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Saving for Success: How California's ScholarShare 529 Plan Influences College Enrollment

Did you know that “about 89% of students from well-off families go to college compared to 64% of students from middle-class families, and 51% of students from low-income families” (Reber & Smith, 2023)? For many California families, the dream of sending their child to college can feel financially out of reach. To remedy such inequities, the use of college savings programs such as California's ScholarShare 529 Plan are often promoted and encouraged to help families prepare and save for higher education. However, it is unclear whether such plans actually influence students' decisions to enroll in college. Therefore, my broad research question is “Broadly, does participation in college savings programs increase college enrollment rates among California students?,” and my specific research question is “Are counties with higher ScholarShare 529 plan participation rates associated with higher four-year college enrollment rates across low, middle, and high-income California counties between 2018-2022?” To answer this question, I compare two high-income (Santa Clara/Marin), two middle-income (San Diego/Santa Cruz), and two lower-income (Kern/Merced) counties to examine whether, in each group, counties with higher 529 rates demonstrate higher college enrollment rates between 2018-2022. I find that ScholarShare 529 rates did have a substantial impact on four-year college enrollment rates, and I conclude with a discussion of what this means for the continued outreach and funding of ScholarShare 529 in California's budget moving forward.

Context/Significance

Access to higher education remains deeply unequal in the state of California – only 51% of students from low-income families complete or even attend college (Reber & Smith, 2023). California policymakers are concerned about these disparities that exist within lower income families in comparison to middle and higher income families. According to the Learning Policy Institute, California’s K-12 system serves more than 6 million students, with a vast majority, roughly 60%, coming from low-income households (Johnson 2023). The K-12 system serves as a precursor to college enrollment, so it is important to incentivize lower-income students, who make up the majority of this population, to pursue higher education. Income disparity has made inequitable college access a widespread public problem, heavily revolving around “admissions...cost...[and] disparities in academic preparation earlier in students’ educational careers” (Reber & Smith, 2023).

In 1999, California’s ScholarShare 529 program was established as a response, helping families save for college through tax-advantaged investment accounts. A 529 plan is a tax-free state-sponsored college savings account used for qualified educational expenses – California’s version, ScholarShare 529, is overseen by the State Treasurer and is part of a broader national policy framework (Emrey-Arras, 2020). In turn, research has demonstrated that participation in ScholarShare 529 programs – meant to address such disparities and inequities in the pursuit of higher education – indicates an improvement in both educational expectations and financial preparedness. Further, studies have found that having a college savings account “help[s] children develop a college-bound identity and...increase[s] the likelihood that youth attend and complete college” (Beverly, Kim, Sherraden, Nam, Clancy 2015).

However, there is one major ongoing policy debate – the fact that 529 plans rely on disposable or discretionary family income. According to the Brookings Institute, 529 programs may unintentionally exacerbate existing inequalities, finding that they “primarily benefit affluent families” (Reeves 2018). Through the implementation of the CalKIDS program in 2022, California has worked to address this concern by automatically depositing state funds into college savings accounts for newborns and eligible K-12 students (California Kids Investment & Development Savings Program). Therefore, evaluating both the effectiveness and equitability of college savings programs and accounts is increasingly important for state public policy.

The expansion or continuation of programs such as these would reduce higher education inequity in the state of California. My research is significant because it examines ScholarShare 529’s impact on California, exploring whether increased participation in such programs reduces educational inequality across six differing socioeconomic regions. Very few scholars and researchers have examined how ScholarShare 529 participation differs across varying socioeconomic regions in California. By filling this important research gap, I can help us better understand such differences and identify certain patterns that can help the state – such as evaluating whether current 529 plans are equitable or if adjustments to current policy are necessary to ensure greater equity.

Literature Review

My literature review is organized methodologically and conceptually, as it focuses on the causal relationship between participation in college savings accounts, CSAs (specifically, 529 plans) and educational outcomes (specifically, four-year college enrollment). I first provide a foundational understanding of program designs, accessibility, and challenges regarding equity through policy reports and program evaluations. Next, I discuss academic studies that use

household or individual-level data to examine the psychological and behavioral mechanisms that link CSAs to college enrollment and its effect on college-bound identities, financial preparedness, and parental expectations. Lastly, I incorporate analyses of state-level outcomes and system-level trends to highlight disparities across counties, income groups, and educational outcomes.

Previous studies and research have demonstrated that having a college savings account or the prevalence of higher savings “are strongly correlated with better educational outcomes, including four-year college enrollment, attendance at selective institutions, and the pursuit of post-graduate degrees” (Briscese, List, Liu 2025). Further, it was found that “those with a CSA account may learn about asset accumulation, can develop a college bound identity, and could be three times more likely to enroll in college. CSAs may also provide benefits beyond educational attainment. They can be linked to improved mental health and a higher quality of life” (Mitchell). Empirical studies further support these findings. For example, Song & Petracchi (2020) conclude that college savings accounts are heavily linked to more beneficial psychological and communicative processes, including more discussions regarding college, and increased parental belief and expectations (Song & Petracchi 1). Further, Chen & Elliott (2020) found a positive correlation between increased CSA participation rates and a stronger expectation and belief in higher education (Chen & Elliott 1, 13). Elliott, Song and Nam (2013) build off of this work by demonstrating that even small amounts of savings reduces the need for student loans and also significantly increases the likelihood of both low and moderate-income students attending and completing college (Song & Nam 2-3). Together, these studies affirm my hypothesis and suggest a causal relationship – counties with higher 529 rates, especially

lower-income counties, will have higher college enrollment rates, particularly in lower-income populations.

However, Pressman & Scott (2017) address significant equity challenges, arguing that 529 plans benefit higher-income families disproportionately due to their tax advantages, which are less accessible and readily available to lower-income families without substantial tax liabilities (Pressman & Scott 4). The authors state that 529 plans may not be an optimal or ideal solution for promoting equitable college access or raising college enrollment rates, especially among economically disadvantaged students and areas. Similarly, Clancy & Parrish (2006) highlight structural barriers and draw on policy recommendations that would increase 529 plan accessibility and flexibility, in addition to the impact these plans have on long-term college access (Clancy & Parrish 2-4).

Altogether, these studies and prior work are limited to individual and national-level data, suggesting that CSAs may generate both non-educational and educational benefits. A key gap in the literature is the lack of state-level analysis, specifically comparing outcomes across differing socioeconomic groups (two high, two middle, and two low income) at the county level. Bridging household-level mechanisms and county-level outcomes, my results offer valuable insights for policymakers seeking to reform such programs and design them to be more equitable.

Theory, Hypothesis, and Causal Mechanism Section

My theoretical framework is bolstered by the aforementioned studies, which suggest that CSAs operate through a dual pathway: (1) through material resources (enhancing financial preparedness); and (2) psychological resources (enhancing college-bound expectations and identities). Therefore, building off of this, my theory is that parents who save for college through structured, dedicated accounts develop stronger college-oriented expectations and greater

financial preparedness, increasing the likelihood that their children pursue 4-year higher education. My conceptual hypothesis is that participation in California's ScholarShare 529 program increases a family's financial readiness and belief that higher education is plausible, leading to higher rates of four-year college enrollment among students in counties with higher participation levels. My operational hypothesis is that counties with higher ScholarShare 529 participation rates between 2018-2022 will have higher four-year college enrollment rates, regardless of income level. My proposed causal mechanism is that participation in ScholarShare 529 improves both a family's financial preparedness and psychological commitment to college, which in turn increases the likelihood that students enroll in four-year institutions (Song & Petracchi; Chen & Elliott; Elliott, Song & Nam).

Research Design Section

My independent variable (X), the ScholarShare 529 participation rate, is measured as the percentage of households in each county that hold at least one ScholarShare 529 account in a given year. This county-level operationalization allows me to compare counties of differing population sizes, illuminating the degree to which families in each county engage with the 529 program. Data for this variable will derive from ScholarShare 529 yearly market success reports, which were directly shared to me because I am currently interning at the California State Treasurer's office under the ScholarShare Investment Board. This operationalization is appropriate and best fitting because participation rate is the best indicator of how widely the 529 program is being utilized within each specific county.

The dependent variable (Y) is the four-year college enrollment rate, measured as the percentage of high school graduates in each county who enroll in a public or private four-year institution following high school graduation. I am using this measure because it is a direct

behavioral outcome that captures whether students actually pursue higher education, which is one of the predicted effects of increased college-bound expectations and financial readiness. Data for this variable will derive from the California Department of Education (CDE) website, which publishes annual California county-level college enrollment rates. Highly regarded in research related to education policy, this operationalization provides reliable, comparable data across all six counties.

My first control variable is median household income. Because families and areas with higher income are better equipped to afford and invest in educational resources, wealthier counties such as Santa Clara and Marin may already have higher college enrollment rates independent of 529 participation. I measure median household income using annual county-level estimates from the California Department of Finance. I define higher-income counties as counties whose median household income ranges from \$120,000-\$150,000, middle-income counties as counties whose median household income ranges from \$80,000-\$100,000, and lower-income counties as counties whose median household income ranges from \$50,000-\$65,000 per year (from 2018-2022). I operationalize it as the median income in dollars for each county in a given year because this provides a comparable measure of economic resources across counties. This operationalization allows me to account for differences in financial capacity that could potentially confound the effect of 529 participation on college enrollment rates.

My second control variable is the county unemployment rate. Within each county, certain economic conditions may influence a family's savings behavior and/or a student's decision to pursue higher education. For example, a county with high unemployment rates could reduce a family's potential contributions to a 529 account, or make students more likely to enter the

workforce instead of pursuing higher education. I measure the unemployment rate as the percentage of the county labor force that is unemployed in a given year, using data from the Employment Development Department. This operationalization provides a clear indicator of local economic conditions that could potentially confound or affect the independent or dependent variables.

My unit of analysis in this study are counties. My geographic scope encompasses six varying socioeconomic California counties: Santa Clara & Marin, two high-income counties; San Diego & Santa Cruz, two middle-income counties; and Kern & Merced, two lower-income counties. Coupled with my temporal scope, a five-year timeframe spanning from 2018-2022, both a multiple-cases-over-time design structure and an n-size of 30 observations (six counties x five years = 30 observations) are produced.

I employed a Pearson's r test, as both my independent (ScholarShare 529 participation rate) and dependent variables (four-year college enrollment rate) are continuous variables measured at the county level. Allowing me to test both the strength and relationship between the two variables across the six counties over five years, I found the correlation coefficient (r), to be 0.475. This indicates a moderate positive association between 529 participation rates and four-year college enrollment rates.

I also employed a one-way ANOVA, which showed significant differences in enrollment across counties with varying 529 participation ($p < 0.01$). The result, $p: 0.00797$, indicates that the observable differences are statistically significant and highly unlikely to have happened by chance, making the relationship between the two variables strong and meaningful.

Results

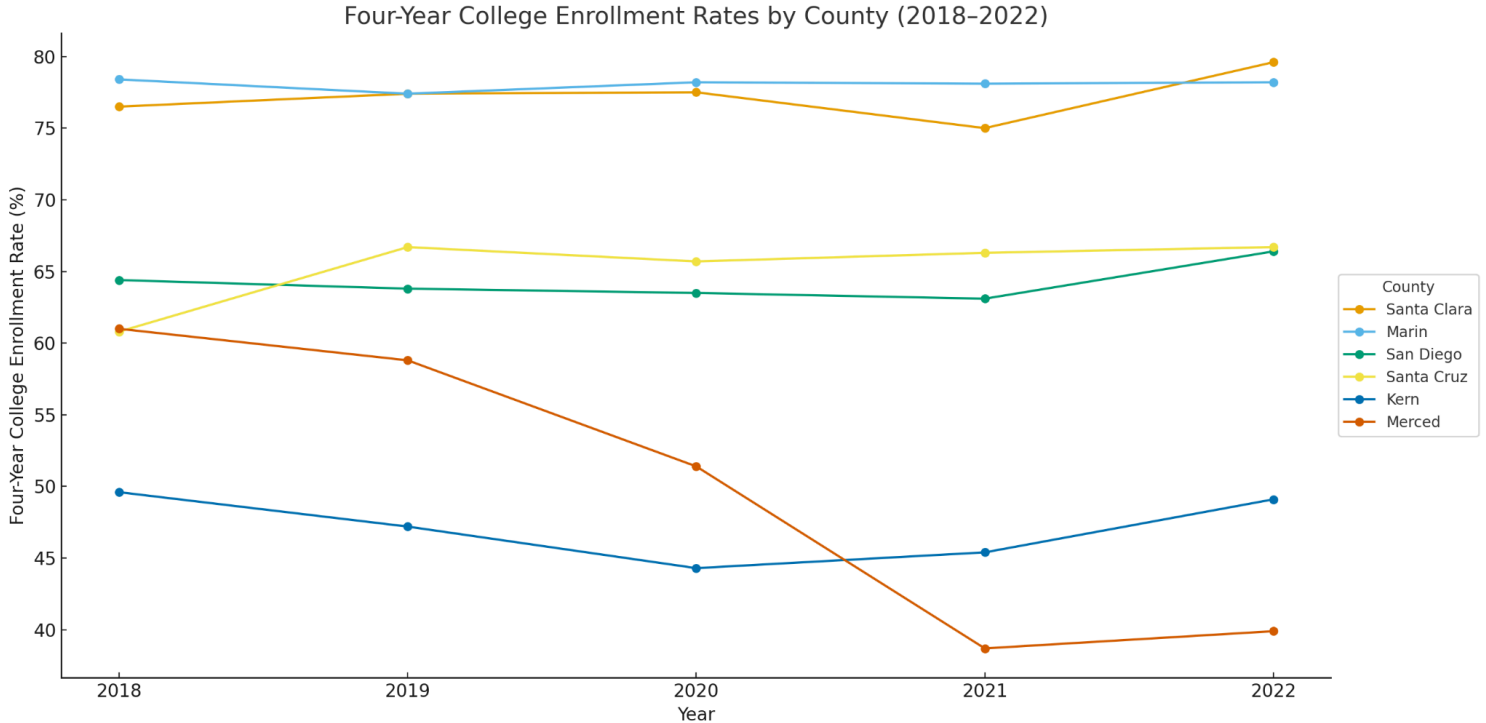


Figure Source: California Department of Education (2018-2022)

Figure 1 (above), a multi-series line graph, displays my dependent variable, four-year college enrollment rates, and how it has changed in six California counties over time. My x-axis encompasses the years 2018-2022, while my y-axis encompasses the percent of California high school graduates who enroll in four-year institutions. Overall, the figure illuminates the disparity in access to higher education: the higher-income counties, Santa Clara & Marin maintain consistently high college enrollment rates (hovering between 76-80%), while the lower-income counties, Kern & Merced, exhibit significantly lower college enrollment rates (around 40-50%).

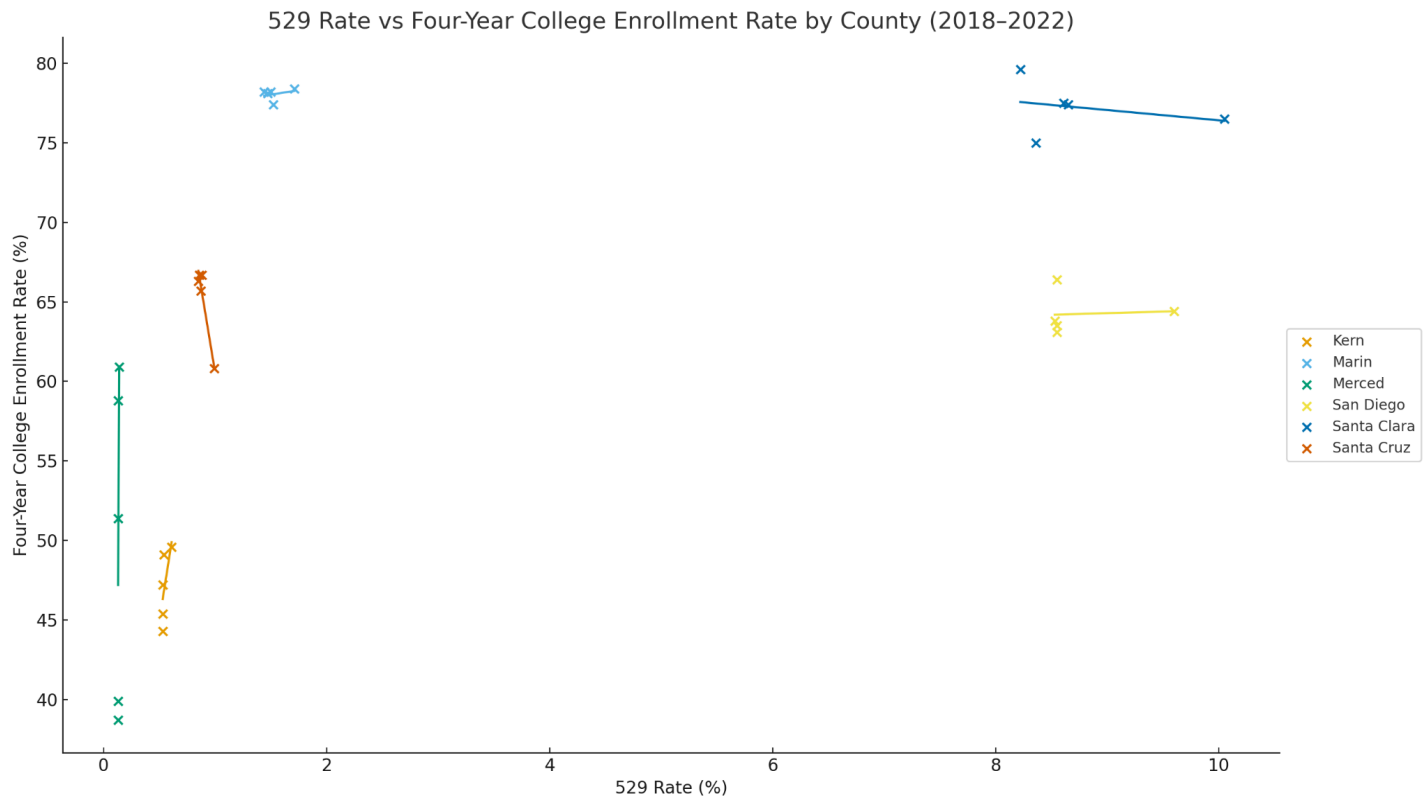


Figure Source: ScholarShare Yearly Market Success Reports (2018-2022)

Figure 2 (above), a scatterplot, shows the relationship between my dependent variable, four-year college enrollment rates, and my independent variable, ScholarShare 529 participation rates, and how it has changed in six California counties over time. My x-axis encompasses the ScholarShare 529 participation rate, while my y-axis encompasses the four-year college enrollment rate. The scatterplot reveals a clear positive association, as counties with higher 529 rates consistently exhibit higher college enrollment rates. For example, San Diego & Santa Clara have the highest 529 rates (between 8-10%) and higher college enrollment rates, while in contrast, Kern & Merced, the lowest-income counties, have the lowest 529 rates (below 1%) and lower college enrollment rates. Thereby, Figure 2 provides evidence that supports my hypothesis.

College enrollment rates by 529 claim rate category (2018-2022)

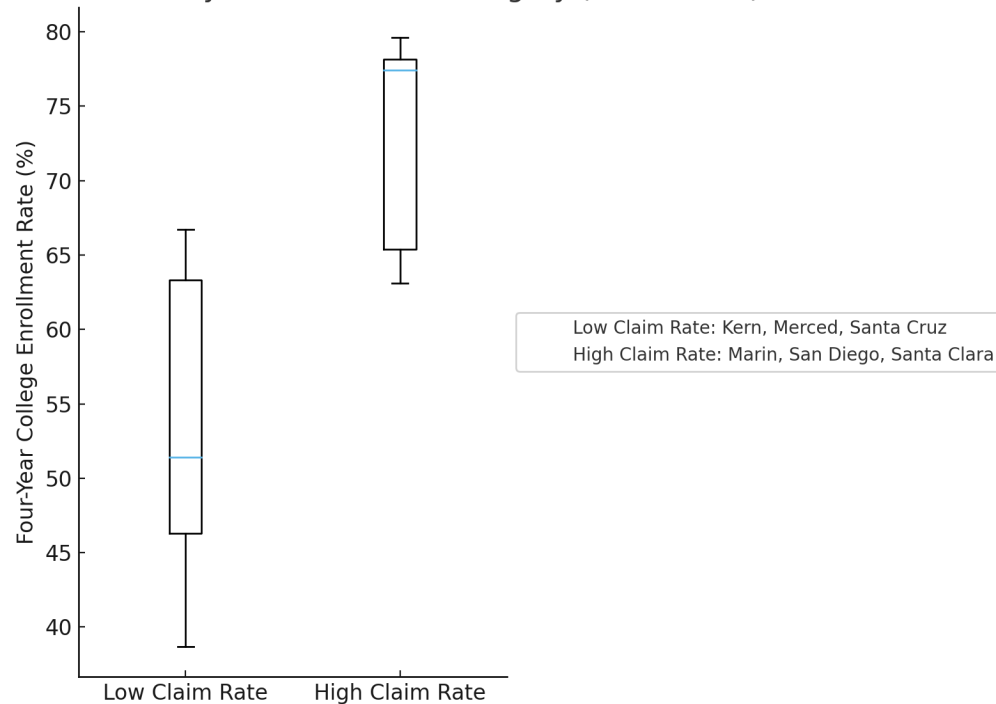


Figure Source: ScholarShare Yearly Market Success Reports (2018-2022)

Figure 3 (above), a box-and-whisker plot, is an alternate visualization of Figure 2. It shows the relationship between my dependent variable, four-year college enrollment rates, and my independent variable, ScholarShare 529 participation rates, and how it has changed in six California counties over time. My x-axis encompasses the ScholarShare 529 claim rate, the share of all California 529 plan accounts claimed by that county. For example, Santa Clara (a high claim rate county) had consistently high claim rates that hovered around 10%, meaning Santa Clara accounted for about 10% of all 529 accounts in California from 2018-2022. However, Merced & Kern (low claim rate counties) had consistently low claim rates (less than 1%), meaning they accounted for less than 1% of all 529 accounts in California from 2018-2022. The box-and-whisker-plot shows that the median enrollment rate for high-claim counties (which were higher-income counties) is in the high 70% range, whereas the median enrollment rate for

low-claim counties (which were lower-income counties) is in the low 50% range. It reveals that counties with higher 529 claim rates tend to have substantially higher four-year college enrollment rates.

Discussion and Research Implications

My specific research question asked, “Are counties with higher ScholarShare 529 plan participation rates associated with higher four-year college enrollment rates across low, middle, and high-income California counties between 2018-2022?” I hypothesized that counties with higher ScholarShare 529 participation rates between 2018-2022 would have higher four-year college enrollment rates. The results of Figure 2 and Figure 3 support my hypothesis, as they both show that higher-income counties have higher ScholarShare 529 participation rates and higher four-year college enrollment rates, while lower-income counties have lower ScholarShare 529 participation rates and lower four-year college enrollment rates.

However, while patterns in both figures are clear, in Figure 2, Marin and San Diego are exceptions to this hypothesis. The first surprising finding was that San Diego had the second highest ScholarShare 529 rate, around 8-9%, yet demonstrated college enrollment rates around 60%, which is lower than expected given such high 529 participation. This could potentially be explained by San Diego’s larger community college system, where students may opt to choose two-year colleges at higher rates, or by extremely high 529 rate concentrations in certain neighborhoods, as San Diego is a county that exhibits significant income inequality and demographic diversity (San Diego Economic Equity Report, 2023). The second surprising finding was the reverse case – Marin, a wealthy county, had one of the lowest 529 rates in the scatterplot, yet consistently showed very high four-year college enrollment rates (around 77-79%, on par with Santa Clara, another wealthy county). However, this could potentially be

explained because Marin is one of the wealthiest counties in California, so families may rely more on direct income, savings, or other investment vehicles/financial strategies to fund higher education (U.S. News & World Report, 2023).

However, although there is a positive relationship between 529 use & enrollment rates, my findings illuminate a major disparity: low-income counties have extremely low 529 use and lower enrollment rates. This is troubling, because the group that could benefit the most from such programs is currently benefiting the least. Hopefully, my findings may help California policymakers realize such discrepancies, allowing them to consider how to publicize, expand, and/or redesign ScholarShare 529 and CalKIDS programs. Some policy ideas I had were: (1) providing annual seed deposits for lower-income children to ensure every child starts with some college savings and to incentivize further growth; (2) greater targeted outreach efforts, such as integrating CalKIDS and ScholarShare 529 program information into school systems in conjunction with more community based campaigns and/or local workshops in different languages; and (3) introducing matching contributions from the state (California) for low and middle-income families.

Research Limitations and Research Extensions

One potential limitation in my research project was the temporal scope, which was restricted because the California Department of Education did not have any college enrollment data beyond 2022. Further, ScholarShare 529 yearly market success reports are not yet available for this year, and reports were not available for certain previous years. If this data were available, it would greatly expand the temporal scope, allowing us to see the effects of ScholarShare 529 since its implementation in 1999. The next limitation I encountered was the geographic scope – I wanted to study college enrollment data and college savings plans in other states, which would

show the national effects of such plans and allow for comparative analysis across states. Another limitation in my research project was the lack of data for the CalKIDS program. Initially, I wanted to study both of the CalKIDS and ScholarShare 529 programs in tandem. However, since the program was implemented in 2022, there was not enough available data or resources available to conduct a study or research project on CalKIDS. My last limitation was being unable to include certain control variables. For example, one additional control variable that would have been interesting to include is parental education levels, as studies show that parents with higher education levels are more likely to (1) encourage their children to pursue higher education and (2) engage or open college savings accounts or plans (Lamar University, 2021).

Ideally, to make improvements to this study in the future, comprehensive data for every state's college savings programs, every state's college enrollment data, and every state's parental education data would need to become available. If available, I would rephrase my research question, asking "Are counties with higher college savings plan participation rates associated with higher four-year college enrollment rates across low, middle, and higher-income counties in all 50 states since each program's implementation?" Hopefully, the findings of this study would align with my findings, which would help encourage policymakers to design more equitable and accessible college savings programs on a national scale.

Conclusion

To conclude, my study's findings are consistent with the hypothesis, illuminating a clear positive association and pattern between ScholarShare 529 rates and college-going outcomes/enrollment rates. While higher 529 rates are correlated with higher college enrollment rates, an apparent equity gap exists, highlighting a disparity between higher and lower-income counties. However, because my findings show that lower-income counties participate the least in

ScholarShare 529, the concerns of critics, such as Pressman & Scott (previously mentioned in the literature review), are reasonable and justifiable. In this case, the ScholarShare 529 plan ends up disproportionately benefiting higher-income families more – this is due to the fact that they are more likely to take advantage of tax incentives and have a greater supply of disposable income, heightening the risk of deepening education inequality (Pressman & Scott 2017).

Hopefully, my research and findings help California policymakers realize that plans such as ScholarShare 529 and CalKIDS are extremely beneficial – both financially and psychologically – but that they need improvements in order to serve their intended purpose: making higher education more accessible for lower-income students and families. First, I believe that greater financial incentives should be provided for lower-income families to combat the disparities in income that wealthier counties have, which would be a big step in leveling the playing field. For example, the introduction of annual seed deposits or matching contributions would incentivize further growth and allow lower-income families to see this growth over time. Second, I believe that there needs to be greater targeted outreach and education efforts. Integrating CalKIDS and ScholarShare 529 program information into school systems would greatly enhance the policy, creating reliable and trusted points of contact – for example: (1) including information sheets in course catalogs, enrollment and school welcome packets, and beginning-of-year communications; (2) promoting programs on school websites and portals in different languages; & (3) hosting workshops in different languages where families can learn about and receive assistance to claim CalKIDS accounts and link them to ScholarShare 529 plans would make higher education more attainable for lower-income families.

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