

City of Promise: Closing the Gap

Prepared by:
Trinity Chamblin
Tina Jiang
Tran Nguyen
Kyla Quimson
Rhiannon Staley

April 29, 2025

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Executive summary

Through our investigation of the relationship between economics and education, our team chiefly found that economically disadvantaged students across all schools faced consistently lower pass rates and higher chronic absenteeism rates than their peers, but economics does not accommodate for the gap in its entirety. Parents' education level also plays a role, indicating that lower parent education levels can reflect in their children's performance. To break down these educational disparities, we suggest five key recommendations: to identify and target chronic absenteeism through proactive monitoring; establish transportation systems in underserved neighborhoods; strengthen after-school academic support programs; support whole families, not just students; and learn from schools that are already succeeding locally. Encountering the problem of insufficient funding, our team has considered cost-effective applications of our recommendations. Furthermore, the cooperation of the parents and the greater community will be needed to break these educational barriers and cycles of generational poverty.

1 Introduction

The intersection of educational achievement and economic outcomes is deeply intertwined, shaping social mobility within the Charlottesville community and beyond. Early disparities in literacy skills have long-term economic consequences, often limiting access to higher education, stable employment, and financial security (Low & Miranda). City of Promise has identified critical barriers to literacy and school attendance due to socioeconomic inequities, highlighting the need for data-driven interventions to close the educational gap.

This project investigates the relationship between economic factors, such as household income, caregiver education levels, average hours worked, and literacy outcomes among elementary students in Charlottesville. Specifically, we aim to quantify the economic disparity between students who meet reading level standards and those who do not. Understanding these relationships will help City of Promise better allocate resources and prioritize recommendations that address educational inequity.

To conduct the analysis, we will combine census data, school system reports, and Charlottesville-specific economic data into one comprehensive dataset. Our goal is to provide data-driven recommendations that support City of Promise’s ongoing efforts to improve literacy rates and education within the community.

2 Data

2.1 Student Performance and Attendance

The primary data source we used was school-level data for the 2022-2023 academic year from the Virginia Department of Education’s School Quality Profiles. This includes standardized reading test results (SOLs) for each Charlottesville City elementary school. The data is broken down by economic status, showing how many students passed, or failed the English Reading SOL, and whether they scored at an advanced, proficient, pass or failed level. While these assessments are typically geared toward upper elementary students, they offer valuable insight into longer-term literacy development.

To capture literacy development at the early elementary level, we also included school readiness data. This measures the percentage of kindergarten students who met the benchmark

of the fall Phonological Awareness Literacy Screening (PALS). Because the PALS assessment is only administered at the early elementary level, this data is unavailable for Walker Upper Elementary. In addition to test performance, we looked at patterns in chronic absenteeism. For each school, we included both the total number of students classified as chronically absent and the percentage this represents of the entire student body. Measuring this in both ways helps show how widespread absenteeism and its relative impact is at each school. We took these data points from the individual schools and merged them into a single dataset for easier viewing.

Table 1: Education and Attendance Factors by School in Charlottesville City

School	Economically Disadvantaged				Not Economically Disadvantaged			
	Advanced	Proficient	Pass	Fail	Advanced	Proficient	Pass	Fail
Burnley-Moran ES	5	44	49	51	38	55	93	7
Greenbrier ES	2	47	49	51	27	58	85	15
Jackson-Via ES	9	40	49	51	31	56	87	13
Johnson ES	4	36	40	60	23	68	91	9

Number of Chronically Absent	Chronically Absent (%)	Pass Rate Gap	School Readiness
32	12.2	44	87
26	9.4	36	71
51	16.9	38	67
50	17.5	51	74

2.2 Economic and Household Context

To understand the environment that different students live in, we also incorporated data from the U.S. Census Bureau’s American Community Survey. This includes:

- Median (Middle) Household Income: For the census tract(s) associated with each school, which gives an insight into the financial resources available in a student’s neighborhood
- Average Hours Worked Per Week: By individuals aged 16-64 in the tract, offering a view into the labor force engagement and economic stability of that neighborhood

- Average Number of Children per Household: Which explores how family size might influence education-related outcomes
- Adult Education Levels: Measured by the percentage of adults age 25 or older who have earned a college degree or higher. Explores how parental educational attainment may influence student performance.

When schools served more than one census tract, we used a proportional weighting system that reflects each tract’s relative contribution or importance to a particular school’s attendance area or service region (United States Census Bureau 2023). This ensures that we account for the full socioeconomic breakdown of the student body.

Table 2: Economic and Demographic Factors by School in Charlottesville City

School	Tract Weight	Median Income(\$)	Composite Median Income(\$)
Burnley-Moran ES	1.0	81,250	87,396
Greenbrier ES	0.5	113,659	96,960
Jackson-Via ES	1.0	87,859	79,614
Johnson ES	1.0	87,859	87,859

Average Total Hrs Worked	Census Pop (16-64)	Under 18 (Per household)	Average Parent Education (%)
38.2	1954	0.277	56.31
37.6	2007	0.463	60.88
38.9	2858	0.510	75.27
38.9	2858	0.510	75.27

2.3 Limitations and Ethical Considerations

In conducting our analysis, we ensured the quality and integrity of the data. We prioritized relevance, by selecting data specifically for the Charlottesville context, and we prioritized privacy by choosing reliable, publicly accessible, and anonymized information from sources like the Virginia Department of Education and the U.S. Census Bureau. No individual-level or identifiable student data is included. Using school and neighborhood tracts ensures that our information is ethical and appropriate for public discussion.

We paid attention to the completeness and accuracy of the data, which meant checking for missing information and ensuring that everything was for the 2022-2023 academic year.

Because some of our data came from different sources, we also worked to ensure that the formatting was consistent across the board, only choosing relevant information to make our analysis as straightforward as possible. We were mindful of fairness and representation in our chosen data, understanding that test scores and absenteeism data may reflect broader systemic issues, not just individual behavior. Our goal is to use this information to highlight those challenges, not reinforce them.

A key limitation of our dataset is that chronic absenteeism data is not broken down by economic status. This may be an issue because, although a school's median income serves as a general economic indicator, household incomes within the school can vary widely. Because of this, we can identify schools where absenteeism is a concern, but we cannot draw direct conclusions about how it varies between economically disadvantaged and non-economically disadvantaged students. Similarly, while SOL performance data is useful for assessing overall literacy outcomes, it may not fully capture the early reading challenges that City of Promise focuses on (grades K-4). Although school readiness is within the desired grade level range, it only measures the percentage of students entering kindergarten who meet the literacy benchmark.

In the future, if we could find data on literacy from individual grades from kindergarten to fourth-grade levels, there would be a more complete and accurate picture of how economic factors may affect academic development in early education. Thus, our team hopes to bridge these gaps with the inclusion of both School Readiness for Early Literacy and SOL performance measures for literacy development. Despite these limitations, we believe that the dataset provides a foundation for understanding the relationship between education, economic conditions, and equity in Charlottesville's public elementary schools.

3 Descriptive Analytics

This section presents a series of visualizations that reveal how economic inequality, school attendance, and neighborhood characteristics contribute to disparities in academic performance across Charlottesville's elementary schools. We begin with broad school comparisons, then zoom into neighborhood-level data, and finally connect community patterns back to student outcomes to build a fuller picture of what shapes educational success in this city.

We begin by examining how student performance differs based on economic background at each elementary school.

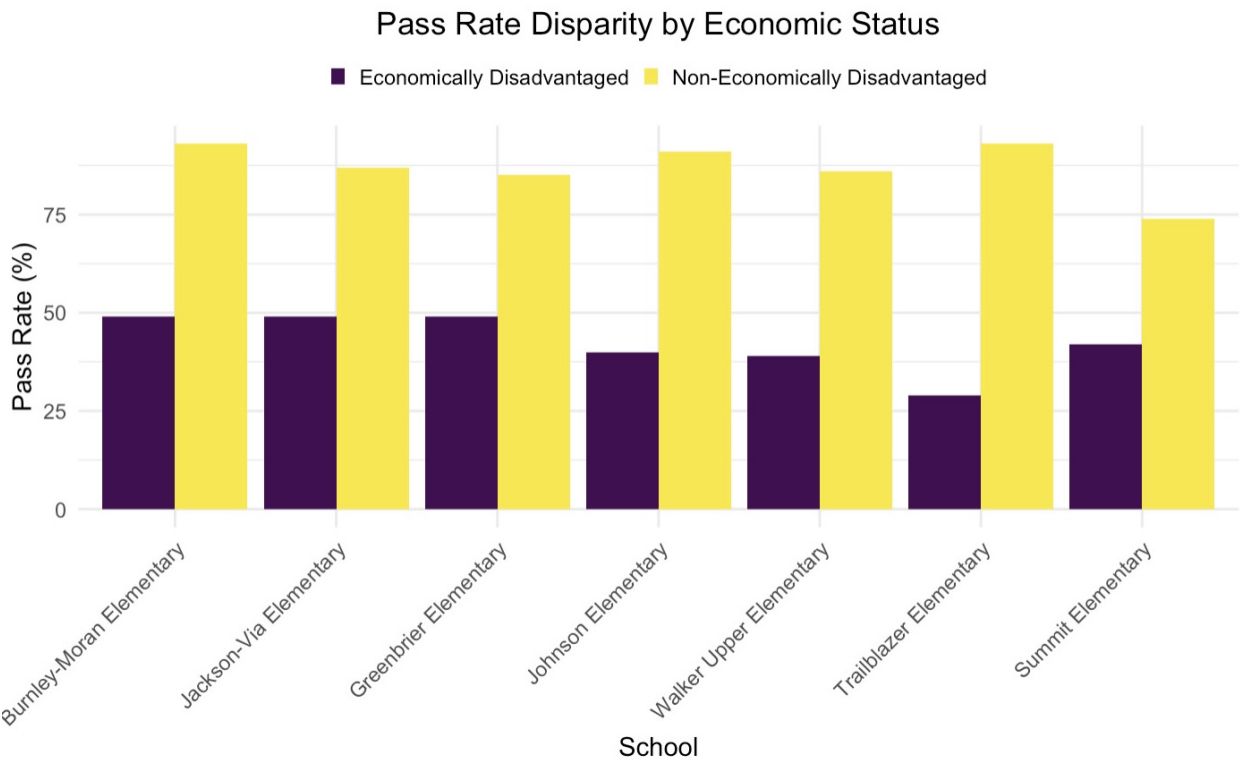


Figure 1: Pass Rate Disparities Overview

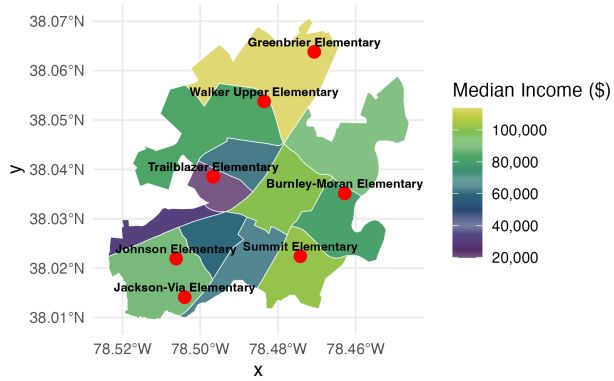
This grouped bar chart compares English SOL reading pass rates for economically disadvantaged and non-disadvantaged students.

Across every school, we see a consistent gap: non-disadvantaged students outperform their disadvantaged peers, often by a wide margin. This sets the stage for our analysis by making one thing clear—academic inequality is not isolated to just one or two schools; it’s happening system-wide. The key question becomes: what are the structural factors driving these differences?

To explore those structural factors, we look beyond schools and into the communities they serve.

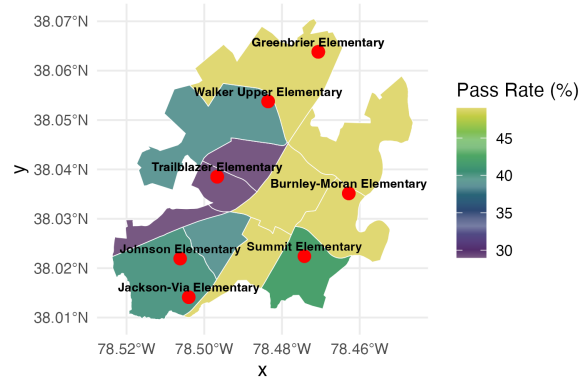
Median Income by Census Tract

Charlottesville, VA Census Tracts



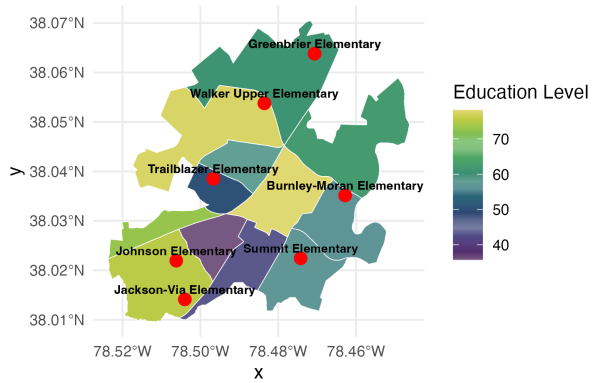
Economically Disadvantaged Pass Rate

Charlottesville, VA Census Tracts



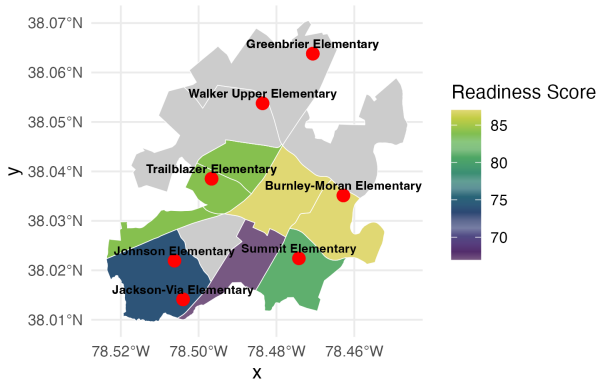
Average Parent Education Level

Charlottesville, VA Census Tracts



School Readiness Score

Charlottesville, VA Census Tracts



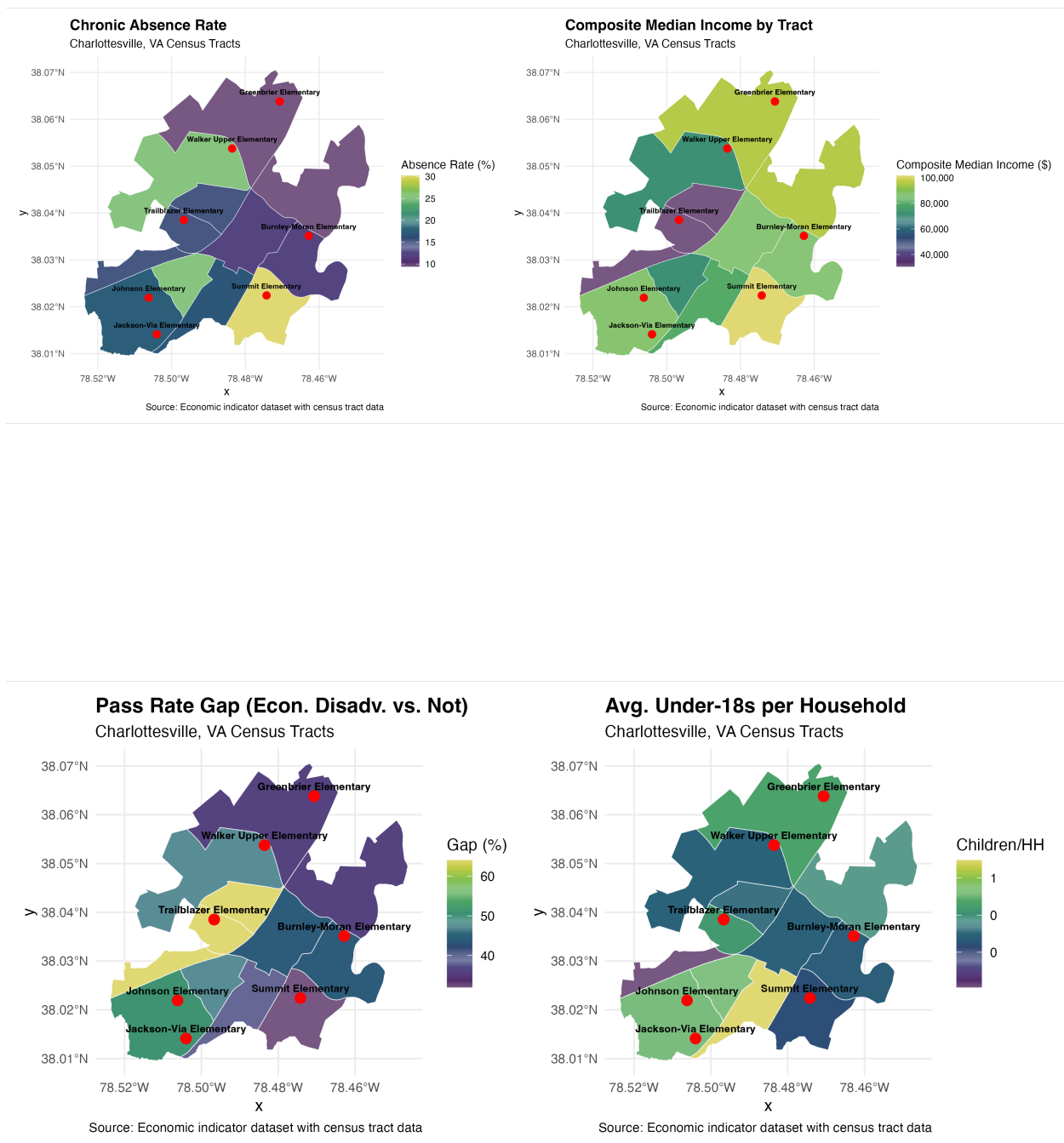


Figure 2: Charlottesville Overview - Key Economic Maps

These maps show how economic, social, and educational indicators vary across Charlottesville’s neighborhoods.

The maps reveal substantial differences in income, parental education, work hours, absenteeism, and other variables across the city. Neighborhoods with lower income and education tend to have higher chronic absences and lower school readiness scores. These maps suggest that community-level disadvantage plays a significant role in shaping students’ readiness and capacity to succeed in school.

We now examine one of the most influential factors—household income.

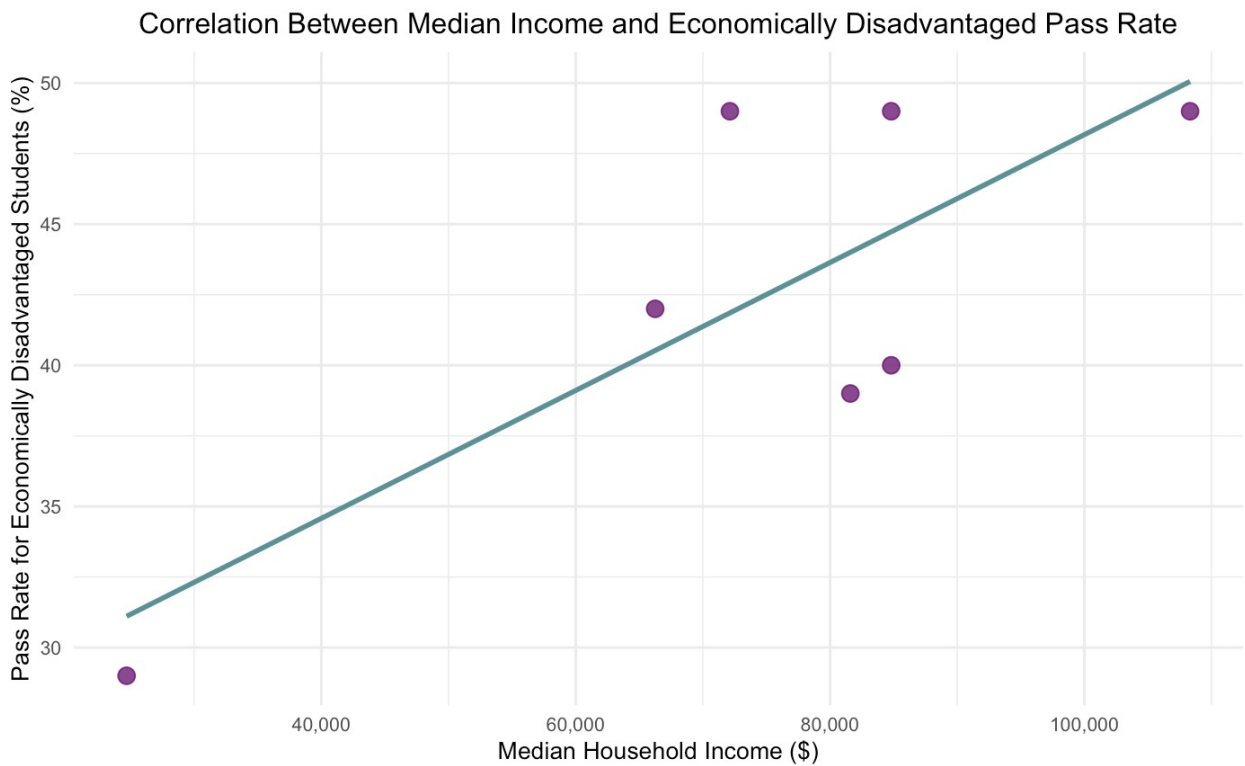


Figure 3: Correlation Between Income and Pass Rate (Economically Disadvantaged)

This scatterplot shows that as neighborhood income increases, SOL reading pass rates for disadvantaged students also tend to rise.

The upward trend is clear: as income increases, so do pass rates for disadvantaged students. This indicates that neighborhood wealth may be providing students with additional

resources—such as access to books, tutoring, or stable housing—that can help buffer against the challenges of poverty. However, not every low-income area performs poorly, which encourages us to keep digging.

Academic success depends on being in the classroom.

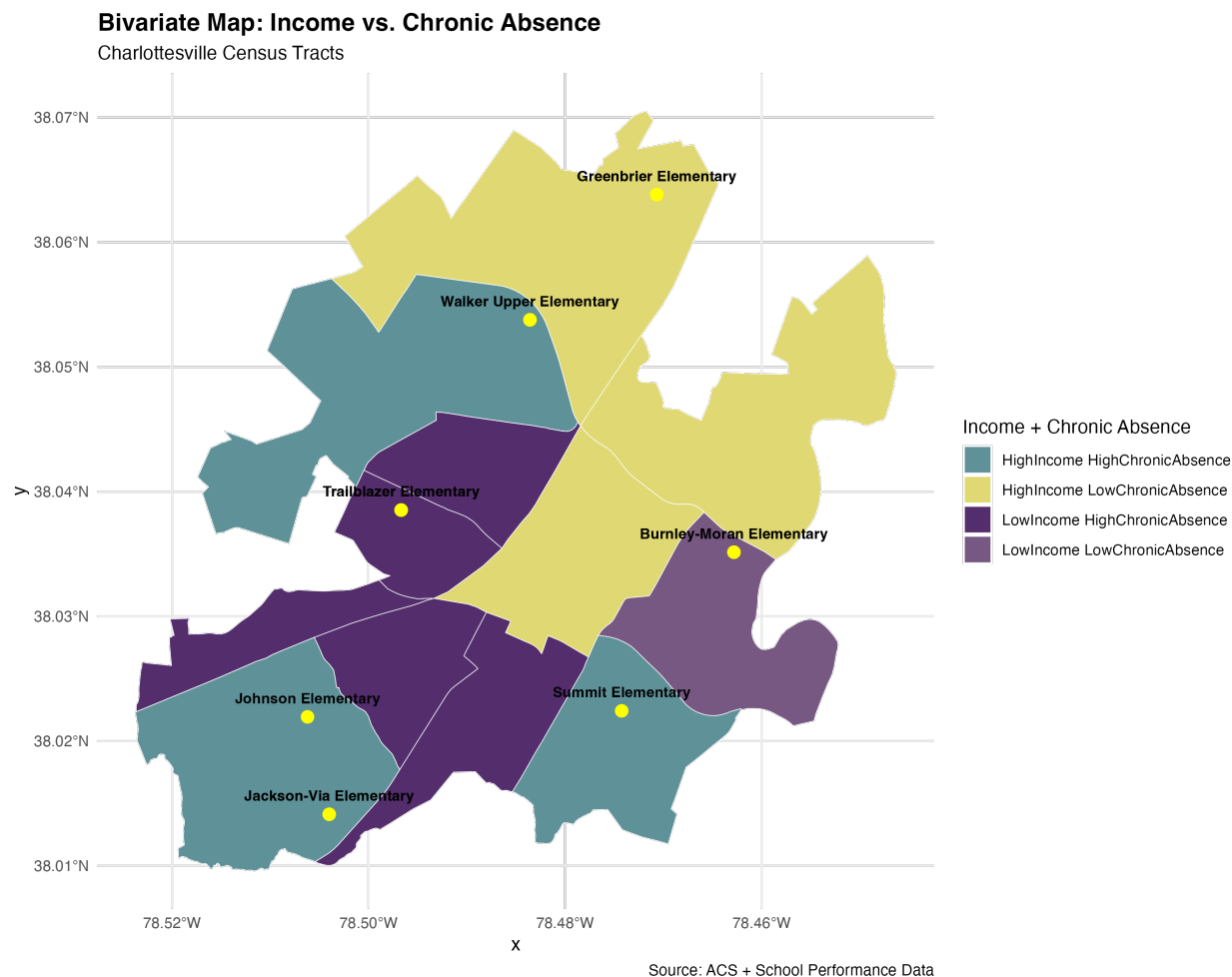


Figure 4: Bivariate Map — Income + Chronic Absenteeism

This map shows chronic absenteeism rates among disadvantaged students across neighborhoods, relative to economic indicators.

At nearly every school, disadvantaged students are more likely to be chronically absent. This matters because missing school is one of the most direct barriers to learning. In schools like

Trailblazer and Johnson, the gap in absenteeism is especially large—mirroring the academic gaps we saw earlier. Attendance may be a key piece of the equity puzzle.

We now turn to geography to examine how income and absenteeism overlap spatially.

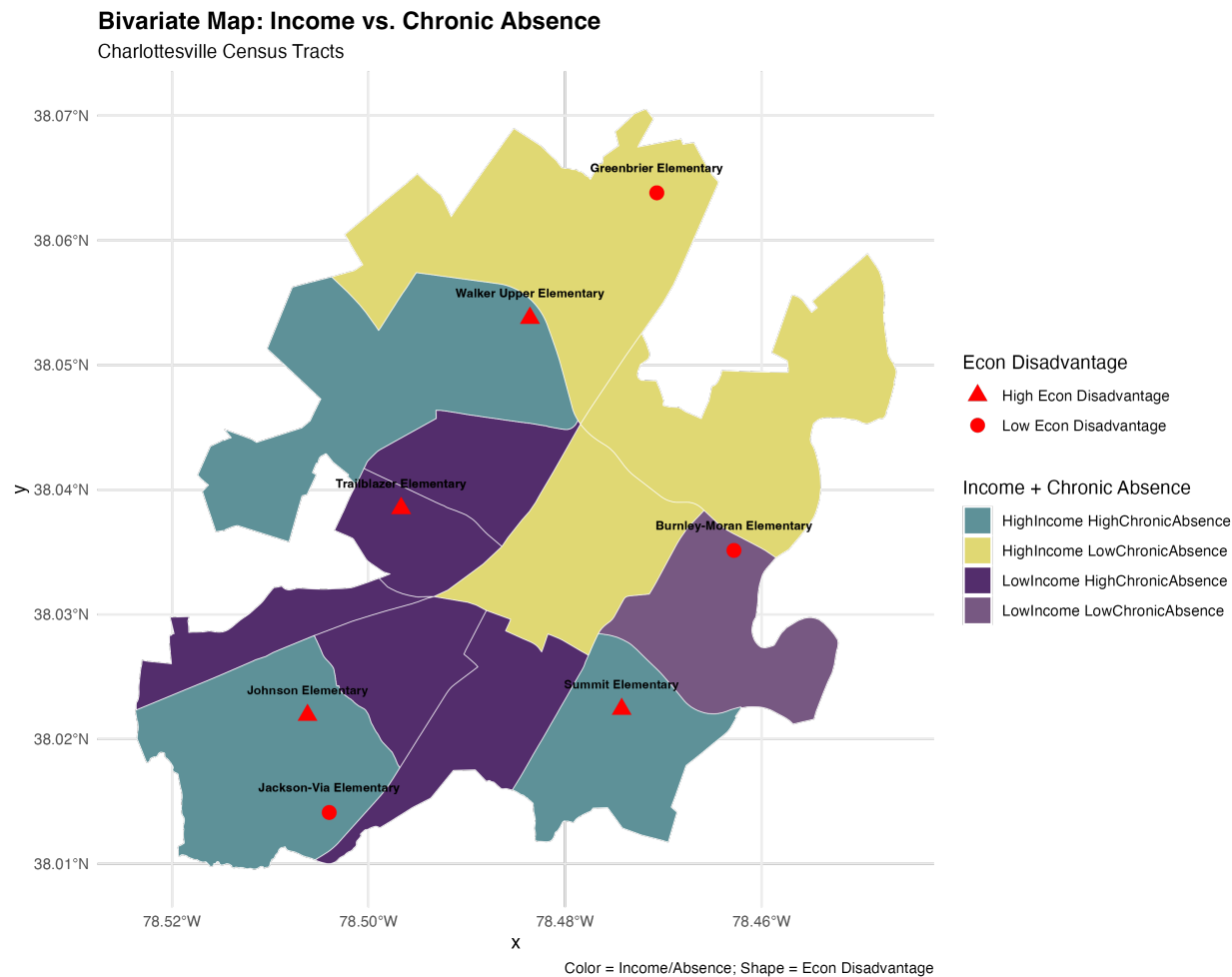


Figure 5: Enhancement: Add Econ Disadvantage to Map Points

This bivariate map uses color to show where each census tract falls in terms of both income and chronic absence.

Surprisingly, chronic absenteeism isn’t limited to low-income neighborhoods. Some high-income areas still have high absence rates, showing that economic advantage alone doesn’t

ensure students make it to school. This adds complexity to our story: improving attendance may require more than just addressing poverty—it may also involve understanding what’s happening inside families and communities.

We build on the previous map by highlighting schools and distinguishing them by the economic makeup of their student bodies.

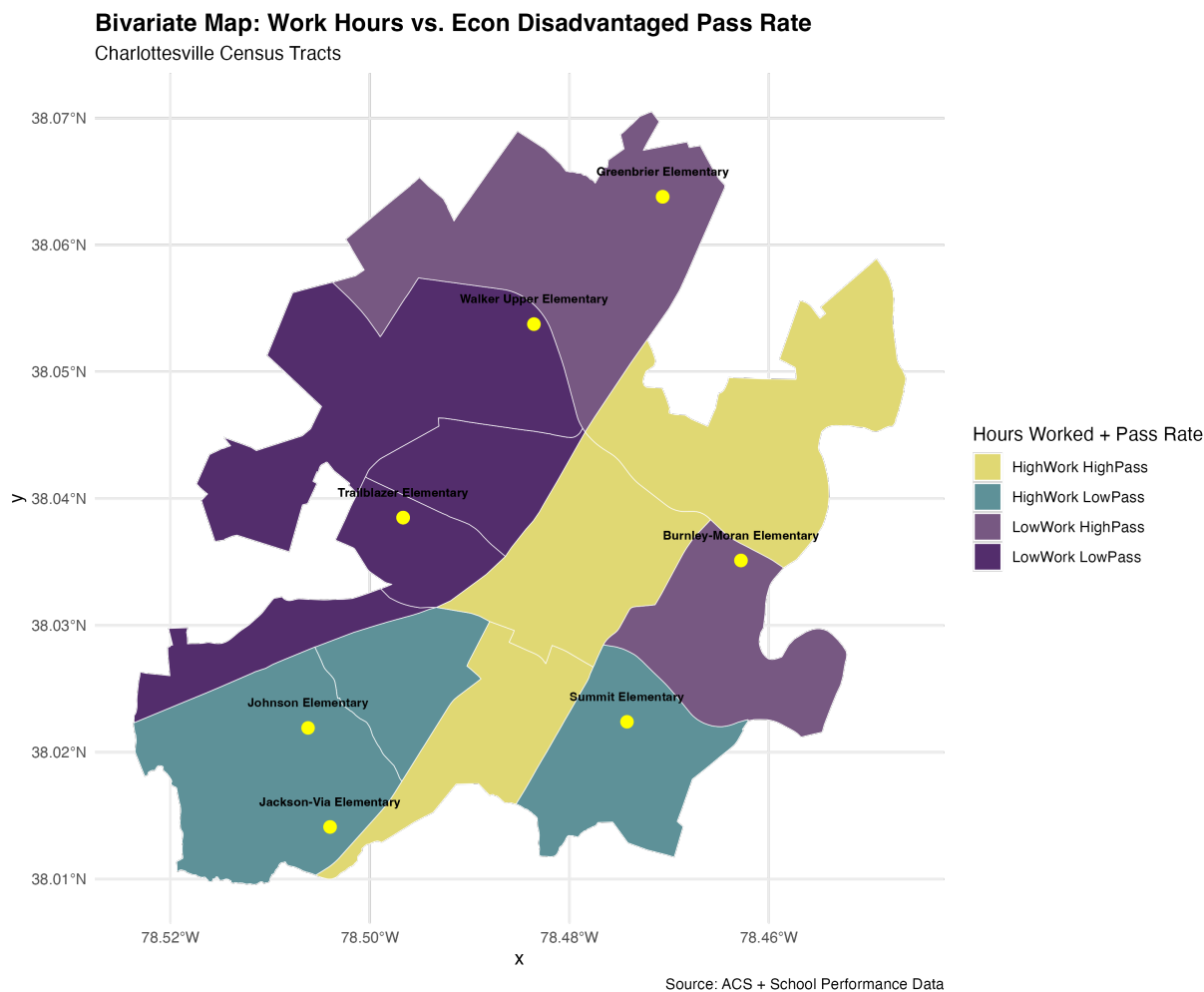


Figure 6: Bivariate Map — Work Hours vs. Pass Rate

Adult work hours are mapped against student reading pass rates to show areas of economic pressure and educational outcomes.

The shape of each school marker indicates whether it has a high or low proportion of economically disadvantaged students. Schools like Trailblazer and Jackson-Via are located in or near tracts with high absenteeism and economic hardship. This gives us a more grounded understanding of which schools are facing the greatest challenges—and where support might be needed most.

Beyond income, we also consider adult work hours—a proxy for household busyness and time available for supporting students.

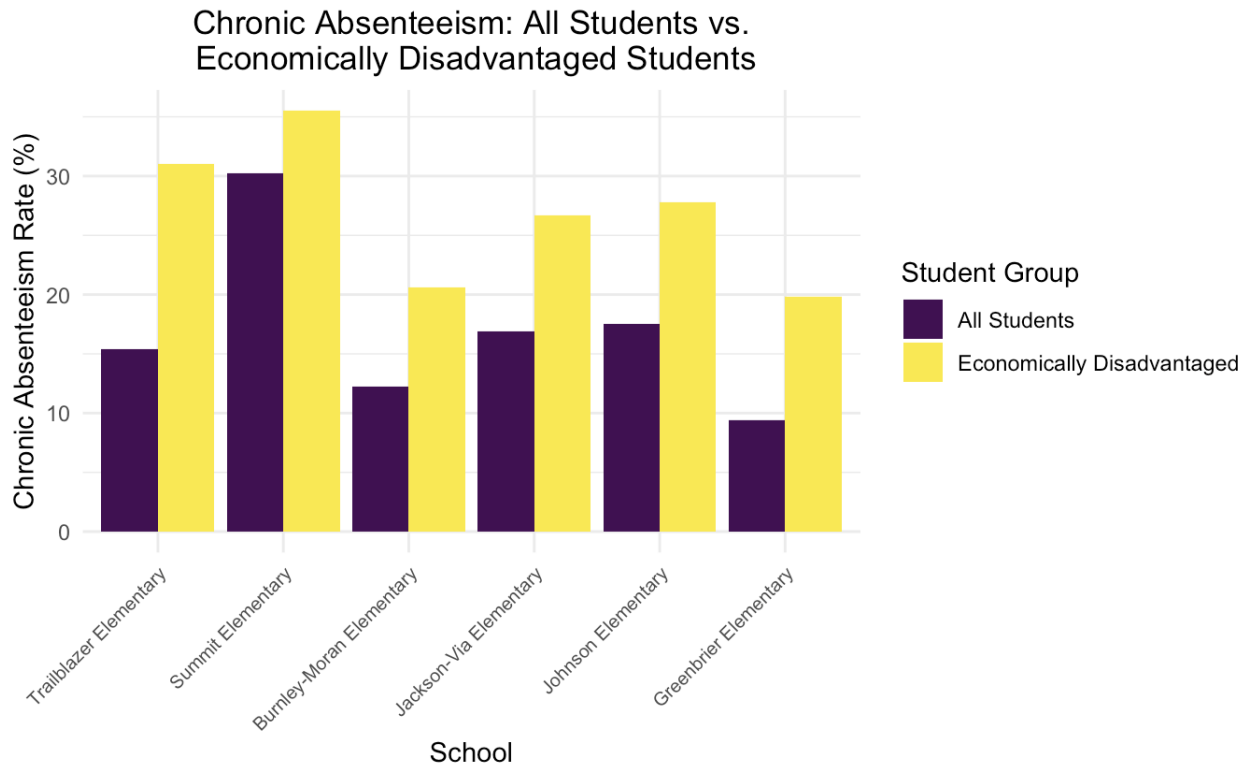


Figure 7: Chronic Absenteeism Rates by School and Student Group

This bivariate map combines average adult work hours with student pass rates.

While some high-work-hour areas perform well, others do not. Chronic absenteeism rates are higher for disadvantaged students across almost every school. This suggests that long work hours might limit family time for schoolwork or rest—or may correlate with other stressors. It reminds us that economic hardship isn’t just about money; time and energy also matter.

Before diving into achievement gaps by school, it’s important to look at when those gaps emerge.

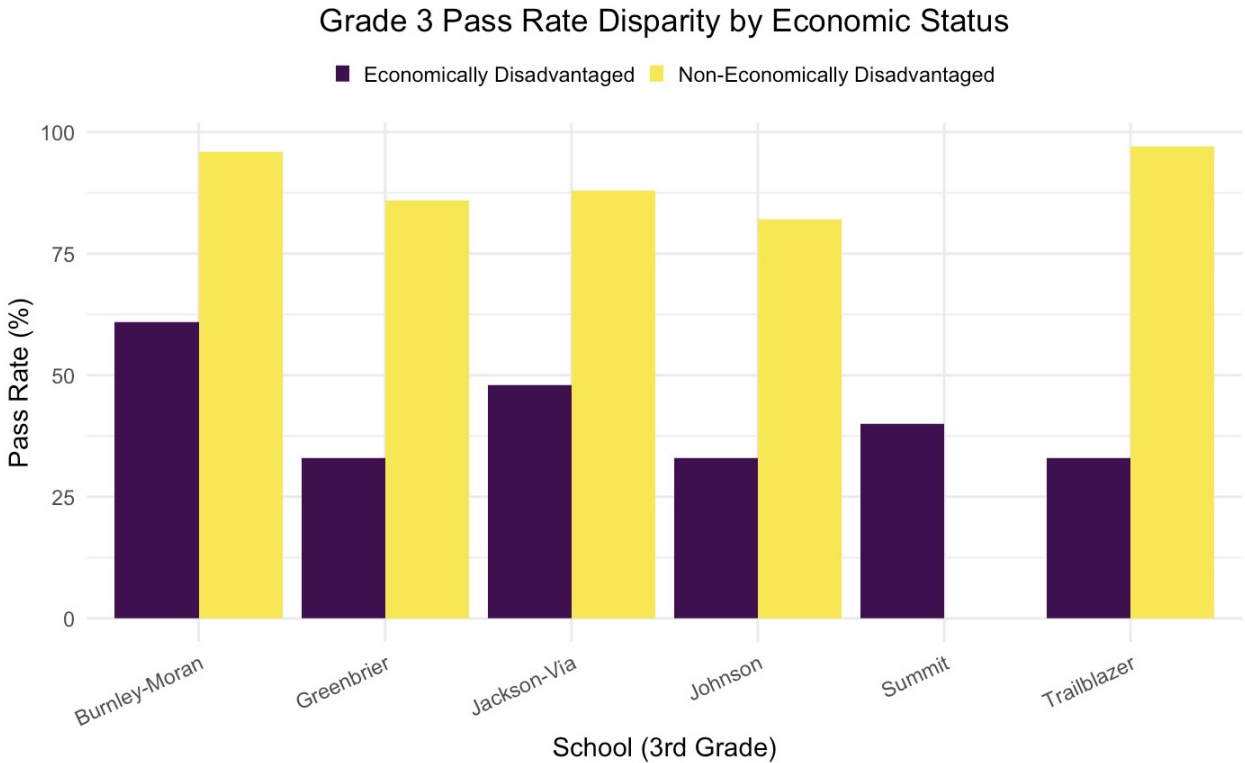


Figure 8: Grade 3 Pass Rates by Economic Group*

This figure presents third-grade SOL reading pass rates for economically disadvantaged and non-disadvantaged students across Charlottesville elementary schools.

The differences are immediately clear. In nearly every school, economically disadvantaged students underperform compared to their peers—sometimes by wide margins. This suggests that academic disparities emerge early in a child’s schooling, well before cumulative years of instruction have taken effect. The implication is clear: if we want to close the gap, we have to start early.

*Data for non-economically disadvantaged students at Summit Elementary are not available.

To see whether those early gaps shrink or persist, we turn to fourth-grade pass rates.

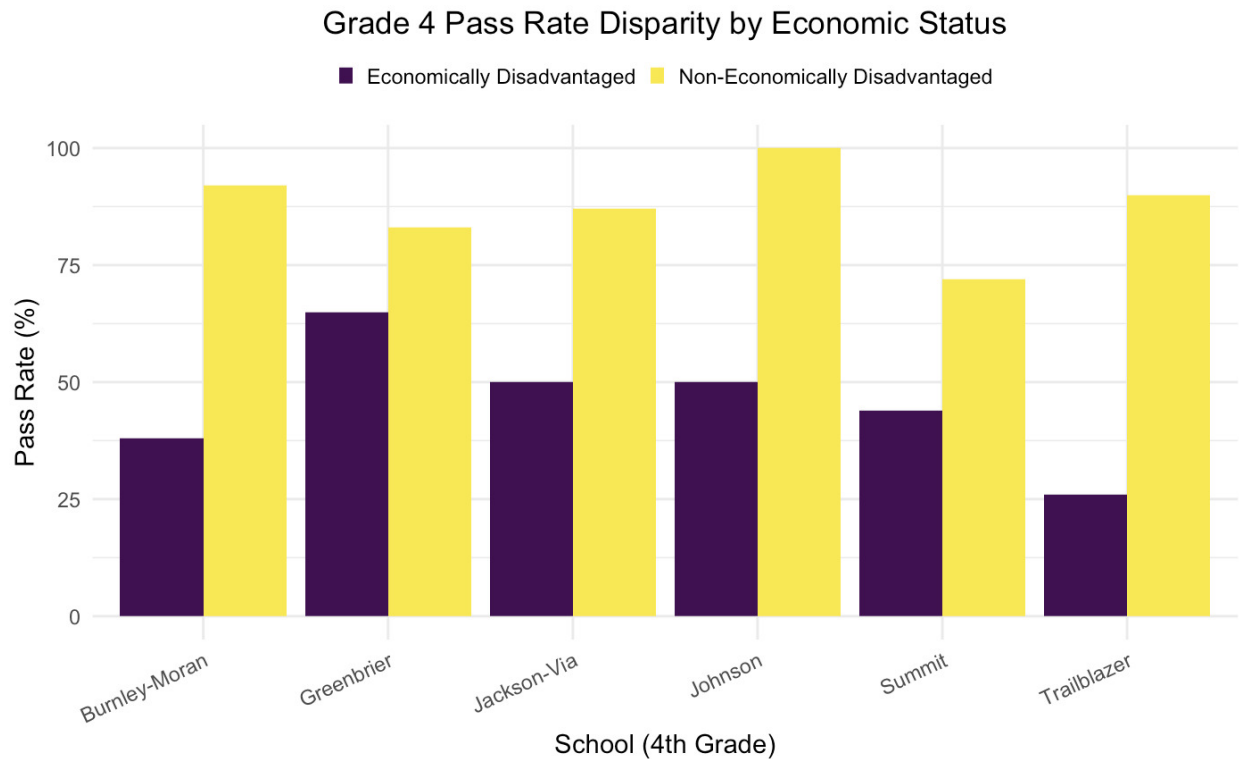


Figure 9: Grade 4 Pass Rates by Economic Group

This chart offers a snapshot of how performance differences evolve as students move up just one grade.

While a few schools show some narrowing, the achievement gaps largely persist into Grade 4. In many cases, economically disadvantaged students remain substantially behind. This continuity reinforces the idea that disparities observed later in schooling often have their roots in early grades—making early intervention not just important, but essential.

By comparing how wide this performance gap is, we can identify schools that may need additional support—and schools that could serve as models of equity.

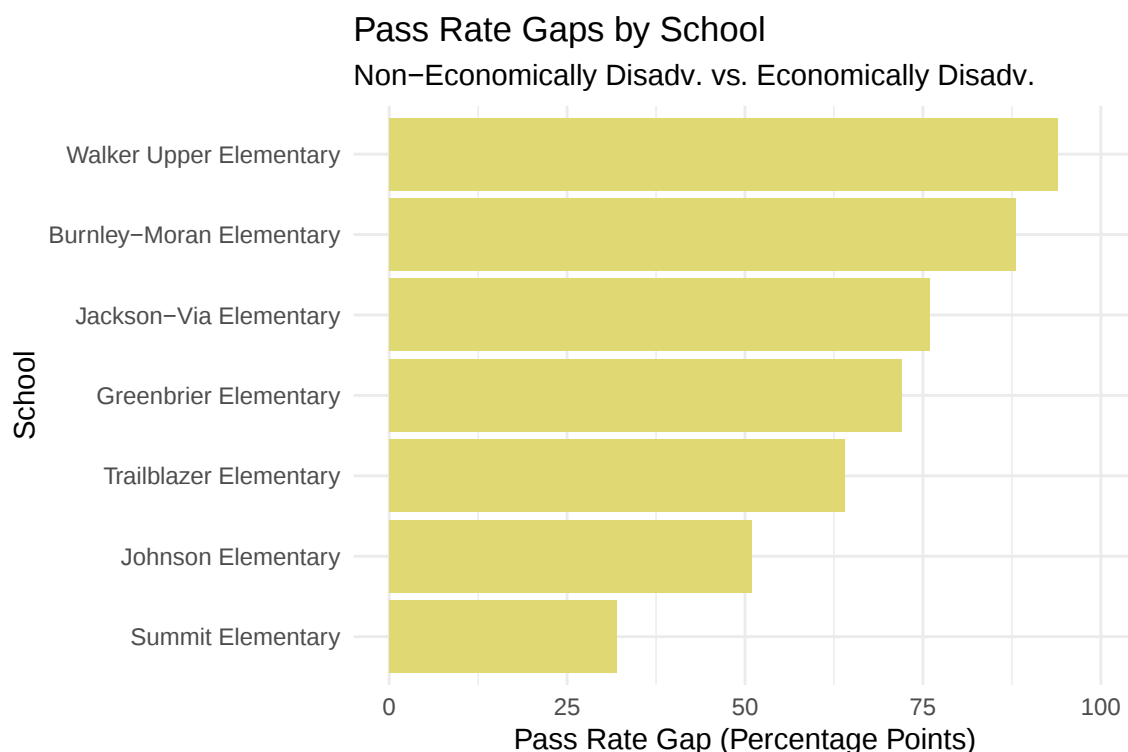


Figure 10: Pass Rate Gap by School

This bar chart shows the difference in reading pass rates between economically disadvantaged and non-disadvantaged students at each school. Larger gaps indicate greater disparities in performance.

We can see that Walker Upper Elementary and Burnley-Moran Elementary have the largest gaps in reading performance between economically disadvantaged and non-disadvantaged students, suggesting that students facing economic hardship at these schools may not be receiving the same level of academic support or resources. In contrast, Summit Elementary and Johnson Elementary show smaller gaps, which may indicate that these schools are either providing more effective support for their disadvantaged students—or that the surrounding communities present fewer barriers to academic success.

This sets us up to investigate what factors contribute to those gaps, and whether attendance might be one of them.

To understand one possible reason for these gaps, we want to investigate if when students aren't consistently in school, that could explain why they're struggling on reading assessments.

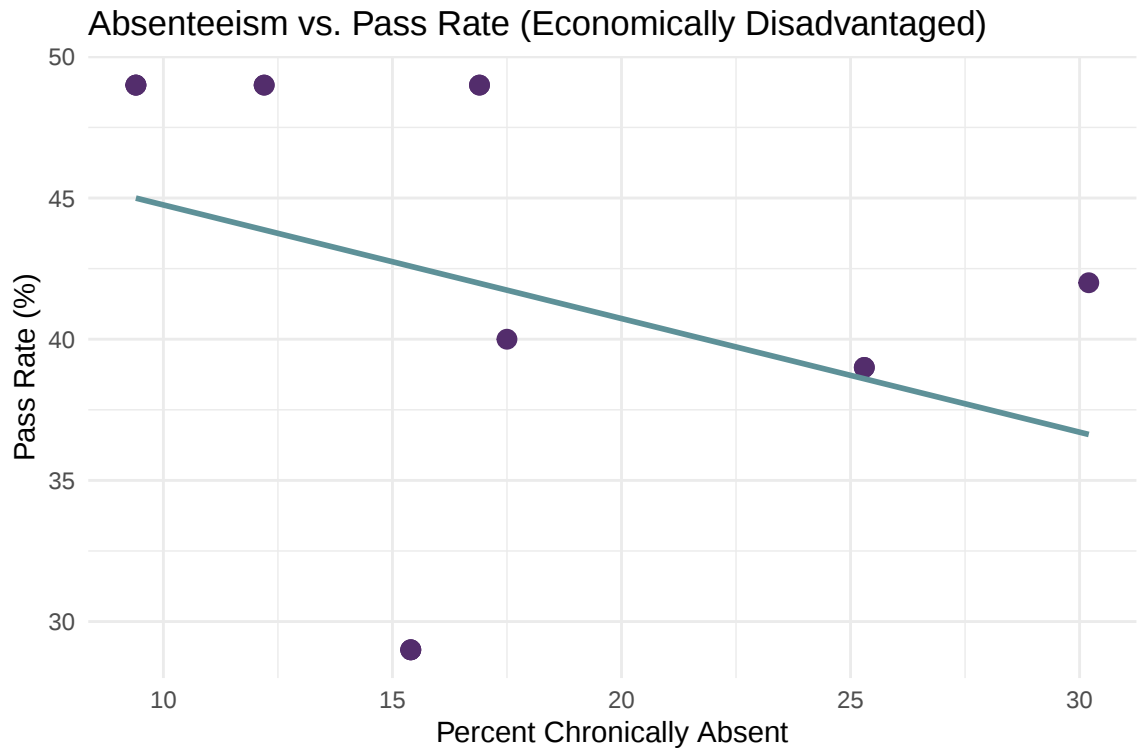


Figure 11: Absenteeism vs. Pass Rate (Economically Disadvantaged)

This scatterplot shows the relationship between Pass Rate and Percent Chronically Absent amongst Charlottesville City Schools.

The scatterplot shows a noticeable downward trend: as absenteeism increases, the pass rate for economically disadvantaged students drops. This confirms that missing school is likely a major contributor to underperformance. When combined with the previous chart, it's clear that schools with large performance gaps may also be dealing with higher rates of chronic absenteeism—highlighting it as a possible area for targeted intervention.

The final visualizations introduce a new variable: parent education. It helps us understand whether higher adult education in a neighborhood can buffer disadvantaged students against performance gaps—and it rounds out our view of the economic ecosystem affecting outcomes.

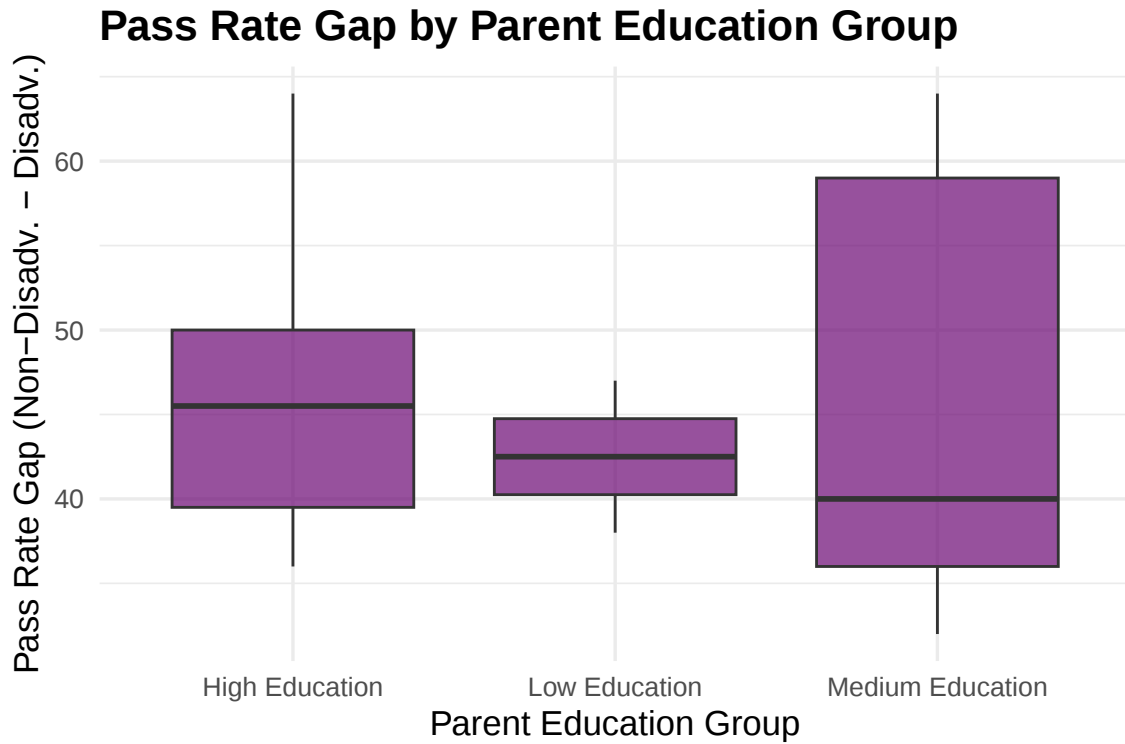


Figure 12: Pass Rate Gap by Parent Education Group

This boxplot shows that schools in neighborhoods with higher parental education levels tend to have smaller achievement gaps between economically disadvantaged and non-disadvantaged students.

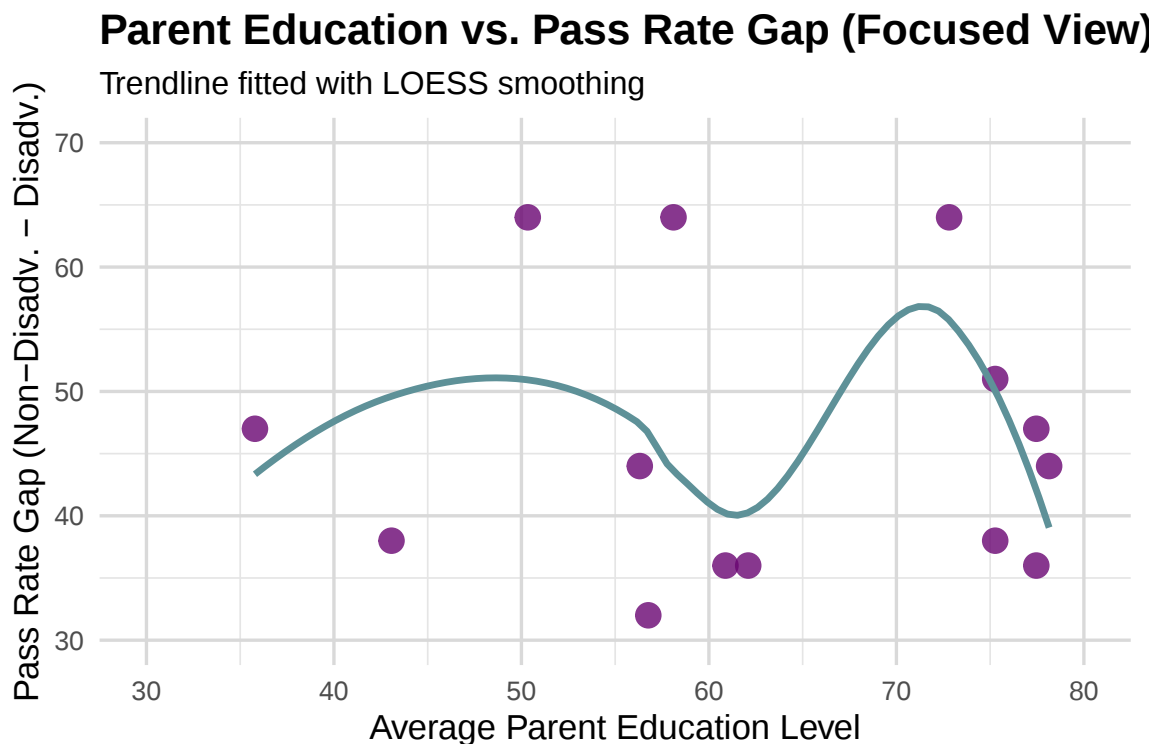


Figure 13: Parent Education vs. Pass Rate Gap (Smoothed View)

This scatterplot fits a LOESS smoothing line to show how average parental education levels relate to achievement gaps across schools while preserving variation among individual observations.

Both the grouped boxplot and the smoothed scatterplot suggest that higher levels of parental education are associated with smaller achievement gaps between economically disadvantaged and non-disadvantaged students. The boxplot shows that schools in neighborhoods with higher average education tend to have lower and less variable gaps, while the scatterplot confirms this pattern across the continuous range of parental education levels. Although the relationship is not perfectly strong—variability exists within all education groups—the overall trend points in a consistent direction. In places where parents have more education, the achievement gap is often smaller, suggesting that having more educated adults in the community may help all students do better. This may reflect the influence of home support, access to learning resources, or broader academic expectations.

4 Conclusions

This series of visualizations paints a detailed and compelling picture of how economic and social conditions shape the educational experiences of elementary students in Charlottesville. We began by highlighting the clear and consistent disparities in reading test pass rates between economically disadvantaged and non-disadvantaged students. From there, we dug deeper into the underlying patterns—geographic, economic, and social—that help explain these gaps.

One of the most consistent findings is the strong connection between neighborhood income and student success. Schools located in higher-income areas tend to see better outcomes for disadvantaged students, suggesting that community wealth provides added support—whether through stable housing, access to resources, or quieter, more structured home environments.

But income alone doesn't tell the whole story. Chronic absenteeism stood out as a major factor, one that cuts across both high and low-income neighborhoods. Some wealthier areas still face high absence rates, showing that economic advantage doesn't always ensure that students are consistently present in school. This points to deeper socioeconomic challenges—like health issues, unstable schedules, or lack of engagement—that may be affecting students regardless of income level.

We also examined other community characteristics, like the hours the adults in the family work, parent education levels, and household size. We found that longer work hours didn't always translate to better academic outcomes, and may even reflect households where parents have less time to support schoolwork. Meanwhile, areas with more educated parents tend to show smaller achievement gaps, suggesting that the presence of adult role models and a home culture that values education may help all students succeed.

By layering these insights through both statistical graphs and neighborhood-level maps, we built a more complete picture of where and why educational inequality exists. Some schools—like Burnley-Moran and Jackson-Via—stand out for having smaller gaps despite facing economic challenges and may offer important lessons about what works in creating a more level playing field.

In the end, closing Charlottesville's achievement gap will take more than just classroom solutions. It requires a community-wide effort: addressing attendance, strengthening family

support, and investing in the neighborhoods where students live. A data-driven approach like this helps spotlight where the needs are greatest and where change can begin.

5 Recommendations

1. Address Chronic Absenteeism through Proactive Monitoring

Assigning dedicated attendance monitors at each school can significantly strengthen efforts to improve attendance. These individuals would track daily attendance records, identify patterns - such as recurring absences from the same students - and intervene early by contacting families. This may involve follow-up calls, home visits, or surveys to better understand the causes of missed school days. The impact of this approach lies in its preventative nature: it enables schools to identify challenges such as unreliable transportation, health-related issues, or unstable home environments before they escalate. However, this strategy will require a commitment to have additional staffing and ongoing coordination with school administrators, which may present logistical and financial challenges.

2. Establish Transportation Systems in Underserved Neighborhoods

Establishing scheduled bus routes for neighborhoods with high absenteeism and limited access to public or private transportation could directly reduce barriers to consistent school attendance. Reliable transportation ensures that students have a safe, predictable way to get to school - particularly in areas where walking is unsafe or where public transit is insufficient. This approach can be especially impactful in increasing daily attendance and supporting families without access to a car. The primary challenge is cost because launching and maintaining these routes would require substantial initial investment and long-term operational funding, likely needing city or school district support.

3. Expand After-School Academic Support Programs

Structured after-school programs - such as those offered by the YMCA - should be extended to provide more focused academic assistance. These programs could include homework help, small-group tutoring, and individualized academic support. Additional staff or volunteers would be needed to ensure students receive meaningful attention. A cost-effective approach to this would be to recruit and train university

students, such as those from UVA and/or PVCC, to volunteer their time. These programs are particularly valuable for students who may not receive academic support at home due to parental work schedules. The effectiveness of this initiative will depend on available funding, access to volunteers, and the ability to maintain consistent program quality.

4. Support entire families, not just individual students

Building on City of Promise's current efforts, schools and community organizations can create family engagement spaces that offer literacy workshops, parent-student learning events, and homework support centers. These spaces can empower caregivers to take an active role in their child's education, even when time and resources are limited. When families feel connected and equipped to support learning at home, students are more likely to succeed in the classroom. However, the success of these initiatives depends on strong community trust, sustained outreach, and a commitment to meeting families where they are in terms of time, language, and comfort with school involvement.

5. Learn from Schools That Are Succeeding Locally

Schools such as Burnley-Moran and Jackson-Via, which have smaller achievement gaps, should be analyzed to identify effective practices. Interviews with staff, along with reviews of resource allocation, class sizes, teacher support structures, and school culture, may reveal what strategies are working under similar conditions. Sharing these findings across schools can help replicate success in other parts of the city. However, not every strategy may be directly transferable. Differences in student demographics, school leadership, or neighborhood dynamics mean that any insights must be strategically adapted to fit the context of each school.

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