College Admissions Algorithms

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College Admissions

- 700+ Colleges
- 4 million applications sent (non-unique)
- Top 10 schools averaged over 80k applications
- Harvard received 40k in 2020

SCHOOL	NUMBER OF APPLICANTS	U.S. NEWS RANK AND CATEGORY
University of California—Los Angeles	108,877	20, National Universities
University of California—San Diego	100,073	34 (tie), National Universities
University of California—Irvine	97,942	36 (tie), National Universities
University of California—Santa Barbara	90,963	28 (tie), National Universities
University of California—Berkeley	88,076	22, National Universities
New York University	80,210	28 (tie), National Universities
University of California—Davis	76,225	38 (tie), National Universities
Pennsylvania State University—University Park	73,861	63 (tie), National Universities
California State University—Long Beach	67,402	12 (tie), Regional Universities (West)
University of Michigan—Ann Arbor	65,021	23 (tie), National Universities

Why are Applications going up?

- Common App (electronic) makes logistics of applying to multiple schools easier
- General increased awareness of applying to college
- Societal effect of job applications requiring a college degree
- Students are encouraged to apply to more colleges
- More awareness of smaller or specialized schools

Should I apply to colleges if my admission-test scores or grades are below their published ranges?

Yes. The admission scores and grades that colleges show on their websites are averages or ranges—not cutoffs. There are students at every college who scored lower (and higher) than the numbers shown.

Remember that colleges consider many factors to get a more complete picture of you. For example, they look at the types of classes you take, your activities, recommendation letters, your essay and your overall character. Colleges are looking for all kinds of students with different talents, abilities and backgrounds. Admission test scores and grades are just two parts of that complete picture.

Should I even bother applying to colleges I don't think I can afford?

Absolutely. Remember that after financial aid packages are determined, most students will pay far less than the "sticker price" listed on the college website. You don't know if you can afford a college until after you apply and find out how much aid that college will offer you (if you're accepted). Fill out the FAFSA® as early as possible after Jan. 1 to qualify for the most aid.
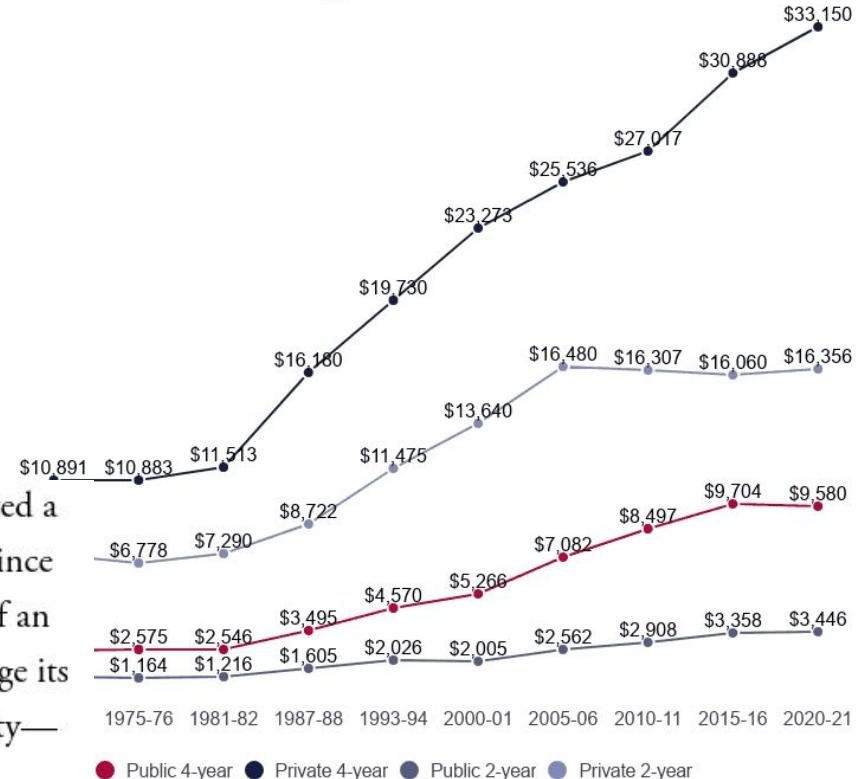
Even if the aid package the college offers is not enough, you have options. Many colleges are willing to work with students they have chosen for admission to ensure that those students can afford to attend.

Gaming the ranking algorithm

- Admissions rate was part of USNews algorithm until ~2018
- What do you think happened with the admissions rate?
- Faculty salary is part of the ranking ? What will happen then?
- New algo is more results based…

In a 2011 *New Yorker* critique of such lists, Malcolm Gladwell highlighted a challenge faced by *U.S. News* and all the other organizations that have since sought to grade schools: "There's no direct way to measure the quality of an institution—how well a college manages to inform, inspire, and challenge its students. So the U.S. News algorithm relies instead on proxies for quality—and the proxies for educational quality turn out to be flimsy at best."

Historical Cost of College Tuition & Fees in 2021 Dollars

Private 4-year: $10,891, $10,883, $11,513, $16,180, $19,730, $23,273, $25,536, $27,017, $30,888, $33,150

Public 4-year: $2,575, $2,546, $3,495, $4,570, $5,266, $7,082, $8,497, $9,704, $9,580

Private 2-year: $6,778, $7,290, $8,722, $11,475, $13,640, $16,480, $16,307, $16,060, $16,356

Public 2-year: $1,164, $1,216, $1,605, $2,026, $2,005, $2,562, $2,908, $3,358, $3,446

Years: 1975-76, 1981-82, 1987-88, 1993-94, 2000-01, 2005-06, 2010-11, 2015-16, 2020-21

- Public 4-year - Private 4-year - Public 2-year - Private 2-year

US News Rankings

How would you game this algorithm?

RANKING FACTOR	NATIONAL UNIVERSITIES AND NATIONAL LIBERAL ARTS COLLEGES INDICATOR WEIGHT	REGIONAL UNIVERSITIES AND REGIONAL COLLEGES INDICATOR WEIGHT
GRADUATION AND RETENTION RATES	**22%**	**22%**
AVERAGE SIX-YEAR GRADUATION RATE	17.6%	17.6%
AVERAGE FIRST-YEAR STUDENT RETENTION RATE	4.4%	4.4%
SOCIAL MOBILITY	**5%**	**5%**
PELL GRANT GRADUATION RATES	2.5%	2.5%
PELL GRANT GRADUATION RATE PERFORMANCE	2.5%	2.5%
GRADUATION RATE PERFORMANCE	**8%**	**8%**
UNDERGRADUATE ACADEMIC REPUTATION	**20%**	**20%**
PEER ASSESSMENT SURVEY	20%	20%
FACULTY RESOURCES FOR 2020-2021 ACADEMIC YEAR	**20%**	**20%**
CLASS SIZE INDEX	8%	8%
FACULTY COMPENSATION	7%	7%
PERCENT FACULTY WITH TERMINAL DEGREE IN THEIR FIELD	3%	3%
PERCENT FACULTY THAT IS FULL TIME	1%	1%
STUDENT-FACULTY RATIO	1%	1%

STUDENT SELECTIVITY FOR THE FALL 2020 ENTERING CLASS	**7%**	**7%**
MATH AND EVIDENCE-BASED READING AND WRITING PORTIONS OF THE SAT AND THE COMPOSITE ACT SCORES	5%	5%
HIGH SCHOOL CLASS STANDING IN TOP 10%	2%	0%
HIGH SCHOOL CLASS STANDING IN TOP 25%	0%	2%
ACCEPTANCE RATE	0%	0%
FINANCIAL RESOURCES PER STUDENT	**10%**	**10%**
AVERAGE ALUMNI GIVING RATE	**3%**	**3%**
GRADUATE INDEBTEDNESS	**5%**	**5%**
GRADUATE INDEBTEDNESS TOTAL	3%	3%
GRADUATE INDEBTEDNESS PROPORTION WITH DEBT	2%	2%
TOTAL	**100%**	**100%**

Former Temple U. Dean Found Guilty of Faking Data for National Rankings

Prosecutors said he conspired to submit fake data about Temple's Fox School of Business that helped it climb influential U.S. News & World Report college rankings.

UC Berkeley Removed From US News College Rankings For Misreporting Statistics

Christopher Rim Contributor ⓘ

Education

As the CEO of Command Education, I write about emotionally intelligent leadership and education.

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#Admissions Insider

8 More Colleges Submitted Incorrect Data for Rankings

U.S. News will consider them unranked for the rest of this rankings year, but that punishment will last only a few weeks. Some colleges say *U.S. News* is to blame.

By Scott Jaschik // August 27, 2018

High School Rankings

Townsend Harris High School

Flushing, NY | **New York City Public Schools**

👏 **#12 in National Rankings**

Townsend Harris High School is ranked first within New York. Students have the opportunity to take Advanced Placement® coursework and exams. The AP® participation rate at Townsend Harris... **READ MORE »**

GRADUATION RATE
100%

COLLEGE READINESS
97.4

ENROLLMENT 9-12
1,183

Brooklyn Technical High School

Brooklyn, NY | **New York City Public Schools**

👏 **#22 in National Rankings**

Brooklyn Technical High School is ranked second within New York. Students have the opportunity to take Advanced Placement® coursework and exams. The AP® participation rate at Brooklyn Technical... **READ MORE »**

GRADUATION RATE
98%

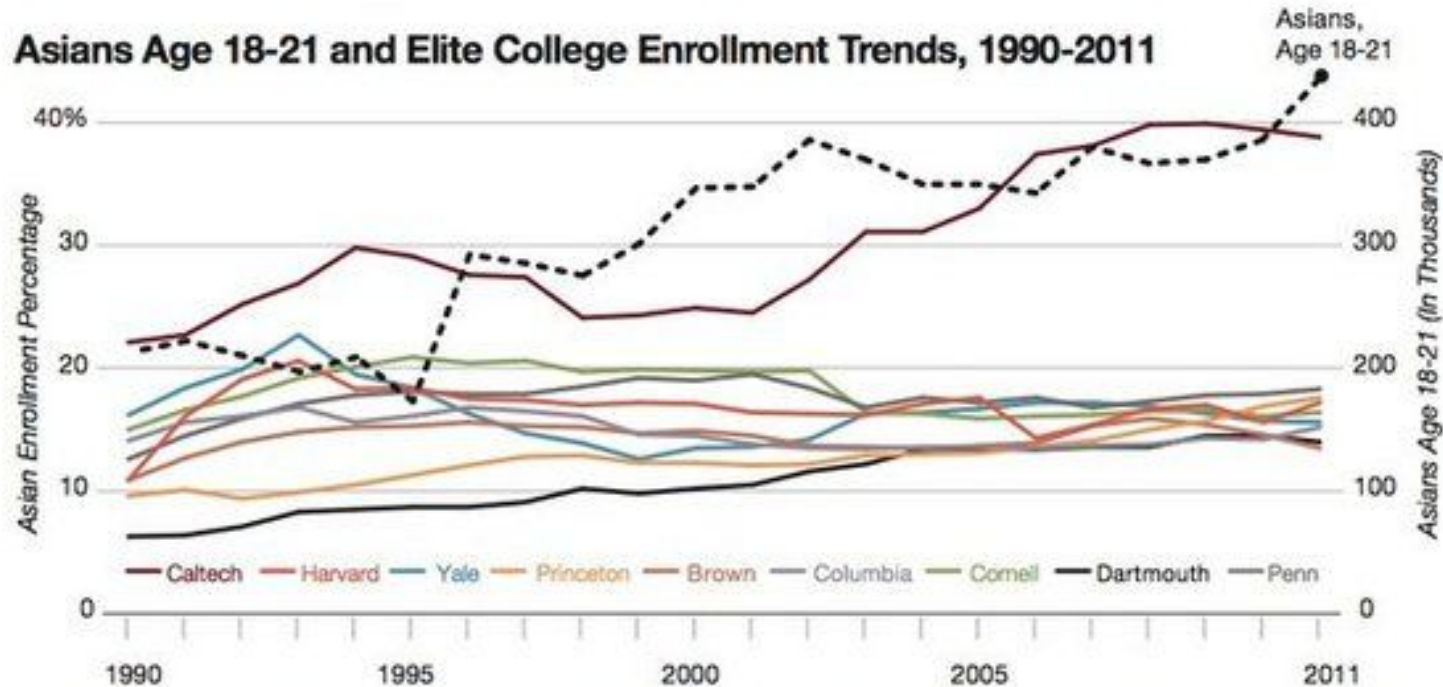COLLEGE READINESS
98.3

ENROLLMENT 9-12
5,934

High School Rankings Algorithm

Data Sources

U.S. News does not collect any information directly from high schools. The data used to produce the Best High Schools rankings and published on usnews.com came entirely from the following third-party sources:

- **The Common Core of Data** is the U.S. Department of Education website, updated annually, that contains basic data on enrollment, student ethnicity and other profile information on all public high schools in the U.S. The department collects the data directly from the schools, school districts or state departments of education, which is reflected on usnews.com.

- **Statewide math and reading level assessment tests and high school graduation rates** data used in the 2021 rankings in almost all cases is from the 2018-2019 school year. This data in most cases is from each state's education agency website or directly from state education agencies.

- **The College Board** was the source of the Advanced Placement examination data for each public high school, when applicable, that was used in rankings calculations. The AP exam data used in the analysis is for 12th grade students in the 2018-2019 school year.

- **International Baccalaureate** was the source of the IB examination data for each public high school, when applicable, that was used to create calculated values. The IB exam data used in the analysis is for 12th grade students in the 2018-2019 school year.
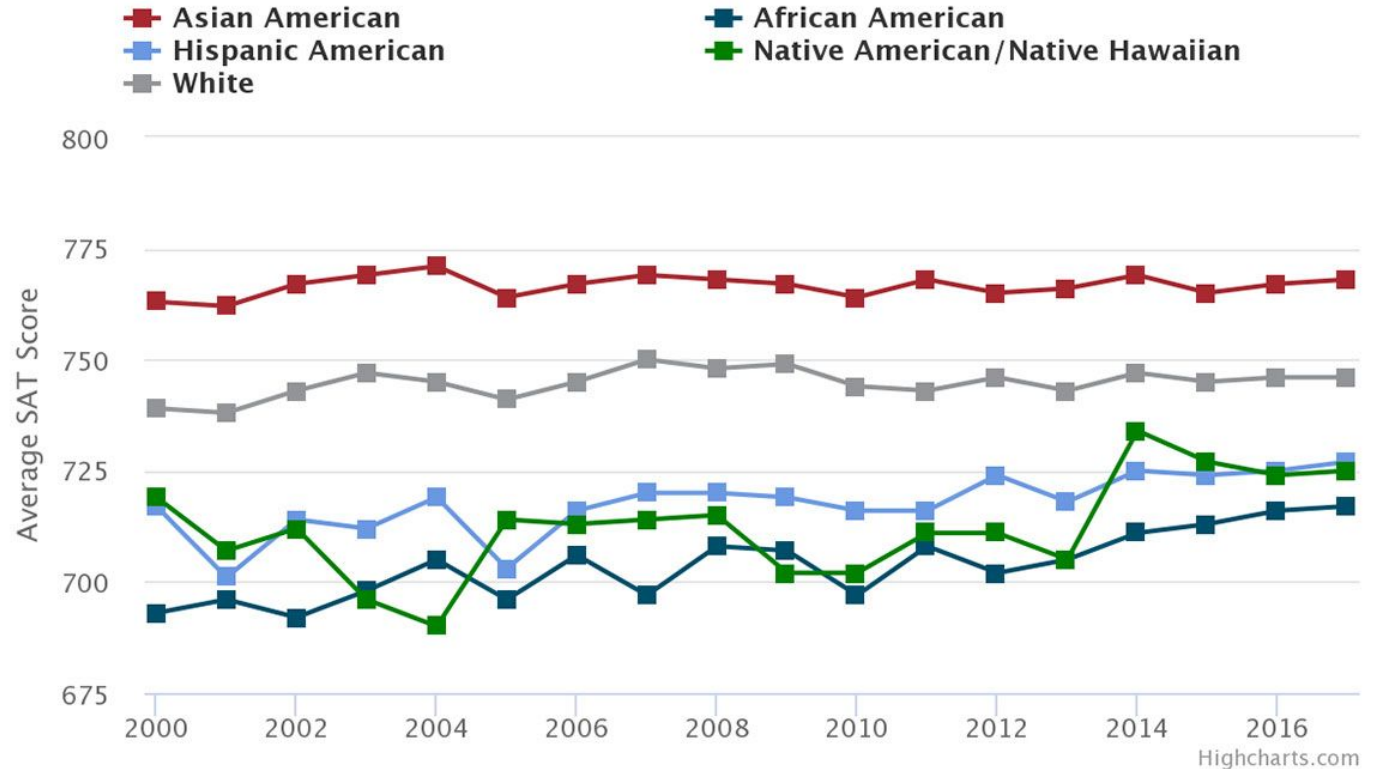
Asian Quota

Asians Age 18-21 and Elite College Enrollment Trends, 1990-2011

Asians, Age 18-21

Asian Enrollment Percentage: 40%, 30, 20, 10, 0

Asians Age 18-21 (In Thousands): 400, 300, 200, 100, 0

— Caltech — Harvard — Yale — Princeton — Brown — Columbia — Cornell — Dartmouth — Penn

1990   1995   2000   2005   2011

Trends of Asian enrollment at Caltech and the Ivy League universities, compared with growth of Asian college-age population; Asian age cohort population figures are based on Census CPS, and given the small sample size, are subject to considerable yearly statistical fluctuations. Source: Appendices B and C.

Asian Quota

Average SAT Scores for Admitted Students by Race

Source: Court documents submitted by Harvard

Legend:
- Asian American
- Hispanic American
- White
- African American
- Native American/Native Hawaiian

Highcharts.com

What would happen in race-blind admissions?

What About Admission Rates?

Another Espenshade study, this one with Chang Chung, a senior staff member in Princeton's Office of Population Research, looked at data from elite colleges to see what would happen if race and ethnicity were eliminated from consideration. The study appeared in *Social Science Quarterly* in 2005.

The study found that, without affirmative action, the acceptance rate for African-American candidates at elite colleges would be likely to fall by nearly two-thirds, from 33.7 percent to 12.2 percent, while the acceptance rate for Hispanic applicants probably would be cut in half, from 26.8 percent to 12.9 percent.
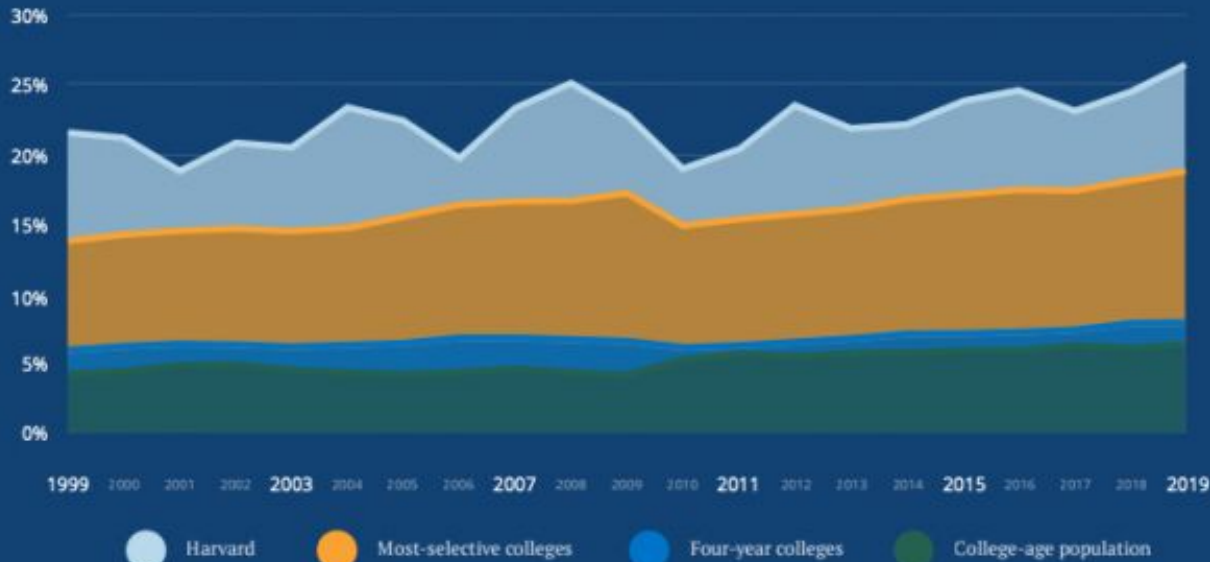
White applicants would have seen little change in this analysis. Their admission rate would rise slightly, to 24.3 percent, from 23.8 percent.

The big gains would be for Asian applicants. Their admission rate in a race-neutral system would go to 23.4 percent, from 17.6 percent. And their share of a class of admitted students would rise to 31.5 percent, from 23.7 percent.

Are the data and studies correct?

Figure 1.

The enrollment share of Asian American and Pacific Islander first-time students at the most selective colleges (including Harvard) has kept pace with their population share growth at all four-year colleges.

Harvard · Most-selective colleges · Four-year colleges · College-age population

Program

Admission Algorithm

- Given list of students and data on the categories below
    - Grades / GPA
    - AP Exams / Honors Grades
    - SAT / Standardized exam
    - Extracurriculars
    - Personal Essay / Story
- Each category can be given a specific weight. Default weights but can be changed
- Students will be ranked according to weights and their data.

Q&A

- Some Q's to keep in mind or to discuss
  - Do you keep your algorithm simple? Rating of 1-10 in 5 categories? Or add more complexities to help refine your search?
  - Should algorithms be made public?
  - How do you remove as much bias and subjectivity in the ratings?
  - How do you rank students to enter a seat limited program?

Resources

- https://www.brookings.edu/research/enrollment-algorithms-are-contributing-to-the-crises-of-higher-education/
- https://www.insidehighered.com/admissions/article/2021/09/27/critics-algorithms-push-admissions-wrong-direction
- https://www.washingtonpost.com/outlook/next-normal-algorithms-college/2021/11/12/366fe8dc-4264-11ec-a3aa-0255edc02eb7_story.html
- https://pro.admitsee.com/mainpage/algorithm
- https://slate.com/technology/2021/01/higher-education-algorithms-student-data-discrimination.html
- https://www.nytimes.com/roomfordebate/2012/12/19/fears-of-an-asian-quota-in-the-ivy-league/statistics-indicate-an-ivy-league-asian-quota
- https://www.kuow.org/stories/whitewashing-of-asian-students-and-the-report-that-launched-a-reckoning
- https://nypost.com/2020/09/12/colleges-reveal-the-secret-formula-for-deciding-who-gets-in/
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