors, and higher major recognition is related to lower frequencies. By incorporating ChangeMajor,

AgreeMajor and MajorUnsuit as control variables, model 2, indicates a low correlation of major recognition and major changing intention frequencies. The significant coefficient of Buy\_CAC suggests a positive relationship between buying CAC and higher major changing intentions. This could be attributed to the reverse effect of CAC, where students are exposed to more information about majors, allowing for a broader range of major choices.

**Table 12.** OLS Regression: Transmission Pathway 6: Major Match.

|              | FreChanMajor          |                        |
|--------------|-----------------------|------------------------|
|              | Model 1               | Model 2                |
| ChangeMajor  |                       | 0.594***<br>(-0.0935)  |
| AgreeMajor   |                       | -0.0455<br>(-0.0426)   |
| MajorUnsuit  |                       | 0.0643***<br>(-0.0156) |
| Buy_CAC      | 0.267***<br>(-0.0966) | 0.248***<br>(-0.088)   |
| Constant     | 1.754***<br>(-0.0635) | 0.896***<br>(-0.246)   |
| Observations | 430                   | 430                    |
| R-squared    | 0.018                 | 0.194                  |

Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5 Conclusion

Based on our analysis above, we believe that CAC significantly contributes to post-undergraduate employment improvement, even with various confounding factors such as personality traits, family income, education level, etc., supporting Hypothesis 0.

Through our analysis about potential transmission pathways of CAC, we have found that H1, part of H4, H5 have proved inaccuracy; H2 and H3 have demonstrated modest accuracy, and part of H4 and H6 have proved significant accuracy. Generally, buying CAC services does not necessarily lead to a better individual major match, lower transferal rates, or improved career plans to enhance employment. Instead, it modestly increases GPA and the likelihood of gaining admission to higher-level colleges. Furthermore, it significantly decreases the risk of slippage and enhances self-awareness, positively influencing employment.

Nevertheless, our analysis has unveiled several issues within the current CAC market. First, 253 (58.8%), over half of respondents express a willingness to pay less than 1000 RMB for CAC services, far lower than the price of the services ranging from 15000 to 50000 RMB

observed in first tier cities. Only 5 out of 430 respondents (1.1%) can afford more than 20000 RMB for CAC services. The extremely high price and the mismatch of supply and demand undermine students' intention of using CAC and hinder the full realization of CAC's potential benefits. Second, as previously mentioned, the career planning of CAC services is limited, failing to assist students in building primary career development paths, putting CAC at a disadvantaged position. Third, some CAC providers prioritize avoiding compensation risks in cases of slippage, potentially leading to conservative school suggestions and a mismatch between students and colleges. These situations decrease students' confidence and satisfaction about CAC service, not beneficial to future development of CAC market.

To create a more equitable and effective CAC landscape that benefits all students, CAC providers need to work from aspects such as price accessibility, quality assurance, transparency increase, risk-benefit balance, etc.

There are also limitations arousing attention in future research. One notable limitation pertains to the composition of sample. Our data collection involved a questionnaire survey encompassing 430 respondents, drawn from various provinces across China. However, it is important to acknowledge that the distribution of these samples was uneven, resulting in relatively small sample sizes in specific regions, limiting the generalizability of our study's findings. Secondly, it is essential to consider the element of time lag. The CAC services utilized by the current cohort of individuals in the labor force were sought several years ago, and it is conceivable that the quality and relevance of CAC services have evolved over time, probably resulting in shifted significance.

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