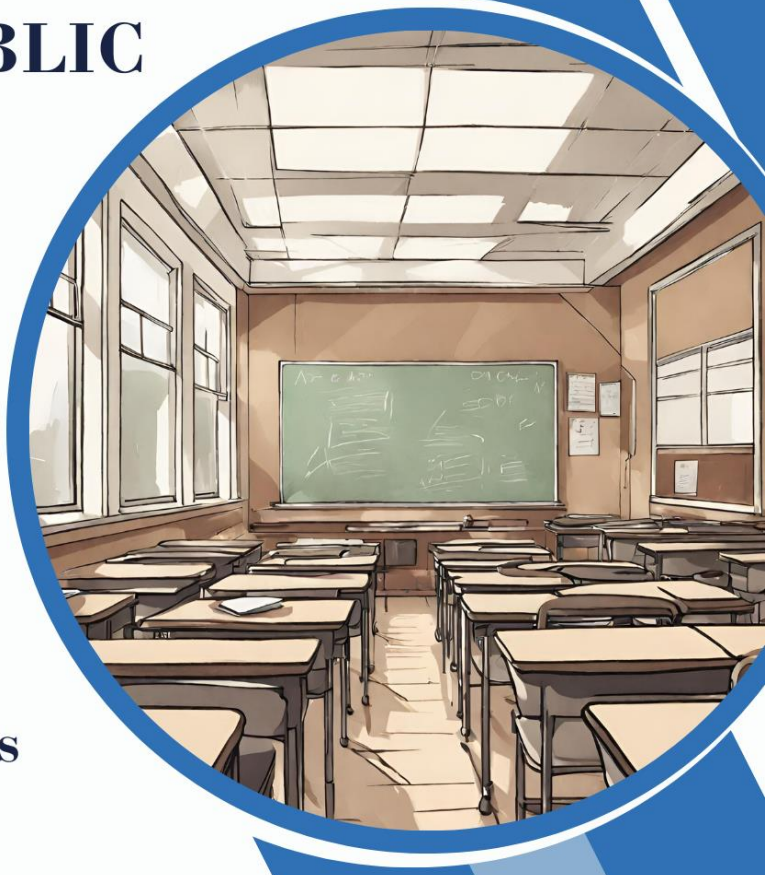
RESPONDING TO LEARNING LOSS IN RICHMOND PUBLIC SCHOOLS

2023-24 APPLIED POLICY PROJECT



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Prepared For:

Richmond Public Schools

UVA | FRANK BATTEN SCHOOL *of* LEADERSHIP *and* PUBLIC POLICY

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Disclaimer

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgements and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

Acknowledgements and dedication

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Honor Pledge

On my honor, I have neither given nor received unauthorized aid on this assignment.

Executive Summary

When students in Richmond Public Schools returned to school in 2022, they had lost the equivalent of more than one year of schooling (Harinstein, 2023). While learning loss was a national trend, students in RPS faced more severe learning loss than the national or state-wide average, due in part to the disparate impact of school closures on school divisions with high concentrations of non-White or economically disadvantaged students (Fahle et al., 2023). The economic consequences of learning loss, if persistent, could amount to over $40,000 in lost future earnings for every RPS student. The unequal impacts of the pandemic also threaten to widen longstanding inequalities in education, future wealth, and health outcomes. (Fahle et al., 2023).

The following memo analyzes several strategies to increase instruction and remediate learning loss, based off of a case study in RPS. I analyze four alternatives based on proposals made by the RPS Administration as students returned to school:

1) Continuing to Scale a 200-Day Calendar Year Pilot
2) Implementing a 200-Day Calendar for all Elementary Schools
3) Implementing a Year-Round Calendar for all Elementary Schools
4) Implementing Small-Group Instruction within a 180-Day Calendar.

These alternatives are all evaluated on the basis of their cost-effectiveness, equity, and political feasibility. Ultimately, I recommend to maintain and continue to scale the 200-day pilot calendar based on the pilot's relative cost-effectiveness and politically feasibility.

I conclude by recommending several means of increasing political sustainability and the likelihood of the calendar being renewed, including seeking dedicated funding streams for the pilot, increasing partnership and coordination with the City, and increasing community engagement around decision-making processes and the benefits of the pilot.

Introduction

"Learning loss" – historically used to refer to declines in student learning over summer break – has become a ubiquitous term since the COVID-19 pandemic halted in-person instruction across the country. Google searches for the term peaked in 2022, doubling the searches of the early period of No Child Left Behind (Google Trends, n.d.). As students returned to in-person instruction, schools grappled with how to address unprecedented levels of declines in learning. While learning loss was a national trend, it – like many aspects of the pandemic – was not felt equally across the nation, disproportionately harming already disadvantaged school districts and exacerbating disparities within the K-12 education system (Fahle et al., 2023).

In 2023, over 1,000 Richmond Public School (RPS) Elementary students returned to school in July – 20 days early. This pilot program (RPS 200) marked a compromise following over a year of internal debate over how – and if – to increase instruction for students. Administrators faced the tension of how to best support students and balance student empowerment with addressing the inevitable gaps that had emerged post-pandemic. As both the U.S. and Richmond face the potentially lasting effects of the COVID-19 pandemic on learning, this pilot has emerged as a potential strategy to mitigate loss among K-12 students.

While RPS 200 was a creative and timely response to a pressing issue, it is important to understand the relative tradeoffs of different interventions that have gained traction as policy options. This analysis attempts to do so by evaluating several alternatives considered by RPS before implementing RPS 200.

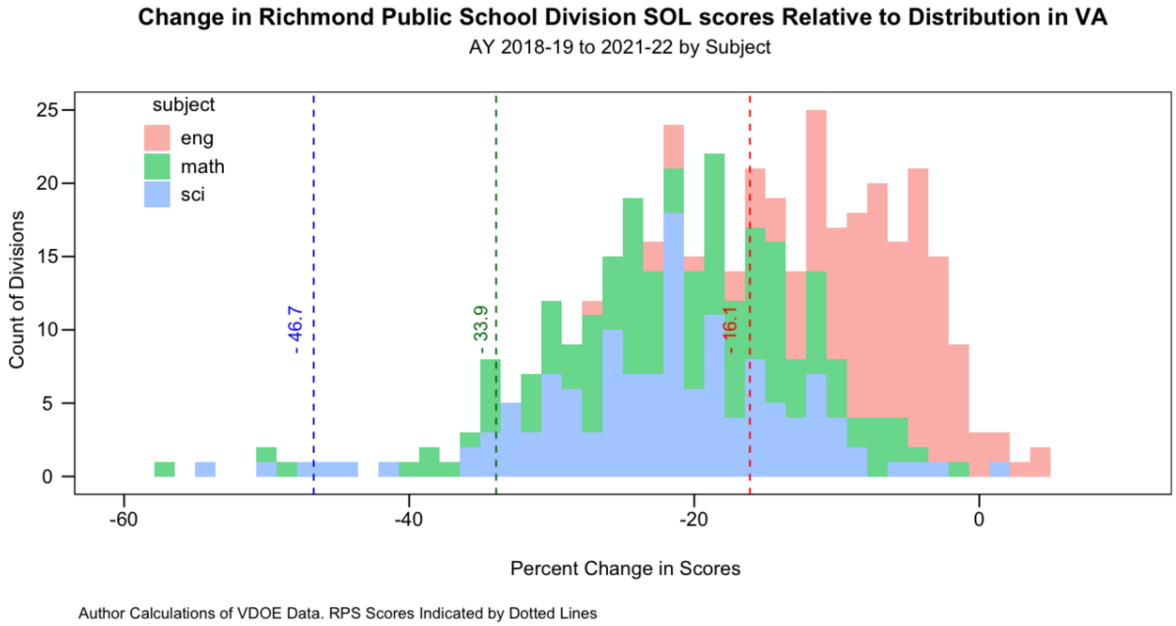
The goal of centering learning loss – rather than RPS 200 itself – is to contextualize the pilot as one strategy of many that may improve student learning. In turn, this will allow a more holistic evaluation of the pilot's effects and a discussion of viable alternatives or changes as the program moves forward.

Problem Statement

From 2019-2022, academic outcomes for students in Richmond Public Schools drastically declined. Nationally, the average third- to eighth-grader lost "the equivalent of half a year of learning in math and a quarter of a year in reading" – in Richmond, students lost the equivalent of more than one full year of instruction in both (Harvard Graduate School of Education, 2022; Harinstein, 2023). This level of learning loss, if persistent, would correspond to a mean loss in lifetime earnings of $42,744 per K-12 RPS student (Harinstein, 2023).

Learning loss in RPS was also relatively large within Virginia. Nearly all school districts in Virginia saw a decline in pass rates on the Math, Science, and Reading Standards of Learning (SOLs) – the state-wide standardized tests administered to all K-5th graders. The degree of loss, however, ranged from around 0% to declines of more than 50%. The changes in RPS Math and Science SOL pass rates were far greater than that of the mean loss in Virginia: from the 2018-19 Academic Year to the 2021-22 Academic Year, RPS pass rates in Math and Science declined by more than 30% and 40%, respectively (Figure 1).

FIGURE 1



Author Calculations of VDOE Data. RPS Scores Indicated by Dotted Lines

Client Overview

Richmond City Public Schools is a public school system that serves about 25,000 students in the Richmond metropolitan area. RPS serves these 25,000 students through 25 elementary schools, seven middle schools, five high schools, a charter school, three specialty schools and five preschool centers (Richmond Public Schools, 2024b). RPS is guided by its 2018-23 Strategic Plan[1], Dream4RPS, which outlines 10 key goals (RPS, n.d.), including:

- **Achieve 100% full accreditation**;
- **Increase the graduation rate** and the percentage of graduations attending a 4-year or 2-year college, entering the workforce in a living wage job, or participating in a national service;
- **Increase the proficiency and advanced rates** in reading, writing, math, science, and social studies – overall and for each subgroup – which is tracked both via early literacy (PALS) outcomes and SOL outcomes;
- **Equity – Decrease the gaps in proficiency and advanced rates** – by race, economic status, ELL status, and IEP status.

Learning loss is directly related to student subject-matter proficiency and literacy (goal 3), but it is also related to equity, graduation, and accreditation:

- The pandemic disproportionately affected schools with higher concentrations of students of color and low-income students (Fahle et al., 2023), which implies that a targeted reduction in learning loss will in turn reduce the achievement gap (goal 5).

[1] RPS is currently in the process of seeking comment on and releasing an updated strategic plan (RPS, 2024a).

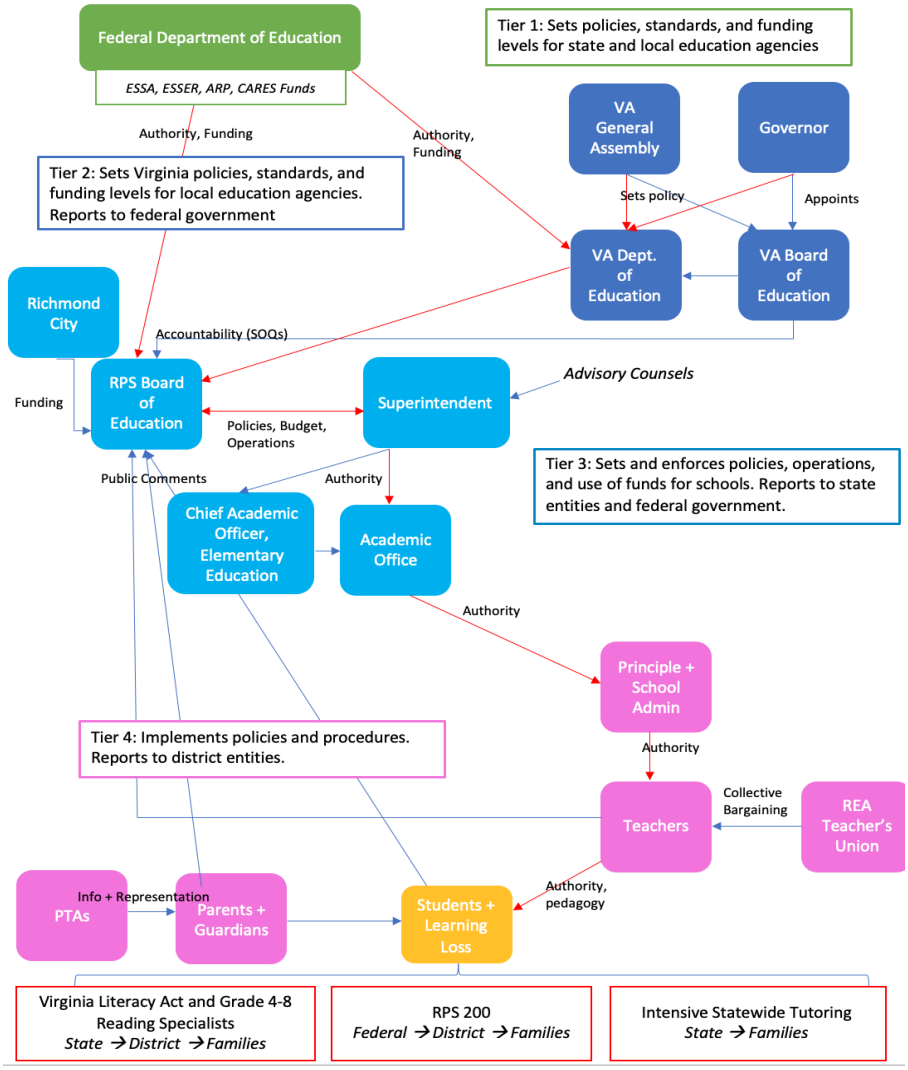
- Student test scores predict their likelihood of graduation from high school (Kane et al., 2022).
- Student proficiency rates are directly related to accreditation – academic achievement is used to calculate "School Quality Indicators" that inform accreditation in Virginia (Virginia Department of Education, n.d.). 24 of 40 schools (over half) in RPS are currently accredited with conditions, meaning they have one or more quality indicators that are below standard (VDOE, 2023).

Learning loss is a salient issue for RPS – it is directly related to their goals related to proficiency, equity, and student outcomes. There was, and continues to be, urgency to remedying learning loss post-pandemic, as educational effects are cumulative – a lack of action today could make it more difficult to act in the future (Pinto & Jones, 2020). RPS 200 is a direct result of RPS's will to act quickly and effectively to remedy learning loss.

Role in Addressing Learning Loss

RPS is not alone in their concern nor their action towards learning loss. During and after the pandemic, federal agencies distributed widespread funding to states and local educational agencies to implement educational interventions and support students (MacGillis, 2023). The Virginia General Assembly and Governor Younkin also acted quickly to pass the Virginia Literacy Act, increasing resources for literacy coaches and high dosage tutoring in Virginia public schools (Virginia Literacy Act, 2022). RPS fits into a broader policy ecosystem of funding and programming in which it is both an implementor of policy and a creator of policy (Figure 2). In this case, RPS 200 was made financially possible by federal funds from the American Rescue Plan (ARP) and Coronavirus Aid, Relief, and Economic Security (CARES) Act. However, it was the RPS Administration that created proposals for extended- and year-round calendar years, mobilized stakeholders, and implemented a 200-day calendar pilot.

FIGURE 2: POLICY ECOSYSTEM



Background

Learning Loss

Learning loss has been at the center of a longstanding debate in American education, even prior to the to widespread closures of K-12 schools in 2019 and 2020. Researchers have long recognized the detrimental effects of summer breaks on learning, particularly for disadvantaged students – by ninth grade, much of the achievement gap between high and low socioeconomic status students can be explained by differential summer learning experiences throughout their elementary education (Alexander et al., 2007).

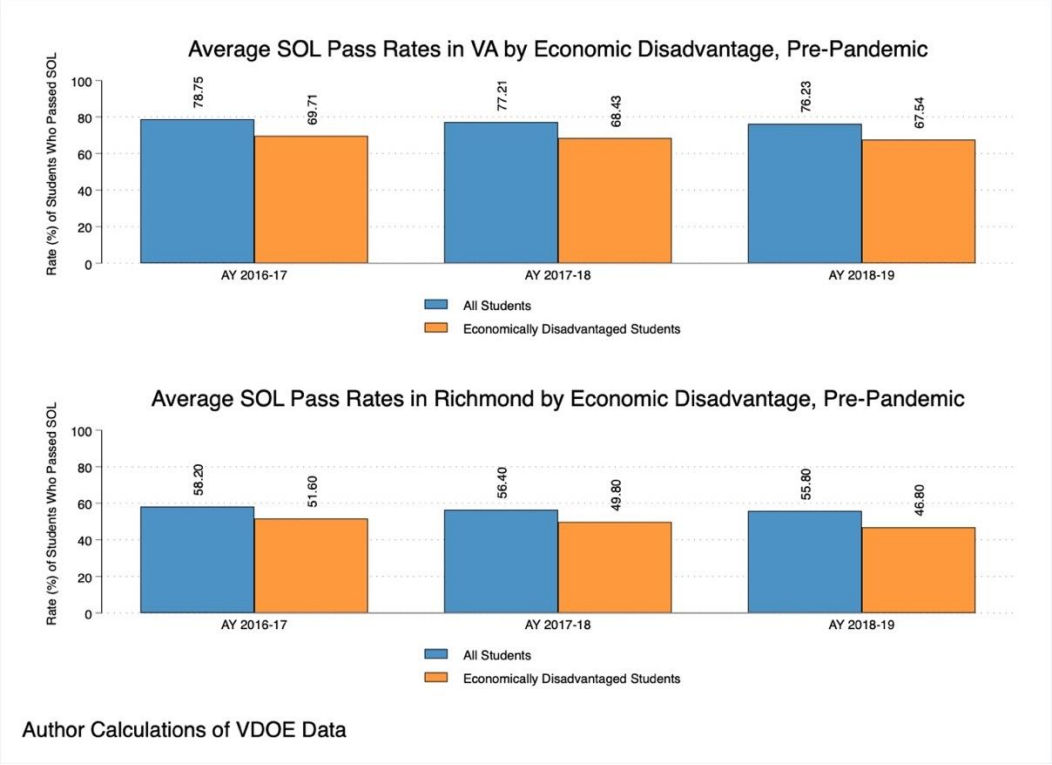
The learning loss resulting from over a year spent out of in-person school has proved no different, and has mapped onto existing racial and socioeconomic inequities within K-12 education system – school districts with a higher proportion of minority and low-income students experienced greater learning loss (Fahle et al., 2023).

Importantly, the differential level of learning loss was primarily *across* district, not *within* district – for example, Black and White students within a given district saw declines in test scores of

roughly the same amount (Fahle et al., 2023). This suggests that the differential impact for districts with a higher proportion of minority or low-income students is likely driven by district or county-level characteristics. For example, students of color are more likely to be concentrated in schools with fewer resources (Spatig-Amerikaner, 2012), teachers with lower compensation and lower experience levels (Office for Civil Rights, 2014), and college-ready courses (Spatig-Amerikaner, 2012). Predominately Black, Latinx, Asian American or Pacific Islander communities, as well as other marginalized communities, were also exposed to differential impacts of the pandemic and morality due to COVID-19 (Mheidly et al., 2022), which was correlated with higher declines in test scores (Fahle et al., 2023).

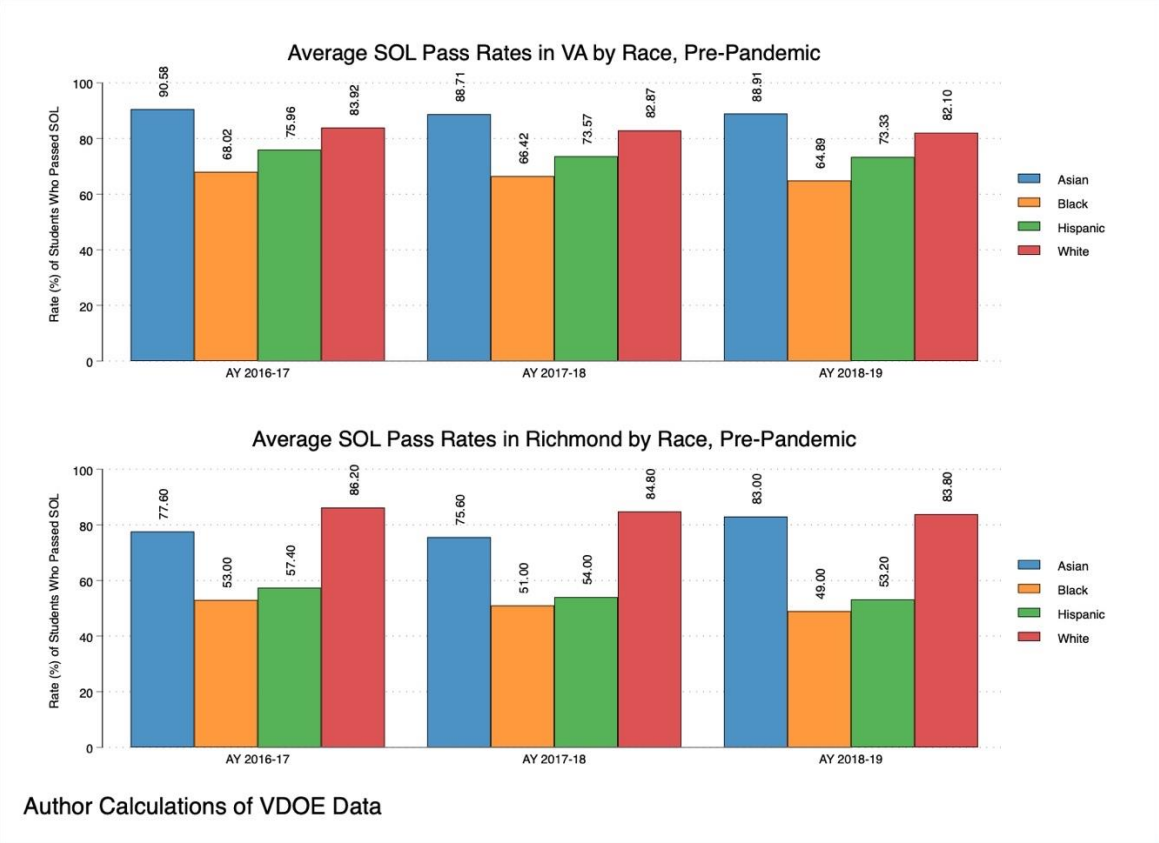
Pre-existing racial and socioeconomic disparities within Virginia may, in part, explain the high levels of learning loss experienced by Richmond: in both Virginia and Richmond, Black, Hispanic, and economically disadvantaged students all scored systematically lower than their peers in the years preceding the pandemic. (Figures 2 and 3).

FIGURE 3



Author Calculations of VDOE Data

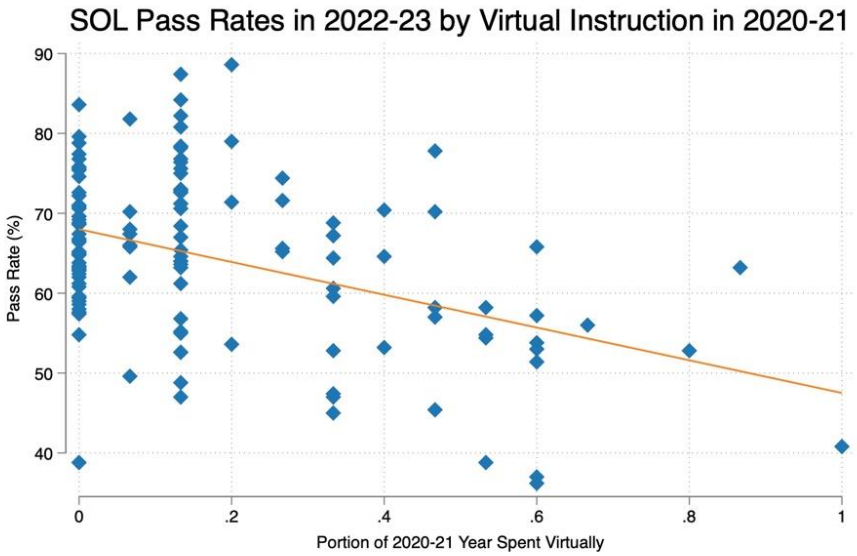
FIGURE 4



Students of color are also generally overrepresented in RPS – while there are roughly equal proportions of Black and white residents in Richmond, 60% of the RPS student population is Black and 10% is white (Bryson, 2023). Both of the two pilot schools who participated in the first year of RPS 200 – Cardinal and Fairfield Court – disproportionately serve students of color, English Language Learner (ELL) students, or students experiencing poverty (MacGillis, 2023) – 97% of students at Fairfield Court and 54% of students at Cardinal are economically disadvantaged (Bryson, 2023).

In addition to the racial and socioeconomic make-up of student bodies, the amount of time students spent out of physical instruction is directly related to learning loss: test score reductions were larger in districts which were remote or hybrid for a greater portion of the 2020-21 school year (Fahle et al., 2023). This is not a value judgement of virtual or in-person instruction – school administrations faced real tradeoffs between student safety, community well-being, and educational outcomes during the pandemic. Nor is this necessarily a causal relationship, and it may not be a surprise that increased time out-of-school mechanically increases learning loss. Nonetheless, it was a key predictor of learning loss as students returned to school in the 2021-2022 school year, and may also explain part of the relatively large decline in testing in RPS (Figure 4). While U.S. school districts offered in-person instruction for about 46% of the 2021-22 school year on average (Fahle et al., 2023), RPS was completely virtual for the 2021-22 school year.

FIGURE 4



Author calculations of VDOE Data

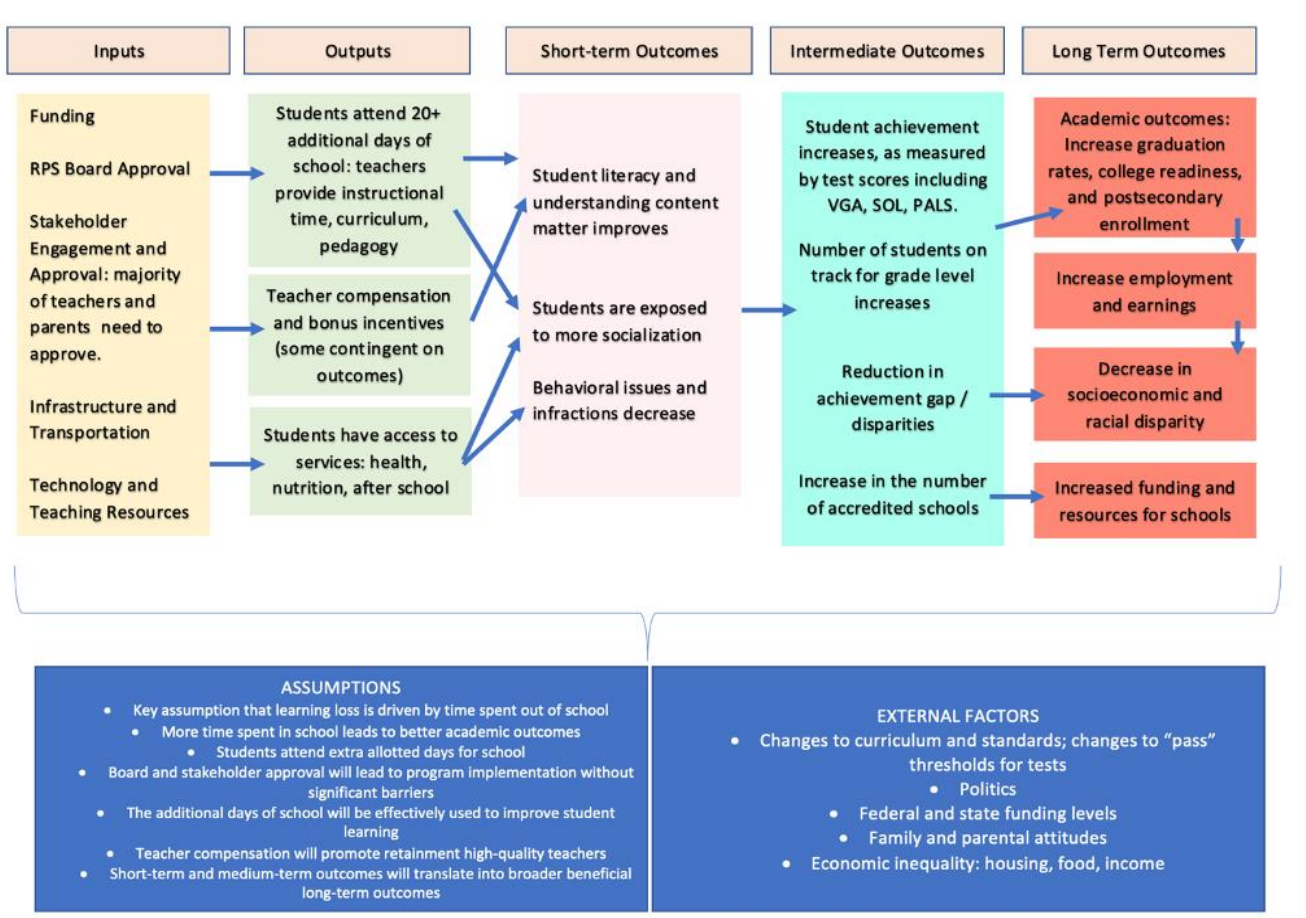
RPS 200: A 200-Day Calendar Pilot

In 2021, facing the persistently low test scores post-pandemic, RPS Superintendent Jason Kamras proposed a year-round calendar for the 2022-23 school year. The calendar would maintain 180 school days for most students – redistributing summer break into four two-week breaks throughout the school year – but select 5,000 students who could receive additional days of instruction. The proposal quickly became divisive, garnering hundreds of public comments, and splitting the School Board. (MacGillis, 2023).

In August of 2022, Kamras proposed RPS 200 as a compromise. The proposal allocated 20 additional days of school at the start of the year, with additional compensation for teachers who partook in the pilot. He invited Principals to apply, requiring both a majority of teachers and a majority of parents to vote in favor of implementation. Ultimately, two schools - Cardinal and Fairfield Court - successfully applied with majority approval from both teachers and parents, and the Board approved their calendar for the year MacGillis, 2023). Leftover federal pandemic funds from the American Rescue Plan (ARP) and Coronavirus Aid, Relief, and Economic Security (CARES) Acts covered the cost, estimated to be more than 1 million dollars per school (MacGillis, 2023).

The causal logic driving RPS is that additional days of instruction will directly improve student subject-matter proficiency and literacy, which will translate into improved academic achievement (as measured by test scores). In the long run, these effects are presumed to improve long-term student outcomes (Figure 5).

FIGURE 5



Consequences of Learning Loss

Amidst discussions of how to address learning loss, there has also been push back on *if* we should address learning loss. These arguments underscore the importance of education in meeting students where they are and highlight the limitations of test scores (Berger, 2021). While it is true that test scores have limitations as a proxy for learning, and they are not the only outcome a district should value, it is also true that they are highly predictive of future outcomes.

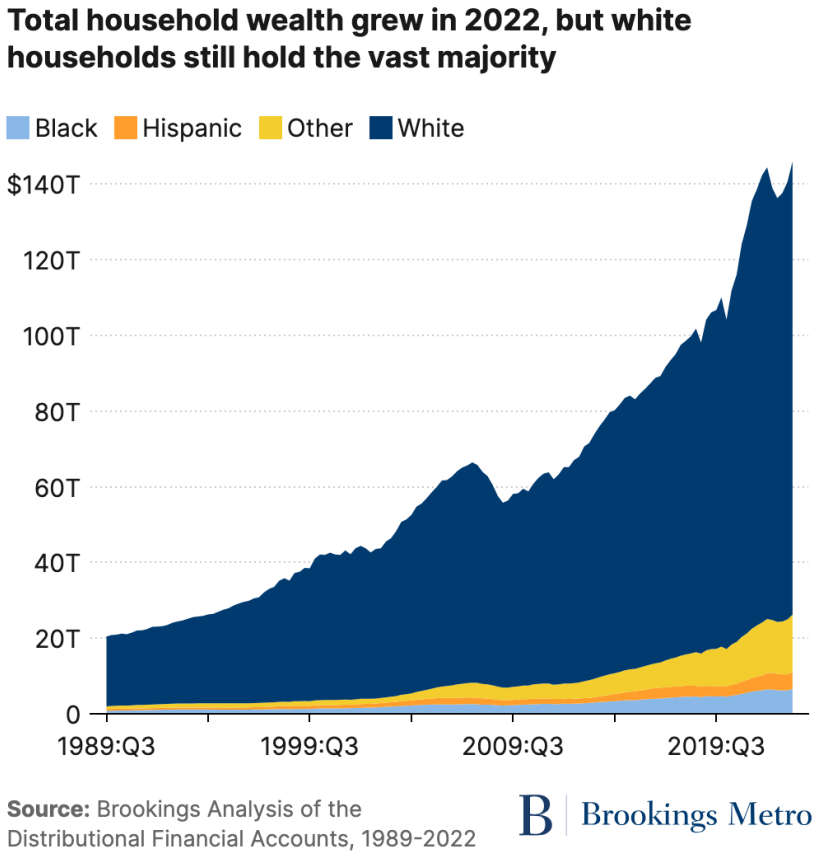
Firstly, test scores are highly correlated to future earnings: just one standard deviation in eighth grade math scores correlate to an 8-percent increase in income – if the national trends in learning loss are persistent post-pandemic (or not remediated), the average K-12 student would see a 1.6 percent decline in the present value of their lifetime earnings (Kane et al., 2022). This does not only threaten the economic well-being of students themselves, but had aggregate economic effects: the estimated impact on the U.S. economy ranges from $128 to $188 billion for every year that impacted student cohorts enter the workforce (Dorn et al., 2021).

In addition to economic outcomes, learning loss also increases the likelihood of students dropping out of high school before graduation and decreases the likelihood of both Associate degree and Bachelor degree attainment (Blagg, 2021). This has important implications for other facets of student well-being in adulthood: lower education attainment is not only correlated with

a loss in earnings, but also "higher crime rates, poorer health and morality outcomes, and reduced participation in political and social institutions" (Pinto & Jones, 2020).

The well-documented impact of educational outcomes on economic and health outcomes in adulthood and the disparate effect of the pandemic on students of color and low-income students also produces equity concerns. The racial wealth gap – or the gap in earnings between White and non-White households – has remained persistent: Black households held $15 in wealth for every $100 held by White households in 2022 (Figure 6, Perry et al., 2024). If the effects of learning loss are not reduced, the reduction in lifetime earnings is estimate to be 50 to 70 percent higher for Black and Hispanic students relative to White students (Dorn et al., 2021), adding to structural disparities in wealth and economic well-being by racial and socioeconomic status.

FIGURE 6



(Perry et al., 2024)

There are important discussions to be had about whether testing and accountability is the right way to measure and approach student performance, particularly after a traumatic pandemic. It is clear, however, that a lack of action from schools, districts, and states could harm student outcomes – particularly groups of students who already have lower outcomes resulting from longstanding structural inequities.

Existing Evidence and Literature

Does Increased Instructional Time Work? A Review of the Evidence

The United States' short school years first drew national attention in the 1980s when "A Nation at Risk" highlighted the relatively short American school year compared to its international counterparts (Patall et al., 2010). Over the following decades, many schools have launched initiatives to increase learning time, either by extending instruction, the school year, or the school day (Patall et al., 2010). Conversations about how less instructional time harms students, and which students it harms, have come to the forefront of educational debates again as the pandemic has threatened persistently high costs in terms of academic achievement and long-term economic outcomes (Fahle et al., 2022).

Increasing the amount of instruction a student is exposed to can take place in many forms. A district or school may extend the school day, extend the school year, or increase targeted instruction (via tutoring, small group instruction, summer programming, for example). There is well-established evidence that additional exposure to instruction, within a given school year, increases academic outcomes. Much of this research uses exogenous variation in exposure to school years, based on structural or random assignment to more schooling, to establish this relationship.

The Marginal Effect of Schooling: Changes to Instruction Before Exam Time

Fitzpatrick et al. (2010), use natural variation in the amount of schooling elementary students are exposed to before they take the Early Childhood Longitudinal Study (ECLS-K) exams to estimate the marginal effect of instruction on academic achievement. The authors find that within one school year, children's math and reading scores increase by about 1.5 standard deviations – approximately ⅔ of this gain (1 standard deviation) can be directly attributed to children spending time in school, as opposed to time out of school where other developmental learning may take place. Similarly, Hansen (2011) uses exogenous weather-related cancellations in Colorado and Maryland (which are not made up for prior to test administration) and changes in Minnesota mandated test-date administration to estimate the effect of additional instructional time on test outcomes from each state's Department of Education. Hansen estimates that the marginal effect of an additional day of schooling improves test scores from 0.013 to 0.039 standard deviations (Hansen, 2011).

Extended Calendar Years

While the prior studies examine the effect of additional ad hoc days of instruction within a given school year, extended calendar years explicitly increase the number of days a student spends in school. While the research indicates a stronger relationship between extended-year models and achievement than that of year-round models, treatment effects tend to most strongly affect disadvantaged students or students at the "margins" of outcomes (passing grades or test thresholds).

Pischke (2003) exploits variation in the German school year to explore the effect of shorter school years. In the 1960s, Germany transitioned from a spring- to a fall-semester start of the school year and permitted different city-states to choose their own implementation strategies. This led to students being exposed to different lengths of school depending on when they had entered school, where they lived, and what academic track they were on. Students who participated in the two-short school years attended school for ⅔ of a year less than their

counterparts who graduated before or entered after 1966. Pischke exploits this variation based on year of attendance, state of attendance, and school track and finds that short school years were most impactful for weak students or students on the "margins" of passing particular grades. There was no significant effect on the proportion of students who entered the highest secondary track (i.e. stronger academic students), signifying that more advanced students were not affected by this change, and there was a negligible effect on testing and on long-term earnings (Pischke, 2003).

Leuven et al. (2010) do not consider explicitly "extended" school years, but analyze the effect of natural variation in the length of school years for students based on enrollment policies in Holland. Specifically, Holland permits "rolling enrollment," meaning students may enroll in school immediately after their fourth birthday, as opposed to waiting for the beginning of the school year. Using the exogenous variation in birthday and which class students are placed in, the authors use birth dates to instrument for length of schooling, and estimate that, for disadvantaged students, an additional month of schooling increases test scores in language arts and math by 0.06 and 0.05 standard deviations, respectively. Importantly, there are negligible effects for non-disadvantaged students (Leuven et al., 2010).

Targeted Instruction

Lastly, some studies have explored the effect of increasing targeted instructional time for a subset of students *without* increasing the school year. Cortes & Goodman (2014) isolate the causal effect of increasing instructional time for a given subject in Chicago Public Schools. The authors exploit variation in a CPS "double dosage" policy, which required students (beginning in 2003-2004) who received lower than the 50th percentile on their standardized math score to take both a math and math-remedial course in their freshman year of high school. The authors estimate the difference in outcomes between low-scoring and high-scoring students before and after the intervention took place. They find that this policy increased double-dosed students freshman algebra GPA by 0.22 grade points and increased the proportion of students receiving a C or better by 6.7 percentage points. The policy also increased longer-term outcomes, including a 3.8 percentage point increase in receiving at least a C in geometry the following year. An important distinction of this study is that these positive effects of instruction were realized by lower- and middle-achieving students, but not by the lowest-achieving students (Cortes & Goodman, 2014).

Bonesrønning et al. (2022) estimate the effect of a randomized controlled trial (RCT) that randomly assigned Norwegian students in elementary school across all skill levels to two periods of four-to-six weeks of additional small group instruction. The authors estimate the intent-to-treat, or the effect of being randomly assigned to treatment (rather than receiving treatment) and find an effect size of 0.06 standard deviations. Lastly, Dietrichson et al. (2017) conduct a meta-analysis of various educational interventions for low-socioeconomic status students in Elementary and Middle School. Among four unique study samples, they find an average effect size of small group instruction, i.e., targeted instruction, of 0.24 standard deviations.

In general, there is a strong empirical basis for the effect of increasing instructional time, either targeted or universally, on student achievement. Reasonably causal studies, which exploit variation in policy or natural events, highlight that increasing instruction can improve both shorter- and longer-term academic performance. One key caveat is that some studies find that instructional time does not necessarily target the *most* at need, or the lowest performing,

students. This may indicate that instruction alone cannot address the needs of the lowest-performing students, and targeted services may consider non-academic needs (such as financial and nutritional support, counseling, or social emotional learning), or instruction outside of the classroom.

Year-Round Calendars: Redistributing the School Year

Year-round calendars are distinct from other calendar changes or instructional changes because they do not necessarily increase time in school. Year-round models decrease vacation days often given during "summer breaks," and instead distribute breaks more evenly throughout the school year (Fitzpatrick & Burns, 2019). In general, the literature does not support a strong effect of year-round schooling on student academic outcomes.

McMillen (2001) compares students in the 1997-98 school year in North Carolina, in which 106 public schools operated on a year-round calendar. Year-round models were implemented both by school and within schools. McMillen uses hierarchical linear modeling to isolate the causal effect of year-round models, estimating the effects of 1) exposure to a year-round school on test scores, 2) student characteristics on test scores, and 3) both student characteristics and year-round status on test scores. He finds no statistically significant difference in either reading or math scores between students in year-round versus traditional schools once student characteristics are controlled for. He does find small statistically significant effects of year-round schooling when interacted with prior test scores and parental education, indicating that year-round schooling may have slightly larger treatment effects for students who are higher-achieving at the baseline (McMillen, 2001).

Similarly, Dossett & Munoz (2000) compare students in year-round versus traditional schools in fourth and fifth grade. The authors match students based on prior (3rd grade) test scores and socioeconomic status and compare pairs of match students. They find no significant difference in reading and math test scores or average attendance, but their cost-efficiency analysis indicates that year-round schooling is relatively more expensive than traditional schooling for its negligible effects (Dossett & Munoz, 2000).

The negligible effects of year-round schooling are corroborated by many research papers (Fitzpatrick & Burns, 2019). While there has historically been thought to be a positive effect of the program, many older studies examining the effects of year-round schooling did not account for observable (or unobservable) differences between schools and students that may drive differences in achievement (McMillen, 2001; Patall et al, 2010).

One key caveat to the negligible findings in support of year-round calendars is that the structure of the school year often allows schools to embed additional instruction opportunities into the breaks, referred to as "intersessions" (Brown et al., 2012). Given the empirical support for increasing the quantity of instruction for students, year-round models that offer learning opportunities within intercessions may have positive effects on student outcomes.

Discussion

In general, the evidence for the effect of increased instruction is much stronger than that for year-round, both quantitatively and qualitatively. This reflects, in part, that it is much more

difficult to isolate the causal effect of year-round models, which are often inherently targeted and implemented in a non-random fashion

Extended-model programs – which are inherently increasing instructional time – have stronger evidentiary support but, as a school-wide intervention, may also be mediated by many other factors. There is a digression in the research between those who find that extended-model programs *are* effective at reaching the most disadvantaged students, and those who find that extended-model programs are effective at improving the outcomes of students who are on the margins of reaching proficient or other desirable academic outcomes. This is an important distinction, as extended-year models can be more costly than smaller, targeted interventions. All programs are mediated by a variety of factors including teaching quality, resources available to students (including food), and peer effects. It is crucial that future research decomposes these effects to understand the causal mechanisms of instructional programs and be able to feasibly compare the cost-effectiveness of different interventions.

One final important caveat to this research is that it is primarily conducted prior to the COVID-19 pandemic and its associated learning loss. The pandemic led to not only a decrease in instruction and learning, but also harmed the socialization of students and other key non-academic developmental processes, which may lend itself to more universal instructional interventions that can include non-academic provisions. It also fundamentally changed the "counterfactual" – research indicates that part of the key distinction in development for lower- and higher-SES students is the opportunities for learning and development they have during the summer (for example, a camp, traveling, museums, etc.) The pandemic limited these opportunities for *all* students, and therefore had a greater universal impact on student learning.

Evaluative Criteria .

Based on the literature and on existing or prior proposals in RPS , this analysis evaluates four alternatives to increase student instructional time:

1) Continue to fund the maintenance and expansion of RPS 200;
2) Implement the 200-day Calendar for all 25 Elementary Schools;
3) Implement a Year-Round Calendar with Intercessions for all 25 Elementary Schools;
4) Implement Intercessions within a 180-day calendar.

I restrict my analysis to elementary schools to account for the fact that RPS 200 has only been implemented in elementary schools. Moreover, implementing school-wide interventions in elementary school is consistent with the concept of dynamic complementarity – investments (or a lack thereof) have a cumulative effect and impact the efficacy of interventions made at later dates (Pinto & Jones, 2020). All alternatives propose implementation in the 2025-26 academic year, as the calendar for the 2024-25 year has already been voted on (Kamras, 2024).

Client Values

Dreams4RPS outlines several goals and guiding principles (RPS, n.d.). The goals particularly relevant to this project are:

1. Increasing proficiency rates and advanced pass rates on Standards of Learning (SOL) tests.

2. Decreasing the gaps in proficiency and advanced rates on SOLs that exist by "race, socio-economic status, English Language Learner status, and [learning disability] status" (RPS, n.d.).

In addition to the explicit academic goals of Richmond Public Schools, questions of cost as well as political feasibility are potentially important values. The original RPS 200 pilot was funded with leftover federal pandemic funds (MacGillis, 2023) – with no funding left over from these programs for future fiscal years, any long-term intervention may require a decrease in funding for other programs or priorities. Programs that are cost-effective will minimize trade-offs. Furthermore, any intervention (particularly any that alter the calendar year), require majority approval by the Board, which has previously been divided in how to approach learning loss (MacGillis, 2023). An effective alternative will have enough support from the Board and key stakeholders that affect the Board's perceptions, to be passed.

Based on the expressed and implicit values of RPS, the following criteria will be used to evaluate and compare my alternatives:

Effectiveness: I measure effectiveness as the estimated standard deviation change in test scores for students. The estimates of the change in test scores for a given program are based on empirical estimates in the literature. I prioritize estimates that are reasonably causal, either due to randomization or quasi-experimental research design.

Cost: I measure cost as the *financial* costs to the division. This analysis focuses primarily on operating costs driven by salaries for teachers, administrators, and support staff. Fixed costs are largely negligible, as there is not a significant change in capital needed for any of the proposed alternatives. Operating costs are driven primarily by personnel (teacher, administration, and support services staff): salary costs account for nearly 60% of the overall, and salaries and benefits account for more than 80% (RPS, 2024b). Moreover, teacher salaries accounted for about 90% of the costs of intersessions for year-round schools in Virginia (Brown et al., 2012).

There is the question of to what degree focusing on only financial costs will over- or understate the total cost to the district. Two other key costs that may be considered in a complete cost analysis could include:

- Transition costs: costs derived from additional planning, training, and communication required for implementation.
- Costs to other stakeholders: the costs or other opportunity costs imposed on students, teachers, and parents for a given intervention.

While not including these will likely lead to a net understatement of the total costs of each intervention, I assume that it will *understate all costs by roughly the same amount*. All transition and planning costs will need to occur regardless of which program is administered, and costs and opportunity costs to other stakeholders – particularly teachers, students, and parents – inform my metric of political feasibility, and are not captured in my financial cost measurement.

To calculate the financial costs of a policy driven by teacher salaries, I use salary scales from RPS, estimates of teacher experience in RPS, and estimates of the distribution of degrees (BA/MA) for teachers in RPS to calculate the marginal salary for each additional day a teacher contract is extended by. I also use estimates from RPS on the wage teachers are paid for

"additional" teaching time, which is used to calculate the additional cost per hour for intersessions (Kamras, 2021a). For additional information on cost calculations, see Appendix 1.

Cost-Effectiveness: Cost-effectiveness is the ratio of cost per student and the standard deviation change in test scores per student (effectiveness). It can be interpreted as the **investment per student required for a one standard deviation increase in test scores.**

Equity: For the purposes of this analysis, I define equity as the extent to which an alternative improves outcomes for disadvantaged students relative to non-disadvantaged students.

As previously discussed, students of color, particularly Black and Hispanic students, scored systematically lower than their White and Asian peers prior to the pandemic (Figure 2) and economically disadvantaged students scored systematically lower than their non-disadvantaged peers (Figure 1). Given these pre-pandemic trends and the disparate effect of the pandemic on learning for districts with high concentrations of non-White and low-income districts, I define one dimension of equity the targeting of schools or eligible student populations with higher concentrations of underrepresented minority students (URM) and economically disadvantaged students. I defined "underrepresented minority student" as a student who is Black, Hispanic, Native Hawaiian or Pacific Islander (NHPI), or American Indian or Alaskan Native (AIAN).

In addition to considering racial and socioeconomic equity, I also consider the extent to which a policy targets schools with high concentrations of low-scoring students at baseline, as measured by their SOL pass rates before the pandemic. In practice, there is overlap between these two dimensions. RPS serves a majority of both underrepresented minority students and students with economic disadvantage (Table 1), which is correlated with pre-pandemic SOL outcomes.

TABLE 1: EQUITY SUMMARY STATISTICS FOR RPS

	Mean
% Enrollment – Black/AA Students	61.32%
% Enrollment URM Students	81.68%
% Enrollment - Econ Dis	68.32%
Average SOL Pass Rate 2019	59.13%

Schools within RPS that had higher concentrations of URM and economically disadvantaged students also saw, on average, greater declines in SOL pass rates during the pandemic. Figures 7 and 8 show the distribution of changes in pass rates for schools with concentrations of more than 50% URM or disadvantaged students, in comparison to the red lines which indicate the change for schools with less than 50% of these populations.

FIGURE 7

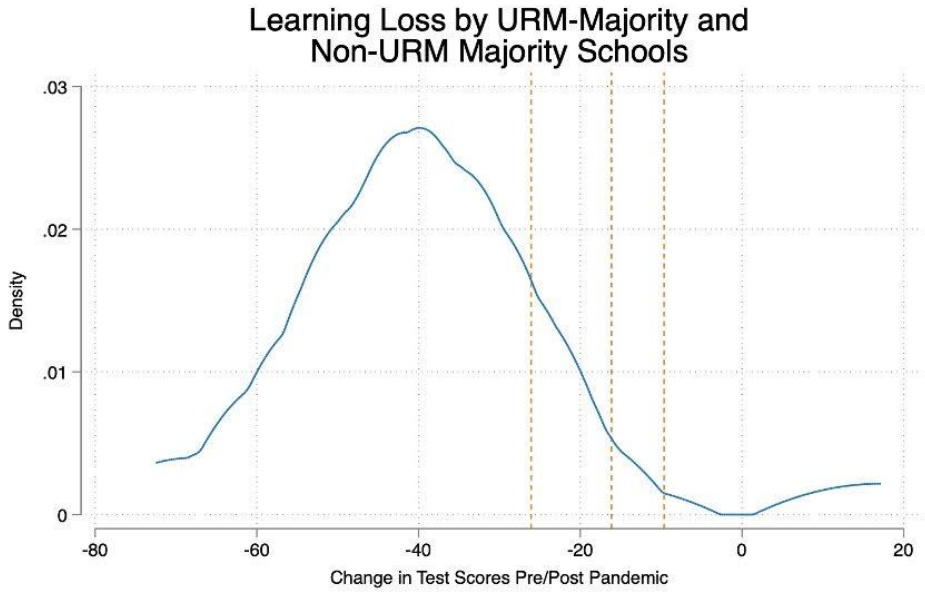
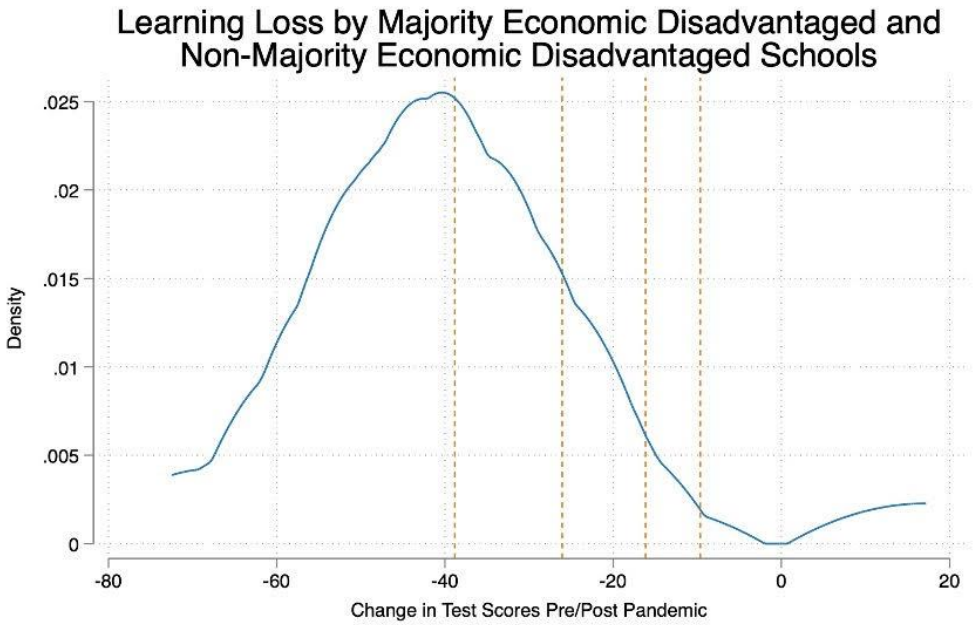


FIGURE 8



To distinguish between different relative concentrations of academic achievement and disadvantage, I use enrollment and SOL data from the VDOE to calculate the percentage of underrepresented minority students, students with economic disadvantage, and SOL 2019 pass rates for each school in RPS. I consider these measurements of the relative concentration of each group. I then create a categorical variable corresponding to each decile of the concentration of each group. These variables are coded so that the higher the number, the higher the concentration of URM and economically disadvantaged students, and the lower the SOL baseline pass rates. I

consider the average as a measure of "targeting" – the higher the average, the more targeted towards these three groups a policy is.

Political Feasibility

I define political feasibility as the likelihood of an alternative being approved and passed in the 2025-26 school year. This is ultimately dependent on if an alternative receives a majority affirmative vote by the School Board. However, the input of other key stakeholders – particularly teachers and families – influences this outcome. I assess the relative strength of key stakeholders – in particular, families (students and parents) and teachers – and their predicted values related to each alternative. Based on hundreds of public comments (RPS School Board, 2021a), I identify key buckets of preferences and opinions (see Appendix 2), which in turn form the "key values" I use to inform my political feasibility measurements:

- **Notion of "fairness":** A policy targets the highest-need students without increasing costs (e.g. time costs, losses to engagement or rigor, etc.) to families and students who are not targeted by the policy.
- **Student achievement and opportunity**: A policy increases student achievement and improves their opportunities to succeed.
- **Community engagement and transparency**: Families and teachers are thoroughly engaged and feel heard throughout the decision-making process. Ultimate decisions, and the data or thought process behind them, are clear and accessible to all stakeholders.
- **Autonomy**: Teachers and families have of autonomy in choosing both whether to participate in a policy and the nature of their participation.
- **Degree of Disruption:** A policy does not significantly reduce student and teacher opportunities in other facets of life (such as summer jobs) and does not significantly disrupt family schedules and planning (such as childcare).

Several of these values or preferences are accounted for in other criteria – specifically, student achievement is measured by "effectiveness" and targeting of the highest-need students is measured by "equity." Moreover, concerns about financial implications from both the Board and families is captured in cost. Therefore, I focus my political feasibility on the following:

1) Perception of fairness: it is clear *how* students are chosen for a given intervention, and one student's participation in treatment does not induce costs for non-participating students.
2) Stakeholder autonomy: teachers and families may choose whether to participate in the policy without large costs to non-participation.
3) Adaptability/Integrability: a policy or calendar does not significantly disrupt other aspects of teachers' or families' schedules or induce large opportunity costs.

Lastly, I include a measure for whether the Board has previously voted affirmatively or negatively on a given policy or a comparable policy. These alternatives are unique in that multiple discussions and votes exist from the 2021-2022 and 2022-23 school year that provide data on the Board's willingness to vote on a particular calendar (RPS, 2021b; RPS, 2023c).

While teachers, students, and parents in RPS are highly heterogenous groups, maximizing all of these dimensions will make the Board most likely to perceive high constituent support and make

a policy most politically feasible. The rubric below indicates how each of these values is defined as "low," "medium," or "high," and the respective points assigned.

	Low (0)	Medium (1)	High (2)
Perception of Fairness	Criteria for student eligibility is unclear or arbitrary. Student participation in the policy may induce costs to non-participating students/families.	Criteria for student eligibility is moderately clear and communicated. Student participation in the policy may induce costs to non-participating students/families within a treated school.	Criteria for student eligibility is clear and well-communicated. Student participation in the policy does not induce costs to non-participating students/families.
Stakeholder Autonomy	Teachers and families are induced to participate in the policy.	Teachers and families may choose to participate in the policy, with some barriers to their choice.	Teachers and families may choose to participate in the policy.
Disruption	Policy significantly changes timing or access to resources, jobs, or opportunities.	Policy moderately changes timing or access to resources, jobs, or opportunities.	Policy does not significantly change timing or access to resources, jobs, or opportunities.
Prior Voting Record	The Board has previously voted against or indicated a likelihood of voting against a comparable policy.	The Board has not explicitly indicated a preference for or against a comparable policy.	The Board has previously voted or indicated likelihood of voting to pass a comparable policy.

Alternatives and Evaluation

Alternative 1: Continue the Maintenance and Expansion of RPS 200

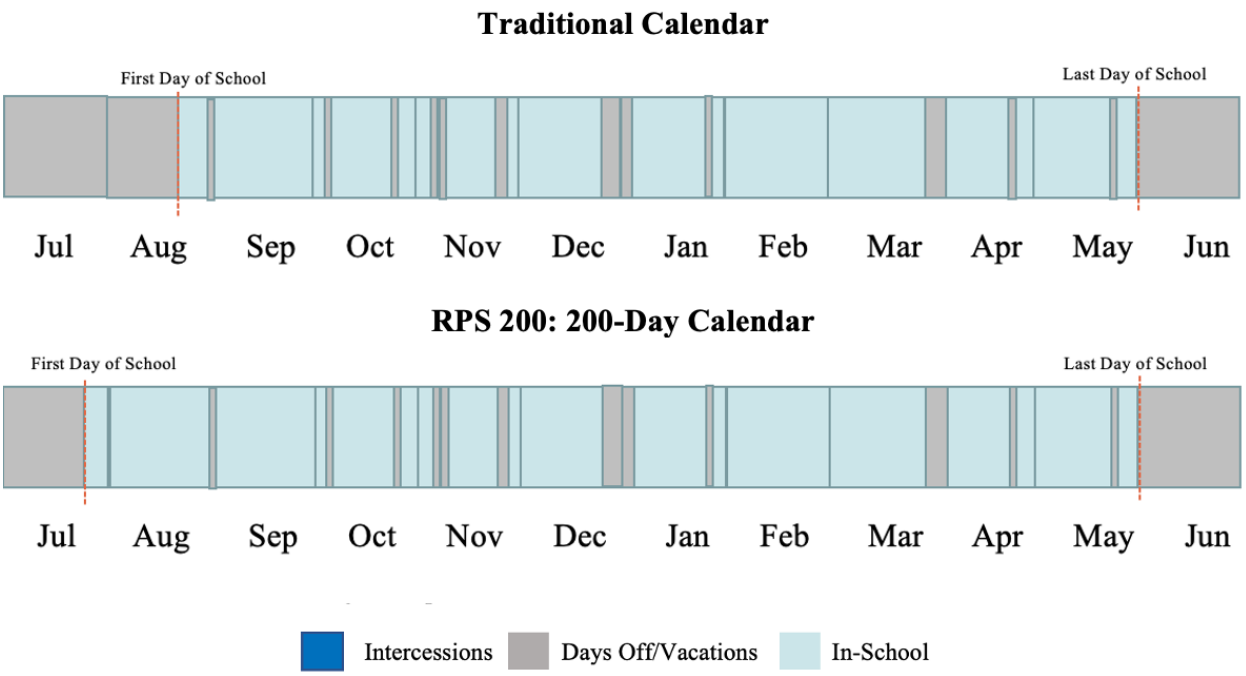
This intervention calls for Superintendent Kamras and the School Board to continue the maintenance and expansion of RPS 200 to two additional schools in the 2025-26 school year.

The Board has already voted to maintain the 200-day calendar for Cardinal Elementary and Fairfield Court Elementary, as well as approved the Superintendent to begin gauging interest from additional schools to expand the pilot (RPS, 2023c). This alternative assumes that two additional schools will begin a 200-day calendar in 2024-25, and proposes that an additional two are selected to begin in 2025-26, for a total of six 200-day elementary schools. Adoption of a

resolution to maintain RPS 200, expand the pilot to two additional schools, and allocating funding towards the pilot would require a majority vote from the School Board (RPS, 2023a).

All six schools would follow the existing program model and begin 20 days prior to the first-day of the 180-day calendar (Figure 9). School administrators and teachers have discretion over how they use the additional 20 days – it could be used to increase exposure with the forthcoming year curriculum, review curriculum from the prior year, or incorporate non-academic enrichment activities (Kamras, 2021a).

FIGURE 9



Teachers and support staff receive both an increase in salary, proportional to the extension of their contract, and bonuses. Teachers and support staff operate on an 11-month contract and receive additional bonuses of $10,000 and $5,000 per year of the program, respectively. Principles and Assistant Principals also receive a $15,000 bonus for participation. Lastly, all staff are eligible to receive an additional $5,000 bonus, contingent on meeting specified outcome goals (Kamras, 2023).

Additionally, schools, teachers, and families are all able to opt-in or opt-out of the program. In practice, this entails the Superintendent inviting school leadership to apply for the program – school leadership must then gain and demonstrate majority support from both staff and parents in the school community (MacGillis, 2023). Once a school has achieved sufficient support, the Board votes on if that school will operate on a 200-day calendar. Students and teachers who do not wish to participate receive priority in enrollment to other schools (Kamras, 2023).

Cost of Expanding RPS 200

I use public salary information and information on the distribution of teacher education and experience to estimate the marginal cost of paying teachers for one additional day of instruction – about $337 dollars (see Appendix 1). I calculate the cost per elementary school by multiplying this marginal cost by the total numbers of teachers in a given school and the number of days of the program. To account for uncertainty in which additional four elementary schools would be selected for the 2024-25 and 2025-26 pilot, I estimate a range of costs for four different scenarios:

1) **The "minimum cost":** the next four schools selected are those for which the cost is lowest.
2) **The "average cost":** I calculate the cost of each additional elementary school added (four in total) as the average cost among all elementary schools.
3) **The "pilot cost":** I scale the cost of the original pilot (the amount paid for the two pilot schools) to all six schools.
4) **"The maximum cost":** the next four schools selected are those for which the cost is lowest.

I calculate all of these costs without and with the bonuses to facilitate a clearer comparison with the other alternatives. For my ultimate comparison of the alternatives, I **do not include the bonuses.** This is based on the assumption that comparable bonuses would have been implemented for the other alternatives, based on planning materials from RPS (Kamras, 2021b) and the need to incentivize participation among teachers.

The estimated cost of the program without teacher bonuses ranges from $445.75 per student to $484.35 student. This is a relatively small range compared to the total cost of the program, which ranges from about $930,000 to $1.6 million dollars. The smaller variance in per-capita cost underscores that schools at which the cost of implementation is higher tend to also serve more students.

TABLE 2

Cost of RPS 200 Current to 2025-26: No Teacher Bonuses				
	Min Additional Cost	Average Cost Scaled	Pilot Cost Scaled	Max Additional Cost
2023-24 (Fixed)	$ 464,828.59	$ 464,828.59	$ 464,828.59	$ 464,828.59
2024-25 Cost	$ 680,387.13	$ 840,398.82	$ 929,657.17	$ 1,099,532.43
2025-26 Cost	$ 930,282.77	$ 1,215,969.05	$ 1,394,485.76	$ 1,613,845.49
# of Students	2087	2645	3228	3332
Cost/Student	$ 445.75	$ 459.73	$ 432.00	$ 484.35

TABLE 3

Cost of RPS 200 Current to 2025-26: With Teacher Bonuses				
	Min Additional Cost	Average Cost Scaled	Pilot Cost Scaled	Max Additional Cost
2023-24 (Fixed)	$ 1,154,828.59	$ 1,154,828.59	$ 1,154,828.59	$ 1,154,828.59
2024-25 Cost	$ 1,690,387.13	$ 2,086,798.82	$ 2,309,657.17	$ 2,729,532.43
2025-26 Cost	$ 2,310,282.77	$ 3,018,769.05	$ 3,464,485.76	$ 4,003,845.49
# of Students	2087	2645	3228	3332
Cost /Student	$ 1,106.99	$ 1,141.33	$ 1,073.26	$ 1,201.63

Effectiveness of Expanding RPS 200

While the empirical literature on the impact of additional instructional time is both reasonably causal and suggests a positive effect size of more instruction on student test scores, the point estimates of different papers can vary considerably depending on the context in which they exam the changes and how they define their research question.

For example, Fitzpatrick et al. (2010) do not focus on exogenous increases in instruction, but on the amount of development that can be attributed to academic learning in a given school year. The authors' estimate of 1 standard deviation implies that about 0.11 standard deviations in learning can be attributed to 20 days of school. Similarly, Leuven et al. (2010) explore the effect of an additional month of *enrollment* in a given year and estimate that an additional month of schooling leads to an increase of about 0.05 standard deviations in test scores. This estimate implies an effect size of 0.04 standard deviations for 20 days.

There is no less variation in research that focuses on quasi-random increases or decreases in instruction within a given school year. The use of exogenous weather-related cancellations in Hansen (2011) suggests an effect size of 0.013 to 0.038 standard deviations for one additional instructional day – scaled, this suggests an effect size of 0.26 to 0.76 standard deviations for 20 days of instruction.

These estimates may vary for several reasons. First, some estimates may simply capture the effect of additional instruction on proximate test performance, rather than the effect of additional instruction on sustained development, and may vary based on how proximate a standardized test is to when students are exposed to additional instruction. The research questions of the above studies are similar, but distinct, in whether they explore effects of the length of the school year itself or exposure to additional instruction. Furthermore, most studies focus on only one or so years of outcomes and may capture noise of some schools "reverting to the mean" – a "district with poor test scores in one year is more likely to improve test scores the following year than a district with average test scores." (Sims, 2008).

The variation in empirical estimates suggests that there is causal evidence to support the positive effect of an extended-year model that increases student exposure to instruction within a given year. It also suggests, however, that there is substantial variation that could be mediated by other school and classroom characteristics. It is also unclear the degree to which "scaling" the above estimates to 20 days over- or understates the effect – this depends primarily on whether the cumulative effects of instruction and learning are linear. Because of the uncertainty in this assumption, I use the *conservative, lower limits* of my scaled estimates and provide a range of estimates for the effectiveness of this policy.

Ultimately, this implies that the effectiveness of 20 additional days of instruction on standardized test scores ranges from 0.04 standard deviations to 0.26 standard deviations.

Cost-Effectiveness of Expanding RPS 200

Based on the range of estimates for cost-per-student and standard deviation gain per student, the **cost-effectiveness of this policy ranges from $1,714.42 to $12,108.75.**

Equity of Expanding RPS 200
There is some uncertainty surrounding equity of expanding RPS 200 because the additional schools have not been selected yet. I estimate the equity of the expansion of RPS 200 for three groups of schools – 1) the schools selected which constitute my "minimum cost" calculation above, 2) the schools selected which constitute my "maximum cost" calculation above, and 3) four schools which would be likely to maximize the equity of the policy. For each of these groups of schools, I take the average of the decile category for their 2019 baseline scores, the percentage of students enrolled who are URM students, and the percentage of students enrolled who are economically disadvantaged. The relative scores of Cardinal Elementary and Fairfield Court Elementary (the two existing pilot schools) are also included in this average.

1) The four additional schools chosen are the ones that constitute this policy's **"minimum cost,"** as calculated above:

In this scenario, Bellevue, Swansboro, Lois Harris Jones, and Southampton Elementary are the four elementary schools chosen to participate in the pilot in addition to Cardinal Elementary and Fairfield Court Elementary. These are the four schools which have the lowest cost of implementing a 200-day calendar, as measured by teacher salary. The average index of disadvantage for this group is **5.22 of 10**.

2) The four additional schools chosen are the ones that constitute this policy's **"maximum cost"** as calculated above:

In this scenario, Broad Rock, G.H. Reid, Miles Jones, and J.L. Francis are the four elementary schools chosen to participate in the pilot in addition to Cardinal Elementary and Fairfield Court Elementary. These are the four schools which have the highest cost of implementing a 200-day calendar, as measured by teacher salary. The average index of disadvantage for this group is **6.56 out of 10**.

3) The four schools chosen are chosen to maximize equity:

In this scenario, Blackwell, Chimborazo, George W. Carver, and Woodville are the four elementary schools selected to participate in the pilot in additional to Cardinal Elementary and Fairfield Court Elementary. These are the schools in the two highest deciles of academic need as measured by 2019 SOL pass rates. For all four of these schools, this high academic need is also correlated with high enrollment of URM students and economically disadvantaged students – therefore, this selection would make this policy highly equitable. This average index of disadvantage for this group is **7.83 out of 10.** The cost-per-student of implementing this scenario is roughly equal to the maximum cost estimated above ($485).

Political Feasibility of Expanding RPS 200
Perception of Fairness: Student eligibility is determined by their school, who must opt-in with majority support from both parents and teachers. While the nature of initial school eligibility (i.e. receiving an "invitation to apply") may be more ambiguous, the actual selection of treated students within school is universal, clear, and well-communicated. There are no trade-offs in terms of time-in-school or targeted instruction that induce costs to non-participating students or families. The perception of fairness for this alternative is **high**.

Stakeholder Autonomy: Teachers and families are both engaged in the decision process and have some autonomy over whether their school is selected for the pilot and can feasibly "opt-out" of the program if their school is selected and they do not wish to participate. However, there are costs to laterally transferring within RPS, such as a loss of consistency or support system, transportation costs, and administrative costs. Therefore, the stakeholder autonomy of this alternative is **medium.**

Adaptability & Integrability: Students, families, and teachers at the six 200-day elementary schools may incur some scheduling costs and opportunity costs, including family vacations, camps and other developmental opportunities, and professional development or summer job opportunities for teachers. However, because this alternative still maintains most of the summer vacation, this is only a moderate impact – the adaptability or integrability of this alternative is **high.**

Prior Voting Record: The Board explicitly voted for the initial pilot in 2022-23 (Kamras, 2023), as well as the maintenance and expansion of the pilot in 2023-24 (RPS, 2023c).

Based on these dimensions of political feasibility, the feasibility of maintaining the gradual expansion of RPS 200 is a moderately high value of *six.*

TABLE 4

	Low (0)	Medium (1)	High (2)
Perception of Fairness	Criteria for student eligibility is unclear or arbitrary. Student participation in the policy may induce costs to non-participating students/families.	Criteria for student eligibility is moderately clear and communicated. Student participation in the policy may induce costs to non-participating students/families within a treated school.	Criteria for student eligibility is clear and well-communicated. Student participation in the policy does not induce costs to non-participating students/families.
Stakeholder Autonomy	Teachers and families are induced to participate in the policy.	Teachers and families may choose to participate in the policy, with some barriers to their choice.	Teachers and families may choose to participate in the policy.
Adaptability & Integrability	Policy significantly changes timing or access to resources, jobs, or opportunities.	Policy moderately changes timing or access to resources, jobs, or opportunities.	Policy does not significantly change timing or access to resources, jobs, or opportunities.
Prior Voting Record	The Board has previously voted against or indicated a	The Board has not explicitly indicated a preference for or	The Board has previously voted or indicated likelihood

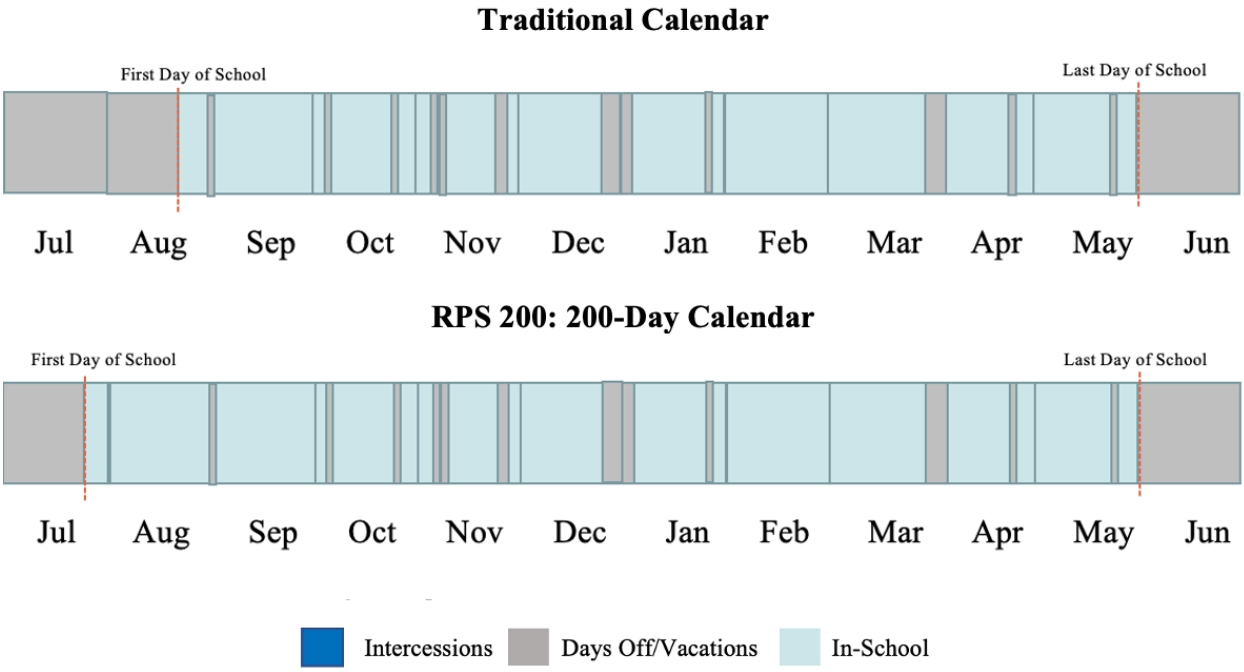
	likelihood of voting against a comparable policy.	against a comparable policy.	of voting to pass a comparable policy.

Score: 6

Alternative 2: Make Extended-Year Model Universal within RPS

This intervention would scale the 2023-24 extended-year pilot ("RPS 200") to all K-12 public elementary schools in RPS**.** Under this alternative, Superintendent Kamras would propose a calendar for the 2025-26 Academic Year under which all 25 public elementary schools would operate on a 200-day calendar. The calendar would begin in mid-July and end in June (Kamras, 2023).

FIGURE 10



The universal model implies that elementary school teachers cannot opt-out, or at least not transfer laterally within RPS, and that families would also not be able to opt-out while remaining in RPS. Teachers, staff, and principals would still be eligible for the same participation- and performance-based bonuses, although I will continue to measure the marginal *salary* cost of the policy. As with the other alternatives, adoption of this calendar year and the budget to support it would require a majority vote from the School Board (RPS, 2023a).

Cost of a Universal 200-Day Calendar

I estimate the cost of the universal RPS 200 with all of the same inputs as the pilot program, but scaled to all 25 elementary schools for a total of 9,806 students. Without including teacher

bonuses, this program would cost almost $4.7 billion, or $478.75 per student. With teacher bonuses, this program would cost about $11.6 billion, or $1,188.01 per student.

TABLE 5

Cost of 200-Day Calendar for All Elementary Schools, with and without Teacher Bonus					
	Total Cost		Total Number of Students	Cost/Student	
No Bonuses	$	4,694,627.89	9806.0	$	478.75
With Teacher Bonuses	$	11,649,627.89	9806.0	$	1,188.01

Effectiveness of a Universal 200-Day Calendar

Based on the literature, I estimate the same per-student effect for the universal 200-day calendar as the pilot program: **0.04 to 0.26 standard deviations**.

One potential caveat to extrapolating the effect of the pilot is that there may be heterogenous treatment effects. If the universal expansion of the pilot implies that students who, on average, experienced less learning loss also receive treatment, the treatment effect of additional instruction may increase or decrease. If higher-achieving students have a stronger baseline, and therefore benefit more from marginal instruction, the effect of the universal calendar will be greater than that of the pilot. If higher-achieving students benefit less from additional instruction, perhaps because they have less of a need for it, then the effect of the universal calendar with be smaller than that of the pilot. There are discrepancies in which of these hypotheses the literature supports – for the purpose of this calculation, I assume that treatment effects are homogenous across baseline achievement levels.

Cost-Effectiveness of a Universal 200-Day Calendar

Based on the per-student costs and changes in test-scores, the cost-effectiveness of this policy ranges from $1,841.35 to $11,968.75.

Equity of a Universal 200-Day Calendar

To calculate the equity of implementing a 200-day calendar for all elementary schools, I take the average of the distribution of disadvantage (as measured by deciles of each category) for all 25 elementary schools. This, both mechanically and intuitively, is close to five for all categories – although it is slightly above five, underscoring the relative concentration of disadvantage across the division. Overall, this treatment group has an index of disadvantage of **5.20 of 10**.

Political Feasibility of a Universal 200-Day Calendar

Perception of Fairness: By nature of this program being a universal policy that impacts all Elementary Students, the criteria for student eligibility are clear and well-communicated. There are no potential tradeoffs or costs imposed on non-participating elementary students as there is not a "targeted" treatment – all elementary students receive exposure to an additional 20 days of instruction. The perception of fairness for this alternative is **high**.

Stakeholder Autonomy: Teachers and families in the RPS Elementary School system are induced to participate in the policy and have no feasible way to opt-out without transferring out of the

district (or teachers transferring to another level of teaching), which imposes substantial costs on students, parents, and teachers. The stakeholder autonomy for this alternative is **low**.

Adaptability & Integrability: Similarly to alternative 1, extending the school year by 20 days for all Elementary Students does likely incur some scheduling costs and opportunity costs for teachers and families, including family vacations, camps and other developmental opportunities, and professional development or summer job opportunities for teachers. However, because this alternative still maintains most of the summer vacation, this is only a moderate impact – the adaptability or integrability of this alternative is **high.**

Prior Voting Record: I consider this universal model to be comparable to a universal year-round model. Although there are some caveats, the Board has expressed hesitancy at implementing a universal, costly policy that has unforeseen outcomes for a year-round calendar (RPS, 2021).

Based on these dimensions of political feasibility, a Universal Extended-Calendar Year has moderately low political feasibility, with a value of *three*.

TABLE 6

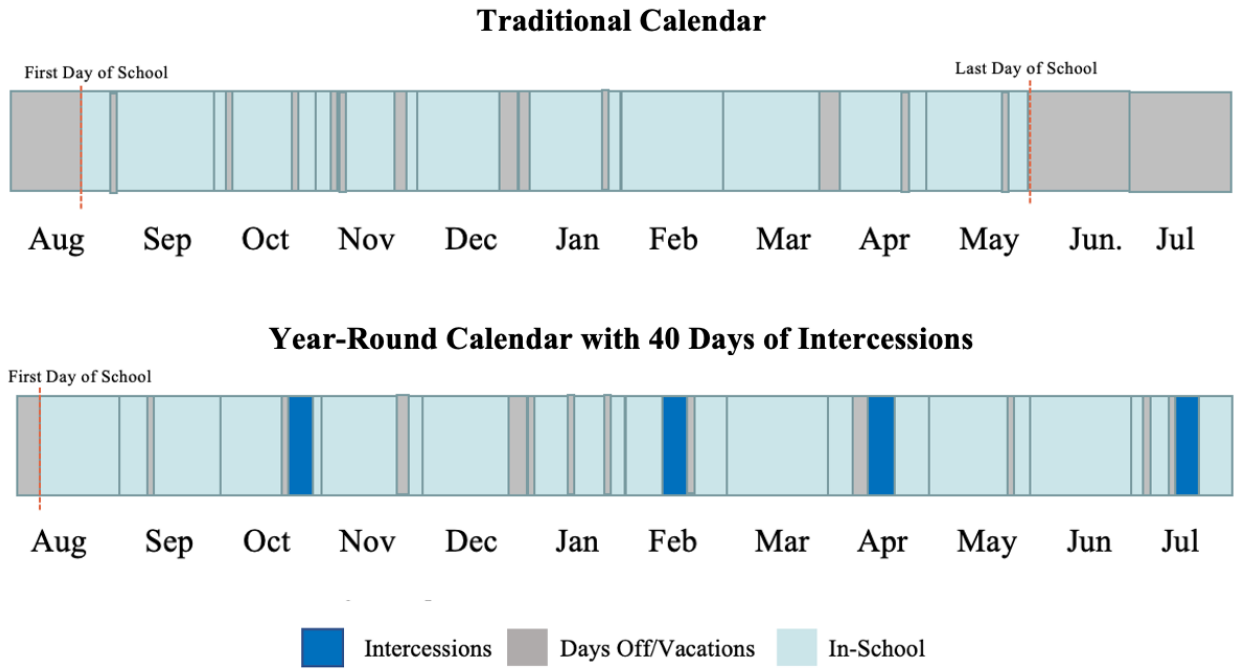
	Low (0)	Medium (1)	High (2)
Perception of Fairness	Criteria for student eligibility is unclear or arbitrary. Student participation in the policy may induce costs to non-participating students/families.	Criteria for student eligibility is moderately clear and communicated. Student participation in the policy may induce costs to non-participating students/families within a treated school.	Criteria for student eligibility is clear and well-communicated. Student participation in the policy does not induce costs to non-participating students/families.
Stakeholder Autonomy	Teachers and families are induced to participate in the policy.	Teachers and families may choose to participate in the policy, with some barriers to their choice.	Teachers and families may choose to participate in the policy.
Disruption	Policy significantly changes timing or access to resources, jobs, or opportunities.	Policy moderately changes timing or access to resources, jobs, or opportunities.	Policy does not significantly change timing or access to resources, jobs, or opportunities.
Prior Voting Record	The Board has previously voted against or indicated a likelihood of voting against a comparable policy.	The Board has not explicitly indicated a preference for or against a comparable policy.	The Board has previously voted or indicated likelihood of voting to pass a comparable policy.

Score: 3

Alternative 3: Implement a Year-Round Model

This intervention would set a year-round model for all K-5 students, with additional instruction during intersessions for selected students. This intervention can be broken up into two key components: 1) a year-round calendar, and 2) targeted intersessions.

FIGURE 11



1) Year-Round Calendar: A 180-day calendar with days of instruction *redistributed* throughout the academic year.

Year-round calendars themselves do not increase instructional time, but incorporate longer breaks throughout the school year (see October, February, April, and July). Year-round calendars may be *single-track* or *multi-track* (Brown et al., 2012). Multi-track calendars differ from single-track (the calendar proposed) in that student breaks are staggered so that different bodies of students are in the school at a given time. Multi-track calendars are primarily used to address capacity or capital constraints, as opposed to the single-track calendar which is most often intended to improve learning outcomes by reducing learning loss that takes place over the summer break (Brown et. al, 2012). This particularly policy proposes a single-track calendar, where the majority of breaks double as intersessions, during which high-need students would attend additional instruction (Figure 11).

2) Targeted Intersessions: Four two-week (about 40 days in total) intersessions throughout the academic year intended to target students at-risk of not passing key tests.

The increase in instructional time that takes place during year-round calendars is due to the common inclusion of intersessions – breaks throughout the year in which some students are selected to attend school for additional small-group instruction. Under this proposal, there would be four, two-week intersessions for a total of approximately 40 days of additional instruction for 2,855 elementary school students. [2] Students would be encouraged, not required, to participate, and if originally-eligible students do not take-up the program, other students would be able to opt-in (Kamras, 2021a). Teachers are also not required to participate, but are incentivized with additional pay and bonuses (Kamras, 2021a).

Although these two components are part of one cohesive alternative, I discuss the effectiveness and cost for the year-round component and intersession component separately below. I do so to emphasize that the majority of the test scores gains and the financial costs are driven by intersessions, and not the redistribution of the school year. Some discussions of year-round models conflate the two components, which can lead to the interpretation that the redistribution of the school days themselves are more effective or more costly than they actually are. Ultimately, this alternative is evaluated as the sum of its two parts.

Cost of Year-Round School

This proposal does not call for an extension of teacher contracts (who will be teaching the same number of days), but instead provides additional pay to teachers who opt-in to the intersession periods. Intersessions are also the driving factor of cost for year-round models (Brown et al., 2012). Due to this dynamic and due to the method of calculating financial costs, I assume there is no difference in operational costs for redistributing the 180-days of instruction throughout the year.

In contrast, intersessions can be costly. The proposal for the year-round model called for increasing "additional teacher pay" – the hourly wage a teacher receives when they take on additional hours outside of their contract – to $40/hour (Kamras, 2021a). As a reference, I calculate the cost of these intersessions based on this wage *and* based on my previously calculated marginal cost of one day of teacher pay. These estimates are comparable, with the additional pay wage ultimately being lower than extending teacher contracts. I also calculate the cost of intersessions based on three "treatment" sizes of students, based on scaling the original proposal of 5,000 students for K-12 to K-5 (see Appendix for more information). My final estimate is based on a wage of $40/hour, for 2855 students at a teacher-student ratio of 1:8 as previously proposed (Kamras, 2021a).

Students	Cost - MC of a Day	Cost/Student	Cost - Proposed Rate	Cost/Student2
1500	$ 2,535,023.65	$ 1,690.02	$ 2,406,400.00	$ 1,604.27
2855	$ 4,813,848.10	$ 1,686.11	$ 4,569,600.00	$ 1,600.56
5000	$ 8,427,605.22	$ 1,685.52	$ 8,000,000.00	$ 1,600.00

TABLE 7

[2] The original proposal called for 5,000 eligible students (Kamras, 2021a). This proposal scales that number to elementary students based on the number of students in K-5 who were identified as "at-risk." See Appendix for more information.

Effectiveness of Year-Round School
The review of the evidence highlighted that, on average, the effect size of redistributing 180 school days to a year-round calendar is negligible on student achievement. I assume an effect size of 0.00 standard deviations in the absence of intersession instruction.

For intersessions, it is not sufficient to only focus on literature on additional instructional time: positive effects of intersessions may not be driven only by additional instructional time, but also by smaller class sizes, which have been consistently shown to have a positive effect in the literature (Sims, 2008). Therefore, literature that explicitly measures the effect of small-group instruction is used to inform the effectiveness of the interessions within a year-round school model. I assume that the effect size of small-group instruction encompasses the effect of reducing class size in addition to the increase in exposure to instruction.

The estimate of 0.06 standard deviations in Bonesrønning et al. (2022) provides a causal and relatively comparable estimate in terms of the time of additional instruction. The 0.06 standard deviation estimate corresponds to two periods of four-to-six weeks, or 40 to 60 days. Therefore, exposure to only one period of that treatment per school year (such as in this proposal) would correspond to an increase in test scores of 0.03 standard deviations.

Similarly to the evidence on the isolated effect of additional instruction, there is substantial variation in estimates of the effect of small-group tutoring. The meta-analysis from Dietrichson et al., (2017) suggests a much larger average effect size of small group tutoring of 0.24 standard deviations. However, we may be slightly more concerned about the interpretation of this estimate as a causal or average effect. This effect is the average of studies with four unique treatment samples and has a corresponding confidence interval of [0.00, 0.48] – it is one of 57% of the "intervention buckets" that has a confidence interval that may include zero. Moreover, this study focuses particularly on low-socioeconomic status students. While I interpret this effect as the upper bound of my effectiveness estimate for intersessions and therefore year-round schooling, I consider the relative uncertainty of this estimate when making my recommendation.

Based on these assumptions, I estimate the effectiveness of the intersessions within this year-round model to be 0.03 to 0.24 standard deviations.

Cost-Effectiveness of Year-Round School
The above cost and effectiveness of year-round school with intersessions implies a total cost effectiveness of $6,669.00 to $53,352.00 per student.

Equity of Year-Round School
Because the year-round calendar is a universal calendar that applies to all students, it's ranking of equity is equal to that of the 200-day calendar (5.2 out of 10). However, the intersessions explicitly target the highest academic need students. Since my calculations of disadvantage are at the school level, I measure the relative equity of intersessions (which directly target students) in two ways.

I first use SOL pass rates and student enrollment to impute the count of students at each school who did or did not pass an SOL. For the whole population of elementary schools, this amounts to about 3,975 students who did not pass an SOL in 2019. In order to estimate the potential

distribution of disadvantage for these students, I assume that the students at the schools in the lowest deciles of scores are reasonably comparable to the students who would be selected for intersessions. Given that assumption, 3,975 students is equal to the total of number of students at schools in the three- to four-lowest deciles of baseline SOL scores.

However, as previously discussed, this analysis assumes that 2,855 Elementary Students would be deemed eligible for intersessions based on estimates from RPS (Kamras, 2021). The 2,855 lowest-scoring students in the distribution of elementary schoolers roughly correspond to the total number of students attending schools in the *bottom two deciles of SOL scores.* Therefore, I calculate the equity of intersessions to be equal to expanding the calendar for the schools in the bottom two declines (7.83). The equity of the entire policy is the average of these two scores, for **an average equity measurement of 6.51.** It is worth noting, however, that under these constraints, intersessions would not reach all students who have not passed an SOL.

Political Feasibility of Year-Round School

Perception of Fairness: Criteria for student eligibility in the intersessions is *moderately* clear and induces potential costs for non-participating elementary students. RPS Administration identified a potential 5,000 students (closer to 2,500 in elementary School) who were deemed at-risk of not passing a given grade based on their standardized scores or by teacher report (Kamras, 2021). These students, however, would not be required, but "strongly encouraged," to participate in the intersessions and other students could opt-in if there is space or opting-out of eligible students. Parents and teachers communicate uncertainty about if the 5,000-student threshold is arbitrary or well-targeted (RPS School Board, 2021). Some parents also communicate uncertainty about the benefit of intersessions for non-participating students, and how a calendar intended to target only 5,000 students would benefit (or potentially harm, via loss of engagement and rigor) the remaining majority of students (RPS School Board, 2021). The perception of fairness for this alternative is **medium**.

Stakeholder Autonomy: By nature of a year-round calendar being proposed universally (in this context, universal for Elementary students), teachers and families may not opt-out of the calendar without incurring costs – teachers and families would have to transfer to another school district to avoid the year-round calendar. The stakeholder autonomy in this alterative is **low.**

Adaptability & Integrability: Year-round school causes substantial disruptions to scheduling for teachers and families. Because the summer-break is effectively redistributed to 1- to 2-week breaks throughout the school year, families face obstacles to scheduling childcare outside of the traditional summer break (both for participating children and younger siblings). Families with children enrolled in different school districts also face obstacles to maintaining consistent schedules for all of their children (RPS School Board, 2021). Families place value on the ability to expose their children to non-academic developmental activities, such as camps or family vacations (Board Docs). Lastly, teachers may face opportunity costs of losing access to professional development or workshops as well as second jobs (Walker, 2019) – if the compensation or utility they get from year-round contracts is less than that of the job they would have worked. The integrability of this policy is **low**.

Prior Voting Record: The Board explicitly voted against implementing a year-round calendar in 2021-22 (RPS, 2021b) and 2022-23 (RPS, 2023b).

Based on these measurements, the total score of this alternative in terms of political feasibility is *one*.

TABLE 8

	Low (0)	Medium (1)	High (2)
Perception of Fairness	Criteria for student eligibility is unclear or arbitrary. Student participation in the policy may induce costs to non-participating students/families.	Criteria for student eligibility is moderately clear and communicated. Student participation in the policy may induce costs to non-participating students/families within a treated school.	Criteria for student eligibility is clear and well-communicated. Student participation in the policy does not induce costs to non-participating students/families.
Stakeholder Autonomy	Teachers and families are induced to participate in the policy.	Teachers and families may choose to participate in the policy, with some barriers to their choice.	Teachers and families may choose to participate in the policy.
Adaptability and Integrability	Policy significantly changes timing or access to resources, jobs, or opportunities.	Policy moderately changes timing or access to resources, jobs, or opportunities.	Policy does not significantly change timing or access to resources, jobs, or opportunities.
Prior Voting Record	The Board has previously voted against or indicated a likelihood of voting against a comparable policy.	The Board has not explicitly indicated a preference for or against a comparable policy.	The Board has previously voted or indicated likelihood of voting to pass a comparable policy.

Score: 1

Alternative 4: Hold additional days of instruction for at-risk students

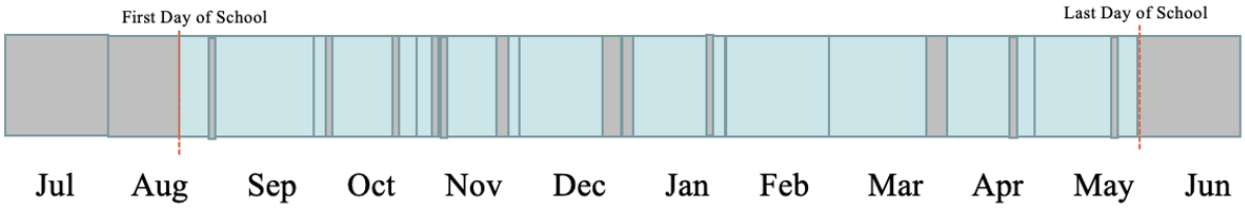
This intervention entails a standard, 180-day academic year for the majority of students, with 3 one-week intersessions (14 days total) embedded into breaks throughout the academic year.

While the academic-year would remain at 180 days, breaks throughout the year would be shifted in order to create three additional week-long breaks for instruction. Eligibility for these instructional breaks would be based on measures of prior-year literacy and proficiency on standardized tests (Kamras, 2021a).

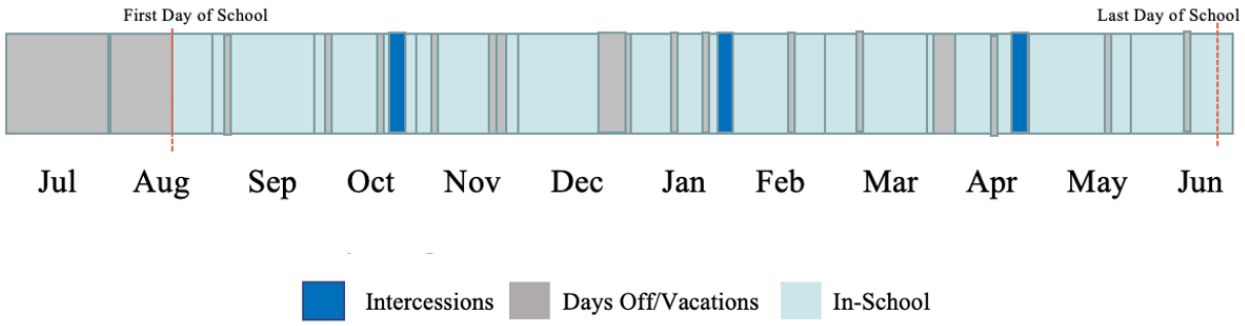
While this alternative is similar to both a year-round and extended-year model in some ways, I interpret this alternative as the effect of intersessions with relatively low disruption to the calendar year. It is distinct from the year-round calendar because it does not get rid of summer break (but slightly shortens it), and it is distinct from an extended-year model because it does not use the slight reduction in summer vacation to provide additional instruction to all students.

FIGURE 12

Traditional Calendar



180-Day Calendar with 14 Intercession Days



In order to implement this alternative by the 2025-26 academic year, Superintended Kamras would propose this calendar model by November 2024 (RPS, 2023b). Similar to the aforementioned alternatives, this proposal would require majority approval from the School Board for adoption (RPS, 2023a).

Cost of Standalone Intersessions

My final calculation of the cost of intersessions is, similarly, based on the proposed $40/hour wage for additional teaching time. I also assume that 2,855 elementary students will be recruited (as based on the identification of "at-risk" students) for a teacher ratio of 1:8 (Kamras, 2021a). **The cost of 14 days of intersessions per student, therefore, is $560.20.**

Students	Cost - MC of a Day	Cost/Student	Cost - Proposed Rate	Cost/Student2
1500	$ 887,258.28	$ 591.51	$ 842,240.00	$ 561.49
2855	$ 1,684,846.84	$ 590.14	$ 1,599,360.00	$ 560.20
5000	$ 2,949,661.83	$ 589.93	$ 2,800,000.00	$ 560.00

Effectiveness

I use the same empirical estimates for both the 40- and 14-day intersessions, which would suggest an effective size of 0.03 to 0.24 standard deviations. I do not expect that 40 additional days of instruction and 14 additional days of instruction would produce the same estimates, so I scale down the effect size – this implies an effect size of 0.01 to 0.08 standard deviations. I also consider the marginal effect of an additional day of instruction to counteract the effect of scaling "down" estimates, which may underestimate the effectiveness of small-group instruction (Hansen, 2011). For 14 days of additional instruction, the total effect of small-group instruction on students outcomes would be 0.18 standard deviations. Therefore, **the range of effectiveness for 14 days of small-group instruction is 0.01 to 0.18 standard deviations.**

Cost-Effectiveness
Based on the estimate cost-per-student and test-score change per-student, the cost-effectiveness of this policy is **$3,112.22 to $56,020.00.**

Equity
Similar to the calculating the equity of the intersessions for the year-round school calendar, I assume that the students at the schools in the lowest deciles of scores are reasonably comparable to the students who would be selected for intersessions. For the 2,855 lowest-scoring students in the distribution of elementary schoolers, this is equal to the total number of students attending schools in the bottom two deciles of SOL scores. Therefore, the equity of stand-alone intersessions is equal to extending the calendar for the schools in the bottom two declines – 7.83 of 10.

Political Feasibility
Perception of Fairness: The perception of fairness for these intersessions is similar to those of the year-round school model. The RPS Administration explicitly outlines a strategy for identifying eligible students (Kamras, 2021), but the intersessions prompt concern about the method of selection and engaging students; the relative rigor or arbitrariness of choosing a limit to the number of students who are eligible; and how the intersessions may harm non-participating students (RPS School Board, 2021). Students are also not required to participate in the sessions, and students who were not initially eligible may opt-in given space. The perception of fairness for this alternative is **medium.**

Stakeholder Autonomy: Teachers and families may both opt-in to the policy, with no direct costs associated with opting out. Teachers are compensated for teaching the intersessions if they choose to opt-in and have some discretion over how they use additional time (Kamras, 2021). The stakeholder autonomy of this alternative is **high.**

Adaptability and Integrability: The use of intersessions for about 2,855 Elementary Students implies that the remaining 70% or so of Elementary Students will have relatively ad hoc breaks throughout the school year. This will induce some costs to families in terms of finding childcare outside of the traditional summer break, as well as potential scheduling costs if some children within a given family are selected for intersessions while others are not. However, this alternative still maintains the majority of the summer break. Therefore, the integrability of this alternative is **medium**.

Prior Voting Record: Although this was a calendar briefly introduced as one of three alternatives, the Board has not explicitly voted on this calendar or a similar calendar that introduces intersessions without significantly altering the length or make-up of the school year.

	Low (0)	Medium (1)	High (2)
Perception of Fairness	Criteria for student eligibility is unclear or arbitrary. Student participation in the policy may induce costs to non-participating students/families.	Criteria for student eligibility is moderately clear and communicated. Student participation in the policy may induce costs to non-participating students/families within a treated school.	Criteria for student eligibility is clear and well-communicated. Student participation in the policy does not induce costs to non-participating students/families.
Stakeholder Autonomy	Teachers and families are induced to participate in the policy.	Teachers and families may choose to participate in the policy, with some barriers to their choice.	Teachers and families may choose to participate in the policy.
Adaptability and Integrability	Policy significantly changes timing or access to resources, jobs, or opportunities.	Policy moderately changes timing or access to resources, jobs, or opportunities.	Policy does not significantly change timing or access to resources, jobs, or opportunities.
Prior Voting Record	The Board has previously voted against or indicated a likelihood of voting against a comparable policy.	The Board has not explicitly indicated a preference for or against a comparable policy.	The Board has previously voted or indicated likelihood of voting to pass a comparable policy.

Score: 5

Recommendation(s)

The previous analysis of cost, effectiveness, equity, and political feasibility for each alternative leads to the following outcomes matrix:

	Expand RPS 200	**Universal RPS 200**	**Year-Round Calendar**	**"Stand-alone" Intersessions**
Cost/ Student	Low: $445.75 High: $484.35	$478.75	$1,600.56	$560.20

Effectiveness/ Student	Low: 0.01 High: 0.26	Low: 0.04 High: 0.26	Low: 0.03 High: 0.24	Low: 0.01 High: 0.18
Cost-Effectiveness	Low: $1,714.42 High: $12,108.75	Low: $1,841.35 High: $11,968.75	Low: $6,669.00 High: $53,352.00	Low: $3,112.22 High: $56,020.00
Equity	Low: 5.22 High: 7.83	5.20	6.51	7.83
Political Feasibility	6	3	1	5

In general, it is clear that cost-effectiveness is highly variable for all policies: cost-effectiveness estimates range from the thousands to the tens of thousands across each alternative. This large range is primarily driven by the large range in the effectiveness of the policies. If one standard deviation increase in learning can be attributed to a given school year (Fitzpatrick et al., 2019), these instructional interventions could lead to an increase in learning from anywhere between a few days of school to a quarter of the school year.

While the program's intensive targeting of academically at-risk students makes it consistently equitable, *implementing a year-round model is not a viable option*, based both on the much higher per-student cost of implementing the year-round model, and the potentially large cost-per-unit increase in scores due to the high variance in effectiveness. It is also not politically feasible due to its lack of flexibility and autonomy built in for teachers and families, its poor adaptability to existing schedules that rely on consistent breaks, and because the Board has previously voted against it.

Implementing a universal model of the 200-day calendar for all Elementary students is also not very politically feasible, and it not well targeted. While it has a similar per-capita cost-effectiveness, its total cost of more than $11 million is much higher than can be feasibly implemented by the division. Moreover, it has similar problems to the Year-Round Calendar of lack of autonomy for teachers and families.

The two most viable alternatives are continuing the expansion of RPS 200 and "stand-alone" intersessions. While short-term intersessions are both reasonably affordable and highly equitable, the uncertainty around the effectiveness of the program leads to high variance in its cost-effectiveness. While both estimates of effectiveness are highly variant, the literature for additional days of instruction is stronger than small-group tutoring, and is therefore given more weight. However, it is important to note that if RPS 200 were to continue to expand beyond the 2025-26 year, it would eventually reach a point of higher expense due to the greater number of students recruited. This could potentially affect the relative cost-effectiveness of the two policies.

Moreover, while the equity of the extended-year pilot is more uncertain than that of the intersessions, the program is still being expanded and designed. RPS 200 can be reasonably implemented to prioritize any of the policy goals, including achieving the same level of equity by targeting the highest-need schools. The initial two pilot schools – Cardinal Elementary and Fairfield Court – were two of the schools with the highest levels of concentrated disadvantage, suggesting this may be the intent of the Administration.

Lastly, the extended-year pilot is more politically feasible. Teachers and families have more autonomy and choice in participation for the intersessions, but the extended-year pilot incurs less scheduling and logistical costs for non-participating families and students – since it is a school-wide model – and has stronger historical support from the Board. Based on the relative cost-effectiveness and political feasibility of the program, **I recommend continuing to expand the RPS 200-day pilot.**

Implementation

To increase the political sustainability of this program, RPS should consider how to more effectively engage stakeholders and disseminate evidence about the program; increase coordination with services and agencies in Richmond City; and maintain a consistent funding stream for the pilot that is distinct from the General Operating fund.

Stakeholders

Superintendent Kamras and the Superintendent's office have been the primary advocating voice for the implementation of additional instructional time, including conducting community outreach, engaging eligible schools, and presenting data and calendars to the Board (MacGillis, 2023; Kamras, 2021a). Other implementation managers will include local and state officials in Richmond City and Virginia, who have indicated an interest in funding and supporting this initiative (RPS, 2023b) **and** who have the political means and will to incentivize stakeholders and engage with opponents.

The Richmond Public School Board is also a crucial stakeholder, as they have veto power on any proposal to change the calendar or budget. Nearly every vote on the RPS calendar, the extension of the model, or even gauging interest from schools for the expansion of RPS 200 in 2024 has been a split vote (MacGillis, 2023; RPS, 2023b). Board members have expressed concern about the opportunity costs of this program – which instills large costs for a restricted-access program as opposed to bolstering more widespread initiatives – and concerns about adequate community engagement and ensuring we are listening to all community stakeholders (RPS, 2021; RPS, 2023b).

Other key stakeholders include principals, teachers, and families – both parents and students. Principals of schools are essential to the implementation of the pilot. Not only must they select **into** the pilot, but then engage their teacher, staff, and parent body to garner support for the initiative – only schools that have demonstrated enough support from these stakeholders are selected for the program.

Teachers and parents are both equally essential to the implementation of this program, and success implementation for the 2025-26 school year will require their active engagement. The public comments of past calendar votes highlight that both teachers and families did not feel sufficiently heard – they felt as though there was a lack of transparency surrounding decisions, community engagement, and good faith efforts to assess the relative costs and benefits of the calendar (RPS School Board, 2021). They also highlighted concerns about the evidence supporting the program and the opportunity costs of the program – for their students, but also in terms of their own jobs, scheduling, and childcare arrangements (RPS School Board, 2021).

However, an equal number of teachers and parents highlighted support for efforts to increase student achievement and help the most high-need students.

Increasing Political Sustainability

The preferences of teachers, parents, students, and School Board members are heterogenous, and there will likely be a combination of both resistance and support for the expansion of the pilot. By design, the Board will vote on the calendar every year, so it is not feasible to embed the expansion of the pilot into the legal structure of RPS.

Moreover, there are several characteristics of this policy (and instructional interventions in general) that may threaten its future viability. Firstly, this policy is highly costly, particularly with an additional bonus system, and the cost will increase linearly as schools are incorporated into the pilot. There are also viable alternatives, or what other stakeholders perceive to be viable alternatives, to increasing instructional time or student achievement – intersessions, building out a stronger summer school program, high-dosage tutoring, or year-round schools, for example.

These characteristics of the policy necessitate additional action to ensure the political sustainability of the policy beyond the 2024-25, and 2025-26 school year:

1) **Increase coordination with Richmond City.** The mayor of Richmond has previously expressed his support for increasing instructional time and his commitment to direct city agencies to coordinate City's Department of Parks, Recreation and Community Facilitates, the Office of Community Wealth-Building, the Department of Social Services, and transit services with the new RPS Calendar (RPS, 2021a). Increasing coordination with City programs, especially programs that can offer during- or after-hours care for children who are not in additional school, can decrease the costs to families and teachers while ingraining the program in existing systems.
2) **Create or apply for dedicated funding stream for the program**. It is likely unsustainable to continue to fund the expansion of the pilot via the RPS General Operating Fund. RPS should begin by applying to the Virginia Year-Round & Extended Year School Grants, which provide up to $400,000 per school for implementation of extended- or year-round calendars, beginning in 2024 (Virginia Department of Education, 2023).
3) **Increase community engagement and clear articulation of the benefits.** RPS should begin actively engagement community members on the future expansion of the RPS pilot. Specifically, RPS should attend RPS Education Foundation "Community Hubs" to listen to parents and share accessible information about the program. Community Hubs family liaisons should also be trained to discuss learning loss and disseminate information about the program effectively.

At present, the benefits of the policy are relative concentrated, while the costs are dispersed across the division, which increases the potential sustainability of the program. However, if the perceived costs increase – either due to the financial costs of the program becoming more salient or because there is more demand for the program than the division can afford – stakeholder support, including Board support may shift. *In the scenario in which the Board does not vote to affirm the expansion of RPS-200, RPS should consider building out targeted instruction either via a standard 180-day calendar with intersessions or by expanding access to the RPS summer school program*.

Implementation Timeline: Steps Forward

Date	Action
July to August, 2024	Conduct Extensive Community Engagement: Send surveys both electronically and via mail to 1) families who participated in the pilot on their experiences and perceptions, and 2) to families who did not participate in the pilot on their perceptions of and interest in the program. Train RPS Liaisons at Community Hubs to discuss the program with family members who are less likely to engage with the survey and program. Offer teachers supplement pay to participate in workshops over the summer, both to receive feedback on the program and to brainstorm effective curriculum and best practices for the additional 20 days. Meet with Richmond Education Association to discuss teacher collective bargaining restrictions and receive their input on calendar design. Conduct quantitative evaluation of attendance, test scores, and non-academic outcomes at the pilot schools relative to district averages and comparable non-pilot schools. Recruitment: Invite principals as well as families and teachers who are interested in the program to attend Town Halls on the program.
October to November, 2024	Submit an implementation plan with input and quotes from parents and teachers to the Superintendent and Richmond School Board. Outline key funding streams or sources, especially those from state and federal grants targeting learning loss; reasons for parental and teacher support; and logistics. Present data on attendance, test scores, and other key outcomes from the first year of the pilot.

	The calendar year must be proposed by the Superintendent by <u>November 2024</u> to be implemented by the 2025-26 school year. Read and respond to public comments from students, parents, and teachers. Hold focus-groups to understand concerns based on public comments.
February, 2025	Release formal design of calendar. Notify families and receive any requests for opting-out. Create one-page resources outlining the logistics and benefits of the calendar to be disseminated at Community Hubs.
March – July 2025	Clear communication of logistics and benefits to school communities Prepare curriculum and areas of intervention, with explicit feedback from teachers.

Conclusion

The widespread and unequal impact of learning loss layers onto longstanding problems with how we resource our education system and who we resource. If learning loss goes unaddressed, it presents significant harm to the economic outcomes of students, particularly non-White and low-income students. However, learning loss also presents a unique opportunity to think creatively about improving student outcomes and remediating disparities in education. Increasing instruction can be an effective tool for supporting student academic achievement and equity within and across schools, but it must be well-targeted, evidence-driven, and cost-effective. Piloting and expanding an extended-year calendar to the highest-need schools can effectively increase student performance and reach students who were most impacted by the pandemic; however, consistent funding sources and transparent communication with the community is necessary for future political viability.

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Appendix

Appendix 1: Cost Estimates

To estimate the cost of extending teacher contracts for a 200-day calendar, I use data on:

1) The number of FTE teachers by school in RPS from the National Center for Education Statistics Elementary / Secondary Information System. (2022-23)
2) The distribution of salaries (pay scales) by "steps" in 2023-24 as published by RPS
3) The percentage of teachers for a given school in RPS who hold a Bachelor's or Master's degree (from VDOE).
4) The percentage of teachers within a given range of experience at RPS from NCES.

I first **estimate the average salary for RPS teachers based on experience, by days of contract.** The salary a given teacher receives depends on the "step" (or their level of experience) as well as the number of days they are working. The salary scales published for 2023-24 show a distribution of payments for 200-day contracts, 210-day contracts, and 230-day contracts.

YEARS	GRADE	095	195	295	100	200	300	110	210	310	120	220	320
OF	LANE	B	M	M+30	B	M	M+30	B	M	M+30	B	M	M+30
EXPERIENCE	DAYS	200	200	200	210	210	210	230	230	230	260	260	260
0	Step 00	$54,253	$56,965	$59,804	$56,965	$59,814	$62,793	$62,392	$65,509	$68,774	$70,529	$74,056	$77,746
1	Step 01	$54,889	$57,633	$60,502	$57,633	$60,515	$63,527	$63,123	$66,278	$69,577	$71,356	$74,923	$78,651
2	Step 02	$55,530	$58,306	$61,211	$58,306	$61,222	$64,270	$63,860	$67,053	$70,391	$72,189	$75,800	$79,573
3	Step 03	$56,180	$58,990	$61,928	$58,990	$61,939	$65,025	$64,607	$67,836	$71,217	$73,034	$76,687	$80,507
4	Step 04	$56,837	$59,680	$62,652	$59,680	$62,662	$65,781	$65,364	$68,630	$72,047	$73,889	$77,580	$81,445
5	Step 05	$57,503	$60,378	$63,386	$60,378	$63,395	$66,554	$66,129	$69,433	$72,894	$74,753	$78,489	$82,400

Example of first five steps on teacher salary

In order to estimate the percentage of teachers within a school at each particular step (which is not publicly available), I use estimates from NCES on the percentage of teachers within the district as a whole with 0-3 years of experience, 3-9 years of experience, 9-20 years of experience, and 20+ years of experience. I assume a uniform distribution and divide these percentages equally across the steps within each range. I multiply these percentages – which I interpret as the probability of a given teacher in RPS being at that "step" in the distribution – by the respective salary value, and sum these values for an estimate of the mean salary in RPS. I repeat this exercise for both BA and MA salary scales across the 200-day, 210-day, and 230-day contract scales.

I then **calculate difference in salary by day, weighted by the percent of teachers with MAs and BAs in a given school.** I calculate the weighted mean salary for teachers on 200-day, 210-day, and 230-day contracts by school by weighting each estimated BA/MA salary by the reported percentage of teachers with BAs/MAs in a given RPS school. *I do not include teachers with Doctorates in this equation,* both because many schools have zero teachers with Doctorates and because there is not a clearly equivalent salary scale available for such teachers. Therefore, I recalculate the denominator of teachers in the VDOE education-level data to only include those with BAs and MAs, and use those respective percentages. Once I have a weighted average salary for each school by days-of-contract, I interpret the salary cost of adding 20 additional days (i.e. RPS 200), as the difference in salary between the 230-day and 210-day salary scales. I additionally calculate the difference between the 210-day and 200-day salary scales, and divide

both salary differences by their respective length differences. Both calculations produce the same estimate of the salary increase associated with one additional day of instruction: about $337.10.

For the current and universal extended-year model, I multiply this marginal cost by the total number of teachers in treated schools and by 20 days. This is my assumed salary cost of the program (for teachers, not staff/principals and APs).

For the cost of the intersessions (14-day and 40-day), I calculate both

1) the total cost derived from multiplying the marginal cost of an additional day ($337.10) by the total number of teachers required for the intersessions and the total days of the intersessions; and
2) the total cost derived from multiplying the proposed rate for "additional teacher work" by Superintendent Kamras (Kamras, 2021a) – $40 per hour – by the total number of hours worked over the intercessions and the total number of teachers required for the intercessions.

In addition to varying the method I use to calculate the actual cost, I vary several inputs that could be subject to change:

1) **Teacher-student ratio**. I calculate the number of teachers required to fulfill a teacher-student ratio of 1:8, as proposed by Superintendent Kamras (Kamras, 2021a) a teacher-student ratio of 1:14, the average ratio in RPS elementary schools, and a teacher student ratio of 1:24, the minimum ratio required in Virginia (Kamras, 2021a). I do not report final costs with a ratio of 1:24, because no elementary school in RPS operates with that ratio and it is highly unlikely for intended small-group instruction.
2) **The number of students recruited.** I calculate the total costs based on a treatment group (students in intercessions) size of 1,500, 2,855, and 5,000. The original proposal for 5,000 students encompassed Elementary, Middle, and High Schools. To scale it down to elementary schools, I consider the average size of an elementary school cohort relative to middle and high School cohorts and multiply this by 5,000 – this would mean about 1,500 elementary school students participate. I also sum the number of students in K-5 who were identified as "at-risk" of not passing a PALS, MAP, or SOL exam (Kamras, 2021a).

My final cost calculation for the cost of intercessions is based on Superintendent Kamras's proposed rate of pay ($40/hour), proposed teacher ratio (1:8) and the number of K-5 students deemed "at risk" (2,855) (Kamras, 2021a).

Appendix 2: Political Feasibility

I measure political feasibility as the likelihood of the program receiving majority support (at least 5/9 affirmative votes) by the RPS School Board. This is a function of both their own articulated preferences/beliefs and the preferences/beliefs of key constituencies – particularly teachers, parents, and students. Therefore, my three key "buckets" of constituencies are 1) the School Board themselves, 2) teachers and administrators, 3) families. Families encompass both teachers and students because – particularly for Elementary Students – information on student preferences is most often received from parents.

The values that each stakeholder holds, and the inputs towards their opposition or support for a program, are based on public statements at Board meetings and hundreds of public comments made by stakeholders throughout the voting process. While most of these comments pertain to year-round school, they can be generalized to understand how different stakeholders value 1) changes to the level and intensity of instruction, 2) attempts to target services or instruction, and 3) learning loss and the necessity of addressing it.

These are used qualitatively to inform how different stakeholders perceive the costs and benefits of different programs. They are **not** used as quantitative metrics (for example, the number of supportive or opposing comments for a given alternative) – there is inevitably selection in who is able to access and chooses to participate in these forums, which is likely related to the intensity of their preferences.

The public comments of teachers, students, and parents highlight several key "buckets" of reasoning and preferences.

Trends from Comments in Support of a Year-Round Model:

1. **Belief in the Fundamental Effectiveness of the Program.** Teachers, students, and parents note the degrees of learning loss that they have either experienced or witnessed. They believe that year-round school will increase student information retention and learning to effectively remedy the loss during the pandemic.
2. **A Year-Round Calendar May Reduce Burden on Families, Teachers, and Students.** This program may alleviate the burden for families who are dealing with the repercussions of COVID-19 in their own lives and have difficulty supporting their children's education during virtual instruction. Year-round calendars may also reduce the burden for families with caregivers who work outside of the home. Frequent and shorter breaks may reduce the feeling of "rushed schooling" while increasing instruction time.
3. **Belief in the Necessity of the Program as an Equity Measure:** Parents and teachers report their support for targeting the highest need students and addressing the pre-existing and exacerbated racial and socioeconomic gaps in RPS and more broadly.

Trends from Comments in Opposition to a Year-Round Model:

1. **Behavioral or social effects of interventions.** Parents and teachers highlight concerns that separating or isolating students from their peers based on performance (and neglecting them from breaks) will have effects on student self-confidence and sense of community.

2. **Targeting concerns of interventions and effect on non-selected.** Parents and teachers report concerns about the rigor in selecting 5,000 students for intercessions. Some report concern that this sends the message that only 5,000 students matter or are deserving of additional support post-pandemic. Other comments highlight concern about thresholds of students or selection thresholds and if they may be arbitrary. Lastly, parents report being unclear about how the proposed calendar would benefit the remaining 20,000 students.
3. **Concerns about the effectiveness of the intervention.** Parents and parents highlight concerns about the underlying data supporting the effectiveness of the intervention. Comments highlight lack of rigor of research, negligible findings, and outdatedness of some references. Comments also highlight that most referenced year-round schools in Virginia have since discontinued their year-round program.
4. **Concerns about scheduling and consistency across neighboring divisions.** Parents and teachers report concern about misalignment of schedules with neighboring divisions, where other children of parents and teachers attend school. Specifically, parents and teachers report concerns about child care (both for Pre-K and for K-12) students during intercessions. Students also report concerns about misalignment of schedule with siblings or peers not in RPS.
5. **Opportunity costs of summer.** Parents and students, in particular, highlight concern about the loss to students who will not be able to work summer jobs, partake in family opportunities, or have outside development opportunities. Concerns about scheduling, commitment to summer activities including jobs, random breaks may throw off cycle, break from stress
6. **Concerns about the Execution of the Year-Round Calendar.** Parents, teachers, and students assert that the timing and the roll-out of the calendar are too rushed, and that there are not enough options (relative to what was originally promised) to review. Comments underscore concerns about transparency, thoughtfulness, and financial impact of the program given the short time frame over which it was developed and the community was engaged. Comments also underscore concerns about disruptiveness of calendar to existing plans (or jobs) due to the timing of its roll-out. Multiple comments indicate a preference for either returning to the calendar the following school year or for a longer period for research, community engagement, and potential pilots.
7. **Pandemic-Specific Concerns.** Parents, teachers, and students highlight concerns about disruption and burnout post-pandemic. Teachers highlight the implementation of two new curricula models during virtual instruction, and emphasize that too much change can increase burnout during an already strenuous period. Students and parents emphasize a need to return to normalcy after the pandemic, and highlight that basic priorities (such as returning all students to school in-person and safely) should take precedent.