# Biases and Heuristics in the American College Application Process and Potential Solutions

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#### Abstract

Behavioral economics and the biases and heuristics it analyses has brought reasoning and motive to many economically irrational decisions in the world. But perhaps one of the most important problems to explore using the lens of biases and heuristics is the American college application process, specifically why top students from disadvantaged backgrounds do not apply to the top universities. The extensive and complex structure of the U.S. college application process presents students with many possible obstacles and biases. This paper investigates issues surrounding students from disadvantaged backgrounds and how biases and heuristics affect their decision of applying to top universities. These biases and heuristics include the status quo bias, the availability heuristic and the representativeness heuristic. A solution of changing the high school counselling system is proposed.

## 1 Introduction

In the United States, over 80 percent of top students from low-income families and backgrounds do not apply to top colleges and universities even though they have test scores and grades in the top 10 percent. The complex and extensive nature of the college application process drives this lack of confidence among top students from disadvantaged backgrounds. Adding to the already hard college application process, is the expectation of failure and lack of encouragement, which creates a systematic barrier that is hard to break as it is embedded in the education system of the United States. Students have to prepare to take rigorous courses in high school from middle school, or even elementary school by taking the necessary courses. And when it comes time to apply to colleges, they are not guided enough by counsellors or simply think their financial means won't be enough to cover the cost of post-secondary education. One of the most important parts in getting into top colleges/universities is actually putting the school on your college list, doing your own research and getting the necessary

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support from school counsellors, if the school has one. In the United States, the majority of private schools and some public schools have a counsellor whose duties include guiding the students in their post secondary exploration and helping with applications. This cycle is the foundation of the paper and can be explained through the lens of biases and heuristics.

#### 1.1 Context of U.S. College Application Process

The application process to colleges in the United States is very extensive and is among the most competitive application types in the world. By 2017, the number of applications to these schools had massed to around 10.2 million, 6.8 per enrolled student [DeS20]. Most colleges accept applications through portals like the Common App or the Coalition App, where students can apply to multiple colleges through one system. Some schools like the Massachusetts Institute of Technology and Georgetown University have their own application portal and do not accept other application options. Another such system is the UC (University of California) system. Students apply to the UC schools through an individual portal and the requirements are different from most schools that accept the Common Application. Extensive work goes into the application process, especially to those of top universities. Common requirements include multiple writing supplements extending from 50 words to 500+ words, teacher and counsellor recommendations, and alumni interview. Every student applying from the Common Application has to write a 650-word essay that is sent to every school, and most schools require additional essays, the most common one being the "Why Us?" essay. Therefore the students have to put in long hours of work and dedication into the applications that will make or break their college acceptance journey. Another important factor in the college search is the cost. There are two types of costs: the cost of applying and the cost of attending the school. Even though some top universities are "need-blind", meaning that they do not consider the financial means of a student when evaluating their candidacy, most of them are not. The cost of tuition in these schools ranges from 50,000-90,000 and this is unaffordable for most students from disadvantaged backgrounds. This is because around 17 percent of Hispanics and 19 percent of African-Americans are below the poverty line of \$25,000. And African-American households have a net worth 10% of the net worth of white households [Min21].

## 2 Status Quo Bias

The status quo, also known as the status quo bias, is a cognitive bias where the individual emotionally prefers the current situation instead of a change, as described by Samuelson and Zeckhauser [WS88] in their study. In most studies, the preferred situation is referred to as the "status quo." An example of this bias would be when deciding to be an organ donor or not, at first you are automatically considered as not being an organ donor, whereas in order to be an organ donor you have to go through certain stages. So people are more likely and tend to stay as a non-organ donor. This bias is seen when the rate of organ donation in countries where people are automatically considered organ donors are compared with countries where people are automatically considered as non-organ donors. The rates are significantly higher in countries where the status quo is being an organ donor compared to countries where the status quo is not being an organ donor.

#### 2.1 Status Quo Study Evaluation

One of the most popular studies ever conducted related to the status quo bias is that of Samuelson and Zeckhauser, named "Status Quo Bias in Decision Making" [WS88]. The first experiment consisted of a questionnaire where individuals would be asked to make a decision and choose an investment option. The experimental design is that two versions of the questions are used: one where there is no status quo, so the question is neutral, and one where there is a status quo, therefore the participants have to opt-out if they wish to choose another alternative. The experiment consists of two parts. In the first part the questionnaire frames one of the options as the status quo and in the second part the participant is given a series of questions, therefore when the participant chooses an option that option becomes their status quo for the next question.

	Number and Percent				
	Decision Questions Alternatives	Status Quo	Neutral	Non-Status Quo	Chi-square Significance
#1	60-40	11/18 = .61	11/24 = .46	4/17 = .24	(.025)
	50-50	13/17 = .76	13/24 = .54	7/18 = .39	
#1	30-70	18/29 = .62	16/34 = .47	8/21 = .38	(.10)
	70-30	13/21 = .62	18/34 = .53	11/29 = .38	
#2	Mod. Risk	27/43 = .63	15/25 = .60	21/48 = .44	(.10)
	High Risk	27/48 = .56	10/25 = .40	16/43 = .37	
#2	Treasury	32/63 = .51	18/34 = .53	11/30 = .37	(.40)
	Mod. Risk	19/39 = .63	16/34 = .47	31/63 = .49	
#3	\$120 K	15/20 = .75	15/22 = .68	12/19 = .63	(.50)
	\$125 K	7/19 = .37	7/22 = .32	5/20 = .25	
#3	\$115 K	36/38 = .95	19/22 = .86	18/25 = .72	(.02)
	\$125 K	7/25 = .28	3/22 = .14	2/38 = .05	
#4	E. Coast	16/20 = .80	23/31 = .74	8/38 = .21	(.001)
	W. Coast1	30/38 = .79	8/31 = .26	4/20 = .20	
#4	W. Coast2	16/20 = .80	17/22 = .77	15/22 = .68	(.40)
	Midwest	7/22 = .32	5/22 = .23	4/20 = .20	
#5	Sparse 1500	13/20 = .65	20/32 = .62	7/22 = .32	(.05)
	Dense 1000	15/22 = .68	12/32 = .38	7/20 = .35	
#5	Dense 2000	19/38 = .50	15/45 = .33	9/25 = .36	(.25)
	Sparse 1500	16/25 = .64	30/45 = .67	19/38 = .50	
#6	Silver	14/21 = .67	14/20 = .70	40/64 = .62	(.12)
	Red	24/64 = .38	6/20 = .30	7/21 = .33	
#6	Tan	10/25 = .40	14/25 = .56	12/23 = .52	(N.A.)
	White	11/23 = .48	11/25 = .44	15/25 = .60	

Figure 1: Decision Outcomes for the Study [WS88]

The study examines the decisions that the participants made and if their decisions would change depending on their default, if they had one. The point of the experimental group is to determine whether having a status quo would impact the decision of these individuals and therefore revealing the status quo bias. Figure 1 reports the results of the experiment, but only the portion where there are two options because the experiment has tables also for triples and quads. To understand if the status quo bias is present, the table should be checked for any certain patterns. In figure 1, it can be seen that for almost all of the questions, the percentage response rate was the highest for the status quo, second highest for the neutral, and the lowest for the no status quo. For example, in the table for question number three, the option of 115K strongly outweighs the option of 125K. The crucial part is that when there is a status quo bias present, the dominance of both options become stronger, even though the 125K option was lowly preferred when it was in the neutral position. In 20 out of the 24 options given in the table, the rate that the option was chosen increased when it was the status quo, compared to neutral and non-status quo.

#### 2.2 Status Quo and the College Application Process

Status quo makes choice-makers more likely to stay in the decision that was assigned to them through the status quo. This type of bias is also in effect when making crucial decisions such as choosing a college or university to apply to. Guidance is key when choosing colleges, and high school counsellors are one of the most important figures when making such decisions. It is reported by the U.S. Department of Education that 39 percent of high schools in the United States have counsellors whose duties include helping with college applications, with 69 percent of private schools reporting to have one or more. Figure 2 represents this data and shows the percentage for other duties as well.



Percentage of Counselors Reporting That Their School Had One or More Counselors Whose Primary Responsibility Was Assisting Students with the Following, by School Type

Figure 2: Distribution of Primary Responsibility of Counselors [Rad16]

The most common duty among the counsellors is helping with college applications and also helping students to choose colleges. Authority figures play a great role in the selection process and often create a college list for students depending on their academic performance. The status quo effect comes into play here. Because students from disadvantaged backgrounds usually do not perform well academically, their status quo in the eyes of college counsellors is to not apply to top universities. Therefore these students do not wish to opt-out of the status quo, as there is an emotional tendency to stay in that option. According to a study conducted by So Hoxby and Christopher Avery, many low-income kids from disadvantaged backgrounds only apply to one single college, usually a school where the only requirement is a high school diploma, where the average grades of admitted students is way lower than those of the admitted students from disadvantaged backgrounds.

# 3 Availability Heuristic

The availability heuristic is the mental shortcut where the person makes decisions relying on examples and information that comes to their mind or is available to them at that moment. This heuristic therefore creates a mental shortcut for people that usually results in flawed and inaccurate decision making. A real life example of this heuristic is when people do not wish to drive a car after an accident has occurred involving cars. The person recalls a vivid or recent event to make a decision at that moment to whether or not to ride a car. It might be logical to ride a car at that moment, but the person uses the availability heuristic and therefore decides not to use the car due to the used information.

#### 3.1 Availability Heuristic Study Evaluation

Tversky and Kahneman [AT73] conducted an experiment on the availability heuristic in their paper "Availability: A heuristic for judging frequency and probability" even though this study examines availability in a context of judging frequency and probability, it is still relatable as to how people are affected by this heuristic and how certain decision are made with the use of it. In their study, Tversky and Kahneman asked participants to judge the frequency of a letter in a certain position of words. They based their argument on the rhetorical question asking if a word is more likely to start with K rather than have it as the third letter. They hypothesised that people assess this question by analysing the availability of both instances. They based their argument on the fact that words that start with the letter K are more often remembered than words that have K as their third letter. In the experimental design, they asked the same question as above to participants but using the letter R and four other letters, which were occurring as the third letter more often than they appeared as the first letter of words. The participants were asked to give a ratio of these values. For example if the letter appears as the first letter double the times that it appears as it appears as the third letter, the participant would give an answer of 2:1. The ordering of the question was changed for half of the subjects in order to eliminate any other bias that might occur due to the first appearing option. And also the orders of the letters presented were changed and had three different versions in order to eliminate any further bias. The results showed that out of the 152 participants, 105 of them considered that the letters occur in the first position more often. They considered this for a majority of the letters given. Therefore there was a strong judgement considering the majority of the letters to be more likely in the first position, even though all of them appeared more often in the third slot. This shows that the retrieval of information that is the easiest causes people to make inaccurate or wrong choices. Because this pattern followed for all of the five letters presented, the experimenters concluded that the availability heuristic was in effect due to the fact that words that have the letters in the first slot are recalled more easily.

## 3.2 Availability Heuristic and the College Application Process

The availability heuristic comes into play in the college application and selection process in many different ways. Perhaps one of the most frequent ways that it is used is when judging if their application can be successful to the top universities and whether or not it is worth the effort that the applications require. As discussed in the College Application Context section of the paper, the application process in the United States requires extensive work from the part of students. Therefore when deciding whether or not to apply to these institutions, students consider the work that is supposed to be put in and also their probability and chance of gaining acceptance to the top schools. This is usually done through resources given to them by high school counsellors, their parents or any other person that has an impact on their lives. Most of the students from disadvantaged backgrounds, usually from poor families, live in suburban or small-metro counties according to a study conducted by Pew Research Center. Specifically, 49 percent of them live in those types of communities. As figure 3 suggests below, town, rural, and suburban schools are the most likely schools to give less access to information about colleges or universities. These are the community types where students from disadvantaged backgrounds mostly live. Therefore the information that is available to these students is very limited, which presents forward the availability heuristic.



Figure 3: Source: U.S. Department of Education

According to other data collected by the U.S. Department of Education, the most influential people in the lives of students is their parents, therefore the students from disadvantaged backgrounds are more likely to rely on the information given to them by their parents compared to high school counsellors, because the counsellors are less likely to give them the information and are also less influential compared to parents. And because most of the parents of students from these backgrounds do not have enough information on top universities, the students use the availability heuristic and do not consider applying to these institutions because the information is not available to them.

## 4 Representativeness Heuristic

The representativeness heuristic is a heuristic where the individual considers the probability of the occurrence of an event by using an example or mental image that is already existing in their memory, either experienced or heard from someone else. An example of this from our lives is when we encounter a new person in school that is not very old, and we consider them to be perhaps a visiting student but not a teacher. If the person turns out to be a teacher we are surprised because that person does not fit into the mental image that we had of a teacher. Teachers are usually seen as people who are slightly aged and dull by most people. Therefore when a person appears that does not match that mental image we consider them to be not part of that group, or we consider the probability of them being from that group as lower.

#### 4.1 Representativeness Heuristic Study Evaluation

The experiment conducted to prove representativeness heuristic that is going to be discussed is one conducted by Tversky Kahneman (1981). In this study, the experimenters wanted to test whether or not mental images play an important role in the probability that someone belongs to a certain group of people. In the experimental design, the experimenters made up two personality descriptions where they talked about a certain made-up individual. Each participant in the experiment encountered the descriptions in both within-subject and between-subject treatments. In the within-subject form of the experiment, two descriptions were given. One of the questions is shown below and the numbers before the statements are the mean ranking given to them by the participants of the experiment. The letter A represents the choice that was put in as the representative choice, the letter J represents the choice that was the unrepresentative choice, the letters combined represented a conjunct answer, one where both described choices above were combined.

Bill is 34 years old. He is intelligent, but unimaginative, compulsive, and generally lifeless. In school, he was strong in mathematics, but weak in social studies and humanities.

Please rank order the following statements by their probability, using 1 for the most probable and 8 for the least probable. (3.7) Bill is a physician who plays poker for a hobby.

- (3.9) Bill is an architect.
- (1.1) Bill is an accountant. (A)
- (6.2) Bill plays jazz for a hobby. (J)
- (6.6) Bill surfs for a hobby.
- (5.7) Bill is a reporter.
- (1.4) Bill is an accountant who plays jazz for a hobby. (A&J)
- (6.1) Bill climbs mountains for a hobby.

The experimenters predicted that the conjunct answer would fall in between the mean values of the representative and the unrepresentative answer choices. They also predicted that choice A would be predicted to be the option seen most probable by the participants, and choice J to be the least probable choice compared to choices A and A&J. The experimenters asked 88 individuals who did not have any statistical knowledge to rank these options from most to least probable. Their hypothesis was proven correct when 87 percent of the participants reported their predicted order (A A&J J). Therefore the study showed that mental images of certain groups impact the decisions of individuals. This concept can also be applied to many other contexts, which is discussed further in section 4.2.

## 4.2 Representativeness Heuristic and the College Application Process

Students from disadvantaged backgrounds often do not have people around them that attended top universities because of the constant cycle of poverty and lack of resources that has been present in their lives and also their ancestors' lives. When deciding whether or not to apply to top universities, the probability of acceptance is considered by most students that apply. In the context of the students from disadvantaged backgrounds, when they consider their chance of acceptance, they consider it lower than it actually is because they do not have a lot of similar students who got accepted into these universities and also because most students that they know attend these schools are not from their backgrounds. According to data gathered by the U.S. Census Bureau, 52.9 percent of undergraduate students are white, who are not considered as a disadvantaged background. This data can be considered representative of the top universities as well. Therefore the students from these backgrounds use the representativeness heuristic to assume their chances of acceptance being lower than it actually is due to the mental image of a student accepted by a top university to not match their own view of themselves. This causes them to not apply to these universities.

## 5 Potential Solution for the Problem

For the solution of this complex problem, the approach should be through the status quo bias. The status quo causes the potential applicants to be more

inclined towards not applying to the top universities because it causes a cycle for these students in already disadvantaged communities. The counsellors employed by the schools direct students in their college selection process and often have great influence in the college choices of the students. Therefore their approach is important, but often biased as discussed in section 2.2. The solution is to change the system in which counsellors choose schools for students, by changing the status quo. Using this way, top students opt-out of the decision of applying to top universities rather than opting in. My solution is to create a roadmap system for the counsellors and other authority figures that are active in the applicant's college selection process. In this roadmap system, students from disadvantaged backgrounds who are in the top 10 percent of their class or who have a top 10 percent standardised test score will be automatically considered as applying to at least one top university by their counsellor/authority figure. This way the students will opt-out of the decision rather than opting in, which would increase the rate of application by these students to top universities because opt-ing in is much less preferable statistically as opposed to opt-ing out. This document will be sent to every school in the U.S. to high school counsellors, if there are any, and also to any authority figure that might help disadvantaged students with their applications (principal, head of department, administrator, etc.) The goal is to increase the rate of applying and eliminating the negative effects of the status quo bias by reversing its usage.

# 6 Conclusion

With the use of biases and heuristics, the fundamental pieces of behavioral economics, an issue increasing in importance was able to be explained. The status quo bias, the availability heuristic, and the representativeness heuristic were all an essential part of the application process and the way top students from disadvantaged backgrounds made their decisions regarding post secondary education. A potential solution of a roadmap towards college guidance was proposed in order for students to get the chance to apply to the schools with the interruption of less biases and heuristics. The students from these backgrounds already have many disadvantages that are trying to be solved, and this solution is a great addition for the easing of those disadvantages.

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