Educational and Socioeconomic Inequities in California

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Introduction

This report examines the relationships between income, school characteristics, and student outcomes using multiple datasets that cover schools, districts, counties, and states in California. The analysis uses data on school demographics, teacher salaries, county-level income, graduation rates, and inflation-adjusted metrics to make data-driven decisions. Key areas of focus include the impact of income inequality on free and reduced-price lunch eligibility, the relationship between graduation rates and demographic characteristics, and how economic disadvantages affect dropout rates. The findings emphasize the urgent need for changing resource distribution and policy reforms to address systemic challenges in California's education system.

Data Description

This analysis involves multiple datasets that provide insights into schools, districts, counties, and states.

School/District Data: Contains school characteristics (location, type, level), student demographics, district names, identifiers, and free/reduced lunch eligibility.

Income Data: Contains average annual income and population values in each county per year.

Teacher Salary Data: Includes teacher salaries per year and the district they are employed under.

CPI Data: Used to adjust salary and income data for inflation.

Graduation Data: Captures yearly graduation and dropout rates by student demographics (gender, race).

Preparing the Data

The raw data was cleaned and standardized for consistency. This included renaming columns, removing unnecessary punctuation or spaces, and excluding missing or incomplete rows. Weighted means were used to create accurate demographic proportions, accounting for larger school sizes. School and district data were merged, and teacher salaries were adjusted for inflation. The resulting county, school, and graduation data allowed for further analysis. We can plot quartiles of average real income, trends in eligibility rates over time, graduation rates by demographic, graduation rates by income quartile, and dropout rates by county.

Missing values were excluded in each table, which means our data is an estimate, not a definitive statistic. A large amount of missing data comes from older years, meaning our data could be biased towards the present. Since the missing data is not completely random, we could estimate it based on previous and

future data, but this can introduce bias and uncertainty, so we chose to exclude it at the cost of completeness.

Free and Reduced-Price Lunch Analysis

Figure 1 provides the average real income per county in 2019, divided into quartiles. The income distribution graph highlights significant income disparities across counties, with counties in the **top quartile earning substantially more** than those in the bottom quartile. Santa Clara, San Francisco, San Mateo, and Marin County have significantly higher average incomes than any other county. The Department of Education should prioritize funding towards counties in the lower quartiles, as lower income often is correlated with lower educational attainment.

Figure 2 shows the percentage of students eligible for free/reduced lunch in each county in 2019, with counties grouped by income quartiles. Counties in the lower income quartiles tend to have higher percentages of students eligible for free/reduced lunch (**60%**), while most wealthier counties often have rates **under 50%**, indicating that lower income is positively correlated with free/reduced lunches. Counties with lower eligibility, particularly in the bottom quartile of income, should be allocated additional resources by the Department of Education to increase student outcomes.

Free and Reduced Lunch Eligibility In Top and Bottom Quartiles Since 2000

Figures 3 and 4 analyze the percentage of students eligible for free or reduced lunch in the top and bottom income quartiles, respectively, from 2000 to the present. In the bottom-income quartile, eligibility has **remained around 60%**, which is inconsistent with expectations, as this quartile should have the highest eligibility rates and consistent growth. Currently, the bottom quartile has a **65%** eligibility rate, comparable to the second (69%) and third quartiles (61%), despite being the most in need of this assistance. There has been no significant improvement in this quartile, and resources should be allocated to increase these rates, as it remains the only quartile without consistent growth in eligibility rates.

Conversely, eligibility rates in the top income quartile have increased from nearly **30% to over 50%** since 2000. Although the eligibility rate remains the lowest due to higher average incomes, the widening gap between the top and bottom quartiles highlights the income disparities. This trend may reflect broader economic conditions or global policy changes that create stress in even high-income areas, affecting eligibility. Still, more attention and resources should be dedicated to the bottom quartile to ensure that students in lower-income counties receive the necessary support. Low-income counties should see the

highest eligibility rates, yet their current rates are comparable to those of counties with higher average incomes.

Student Outcomes Analysis

Graduation Rates Based on Demographic, Identity, and Income

Figure 5 categorizes graduation rates based on demographic or identity-based categories. Females have a **4.3% higher graduation rate** than males and a **19.5% higher rate** than non-binary individuals. In terms of ethnicity, Asian or Pacific Islanders have the highest graduation rate of 94% followed by Whites with 89.2%, and are the only two ethnicities above the overall graduation rate. Black students have one of the lowest graduation rates (**86.3%**), providing a demographic for the Department of Education to allocate resources towards increasing. Non-binary students and Black students face concerning gaps in graduation rates, suggesting systemic barriers or inequities in support systems. Policies should focus on helping these struggling groups to address these disparities and improve outcomes for underperforming demographics.

Figure 6 shows how graduation rates vary by income quartile. Although graduation rates are steady between the top 75% of counties, the bottom quartile is **significantly lower** in average graduation rates. Although a few percent may not seem like much, this is sampled by millions of people, meaning the lower rate is correlated to hundreds of thousands of dropouts. This highlights the direct impact of economic inequality on educational attainment, as **lower-income counties often lack funding** for qualified teachers, extracurricular programs, and essential student services. These counties do not have the same amount of resources available to help students graduate. Additionally, low-income students may face greater stressors, such as food insecurity, unstable housing, or limited access to transportation, which further impede their academic performance. Often, these students have other familial responsibilities or get tied up in things outside of school that affect their ability to focus on their education. As a result, their distraction may lead to dropping out of school.

Graduation Rates Based on Location

Figure 7 shows the average dropout rates for various counties. Mono and Glen Counties, with the highest dropout rates, stand out significantly and may require further research to understand the specific circumstances contributing to these elevated rates. Mono County is in the third percentile for average real income, and Glen County is in the second percentile (Figure 2). This relationship suggests that **income inequality can exacerbate dropout rates** by limiting access to quality education, resources, and support systems for students. However, a majority of counties have dropout rates under 10%, with only **five counties** having a rate under 5%. Income level, educational investment, employment opportunities for

families, and local government policies all likely affect dropout rates in each county. Increased funding for schools, mentorship programs, and community support in low-income counties could help address these inequalities.

Conclusion

While higher-income counties consistently outperform lower-income areas in educational attainment, significant challenges remain, particularly in the bottom quartiles. Despite the expected correlation between lower income and higher eligibility for free and reduced-price lunch, the bottom quartile has seen little improvement in this area, signaling a need for greater investment and targeted interventions. Marginalized groups, such as non-binary and Black students, experience lower graduation rates, suggesting areas for improvement. The disparity in graduation rates between income quartiles emphasizes how economic disadvantage directly impacts students' ability to succeed academically. Ultimately, the findings indicate that while wealthier areas continue to make gains, students in low-income counties remain at a disadvantage. Allocating resources to the bottom quartile, improving support for marginalized student populations, and addressing the systemic challenges within these communities will be crucial in reducing educational disparities and increasing student outcomes in the education system across California.
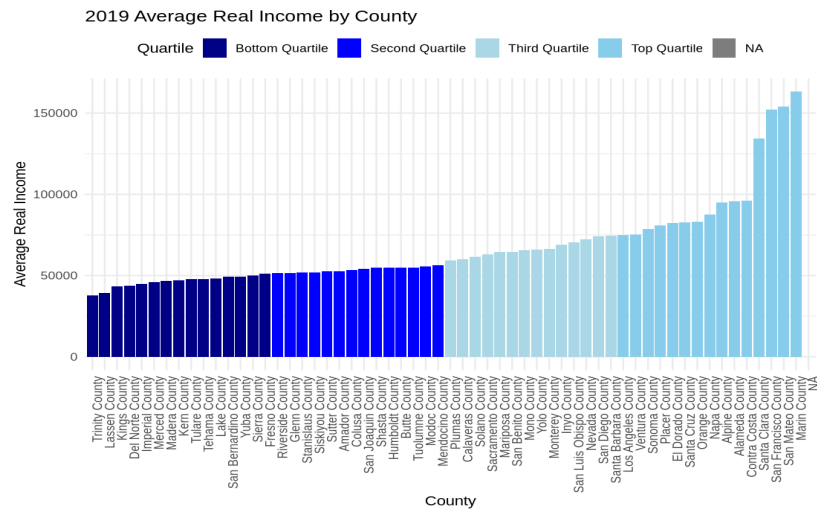
Figure 1: 2019 Average Real Income by County

2019 Average Real Income by County

Quartile ■ Bottom Quartile ■ Second Quartile ■ Third Quartile ■ Top Quartile ■ NA

Figure 2: 2019 Free/Reduced Lunch Eligibility by County

Percent of Students Eligible for Free/Reduced-Price Lunch by County (2019)

Income Quartile ■ Bottom Quartile ■ Second Quartile ■ Third Quartile ■ Top Quartile ■ NA
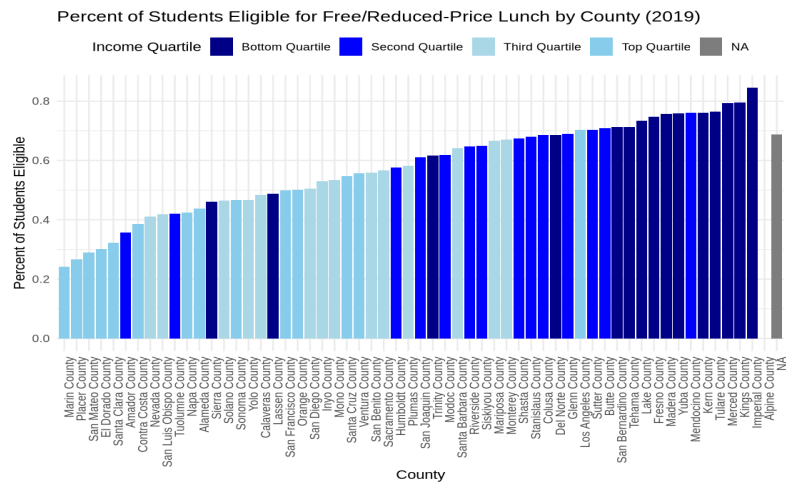
Figure 3: Free/Reduced Lunch Student Eligibility Since 2000: Bottom Quartile

Eligibility for Free/Reduced Lunch Since 2000
Bottom Income Quartile
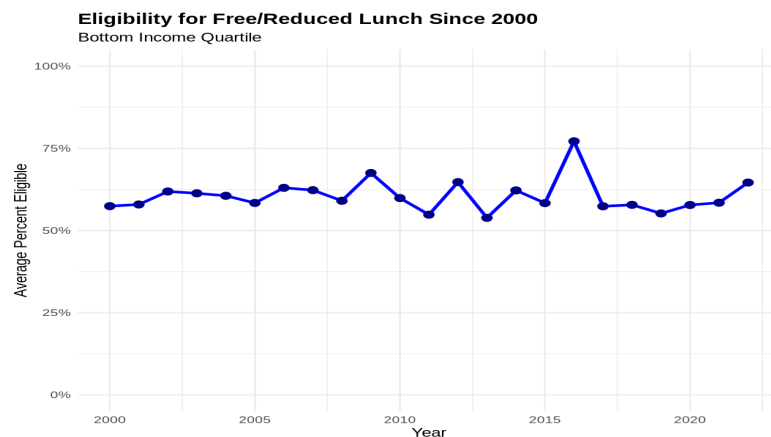
Figure 4 Free/Reduced Lunch Student Eligibility Since 2000: Top Quartile

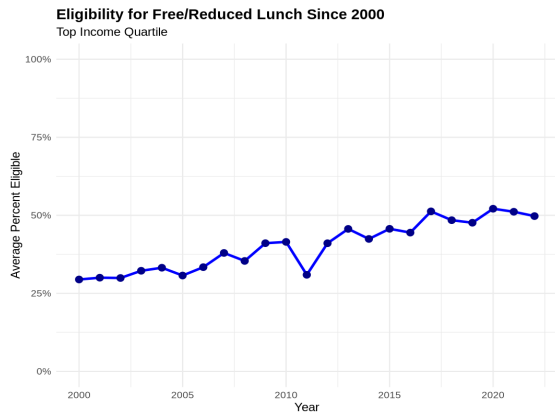**Eligibility for Free/Reduced Lunch Since 2000**
Top Income Quartile

Figure 5: Graduation Rates by Demographic

Average Graduation Rates by Reporting Category

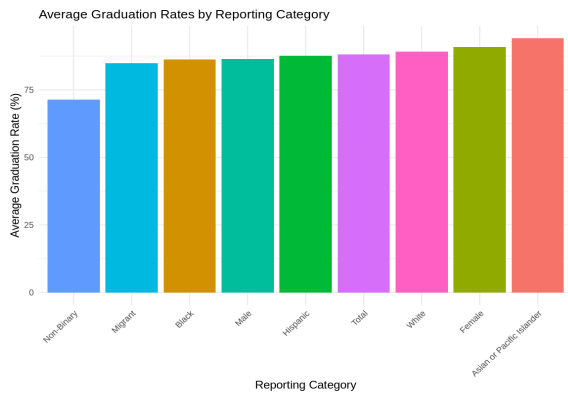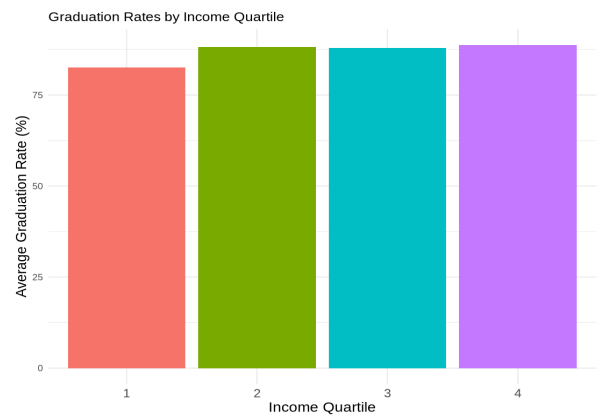## Figure 6: Graduation Rates by Quartile

Graduation Rates by Income Quartile

Figure 7: Average Dropout Rate by County

Average Dropout Rate by County