The Influence of Public Opinion on Major Choice from the Perspective of Student Status Data

Taking university B as a sample

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Abstract. Social public opinion plays a crucial role in shaping the major choices of college students. This study, using university B as a sample, offers a novel perspective by analyzing the correlation between public opinion and actual student status data on enrollment, major transfers, and dropouts from a student status data standpoint. The findings indicate a strong correlation between public opinion and students' major choices. However, the study also highlights a significant disparity between public opinion and professional evaluations of majors, which is an issue that warrants attention from both universities and students alike.

Keywords: student status management; major choice; public opinion.

1   Introduction

The decision to choose a major is influenced by various factors, as supported by current research. Generally, personal, family, and social aspects are considered the three primary influencers [1-4]. Personal factors encompass gender, individual interests, and cognitive understanding of the chosen field. Family factors include cultural background, economic status, and social relationships. Social factors such as employment prospects and public opinion also play a role in shaping students' major choices. Existing literature has extensively researched personal and family factors influencing students' major choices, while social factors, particularly public opinion, have received limited attention, making it a less explored area of study. However, with the implementation of the "General category enrollment and split training" college entrance examination (CEE) reform in China, choosing a major has become an increas

ingly discussed topic during the hot summer months of June and July. Various individuals and organizations within society, whether driven by profit or altruism, often provide guidance and strategies to help students and their parents select the "correct" and "promising" majors, thereby avoiding potential pitfalls in less desirable fields [5-8]. Given the limited research on social factors, particularly public opinion, influencing students' major choices, it is intuitive to believe that such influence exists. However, the exact extent of this impact requires further investigation and analysis.

We also acknowledge that most existing research on influential factors in major choice relies heavily on questionnaire surveys to collect data. The collected data is then analyzed, primarily through correlation analysis, to draw conclusions. These questionnaires are typically distributed to the subjects of study, such as students and their parents, or to third parties like teachers. To ensure data accuracy, it is often necessary to clean the data to obtain valid information.

Our research takes a unique approach by analyzing the impact of public opinion on students' major choice from the perspective of student status data. Unlike previous studies, we utilize real student status data instead of relying on questionnaire survey data. This allows us to gain a deeper understanding of the influence of public opinion on students' major choices.

This study aims to investigate the impact of public opinion on students' major choices by conducting a qualitative correlation analysis between real student status data and public opinion data, using B University as the research sample. The student status data collected for this study includes admission scores (i.e., CEE scores), major transfers, and dropouts. The social opinion data is obtained from CEE big data sources such as Baidu [9] and Education Online [10]. Additionally, the professional evaluation results from "SHANGHAI RANKING" [11] are compared with public opinion to provide a more comprehensive analysis.

2   Study samples and data

2.1   University

B University is a prestigious institution that falls under the "211 Project" initiated by the Ministry of Education in China. It is also recognized as a national "first-class discipline" construction university, which means it has a strong focus on developing and maintaining high-quality programs in specific fields of study.

Undergraduate students at B University follow a unique training approach known as "General category enrollment and split training." In their first year, students are grouped into general categories and receive a broad education that covers fundamental knowledge and skills relevant to various disciplines. Starting from their second year, students specialize in their chosen majors and receive targeted training that prepares them for future careers or further studies in their field of interest. This approach enables students to deepen their knowledge and expertise in a particular subject while also fostering a strong foundation in other areas of study.

This study aims to analyze the impact of public opinion on students' major choices by focusing on six general categories (C1 to C6), including 37 specific majors, such as Chemical Engineering & Technology (CET) etc., as shown in Table I.

Table 1. General Categories & Corresponding Majors

General Categories	Majors	Acronym
C1	Chemical Engineering & Technology	CET
	Environmental Engineering	EE
	Energy Chemical Engineering	ECE
	Bioengineering	BiE
	Pharmaceutical Engineering	PE
	Biomedical Engineering	BME
C2	Macromolecular Materials & Engineering	MME
	Material Science & Engineering	MSE
	Functional Materials	FMat
	Applied Chemistry	AC
	Chemistry	Chm
	Energy Chemistry	EC
C3	Mechanical Engineering & Automation	MEA
	Process Control	PC
	Safety & Engineering	SE
	Robotics Engineering	RE
	Automation	Aum
	Control Technology & Instrumentation	CTI
C4	Artificial Intelligence	AI
	Electronic & Information Engineering	EIE
	Telecommunication Engineering	TE
	Computer Science & Technology	CST
	Data Science and Big Data Technology	DBT
C5	Information Management & Systems	IMS
	Logistical Management	LM
	Big Data Management and Application	BDM
	Electronic Science & Technology	EST
	Mathematics & Applied Mathematics	MAM
	Information & Computing Science	ICS
	Mathematical Finance	MatF
C6	Financial Management	FinM
	Accounting	Acc
	Business Management	BM
	International Economics & Trade	IET
	Administrative Management	AM
	Public Services & Utilities Management	PSU
	Law	Law

2.2   Student Status Data

Admission Scores: This study calculates the average admission score for each of the six general categories, with a total of 37 majors included as shown in Table I. The scores are then normalized to a scale of 100 using maximum-minimum normalization, which is a common technique to compare different data sets across different scales.

The results of this normalization are presented in Table II. Among the six general categories, C4 has the highest average admission score of 66.53, followed by C3 with a score of 62.36, C5 with 61.82, C1 with 59.73, and C2 with 59.36. Notably, C6 has the lowest average score of 56.43. This difference can be attributed to the composition of the general categories. As mentioned, C6 is a category for liberal arts majors, which generally have lower admission scores compared to science and engineering majors.

Table 2. ADMISSION SCORE VS. PUBLIC OPINION SCORE

	Admission Score	Public Opinion Score
C1	59.73	12.42
C2	59.36	13.50
C3	62.36	21.17
C4	66.53	42.60
C5	61.82	16.64
C6	56.43	29.00

Major Transfers: Our data on major transfers has been classified into two groups. The first group comprises students who switched their majors in the initial year of their studies. The change of major that occurs at this time is across general categories, for example from C1 to C2. The detailed data is illustrated by green and yellow bars as in Fig.1. On the other hand, the second group includes students who changed their majors in subsequent years (i.e., from the second year onwards), since by this time they had completed the major split within the general category, enabling us to record the transfer situation between majors, as shown in Fig.2. Our classification of major transfer data provides valuable insights into student behavior and preferences.
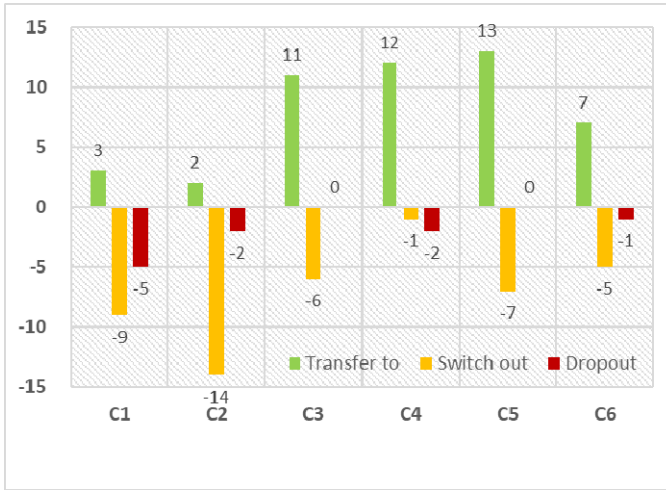
Fig. 1. Transfer across general category and dropout of first-year students.

Dropout: We have also divided the dropout data into two groups: first-year students and senior students. First-year students often drop out due to dissatisfaction with their CEE results, colleges or majors, and may choose to retake the exam and start over. This study, while it has some limitations, attributes this primarily to dissatisfaction with the chosen major, as shown in red bars in Fig.1. On the other hand, the reasons for dropping out among senior students are mainly due to dissatisfaction with or difficulty adapting to their chosen major, as depicted in Fig.3.

2.3   Public Opinion Data

This study utilizes "most popular majors" data from two widely recognized and socially trusted websites, namely Baidu [9] and Education Online [10], as public opinion data. We extracted the popularity of various majors at University B listed in Table I from both websites and calculated their public opinion scores using maximum-minimum normalization method. Finally, we used the average of both as the public opinion score for each major. The relative sizes of the scores for each major are visually represented in Fig.2, where a larger area signifies a higher public opinion score. The average score of all majors within a specific general category is taken as the public opinion score for that general category, as shown in Table II. For example, as a general category, C4 has the highest social opinion score of 42.60, indicating that it is the most popular general category.
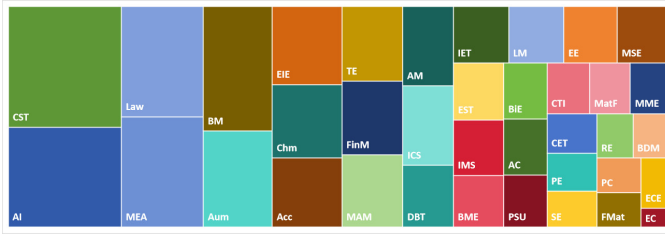
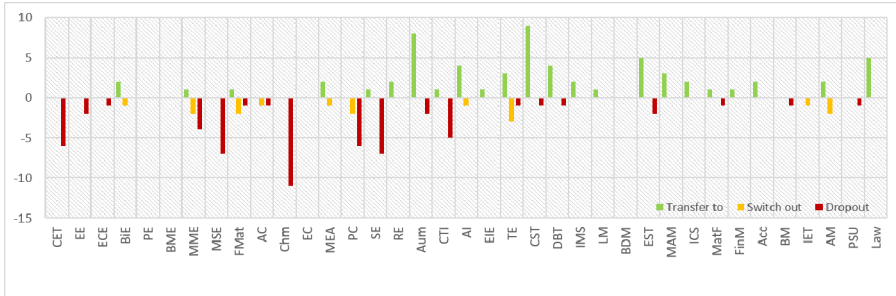**Fig. 2.** Public opinion score for each major

Fig. 3. Major transfer and dropout of higher year students.

3   Data Analysis

3.1   Admission Scores vs. Public Opinion Scores

When the admission scores and public opinion scores are plotted on the same graph for comparison, as demonstrated in Fig.4, it becomes evident that there is a strong correlation between the two. For instance, within B University's six general catego-ries, both curves exhibit nearly identical trends. This can be seen in the case of the most popular general category C4 in terms of public opinion, where students also have the highest admission scores.

The only apparent exception to the general trend seems to be found in the C6 gen-eral category. Despite having a high social public opinion score (as indicated by the upward-pointing tail of the orange curve), the admission scores of its students are among the lowest (as shown by the sinking blue curve at the end). This appears to contradict the previously mentioned rule. As explained in section II.B, this is due to the fact that liberal arts majors have lower admission scores compared to science and engineering majors. If we were to adjust the scores of liberal arts majors under equal conditions to those of science and engineering majors, it would become clear that C6 also follows the same pattern as the other categories.
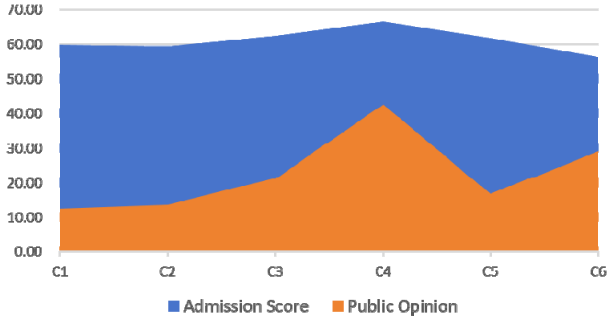
Fig. 4. Admission score vs. public opinion score

3.2   Major Transfer vs. Public Opinion Scores

Upon examining Fig.1, it is evident that a certain number of first-year students are changing their majors across general categories. Notably, there is a relatively high number of students transferring into C3, C4, and C5 (as indicated by the green bars), while the number of students transferring out of C1 and C2 (represented by the yellow bars) is higher. The net inflow and outflow for each general category, along with their respective public opinion scores, are plotted in Fig.5. As expected, the two curves exhibit similar patterns once again. This suggests that the influence of public opinion extends even beyond the first year of enrollment.

The widespread social consensus on popular majors has a lasting appeal to students. Some senior students are willing to pay the price of staying in college for another year or even two years just to switch into these majors, as evidenced by the data presented in Fig.6. This figure shows that each year, a certain number of senior students transfer to popular majors such as CST, AI, Law, etc., which have high public opinion scores.

Fig. 5. Major transfer across general category of first-year students vs. public opinion score
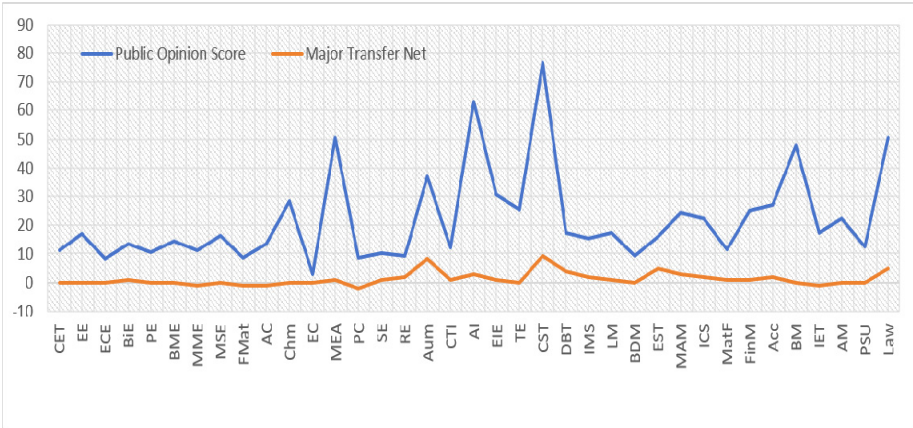
Fig. 6. Major transfer of senior students vs. public opinion score.

3.3   Dropout vs. Public Opinion Scores

With regards to the issue of dropping out, whether it be for first-year or senior students, while the reasons behind dropping out may vary as previously discussed, a comparison of these reasons with public opinion scores reveals an interesting pattern. As demonstrated in Fig.7 and Fig.8, higher public opinion scores correspond with fewer dropouts, resulting in longer bars on the right side and shorter bars on the left. Conversely, lower public opinion scores are associated with a higher number of dropouts, resulting in longer bars on the left side and shorter bars on the right.
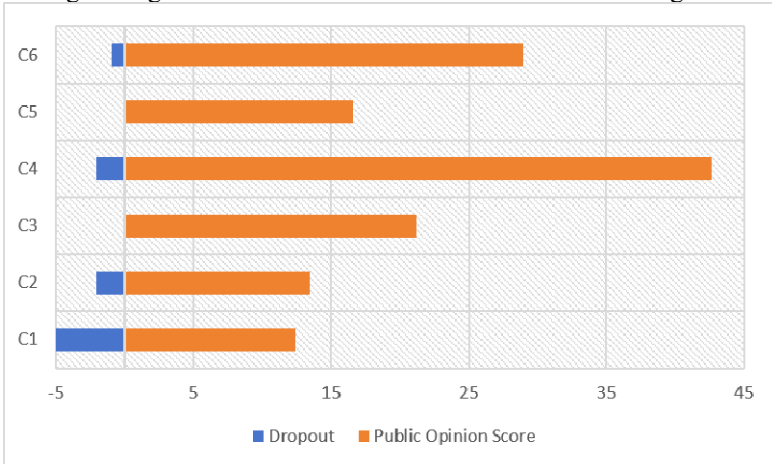
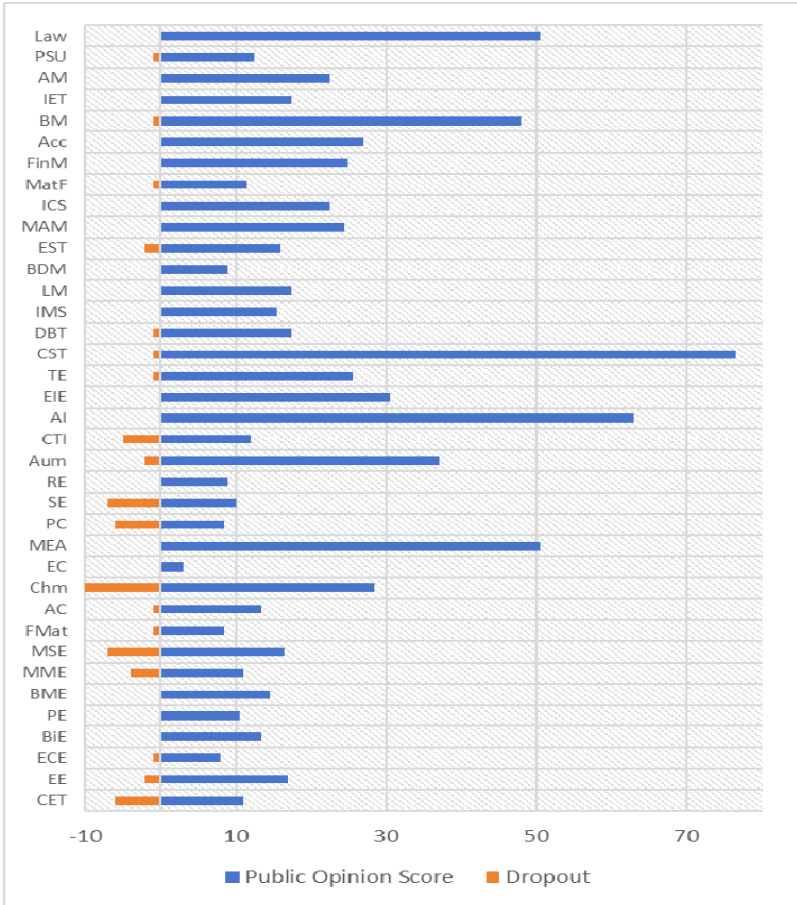**Fig. 7.** Dropout of first-year students vs. public opinion score.

Fig. 8. Dropout of senior students vs. public opinion score.

3.4   Professional Evaluation vs. Public Opinion Scores

Finally, we compared the rankings of B University's majors evaluated by professional institutions ("SHANGHAI RANKING" [11]) with the rankings of public opinion scores. The results are shown in Fig.9. For B University, there is a high consistency between the professional ranking by "SHANGHAI RANKING" and the public opinion ranking for majors within C5 and C6 general categories, as demonstrated on the right side of Fig.9. However, for majors within the C1, C2, C3, and C4 categories, the conclusion is completely opposite; those with higher public opinion rankings are precisely those with lower professional rankings. This reflects the difference between public perception and professional understanding.
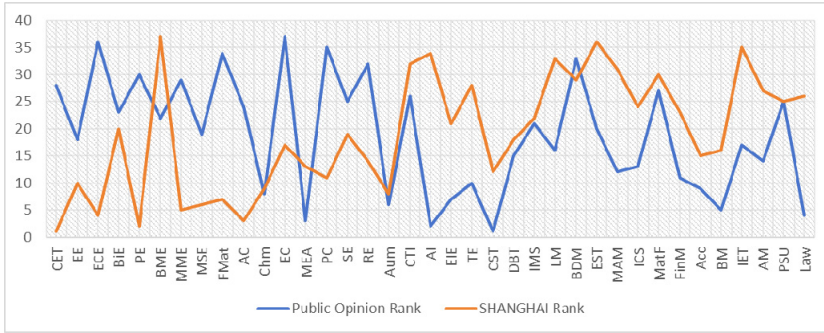
Fig. 9. SHANGHAI Rank vs Public Opinion Rank.

4   Conclusions

The findings of this study indicate that public opinion plays a significant role in shaping the major choices of college students. Students are more likely to choose majors that are popular among their peers and society at large. This trend is particularly evident in fields such as business, engineering, and computer science, which are often viewed as more prestigious and lucrative. However, the study also reveals that there is a mismatch between public opinion and professional evaluations of majors. While certain majors may be popular among the general public, they may not necessarily lead to fulfilling careers.

To address this issue, the study recommends that universities should work closely with industry professionals to evaluate the job prospects and potential growth of different majors. They should also provide more guidance and support to students in choosing majors that align with their interests and career goals, rather than just following societal trends. Additionally, efforts should be made to raise awareness among the general public about the diverse career paths available within different majors, to help reduce the pressure on students to choose popular but potentially unsuitable majors.

Acknowledgement

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