COMP 2501 Project Presentation

Demystifying the College Admission Process

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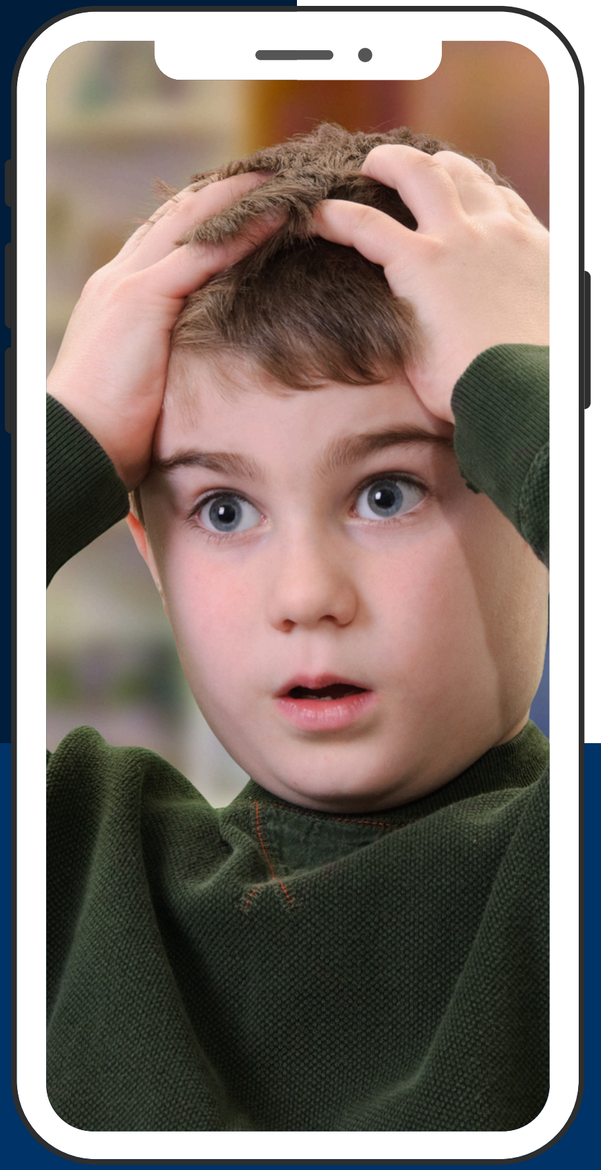
Get Started →

INTRODUCTION

- Competitive admissions for US universities
- Bewildered by the results?
- Tiring of writing application essays?
- Unable to determine the fit schools?
- Meaning of holistic admissions?



RESEARCH QUESTION

What qualities do American universities value most in applicants?

Dataset #1

- Common Data Set (CDS)
- By College Board, U.S. News & World Report, and Peterson's
- Using 23-24 CDS for Top 30 Best National Universities

Dataset #2

- Personal Statements of Admitted Students

US News Ranking	School Name	State	Private(1) or Public(0)	Undergrad/Full-Time/Degree-Seeking/First-time/First-year: Men	Undergrad/Full-Time/Degree-Seeking/First-time/First-year: Women	Undergrad/Full-Time/Degree-Seeking/First-time/First-year: Another Gender
1	Princeton University	NJ	1	668	696	0
2	Massachusetts Institute of Technology	MA	1	551	540	0
3	Harvard University	MA	1	764	880	0
4	Stanford University	CA	1	846	853	0
5	Yale University	CT	1	785	846	10
6	California Institute of Technology	CA	1	154	112	0
7	Duke University	NC	1	777	967	0
8	Johns Hopkins University	MD	1	661	757	0
9	Northwestern University	IL	1	965	1144	2
10	University of Pennsylvania	PA	1	1113	1302	0
11	Cornell University	NY	1	1643	1894	0
12	University of Chicago	IL	1	884	741	0
13	Brown University	RI	1	847	848	0
14	Columbia University	NY	1	694	728	32
15	Dartmouth College	NH	1	616	571	19
16	University of California--Los Angeles	CA	0	2345	4190	44
17	University of California, Berkeley	CA	0	2674	3824	106
18	Rice University	TX	1	560	561	0
19	University of Notre Dame	IN	1	1060	1015	0
20	Vanderbilt University	TN	1	775	844	0
21	Carnegie Mellon University	PA	1	874	834	0
22	University of Michigan--Ann Arbor	MI	0	3397	4029	0
23	Washington University in St. Louis	MO	1	871	952	0
24	Emory University	GA	1	636	789	0
25	Georgetown University	DC	1	630	968	0
26	University of Virginia	VA	0	1689	2276	0
27	University of North Carolina--Chapel Hill	NC	0	1758	2930	0
28	University of Southern California	CA	1	1682	1880	68
29	University of California, San Diego	CA	0	2791	3894	238
30	New York University	NY	1	2442	3356	4

EXISTING WORKS

- In-depth reports focusing on one or two schools
- Listing the admission requirements
- No holistic examination and visualization

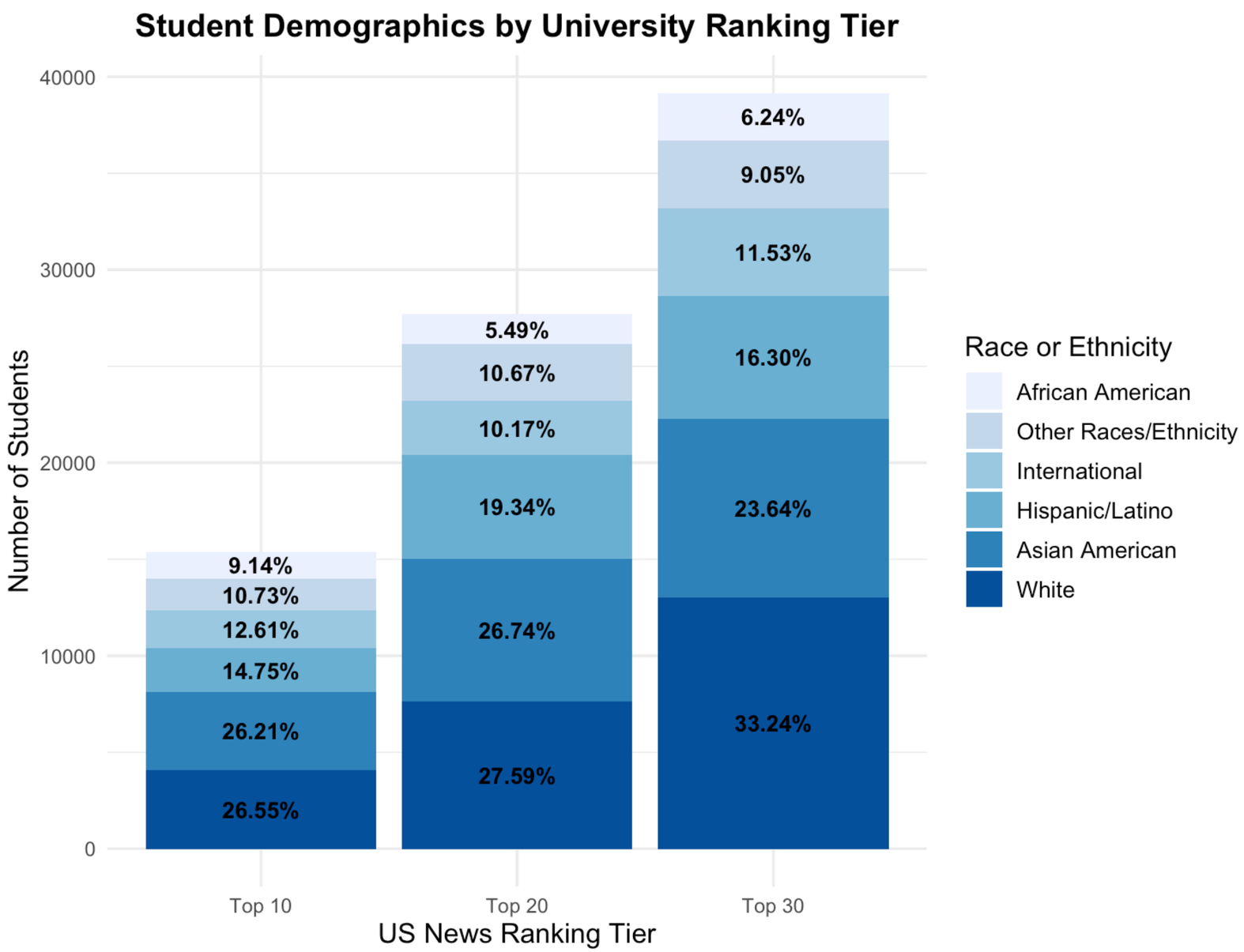
SIGNIFICANCE

- Thousands of applications per school
- Ex: UCLA received 100,000+ applications in 2020

RANKING OF UNIVERSITIES

Ranking	Name
1	Princeton
2	MIT
3	Harvard
4	Stanford
5	Yale
6	Caltech
7	Duke
8	JHU
9	NU
10	UPenn
11	Cornell
12	UChicago
13	Brown
14	Columbia
15	Dartmouth
16	UCLA
17	UCB
18	Rice
19	Notre Dame
20	Vanderbilt
21	CMU
22	UMich
23	WashU
24	Emory
25	Georgetown
26	UVA
27	UNC
28	USC
29	UCSD
30	NYU

DATA OF ENROLLED STUDENTS



- White: +7%
- African American: -3%
- Greater balance of % for Top 10 Universities
- Public vs private
- Significance?

SFFA V. HARVARD & UNC

Harvard CDS 22-23

Nonacademic				
Interview			X	
Extracurricular activities			X	
Talent/ability			X	
Character/personal qualities			X	
First generation			X	
Alumni/ae relation			X	
Geographical residence			X	
State residency				X
Religious affiliation/commitment				X
Racial/ethnic status			X	
Volunteer work			X	
Work experience			X	
Level of applicant's interest				X

- Students for Fair Admissions
- Supreme Court Lawsuit (2021-2023)
- Violation of Equal Protection Clause of the Fourteenth Amendment
- Prohibit the use of race in admission decisions

DIVERSITY TARGETS?

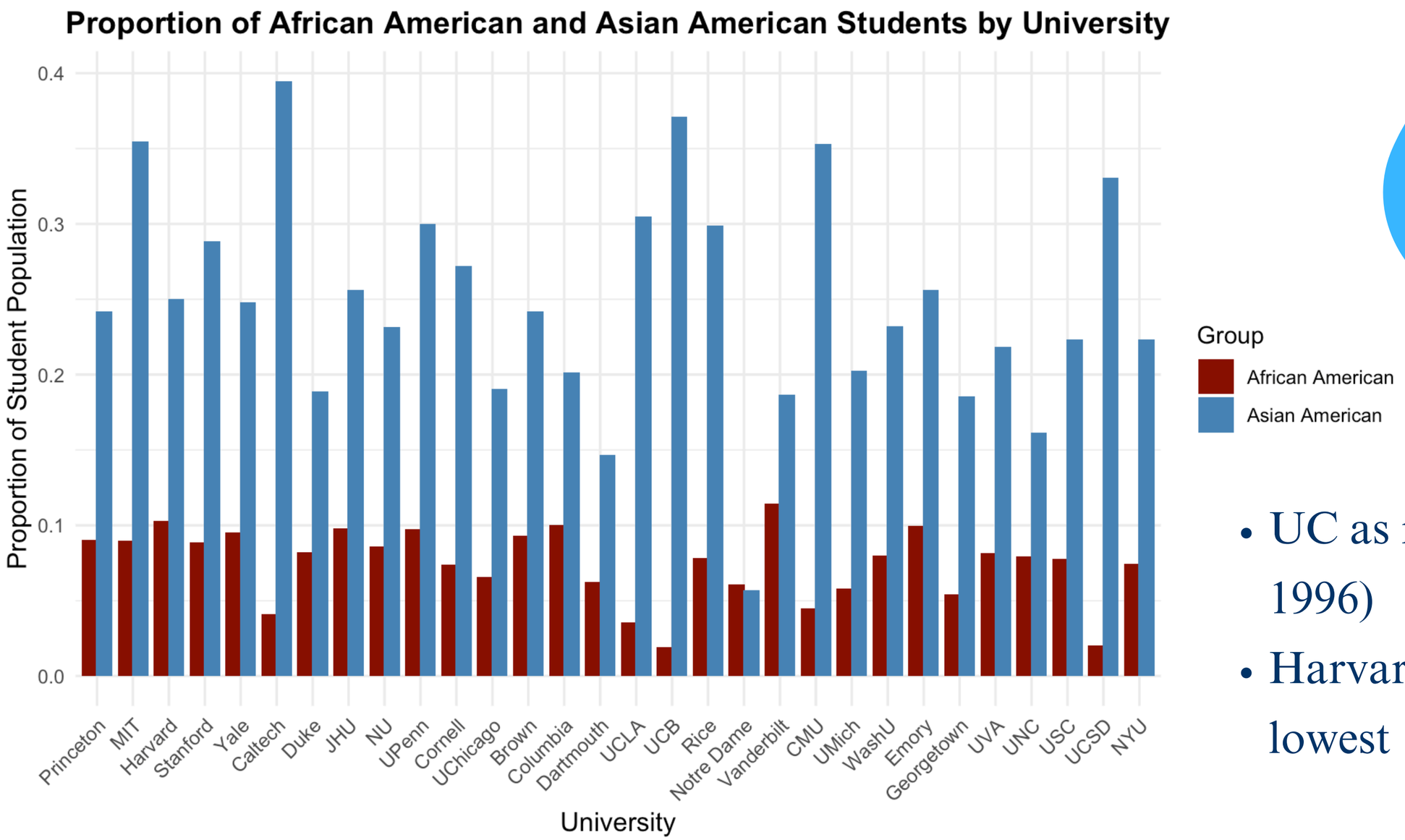
Study by National Bureau of Economic Research (2022)

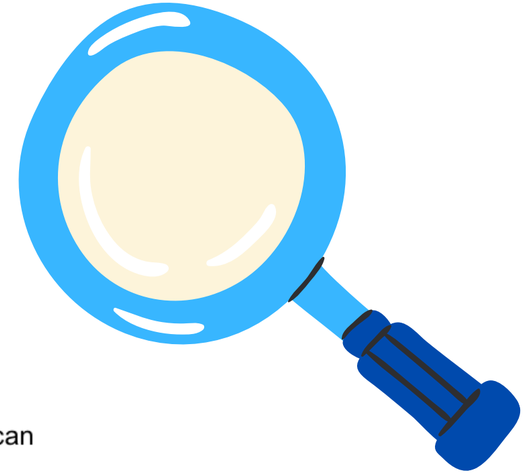
- "For Harvard and UNC out-of-state, both of which have very competitive admissions, racial preferences result in a respective quadrupling and tenfold increase in the admit rate of African Americans."

Primary Reason:

- Substantial racial disparities in college preparation
- Only on academics: "African Americans and Hispanics would respectively make up less than 1% and 3% of admits at Harvard, less than 2% and 9% of out-of-state admits at UNC."

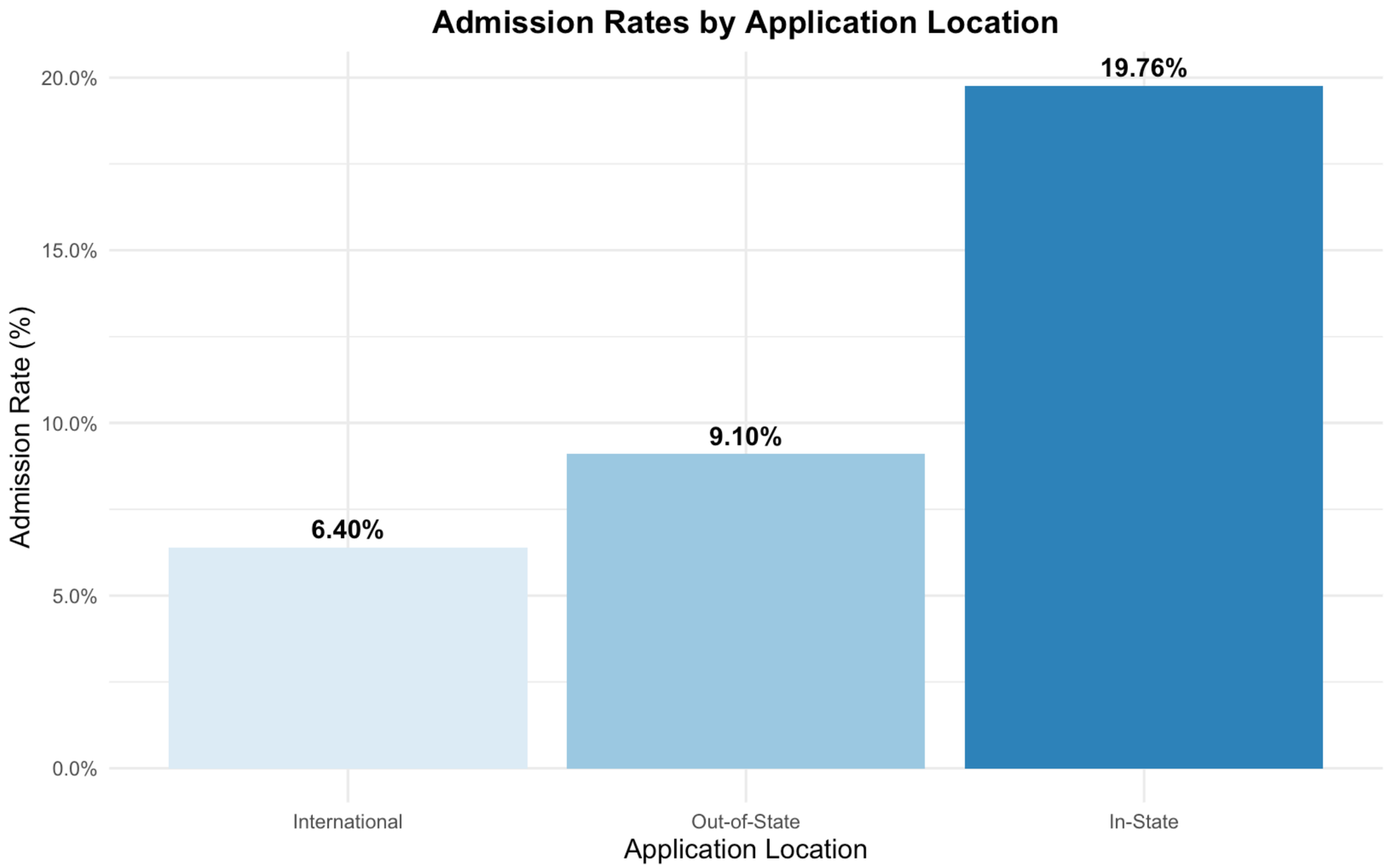
DIVERSITY TARGETS?





- UC as reference (since 1996)
- Harvard and UNC not the lowest

INTERNATIONAL ADMISSIONS



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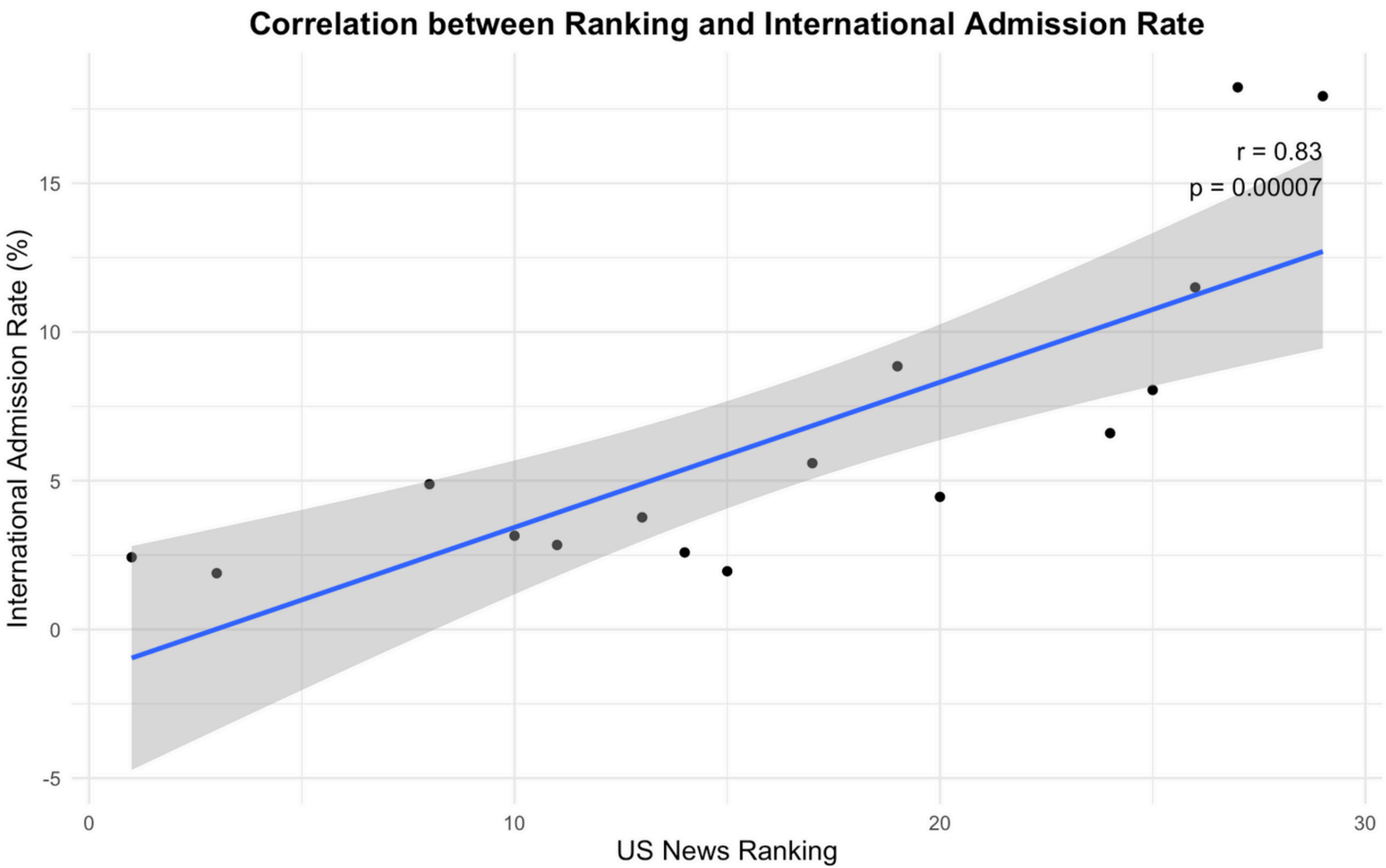


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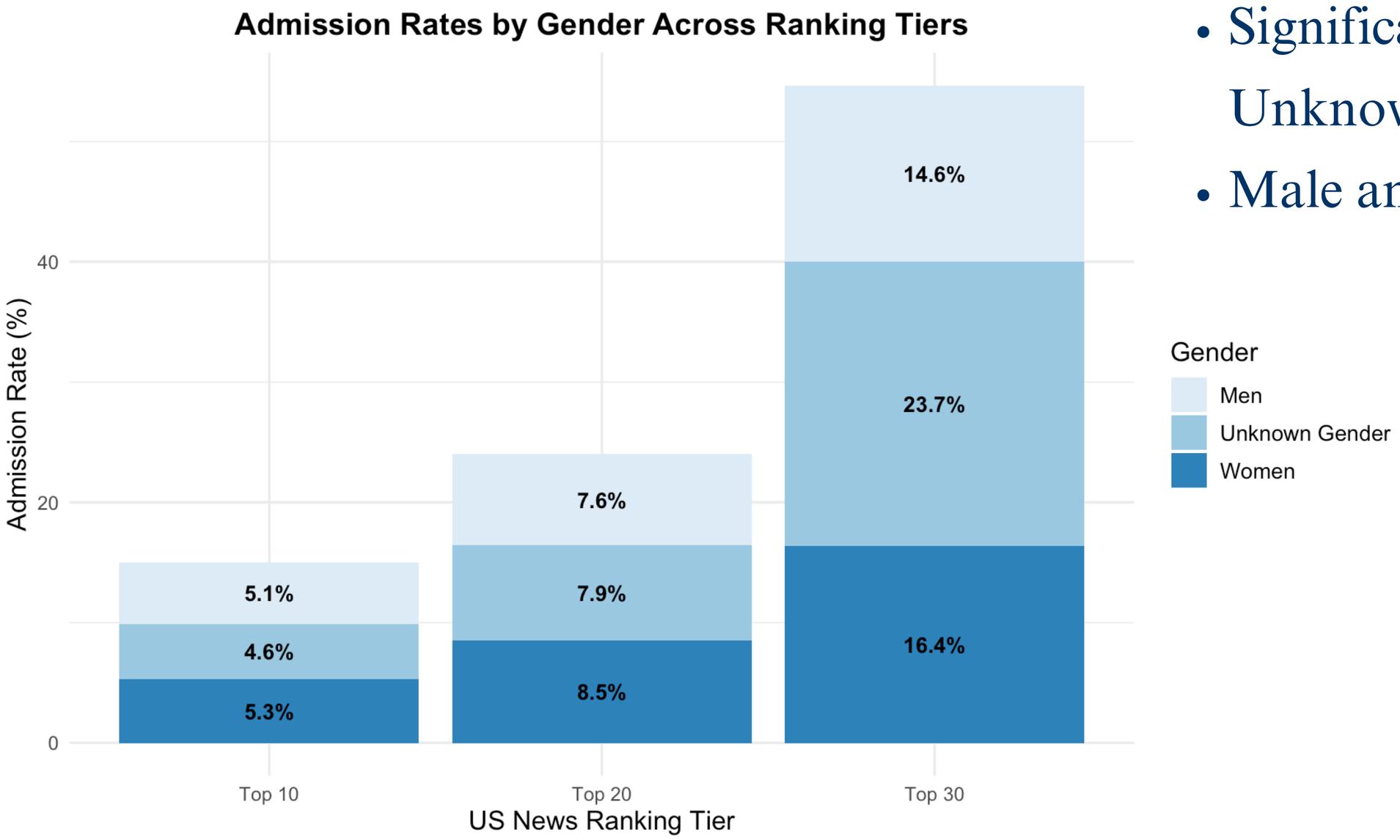
        Shapiro-Wilk normality test

data:  international_data$International_Rate
W = 0.8022, p-value = 0.002913
```

```
        Spearman's rank correlation rho

S = 114, p-value = 6.562e-05
alternative hypothesis: true rho is not equal to 0
sample estimates:
      rho
0.8323529
```

GENDER IN ADMISSIONS



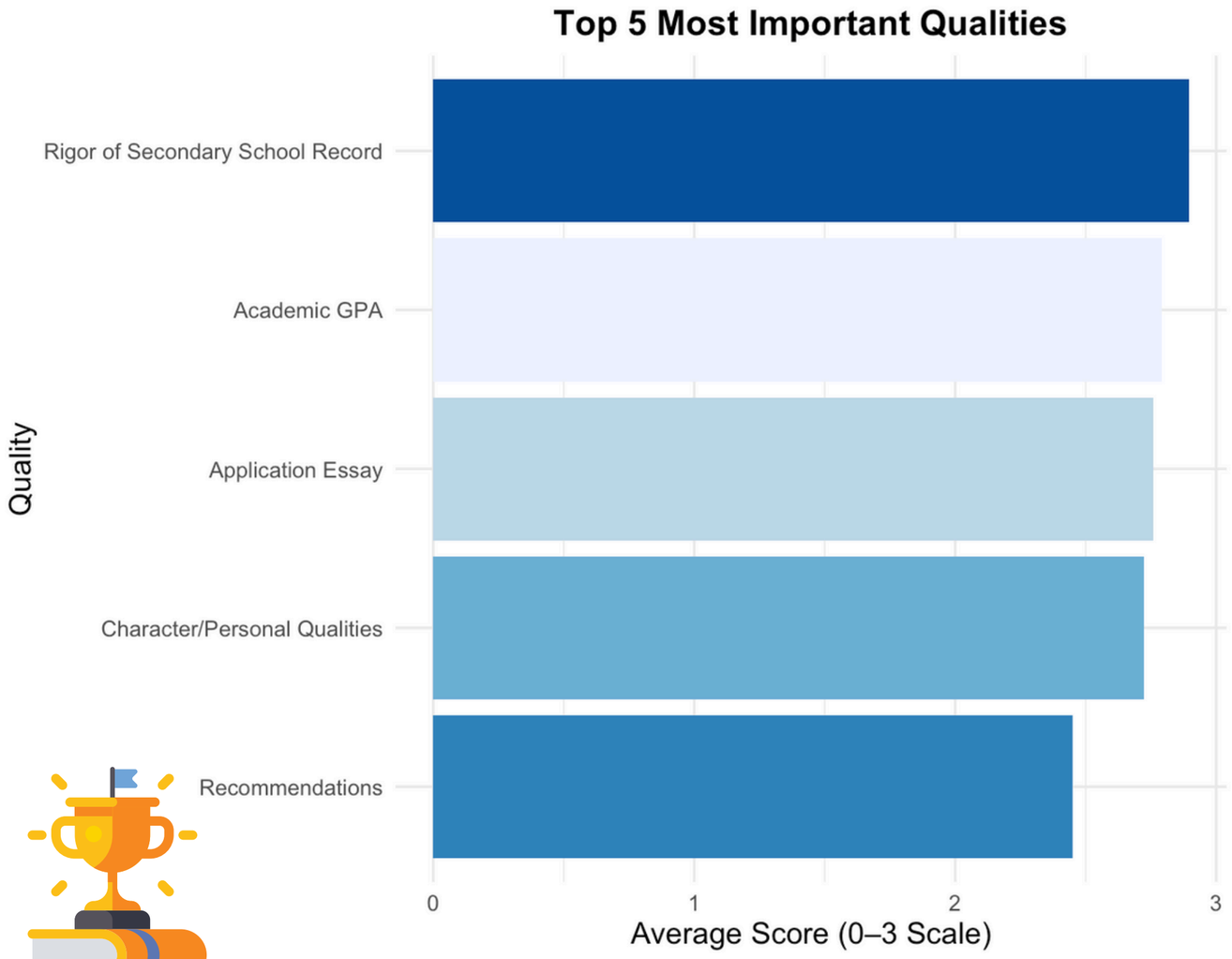
- Significant increase for Unknown Gender?
- Male and Female similar

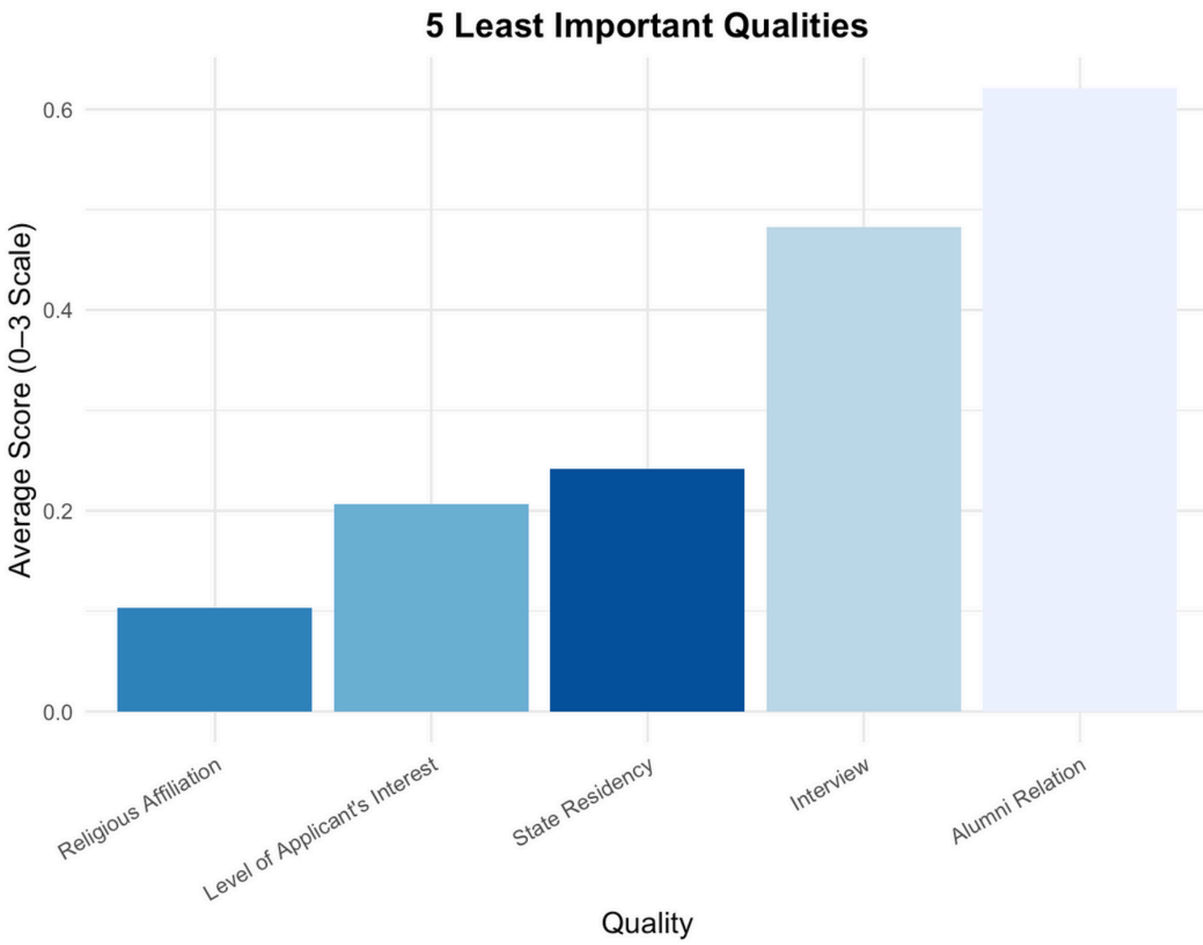
GENDER IN ADMISSIONS

US.News.Ranking	School.Name	Unknown Gender Applicants	Unknown Gender Admits
16	University of California--Los Angeles	6086	396
29	University of California, San Diego	5548	1310
17	University of California, Berkeley	2509	326
2	Massachusetts Institute of Technology	1859	67
14	Columbia University	1187	55
8	Johns Hopkins University	33	20
12	University of Chicago	9	0
30	New York University	4	4
9	Northwestern University	2	0
5	Yale University	1	0
22	University of Michigan--Ann Arbor	1	0

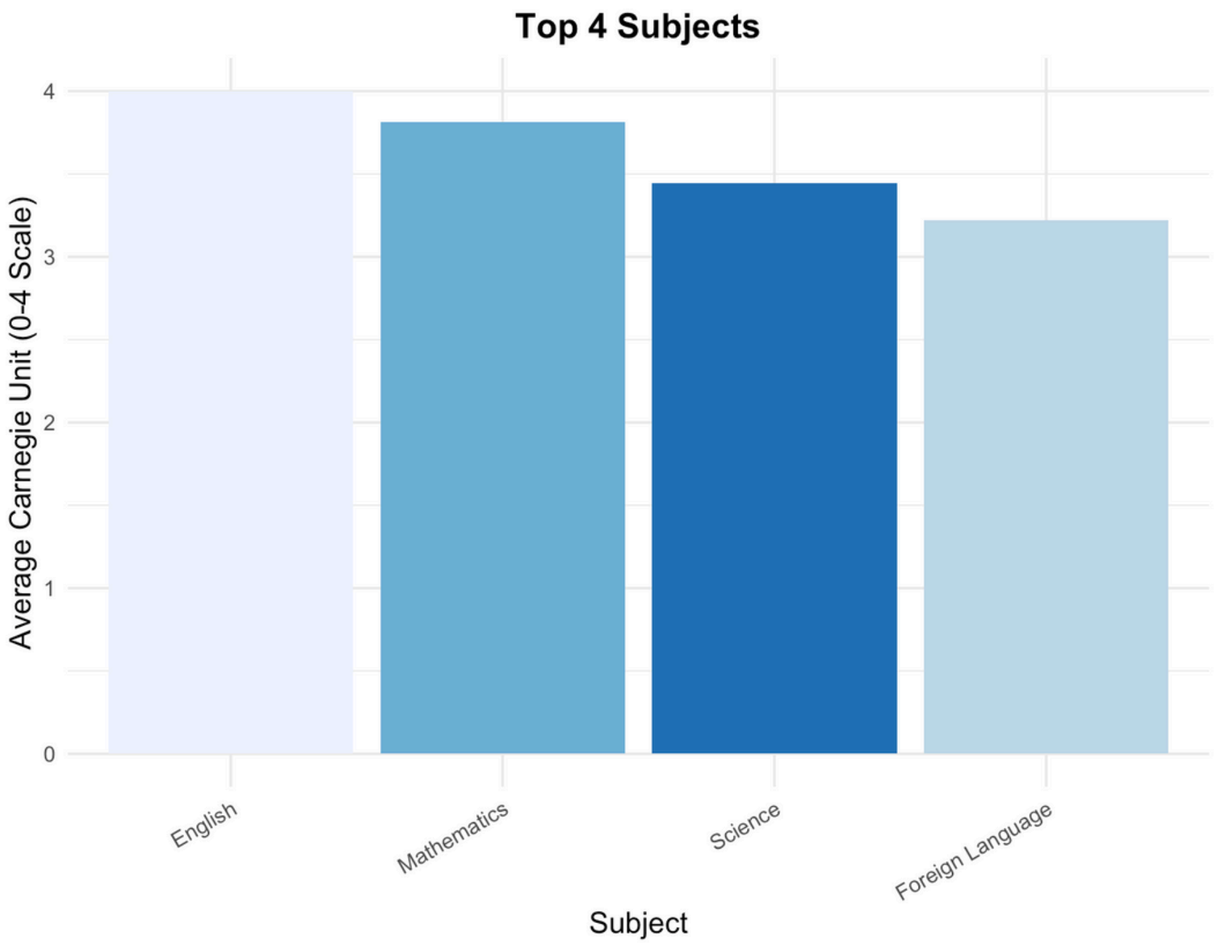
- Mainly data from UCSD for Top 30: 23.61%
- Slightly higher than International Admissions for UCSD (below 20%)

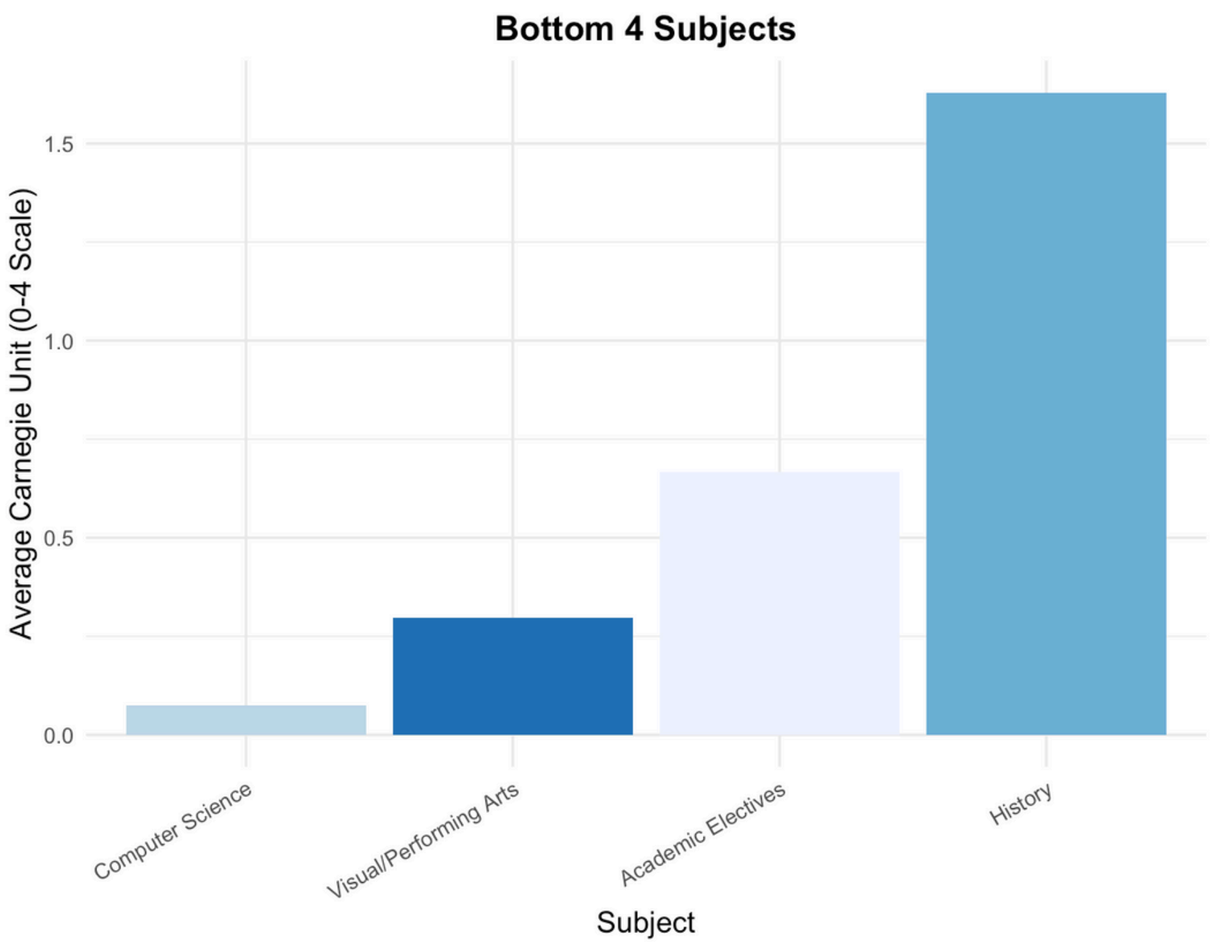
EXAMINED QUALITIES





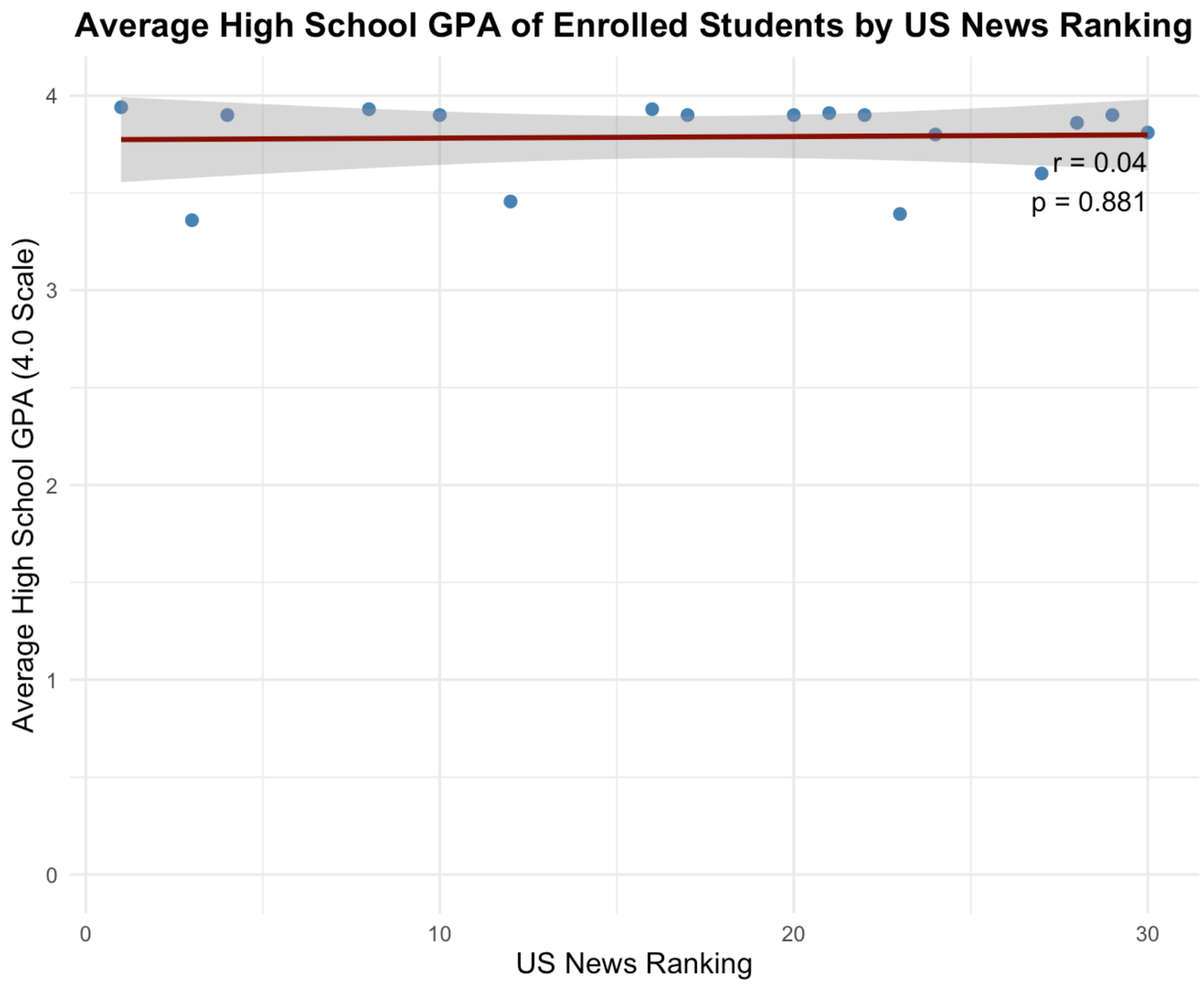
IMPORTANT SUBJECTS



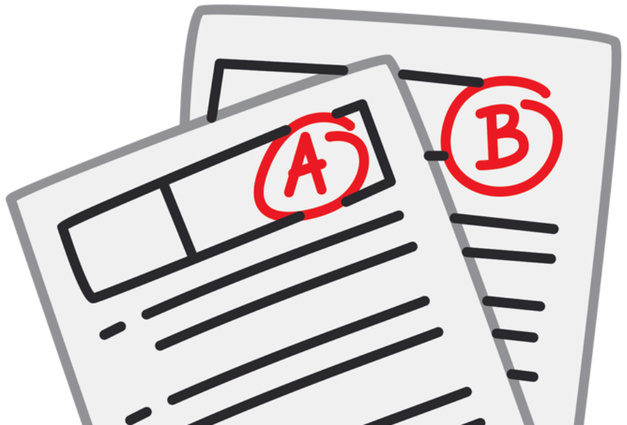


*1 Carnegie Unit = 1 year of study

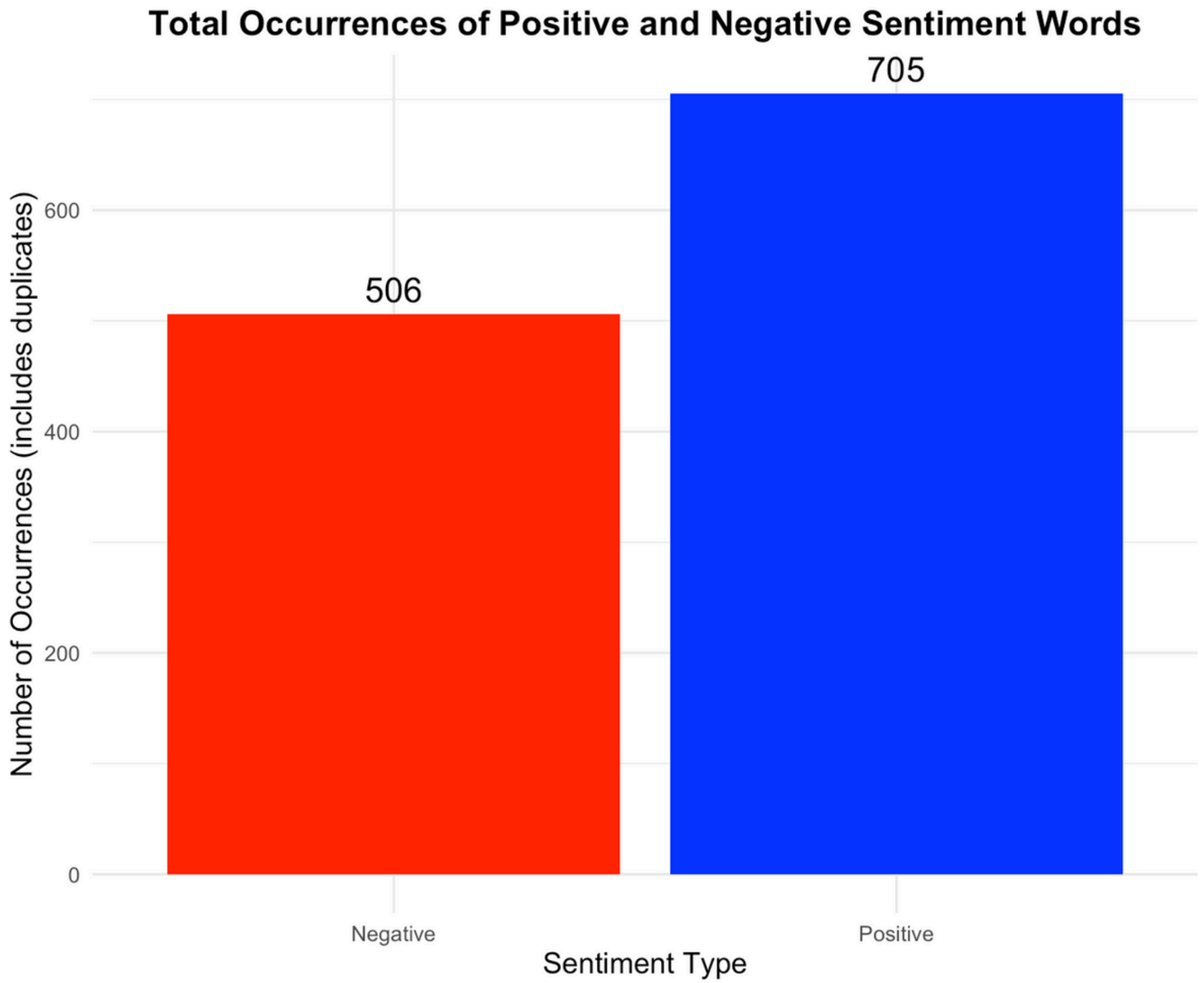
HIGH SCHOOL GPA



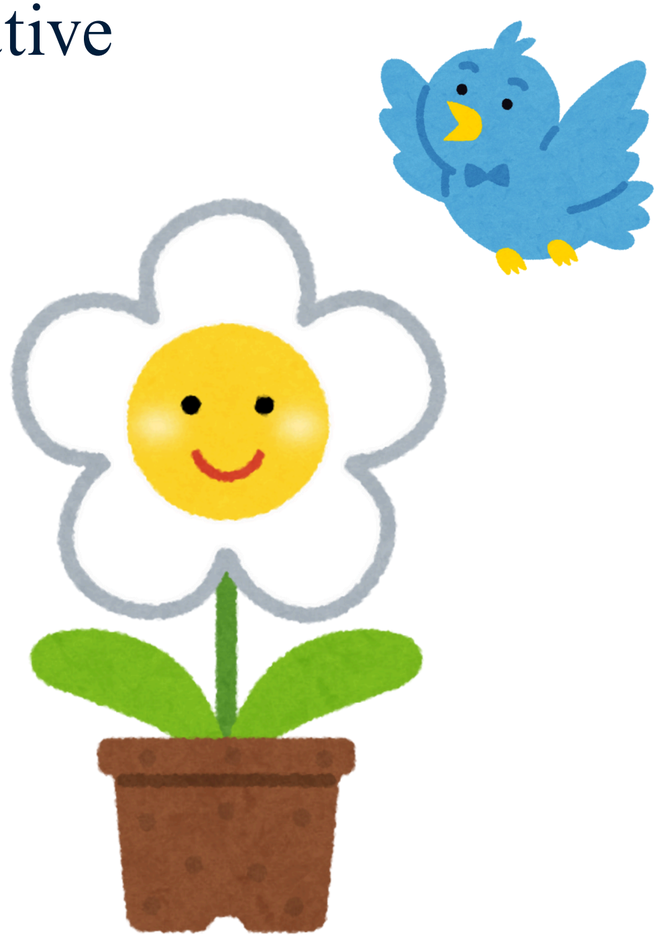
- Conversion from 4.5 to 4.0 scale
- Uses Pearson correlation coefficient
- No statistically significant relationship



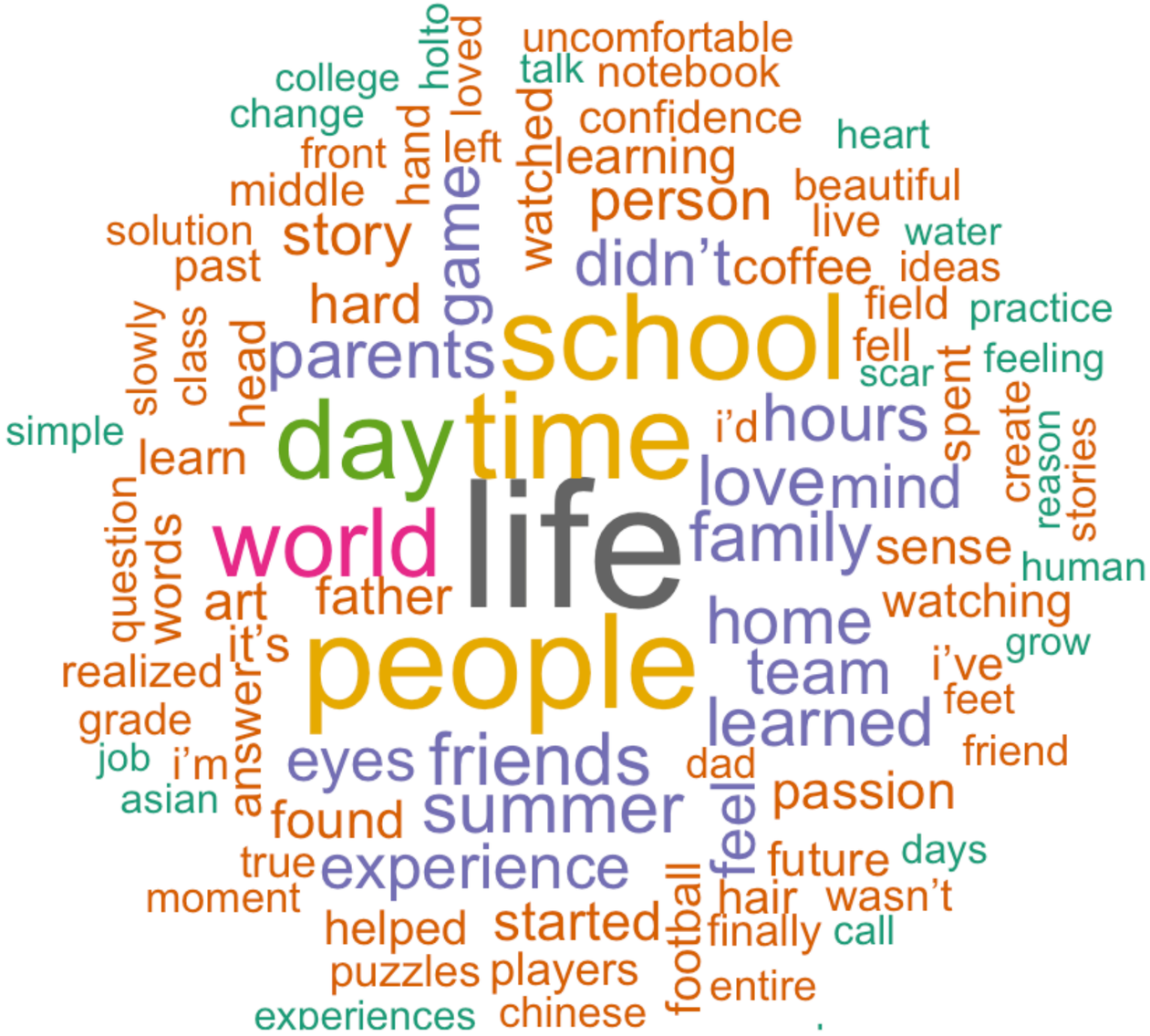
SENTIMENT ANALYSIS



- Includes duplicates
- Positive is 40% more than negative



WORD CLOUD



- Family-related topics
- Feeling-related words
- "Chinese"

SUMMARY OF QUALITIES

IMPORTANT FACTORS

- US Permanent Resident (In-state)
- Rigor of Secondary School Record
- GPA (within a range)
- Application Essay (more positive than negative, personal topics)
- Character/Personal Qualities
- Recommendations
- Key Subjects: English, Math, Science, Foreign Language

LESS/NO EFFECT

- Gender
- Your interest

TIPS

- Be smart with your application choices (difficulty decreases with ranking)
- Avoid choosing schools that everyone applies to (fit schools)

LIMITATIONS

- Missing entries by universities
- Include more data (top50 or top 100)
- Find more data on applicants and admits (race/ethnicity, countries of international students, family income, extra-curricular activities, etc)

EXTENSIONS

- Quantify the relative importance of admission factors
- Effect of state (republican or democrat)
- Socially advantaged students vs socially disadvantaged students
- More transparent admission decisions (AI)

THANK YOU!

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