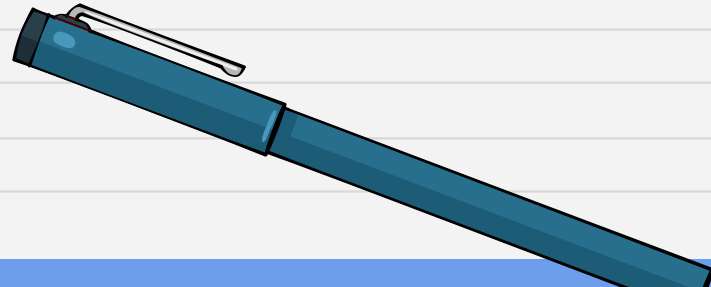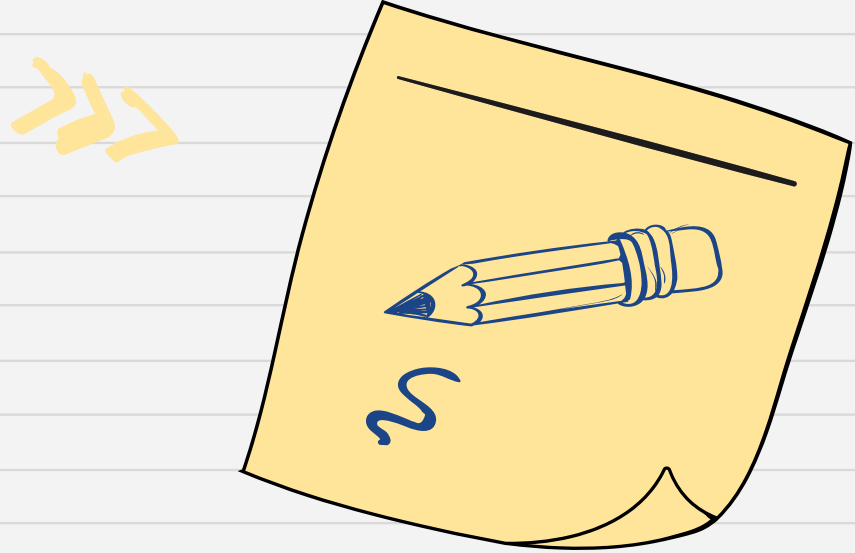# APPLICATION

SUBMITTED

An Analysis on University of California Admissions Data

By Domini Villasenor Niki Sinclair

Have you seen the documentary "The College Admissions Scandal" on Netflix?

Having both seen this documentary, we were interested in rise in collegiate admission competition as well as the relationship between socioeconomic privilege as it relates to application, acceptance, and enrollment into the UC system.

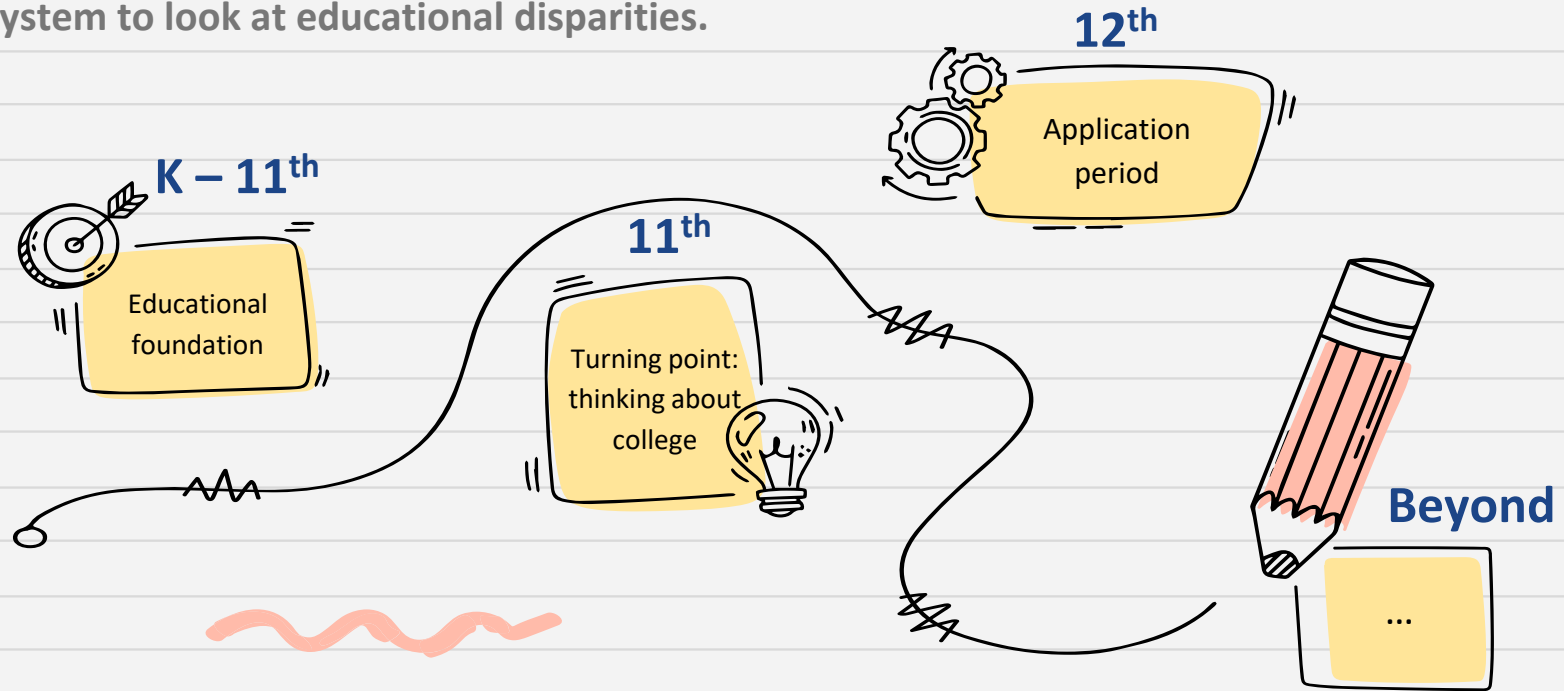# How did we explore these interests using data?

We looked at general application, acceptance, and enrollment trends into the UC system over the last 5 years and drilled down on the top 10 and bottom 10 schools in each category.

What defines educational success?

We wanted to know which high schools applied more, and which high schools applied less into the UC system to look at educational disparities.

K – 11th

Educational foundation

11th

Turning point: thinking about college

12th

Application period

Beyond

...

Project Objective

?

How do UC application rates compare year-by-year for the last 5 years?

?

What are the application, admission, and enrollment rates for the highest-applying high schools?

?

How do UC admissions and enrollment rates compare year-by-year for the last 5 years?

?

What are the application, admission, and enrollment rates for the lowest-applying high schools?

HYPOTHESIS

We theorized the following results for our data analysis:

General application rates hypotheses

1. We hypothesized application rates would go down for application year of 2020 into the UC system due to COVID-19

2. Prior to 2020, we hypothesized application rates would increase year over year due to the general cultural shift towards favoring a college degree from reputable institutions such as UC's
   • This cultural shift may be due to increased job competition, attempts to qualify for a higher-paying job, and general social norms and expectations around getting a college degree

Case studies hypotheses

3. We hypothesized high schools in lower-income counties would have less applications, admissions, and enrollments into the UC system

4. Conversely, we hypothesized high schools in higher-income counties would have more applications, admissions, and enrollments into the UC system

Data Sources

We weren't able to answer all the questions about college acceptance rates with the limited data we had, but we were able to piece together **admissions data over the last five years using the University of California data available to the public.**

https://www.universityofcalifornia.edu/infocenter/admissions-source-school

We also used Census data to determine median income for California counties in our Top and Bottom High Schools Analysis, to test our hypothesis about educational disparities.

https://www.indexmundi.com/facts/united-states/quick-facts/california/median-household-income#table

Variables

Application

We looked at count of application from California high schools*

Acceptance

We looked at count of acceptance from California high schools*

Enrollment

We looked at count of enrollment from California high schools*

*Using public data from the UC System Admissions by Source School, application years of 2016 - 2020

Process and Tools

Process

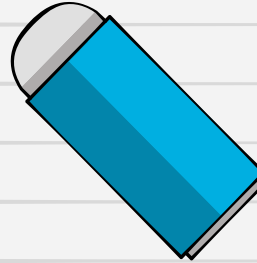⚙️ Importing University of California admissions data from the past 5 years

🗑️ Data cleaning using pandas

🔍 Data analysis using pandas charts

👥 Case studies

Tools

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$
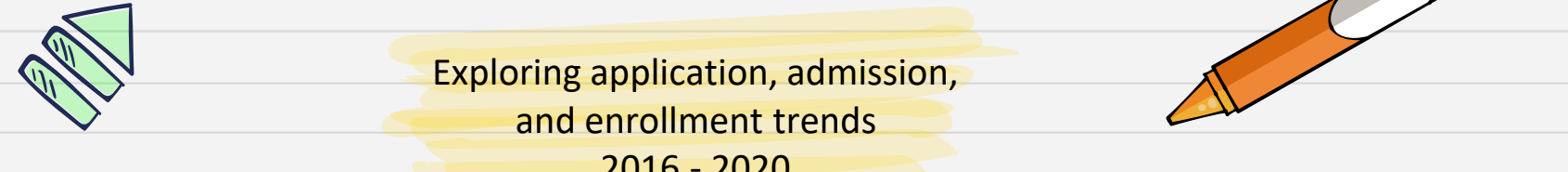
Python / Jupyter Notebooks

pandas

matplotlib

Snippet - Concat

Concatenate UC Data CSV's

```python
In [ ]:  ▶  1  #Merging the data of all 5 years of public and private school data using concat
             2
             3  All_complete_data = pd.concat([uc_data_complete_2020, nine_data_complete,
             4                                 eight_data_complete, seven_data_complete, six_data_complete])
             5  All_complete_data
```

Concatenating 10 CSV files – 2 for the last 5 applicant years (split into 2 CSVs Public/Private)

Snippet – Sum

Sum All UC Data (2016 - 2020)

```
In [ ]:  ▶    1   #Filter the whole data set to see total of admissions
              2   All_complete_data[All_complete_data["Count"]=="Adm"]["All"].sum()
```

```
In [ ]:  ▶    1   #Filter the whole data set to see total of applications for 2016-2020
              2
              3   All_complete_data[All_complete_data["Count"]=="App"]["All"].sum()
```

```
In [ ]:  ▶    1   #Filter the whole data set to see total of enrollment for 2016-2020
              2
              3   All_complete_data[All_complete_data["Count"]=="Enr"]["All"].sum()
```

Summing all UC Data from 2016 – 2020 for applied, admitted, and enrolled high school students (public & private)

Snippet – Double Filter

Double-Filter Applications for Public/Private by Year & Sum

```
In [ ]:  ▶  1  #Double Filter for the number of applications for both public & private for the year 2016
            2  All_complete_data[(All_complete_data["Year"]== 2016) & (All_complete_data["Count"] == "App")]["All"].sum()
```

```
In [ ]:  ▶  1  #Double Filter for the number of applications for both public & private for the year 2017
            2  All_complete_data[(All_complete_data["Year"]== 2017) & (All_complete_data["Count"] == "App")]["All"].sum()
```

```
In [ ]:  ▶  1  #Double Filter for the number of applications for both public & private for the year 2018
            2  All_complete_data[(All_complete_data["Year"]== 2018) & (All_complete_data["Count"] == "App")]["All"].sum()
```

```
In [ ]:  ▶  1  #Double Filter for the number of applications for both public & private for the year 2019
            2  All_complete_data[(All_complete_data["Year"]== 2019) & (All_complete_data["Count"] == "App")]["All"].sum()
```

```
In [ ]:  ▶  1  #Double Filter for the number of applications for both public & private for the year 2020
            2  All_complete_data[(All_complete_data["Year"]== 2020) & (All_complete_data["Count"] == "App")]["All"].sum()
```

Double-filtering applications for public + private high schools, 2016 – 2020
(completed same process for admissions & enrollment)

Summary Stats

UC Applicant Statistics For Both Public and Private Schools for 2016-2020
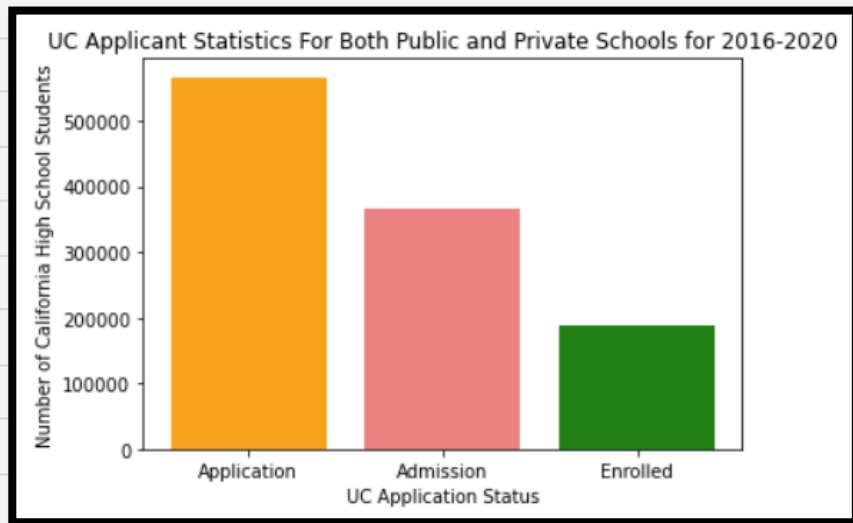
Applied

Is the highest count – of course!
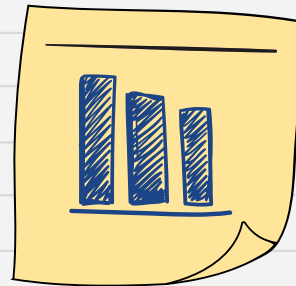
Admitted

Overall UC acceptance rate is surprisingly over 50% of applied.

Enrolled

Overall enrollment rate into the UC system was just over 50% of admitted.

Applicant Trend
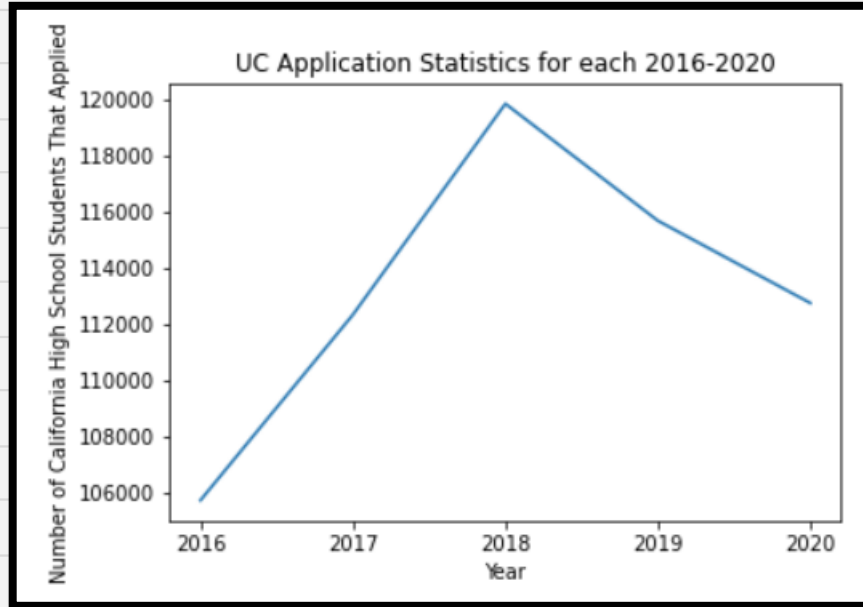
The application rate (from CA public + private high schools) trended upward, peaked at 2018, and declined from 2019 - 2020

Admitted Trend
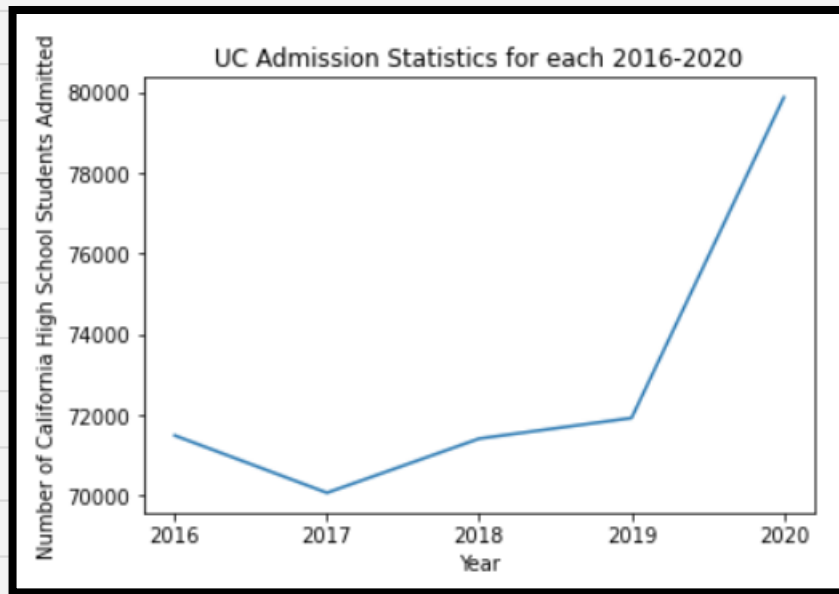
The admissions rate (from CA public + private high schools) greatly rose from
2019 – 2020
(this could be due to COVID!)

Enrollment Trend
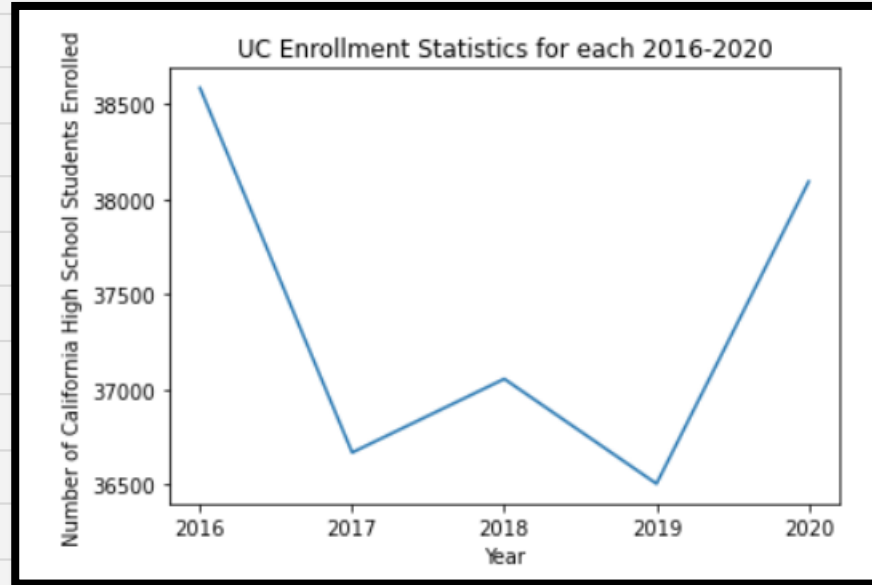
The enrollment trend is more varied, though we can deduce that from 2016 – 2019, high school students may have been exploring other options outside of the UC system or otherwise.

Public v. Private

UC Application Statistics for Public Schools 2016-2020

UC Application Statistics for Private Schools 2016-2020
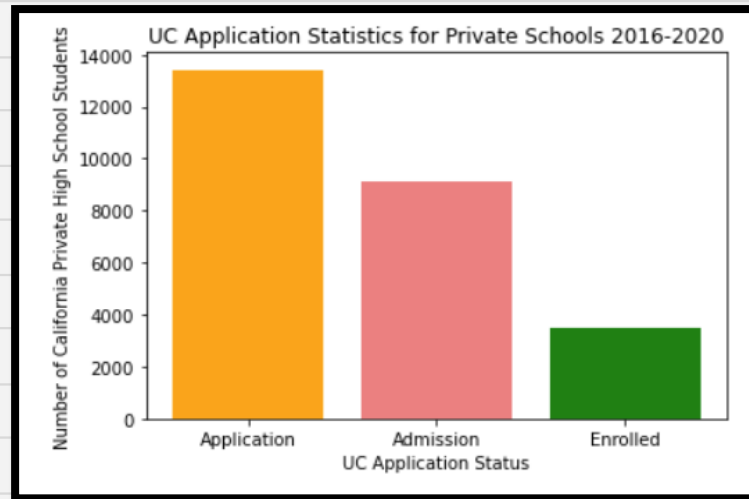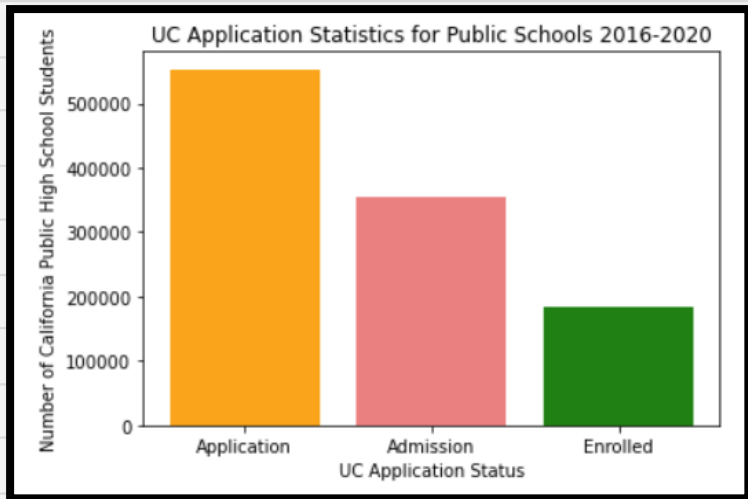
While the stats for applied, admitted, and enrolled were similar between public and private high schools, private schools had a slight advantage in admission at 68%, while public school admission was at 64% (over the last 5 years).
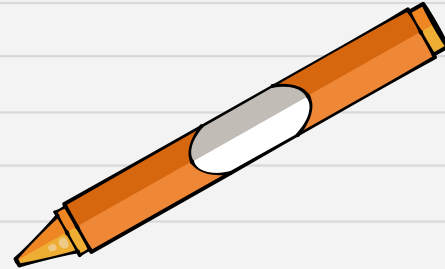
Snippet – Group By

Pull Top 10 Applied, Admitted, Enrolled, CA Public/Private High Schools

```python
#Top 10 public schools with highest application (count)
df_public[df_public["Count"] == "App"].groupby(["Calculation1", "County/State/ Territory"])["All"].sum().nlargest(10)
```

```python
#Top 10 private schools with highest application (count)
df_private[df_private["Count"] == "App"].groupby(["Calculation1", "County/State/ Territory"])["All"].sum().nlargest(10)
```

```python
#Top 10 public schools with highest admissions (count)
df_public[df_public["Count"] == "Adm"].groupby(["Calculation1", "County/State/ Territory"])["All"].sum().nlargest(10)
```

```python
#Top 10 private schools with highest admissions (count)
df_private[df_private["Count"] == "Adm"].groupby(["Calculation1", "County/State/ Territory"])["All"].sum().nlargest(10)
```

```python
#Top 10 public schools highest enrollment (count)
df_public[df_public["Count"] == "Enr"].groupby(["Calculation1", "County/State/ Territory"])["All"].sum().nlargest(10)
```

```python
#Top 10 private schools highest enrollment (count)
df_private[df_private["Count"] == "Enr"].groupby(["Calculation1", "County/State/ Territory"])["All"].sum().nlargest(10)
```

Group by largest to filter top 10 public/private high schools by applied, admitted, enrolled count
(Completed same process for bottom 10 using .nsmallest)

Top 10 Applications

Top 10 Public

For the Top 10 public high schools with the highest count of <u>applications,</u> **there were 3 schools under the California average median income**

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

Top 10 Private

For the Top 10 private high schools with the highest count of <u>applications,</u> **there was 1 school under the California average median income**

Top 10 Applications – Public vs. Private High Schools

Public

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
LOWELL HIGH SCHOOL52970	San Francisco	544.00	104552.00	31776.21
DOUGHERTY VALLEY HIGH SCHOOL53218	Contra Costa	507.40	93712.00	20936.21
ARCADIA HIGH SCHOOL50130	Los Angeles	461.00	64251.00	-8524.79
DIAMOND BAR HIGH SCHOOL50748	Los Angeles	459.00	64251.00	-8524.79
MONTA VISTA HIGH SCHOOL53466	Santa Clara	451.60	116178.00	43402.21
GRANADA HILLS CHARTER HIGH SCH51088	Los Angeles	432.60	64251.00	-8524.79
MISSION SAN JOSE HIGH SCHOOL50970	Alameda	426.80	92574.00	19798.21
BERKELEY HIGH SCHOOL50290	Alameda	400.80	92574.00	19798.21
CANYON CREST ACADEMY50893	San Diego	381.00	74855.00	2079.21
TROY HIGH SCHOOL51009	Orange	379.60	85398.00	12622.21
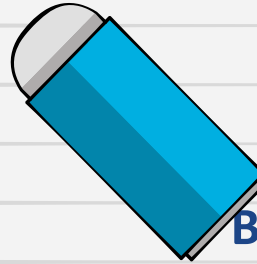
Private

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
ARCHBISHOP MITTY HIGH SCHOOL53078	Santa Clara	270	116178.00	43402.21
SAINT IGNATIUS COLLEGE PREP SC53010	San Francisco	244	104552.00	31776.21
MATER DEI HIGH SCHOOL53240	Orange	231	85398.00	12622.21
SAINT FRANCIS HIGH SCHOOL52077	Santa Clara	218	116178.00	43402.21
BELLARMINE COLLEGE PREPARATORY53080	Santa Clara	208	116178.00	43402.21
VALLEY CHRISTIAN HIGH SCHOOL53338	Santa Clara	204	116178.00	43402.21
BISHOP ODOWD HIGH SCHOOL52185	Alameda	198	92574.00	19798.21
HARKER SCHOOL53142	Santa Clara	190	116178.00	43402.21
CATHEDRAL CATHOLIC H S52896	San Diego	189	74855.00	2079.21
LOYOLA HIGH SCHOOL51685	Los Angeles	176	64251.00	-8524.79

Bottom 10 Applications

Bottom 10 Public

For the Bottom 10 public high schools with the lowest count of <u>applications,</u> **there were 4 schools under the California average median income**

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

Bottom 10 Private

For the Bottom 10 private high schools with the lowest count of <u>applications,</u> **there were 8 schools under the California average median income**

Bottom 10 Applications – Public vs. Private High Schools

Public

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
APOSTLES LUTHERAN SCHOOL54682	Santa Clara	5.00	116178.00	43402.21
APPLE VALLEY CHRISTIAN ACADEMY50122	San Bernardino	5.00	60164.00	-12611.79
ARMENIAN MESROBIAN HIGH SCHOOL52653	Los Angeles	5.00	64251.00	-8524.79
ARROYO GRANDE HIGH (CROWN HILL)989905	San Luis Obispo	5.00	70699.00	-2076.79
BETHEL BAPTIST SCHOOL53239	Orange	5.00	85398.00	12622.21
CABRILLO POINT ACADEMY52138	San Diego	5.00	74855.00	2079.21
CALIFORNIA VIRTUAL ACAD SUTTER54272	Ventura	5.00	84017.00	11241.21
CARLSBAD SEASIDE ACADEMY50471	San Diego	5.00	74855.00	2079.21
CONSERVATORY VOCAL/INSTRM ARTS54871	Alameda	5.00	92574.00	19798.21
DELTA CHARTER HIGH SCHOOL53728	San Joaquin	5.00	61145.00	-11630.79

Private

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
ANAHEIM DISC CHRISTIAN J/S HS50146	Orange	5	85398.00	12622.21
BETHEL CHRISTIAN HIGH SCHOOL52668	Riverside	5	63948.00	-8827.79
BIG VALLEY CHRISTIAN HS52021	Stanislaus	5	57387.00	-15388.79
BRIGHTON HALL SCHOOL53451	Los Angeles	5	64251.00	-8524.79
CALVARY BAPTIST SCHOOLS51381	Los Angeles	5	64251.00	-8524.79
CALVIN CHRISTIAN HIGH SCHOOL50876	San Diego	5	74855.00	2079.21
CENTRAL VALLEY CHRISTIAN HS53661	Tulare	5	47518.00	-25257.79
CITY OF KNOWLEDGE52518	Los Angeles	5	64251.00	-8524.79
CORNERSTONE CHRISTIAN SCHOOL53771	Riverside	5	63948.00	-8827.79
CROSSROADS CHRISTIAN SCHOOL50562	Riverside	5	63948.00	-8827.79

Top 10 Admissions

Top 10 Public

For the Top 10 public high schools with the highest count of admissions, **there were 2 schools under the California average median income**
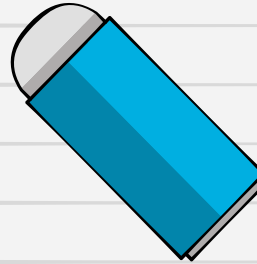
$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

Top 10 Private

For the Top 10 private high schools with the highest count of admissions, **there were 0 schools under the California average median income**

Top 10 Admissions – Public vs. Private High Schools

Public

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
LOWELL HIGH SCHOOL52970	San Francisco	417.60	104552.00	31776.21
DOUGHERTY VALLEY HIGH SCHOOL53218	Contra Costa	392.40	93712.00	20936.21
MISSION SAN JOSE HIGH SCHOOL50970	Alameda	371.60	92574.00	19798.21
MONTA VISTA HIGH SCHOOL53466	Santa Clara	370.80	116178.00	43402.21
DIAMOND BAR HIGH SCHOOL50748	Los Angeles	359.20	64251.00	-8524.79
ARCADIA HIGH SCHOOL50130	Los Angeles	356.60	64251.00	-8524.79
BERKELEY HIGH SCHOOL50290	Alameda	324.40	92574.00	19798.21
LYNBROOK HIGH SCHOOL53463	Santa Clara	296.20	116178.00	43402.21
TROY HIGH SCHOOL51009	Orange	292.80	85398.00	12622.21
CANYON CREST ACADEMY50893	San Diego	289.40	74855.00	2079.21

Private

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
ARCHBISHOP MITTY HIGH SCHOOL53078	Santa Clara	177	116178.00	43402.21
SAINT IGNATIUS COLLEGE PREP SC53010	San Francisco	167	104552.00	31776.21
VALLEY CHRISTIAN HIGH SCHOOL53338	Santa Clara	163	116178.00	43402.21
HARKER SCHOOL53142	Santa Clara	152	116178.00	43402.21
BISHOP ODOWD HIGH SCHOOL52185	Alameda	148	92574.00	19798.21
SAINT FRANCIS HIGH SCHOOL52077	Santa Clara	143	116178.00	43402.21
BELLARMINE COLLEGE PREPARATORY53080	Santa Clara	140	116178.00	43402.21
MATER DEI HIGH SCHOOL53240	Orange	136	85398.00	12622.21
SACRED HEART CATHEDRAL PREP53005	San Francisco	136	104552.00	31776.21
CATHEDRAL CATHOLIC H S52896	San Diego	124	74855.00	2079.21

Bottom 10 Admissions

Bottom 10 Public

For the Bottom 10 public high schools with the lowest count of <u>admissions,</u> **there were 5 schools under the California average median income**
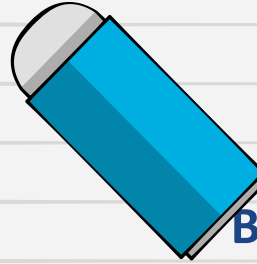
$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

Bottom 10 Private

For the Bottom 10 private high schools with the lowest count of <u>admissions,</u> **there were 5 schools under the California average median income**

Bottom 10 Admissions – Public vs. Private High Schools

Public

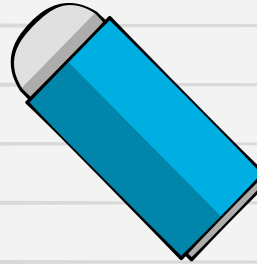| Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
AMBASSADOR HIGH SCHOOL54687	Los Angeles	3.00	64251.00	-8524.79
CABRILLO POINT ACADEMY52138	San Diego	3.00	74855.00	2079.21
CALIFORNIA VIRTUAL ACAD SUTTER54272	Ventura	3.00	84017.00	11241.21
CARLSBAD SEASIDE ACADEMY50471	San Diego	3.00	74855.00	2079.21
CENTRAL VALLEY CHRISTIAN ACAD51995	Stanislaus	3.00	57387.00	-15388.79
COLLEGE BRIDGE ACADEMY54799	Los Angeles	3.00	64251.00	-8524.79
CONSERVATORY VOCAL/INSTRM ARTS54871	Alameda	3.00	92574.00	19798.21
EAST BAY ARTS54105	Alameda	3.00	92574.00	19798.21
ENVIRON/SOC POLICY MAGNET HS54437	Los Angeles	3.00	64251.00	-8524.79
FREDERICK K C PRICE III SCHOOL51777	Los Angeles	3.00	64251.00	-8524.79

Private

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
ANAHEIM DISC CHRISTIAN J/S HS50146	Orange	3	85398.00	12622.21
ARMENIAN MESROBIAN HIGH SCHOOL52653	Los Angeles	3	64251.00	-8524.79
AVERROES HIGH SCHOOL54727	Alameda	3	92574.00	19798.21
BRIGHTON HALL SCHOOL53451	Los Angeles	3	64251.00	-8524.79
CENTRAL VALLEY CHRISTIAN HS53661	Tulare	3	47518.00	-25257.79
DESERT CHRISTIAN HIGH SCHOOL51389	Los Angeles	3	64251.00	-8524.79
REDLANDS ADVENTIST ACADEMY52957	San Bernardino	3	60164.00	-12611.79
SCHOOL INDEPENDENT LEARNERS52209	Santa Clara	3	116178.00	43402.21
TORAH HS OF SAN DIEGO51433	San Diego	3	74855.00	2079.21
WALDORF SCHOOL OF SAN DIEGO HS54494	San Diego	3	74855.00	2079.21

Top 10 Enrollment

Top 10 Public

For the Top 10 public high schools with the highest count of <u>enrollment,</u> **there were 3 schools under the California average median income**

Top 10 Private

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

For the Top 10 private high schools with the highest count of <u>enrollment,</u> **there were 1 schools under the California average median income**

Top 10 Enrollment – Public vs. Private High Schools

Public

	All	Value	Value Minus Average Median Income
Calculation1	County/State/ Territory		
LOWELL HIGH SCHOOL52970	San Francisco	254.00	104552.00	31776.21
ARCADIA HIGH SCHOOL50130	Los Angeles	210.80	64251.00	-8524.79
DIAMOND BAR HIGH SCHOOL50748	Los Angeles	208.00	64251.00	-8524.79
DOUGHERTY VALLEY HIGH SCHOOL53218	Contra Costa	197.40	93712.00	20936.21
MISSION SAN JOSE HIGH SCHOOL50970	Alameda	187.20	92574.00	19798.21
MONTA VISTA HIGH SCHOOL53466	Santa Clara	174.20	116178.00	43402.21
WALNUT HIGH SCHOOL53676	Los Angeles	158.40	64251.00	-8524.79
TROY HIGH SCHOOL51009	Orange	152.40	85398.00	12622.21
BERKELEY HIGH SCHOOL50290	Alameda	151.80	92574.00	19798.21
IRVINGTON HIGH SCHOOL50968	Alameda	149.00	92574.00	19798.21

Private

	All	Value	Value Minus Average Median Income
Calculation1	County/State/ Territory		
BISHOP ODOWD HIGH SCHOOL52185	Alameda	77	92574.00	19798.21
SACRED HEART CATHEDRAL PREP53005	San Francisco	68	104552.00	31776.21
ARCHBISHOP MITTY HIGH SCHOOL53078	Santa Clara	67	116178.00	43402.21
CHAMINADE COLLEGE PREPARATORY51565	Los Angeles	65	64251.00	-8524.79
VALLEY CHRISTIAN HIGH SCHOOL53338	Santa Clara	64	116178.00	43402.21
MATER DEI HIGH SCHOOL53240	Orange	60	85398.00	12622.21
SAINT IGNATIUS COLLEGE PREP SC53010	San Francisco	60	104552.00	31776.21
CATHEDRAL CATHOLIC H S52896	San Diego	55	74855.00	2079.21
SAINT FRANCIS HIGH SCHOOL52077	Santa Clara	50	116178.00	43402.21
MOREAU CATHOLIC HIGH SCHOOL51156	Alameda	49	92574.00	19798.21

Bottom 10 Enrollment

Bottom 10 Public

For the Bottom 10 public high schools with the lowest count of enrollment, **there were 7 schools under the California average median income**

Bottom 10 Private

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

For the Bottom 10 private high schools with the lowest count of enrollment, **there were 4 schools under the California average median income**

Bottom 10 Enrollment – Public vs. Private High Schools

Public

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
ACADEMY SCIENCE & ENGINEERING54626	Los Angeles	3.00	64251.00	-8524.79
ALSION MONTESSORI MIDDLE/HIGH53989	Alameda	3.00	92574.00	19798.21
ALTA VISTA ALTERNATIVE HS54462	Santa Barbara	3.00	71657.00	-1118.79
AMERICAN UNIVERSITY PREP SCHL54820	Los Angeles	3.00	64251.00	-8524.79
ARMENIAN MESROBIAN HIGH SCHOOL52653	Los Angeles	3.00	64251.00	-8524.79
BERT CORONA CHARTER HIGH SCHL50293	Los Angeles	3.00	64251.00	-8524.79
BETHEL BAPTIST SCHOOL53239	Orange	3.00	85398.00	12622.21
BETHEL CHRISTIAN HIGH SCHOOL51378	Los Angeles	3.00	64251.00	-8524.79
BETHEL CHRISTIAN HIGH SCHOOL52668	Riverside	3.00	63948.00	-8827.79
BORREGO SPRINGS HIGH SCHOOL50363	San Diego	3.00	74855.00	2079.21

Private

Calculation1	County/State/ Territory	All	Value	Value Minus Average Median Income
BETHEL BAPTIST SCHOOL53239	Orange	3	85398.00	12622.21
BRETHREN CHRISTIAN HIGH SCHOOL52363	Orange	3	85398.00	12622.21
CAMBRIAN ACADEMY54297	Santa Clara	3	116178.00	43402.21
FAITH BAPTIST SCHOOLS50467	Los Angeles	3	64251.00	-8524.79
FRESNO CHRISTIAN HIGH SCHOOL50994	Fresno	3	51261.00	-21514.79
HIGHLAND HALL WALDORF SCHOOL52153	Los Angeles	3	64251.00	-8524.79
JUNIPERO SERRA HIGH SCHOOL51025	Los Angeles	3	64251.00	-8524.79
MARIN SCHOOL THE52498	Marin	3	110217.00	37441.21
MOUNT MADONNA SCHOOL53711	Santa Cruz	3	78041.00	5265.21
ORANGEWOOD ADVENTIST ACADEMY51031	Orange	3	85398.00	12622.21

Case Studies Analysis

Top 10 Public/Private High Schools – Applied, Admitted, and Enrolled

- Top Public High Schools – had as many as 3 schools that were below the CA median income

- Top Private High Schools – had as many as 1 school that was below the CA median income

- Bottom Public High Schools – had as many as 7 schools that were below the CA median income

- Bottom Private High Schools – had as many as 8 schools that were below the CA median income

Did we prove our hypothesis?

1. TRUE

Application rates into the UC system <u>did</u> decrease in 2020

2. PARTLY TRUE

Application rates did increase from 2016 – 2018, but decreased in 2019 – 2020

3. TRUE

The top 10 most applied, admitted, and enrolled CA high schools were more likely to be in counties over the average median income

4. TRUE

The bottom 10 least applied, admitted, and enrolled CA high schools were more likely to be in counties below the average median income

Data Pitfall
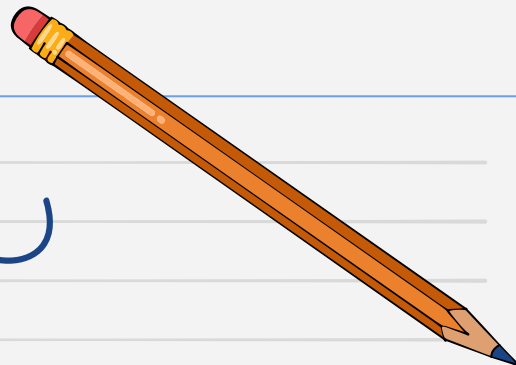
We found out late into our project that the UC data omits any schools with less than 5 applicants, and less than 3 admitted. Therefore, there were rows missing from our data set that would have provided a more complete analysis rather than leaving students out.
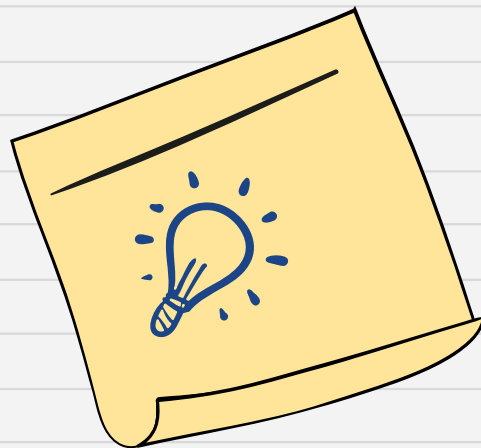
We made do using the data we had to still paint a (mostly) clear picture of California high school student application, admission, and enrollment trends.

Further Research

Data Exploration

- If we had the student body count, we could have further explored educational disparities by comparing the applicant count to the student body count

- While overall admitted rate into the UC system was over 50%, we could have further explored admission rate by campus.

- At first, were interested in students' graduating majors as well as linking it to gender. However, we found that the UC data was not gender-inclusive. But this would be something interesting to analyze in the future with better data.

THANK YOU