Asian American College Major Choice: Median Salary Information Intervention and Analysis of Six Key Influence Categories

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This study examines how six influence categories and 18 factors shape Asian American students' college major selection. Rising sophomores at US colleges (N=150) identified their top major choices and estimated corresponding median salaries. After reviewing actual salary data, 46% changed their selections. Students ranked six influence categories: personal interest, intrinsic major characteristics, major-related information, family, college, and high school factors. They rated 18 specific factors—including salary data, social media, YouTube, and family members—on a 5-point Likert scale. Findings showed improved salary estimation accuracy and reduced influence from high school factors, books, grandparents, and family friends. A Probit regression model confirmed Bankrate salary data significantly predicted major-switching likelihood post-intervention. A linear regression model identified personal interest, intrinsic major characteristics, salary data, YouTube, and books as significant predictors of actual median salary estimates, while parents and siblings were not.

Keywords: college major, Asian American, informational intervention, median salaries, YouTube

INTRODUCTION

The choice of a college major is one of the most important decisions facing young adults. Students who major in STEM and business had the highest cumulative earnings compared with other majors (Kim et al. 2015). Differences in college majors are strongly related to the wage gap between males and females, accounting for 8% to 9% of the 20% wage gap between the genders (Brown and Corcoran 1997). While the gender gap in potential wages based on majors has declined slightly among the most recent college graduates, a large gender gap in potential wages based on majors still exists (Sloane et al. 2021). Males tend to major in the highest-paying majors while females major in the lowest-paying majors (Polachek 1978; Reuben et al. 2017; Gailey 2023; Quadlin 2020). College majors can affect students' career choice, geographic location and lifestyle (Patterson et al. 2019), are highly correlated with job stability and satisfaction, and significantly impact career opportunities and rewards (Porter and Umbach 2006). The choice of majors can also affect skill development, friendship networks, graduate school attendance (Gillis and Ryberg 2021), and associations with professors, fellow students, and extracurricular activities (Medalia 1968). Much literature exists on the choice of college major and how various factors influence this important decision. The students' family income levels impact the major selection process (Ma 2009; Mullen 2014; Quadlin 2017), political views and personality (Porter and Umbach 2006), sending children to art or computer classes (Ma 2009), enjoying coursework, gaining approval of parents and enjoying work

at the available jobs (Zafar 2013), higher than average earnings from parents' and siblings' jobs (Xia 2016), and earnings expectations and ability perceptions (Wiswall and Zafar 2015).

While many studies analyze college major selection by gender, fewer do so along racial/ethnic lines, and even less focus on Asians or Asian Americans. Asian males are much more likely to major in engineering and computer science compared with whites (37% vs 26%) (Dickson 2010), and one reason is that Asians select majors with high earnings potential to achieve social advancement (Xie and Goyette 2003). Southeast Asians selected college majors with the highest starting salary, while men from a foreign-language home environment and men with high self-esteem scores tend to choose more lucrative majors (Song and Glick 2004). Among Taiwanese college students, the importance of influence factors on college major selection, from most to least important, were Career Preference, Personal Preference, Others' Preferences and Institutional Preferences (Liao and Ji 2015). Chinese high school students were presented with an information intervention of post-graduate average wages by groups of majors and most students shifted into higher-paying majors and STEM majors (Ding et al. 2021). Among college students in the United Arab Emirates, there were 12 significant influence factors in the college selection process, including Future Income, Business Opportunities, Initial Income, Internet Search, Brochures, Social Media, Job Demand, Income and Job Responsibility (Kuhail et al. 2023).

As social media usage time increases among high school students, it is helpful to study this further. Minorities are heavier social media users and are not only savvy users but are social media's core engineers (Ng 2015). There is little research on how YouTube videos influence Asian Americans in choosing college majors. On 8/31/24, I used a Google Chrome incognito window to search YouTube for "college admissions advice". Eight of the top 30 organic search results belonged to college admissions coaching companies or college admissions offices. Excluding those eight, out of the remaining 22 videos, 17 (77%) were created by Asian American YouTube influencers, three (14%) by White influencers, and one each by Black or Unknown (avatar) influencers (based purely on the subjective evaluation of the influencers' appearances). As a result, it is likely that YouTube more influences Asian American students in the college major decision process compared with Whites.

Experimental Design

Zafar (2013) surveyed college sophomores because they had not yet selected their majors. He noted that college upperclassmen who have already chosen their major could have cognitive dissonance and could rationalize their selected major. As a result, one key design principle of this study's survey was to only allow rising sophomores in Fall 2024 who have not yet declared a major to take the survey.

One hypothesis is that if students are presented with an information intervention of the median salary of different majors, they will be more likely to select a new major with a higher median salary. The median salary data for 151 college majors presented to students is from a 2023 *Bankrate* article titled "Nearly 80% of graduates with the 20 most lucrative college degrees are men" (Gailey 2023).

This study's survey asked the students to specify the major they selected as their top choice when they were applying to their current college and then to estimate the median salary (in thousands of dollars) for people who graduated with the major. The survey also asked students for their top two major choices, followed by an estimate of each major's median salary. The median salary estimates are then compared with the actual median salaries for the majors. The absolute value of the differences was then averaged to provide a single number measuring how well the participants could estimate the median salaries. Students then stack ranked the importance of six influence categories: their own interests in the major, characteristics intrinsic to the major, information about the major, family, college and high school factors and rated 18 specific factors on a 5-point Likert scale on their importance to the major selection process.

Since the target population of rising sophomores attending US colleges who have not declared a major is relatively hard to find, four online platforms were used to recruit 150 survey participants from 7/18/24 to 8/6/24: Prolific (N=83), Connect by CloudResearch (N=32), Mechanical Turk (N=30) and Clickworker (N=5). Participants received $1.80 to $2.00 for submitting a valid response on a survey hosted by Qualtric XM. The average survey response duration was 9.9 minutes.

Descriptive Results

According to the national 2019 CIRP Freshman Survey (CFS), the racial/ethnic identity was White 50%, Asian 12%, Black 10%, Hispanic 11%, and multiple categories 16% (Stolzenberg 2020). Comparing this survey's participants with the 2019 CFS, this survey has significantly more Asians and less Whites.

TABLE 1
SURVEY PARTICIPANTS BY RACE AND GENDER

	Male	Female	Non-binary	Totals	Total %
Asian	36	16	2	54	36%
Black	7	13	0	20	13%
Hispanic	8	5	0	13	9%
White	29	31	1	61	41%
Other (Mixed)	0	2	0	2	1%
Totals	80	67	3	150	100%

The grouping of the top choice of the majors selected by participants before the information intervention (their top choice major now) can be seen in Table 2. The top three categories are STEM (50%), Business (25%) and Social Sciences (12%) (which includes Education). Among Asians, 31 out of 54 (57%) selected a STEM major. Comparing this study's distribution of intended college majors vs. the 2019 CFS, STEM, and Business majors are significantly overly represented, while Social Sciences, Health & Medicine, Arts & Humanities majors, and Other/Undeclared are under-represented.

TABLE 2
TOP CHOICE MAJOR BY GROUPING BEFORE INFORMATION INTERVENTION

	Undeclared / Other	Arts & Humanities	Business	Health & Medicine	STEM	Social Sciences	Totals
Asian	1		19		31	3	54
Black		3	1	4	10	2	20
Hispanic		2	4		4	3	13
White	1	6	13	3	28	10	61
Other					2		2
Totals	2	11	37	7	75	18	150
% of Total	1%	7%	25%	5%	50%	12%	100%
2019 CFS	14%	11%	13%	12%	34%	16%	100%

Twelve participants were in a control group and were not presented with the informational intervention, which is a Google Sheet containing the actual median salaries of all of the majors from the Gailey (2023) *Bankrate* article. The remaining 138 participants reviewed the spreadsheet and then selected majors, grouped into categories shown in Table 3.

TABLE 3
TOP CHOICE MAJOR BY GROUPING, POST INFORMATION INTERVENTION

	Arts & Humanities	Business	Health & Medicine	STEM	Social Sciences	Totals
Asian		17	3	28	3	51
Black	2	1	3	9	3	18
Hispanic	2	3		5	3	13
White	5	9	3	29	8	54
Other				1	1	2
Totals	9	30	9	72	18	138

64 out of 138 (46%) selected a different major than the one they stated pre-treatment (Table 4). Comparing tables 3 and 4, 23 out of 51 Asians changed majors (45%).

TABLE 4
TOP CHOICE MAJOR BY GROUPING FOR PARTICIPANTS WHO CHANGED MAJORS POST TREATMENT

	Arts & Humanities	Business	Health & Medicine	STEM	Social Sciences	Totals
Asian		6	3	13	1	23
Black	1		2	4	2	9
Hispanic		1		4		5
White	1	4		16	4	25
Other				1	1	2
Totals	2	11	5	38	8	64

Out of the 64 participants who changed majors, only 7 changed from a non-STEM major to STEM. Although this is below expectations, the main reason is that the survey sample contained many more STEM majors than national averages. Out of the 38 participants who changed majors and selected a STEM major, 31 of them changed from one STEM major to another STEM major, especially into a higher-paying one. 47 out of 64 (73%) participants selected a new major with a higher median salary, while 15 out of 64 (32%) selected majors with a lower median salary, and 2 out of 64 selected one with the same median salary. Among the 15 participants who selected a major with a lower median salary, 13 of them selected a new major within the STEM field.

While most research focuses on the college major decision process among high school seniors or college students, a significant percentage of students form interests of potential majors earlier in life. While 27% of the students developed their interest before sophomore year in high school, and 10% during sophomore year, approximately two-thirds developed their interest after sophomore year in high school (Table 5).

TABLE 5
WHEN PARTICIPANTS FIRST DEVELOP AN INTEREST IN THEIR TOP CHOICE MAJOR

	Elem. school	Middle school	HS 1st Yr	HS 2nd Yr	HS 3rd Yr	HS 4th Yr	College Freshman	Totals
Totals	13	18	10	15	27	35	32	150
% of Totals	9%	12%	7%	10%	18%	23%	21%	100%

Hypothesis Testing

Table 6 summarizes all of the H1 to H6 hypotheses tested using the t.test function in R Studio.

TABLE 6
SUMMARY OF HYPOTHESES TESTING RESULTS

Hypothesis	Alt. Dir.	Asian Mean	White Mean	P-Value	Alt. Hypo.
H1. Asian American students will estimate a median salary for their top two choice majors that is less further apart from actual median.	Less	17.53	33.38	0.0003	**TRUE**
H2. Asian American students will place a greater value on median salary data.	Greater	5.24	5.07	0.2957	FALSE
H3a. Your own interest, enjoyment and passion for the major.	Greater	2.19	2.54	0.8861	FALSE
H3b. Your family (parents, siblings, relatives).	Less	3.87	3.82	0.5718	FALSE
H3c. Your high school (teachers, counselors, friends).	Greater	5.04	4.11	0.0016	**TRUE**
H3d. Your college (professors, counselors, friends).	Greater	3.94	4.07	0.6746	FALSE
H3e. Characteristics intrinsic to the major (median salary, popularity, prestige, ease of finding a job).	Less	2.54	3.05	0.0511	FALSE
H3f. Information about the major (in social media, books and articles, websites).	Less	3.43	3.41	0.5255	FALSE
H4a. Median salary data by major.	Greater	3.74	3.66	0.3247	FALSE
H4b. Prestige of the major.	Greater	3.15	3.20	0.5963	FALSE
H4c. Popularity of the major.	Greater	2.89	2.90	0.5213	FALSE

H4d. Difficulty of the major.	Greater	3.20	3.05	0.2245	FALSE
H4e. Ease of finding a job after college with the given major.	Greater	3.70	3.75	0.6086	FALSE
H5a. Traditional Media - Books.	Less	2.31	2.74	0.0287	**TRUE**
H5b. Traditional Media - Articles.	Less	2.37	2.82	0.0144	**TRUE**
H5c. Traditional Media - Websites.	Less	2.80	2.89	0.3422	FALSE
H5d. Traditional Media In General.	Less	2.57	2.72	0.2462	FALSE
H5e. Social Media - YouTube.	Greater	2.83	2.57	0.1356	FALSE
H5f. Social Media - TikTok.	Greater	2.35	2.49	0.7246	FALSE
H5g. Social Media - Instagram.	Greater	2.43	2.74	0.9052	FALSE
H5h. Social Media In General.	Greater	2.74	2.77	0.4452	FALSE
H6a. Your parents.	Greater	3.43	3.34	0.3487	FALSE
H6b. Your siblings.	Greater	2.43	2.39	0.4488	FALSE
H6c. Your grandparents.	Less	2.04	2.52	0.0207	**TRUE**
H6d. Other relatives.	Less	2.09	2.36	0.1167	FALSE
H6e. Family friend who is not a relative.	Less	2.20	2.85	0.0034	**TRUE**

Six of the specific hypotheses had P-value less than 0.05, so those null hypothesis H0 can be rejected and the alternative hypothesis HA is True. H1 is affirmed, which tests whether Asian American students' estimates of their top and second choice majors' median salaries would be less further apart than actuals compared with white students, and the Asian mean was greatly lower than the White mean.

Hypothesis H3 tests whether Asian American students will place more importance on the three influence factors groups (Your family, Characteristics intrinsic to the major, and Information about the major) and less importance on the remaining three groups (your own interest, your high school and your college) compared with whites. This survey question was a forced stack ranking of the importance of the six factor groups (lower mean = more important). Ma (2009) found that parental involvement in sending their children to activities such as computer classes and art classes impacted the college major selection. However, in this study, H3b showed a mean of 3.87 for Asians vs 3.82 for whites on the impact of family, so the alternative hypothesis that Asian students' family was more important (lower mean) compared with

whites is rejected. The only true alternative hypothesis in the H3 section is H3c, which is that the high school category of influence factors (teachers, counselors and friends) is less important than whites. It is interesting to note that the stack ranking of the six groups of influence factors are the same among Asians and whites (from most to least important): 1) Own interests, 2) Characteristics intrinsic to the major, 3) Information about the major, 4) Family, 5) College factors and 6) High School factors.

The hypotheses in H4, H5 and H6 were tested by a 5 point Likert scale on how important is the factor to the college major selection process (higher mean = more important). The alternative hypothesis for H5a and H5b are affirmed, so Asians place less importance on books as providing information about potential majors and also place less importance on articles, respectively. H6 tests whether Asian American students will place greater importance on the parents and sibling influence factors in the "Your Family" category and less on grandparents, other relatives and family friend influence factors than white students. While the Asian mean in H6a (Parents) and H6b (Siblings) were greater than the white mean, the P-Values were not less than 0.05, so the alternative hypotheses are rejected. The alternative hypothesis for H6c and H6e are affirmed, so Asians place less importance on their grandparents' influence and also less importance on family friends who are not relatives.

One reason why Asians may have a lower importance for grandparents compared to whites is that for Asian American college students, their grandparents are probably more likely to be born in Asia and English is not their native language. Their grandparents are also likely to have less first-hand experience with attending college in the United States. As a result, Asian students look less to their grandparents about choosing college majors. Asians may have rated lower importance for family friends who are not a relatives compared to whites because, in the United States, there is the concept of "Godparents," a close family friend who serves as a role model and helps the parents with the child's upbringing. Although it is beyond the scope of this paper, more whites likely have godparents or other family friends who are role models compared with Asians. As a result, Asian participants rated family friends as being less important.

Probit & Regression Regression Model Testing

The glm function in R Studio was used to test H7 and H8 by running a probit regression model on various factors likely to impact whether or not a participant switches to a new major post-treatment. All participants who switched majors post-treatment were coded with "1," while participants who did not switch were coded with "0". H7 tests whether the participant's rating of the importance of the Bankrate median salary data significantly affects the probability of switching majors and H8 tests whether the median salary of the top choice major is also significant. From Table 7, the Bankrate Median Salary Data is significant at the 5% in predicting students' probability of choosing a new major (affirming H7). Being female is also significant at 10%, in that females are less likely to switch majors. Although the estimated coefficient for the "Actual Median Salary" is negative, meaning the higher the actual median salary of the student's original top major choice, the less likely the student will choose a new major, the Pr(>|z|) value is 0.082 and is not statistically significant (rejecting H8).

TABLE 7
PROBIT REGRESSION MODEL RESULTS TO TEST H7 AND H8

	Estimate	Std. Error	z value	Pr(>|z|)	Signif.
(Intercept)	0.036366	0.772114	0.047	0.96243	
Treatment Group 2	0.08673	0.236647	0.366	0.714	
Female	-0.591246	0.250445	-2.361	0.01824	*
Asian	-0.264065	0.275298	-0.959	0.33746	
Black	0.12707	0.370281	0.343	0.73147	

Hispanic	-0.359528	0.451952	-0.795	0.42632	
Bankrate Median Salary Data	0.249989	0.078928	3.167	0.00154	**
Household Income	0.040575	0.05764	0.704	0.48147	
Estimate of Median Salary	-0.003945	0.004057	-0.972	0.33083	
Actual Median Salary	-0.012391	0.007128	-1.738	0.08216	.

*Significant at 10%, ** significant at 5%, *** significant at 1%

The lm function in R Studio was used to test H9 through H11 by running a linear regression model on specific influence factors to estimate the impact on the actual median salary of the top choice major post-treatment. H9 hypothesizes that the two most important influence categories are the participants' own interest in the major and the intrinsic characteristics about the major, such as median salary information. The higher the importance of the Bankrate median salary data, the higher the top choice major's actual median salary (H10). Finally, the higher the importance of YouTube, the higher the top choice major's median salary (H11).

Table 8 shows the models to examine which of the six influence groups impacts the actual median salary of the top choice major. All the models compare the gender data with males and the racial data with Asians. Model I through Model VI adds each of the six influence groupings, one by one. Model VII includes the two groupings that were statistically significant, while Model VIII includes all six groups. The intercept is significant at 1%, so there is a positive correlation between Asian Males and the actual median salary of the top choice major. Only the "Own interest" factor in Model I and "Intrinsic to Major" factor in Model V are significant, so H9 is affirmed. Model VII includes both the "Own interest" and "Intrinsic to Major" groups, which were still significant. Model VIII includes all six major groups and only the "Own interest" factor was still statistically significant. As a result, the "Own interest" factor is the most important, followed by the "Intrinsic to Major" grouping.

Although the most important of the six influence factor groupings is the "Own interest" category on the actual median salary of the top choice major, the effects of the 18 specific influence factors in each category could be quite different. Table 9 shows the various linear regression models to estimate the actual median salary based on the specific influence factors. Model I through III examines the 18 factors by group. Out of all 18 factors, only the median salary, books and YouTube factors were significant, so H10 and H11 are affirmed. Model IV includes these three specific factors plus parents; the first three factors remain significant. Based on the coefficients and significance levels, the median salary factor is the most important, followed by YouTube and then books. Interestingly, the coefficient for the books factor is negative, meaning that a higher rating for the books factor results in a lower actual median salary estimate. Finally, while other studies have hypothesized the importance of parents and siblings, these specific factors were not found to be statistically significant.

TABLE 8
LINEAR REGRESSION MODEL RESULTS TO TEST H9

Model #	I	II	III	IV	V	VI	VII	VIII
(Intercept)	82.1467 ***	89.6861 ***	85.7145 ***	83.6655 ***	94.521 ***	95.4869 ***	88.0763 ***	57.2785 **
Female	-6.1452*	-6.4679*	-6.5184*	-6.3051*	-6.8594*	-5.608	-6.5402*	-5.8714
Non-binary	-17.7087	-19.393	-20.2257	-18.7673	-21.6411*	-20.3199	-19.6337	-18.6261
Black	-4.1913	-3.1433	-2.9357	-3.7672	-3.0075	-4.2828	-3.8849	-5.2577
Hispanic	-9.7871	-12.5228*	-12.0389 *	-13.628*	-11.5427 *	-12.4439 *	-9.4399	-9.8695
White	-4.8046	-4.115	-3.4567	-4.4521	-2.4656	-4.6388	-3.3252	-3.8204
Other	2.1251	2.2838	3.4832	0.3143	2.8884	2.9533	2.598	1.2494
Household Income	-0.3534	-0.7251	-0.7421	-0.8416	-0.7124	-0.7154	-0.413	-0.511
Parents Education	0.2057	0.4202	0.4021	0.4988	0.5614	0.5053	0.3342	0.3078
Own interest	2.7473**						2.2123*	3.668**
Family		-0.1986						1.173
High School			0.6554					1.6579
College				1.3561				2.7639
Intrinsic to Major					-2.551**		-2.0495*	-0.4092
Info about Major						-2.1048		NA

TABLE 9
LINEAR REGRESSION MODEL RESULTS TO TEST H10 AND H11

Model #	I	II	III	IV
(Intercept)	64.2549 ***	79.8267 ***	82.57998 ***	62.9253 ***
Female	-4.9113	-4.5562	-5.70243	-3.8603
Non-binary	-14.0905	-27.4085**	-16.06407	-22.4922*
Black	-3.3063	-3.5592	-3.14319	-2.1286
Hispanic	-7.8083	-10.5417	-11.61668*	-8.8503
White	-4.3304	-2.9145	-4.39167	-2.176
Other / Mixed	-5.6368	-10.7597	0.01781	-14.8078
Household Income	-0.8558	-0.8801	-0.68952	-0.9226
Parents Education	0.527	0.9465	-0.06304	0.9419
Median Salary (Q15a)	4.8839**			5.1216***
Prestige (Q15b)	1.3166			
Popularity (Q15c)	1.1486			
Difficulty (Q15d)	-1.6699			
Ease of Job Search (Q15e)	0.9881			
Books (Q16a)		-4.5106**		-3.0931*
Articles (Q16b)		3.1274		
Websites (Q16c)		-0.9744		
Traditional Media (Q16d)		-1.1107		
YouTube (Q16e)		4.2061*		4.5925***
TikTok (Q16f)		-1.5436		
Instagram (Q16g)		-0.7768		
Social Media (Q16h)		3.4249	.	
Parents (Q17a)			2.26576	-0.3339
Siblings (Q17b)			-0.54933	
Grandparents (Q17c)			0.74477	
Other Relatives (Q17d)			-0.79157	
Family Friend (Q17e)			0.78814	

POLICY RECOMMENDATIONS & CONCLUSION

According to Table 5, 27% of students developed an interest in their top choice major before sophomore year in high school. As a result, having high school guidance counselors provide group sessions to sophomores where the median salary data by major is shared and discussed, could be helpful to the students. Sophomore year is also a good time because students still have time to change their course electives for 11th and 12th grades that could prepare them for certain college majors. Kim et al. (2015) concluded that the lifetime return to college is clearly greater than the cost for males and females, regardless of college major. However, their analysis was based on a four-year college average tuition and fees of $12,967 per year in 2010. The average tuition and fees in 2025 should be significantly higher. As a result, it is possible that the lifetime returns to attending college may only be greater than the costs to attend college for certain majors by race and gender. High school counselors can play an important role in providing the latest median salary by major, lifetime earnings estimates and other data to students and their families so they can make the best informed decision for their future educational and career paths.

The factors that influence students' college major choices are complex and vary between racial groups. This paper illustrated that compared to white students, Asian students better grasp the median salaries for their top choice majors. The influence by high school teachers, counselors and friends in the college major decision process is less important to Asians than whites. Furthermore, books, articles, grandparents and family friends were all valued less by Asians. After the information intervention, 46% of participants selected a new major, and the median salary data significantly predicted the likelihood of switching majors. The linear regression model showed that the students' personal interests in the major is the most important factor, and the major's intrinsic characteristics, including the major's median salary, is the second most important to estimating the median salary of the selected major. Out of the 18 specific influence factors, the three that were statistically significant in estimating the actual median salary are the median salary data and YouTube (both positively correlated) and books (negatively correlated). This study is one of the first to study influence factors consisting of specific traditional and social media sources of information, such as YouTube, TikTok and Instagram. As high school students increase their reliance on social media sources of information, future research at a more granular level on how the various types of social media impact the college major decision process will be helpful.

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