

# RECRUITING AND RETAINING TEACHERS FOR RPS200

Prepared by Elizabeth Link  
For Richmond Public Schools

# Table of Contents

<b>Table of Contents.....</b>	<b>1</b>
<b>II. Executive Summary .....</b>	<b>3</b>
<b>III. Mandatory Disclaimer .....</b>	<b>4</b>
<b>IV. Acknowledgements.....</b>	<b>5</b>
<b>Section 1: Introduction.....</b>	<b>6</b>
<i>1.a. RPS200: A response to pandemic-driven learning loss.....</i>	<i>6</i>
<i>1.b. Problem Statement: Unsustainable Bonuses .....</i>	<i>7</i>
<b>Section 2: Client Overview.....</b>	<b>7</b>
<i>2.a. Teacher satisfaction and retention are a priority for the division.....</i>	<i>7</i>
<i>2.b. RPS can and should restructure participation benefits now .....</i>	<i>8</i>
<b>Section 3: Background.....</b>	<b>8</b>
<i>3.a. Pandemic-Driven Learning Loss.....</i>	<i>8</i>
<i>3.b. RPS200: Policy Details .....</i>	<i>9</i>
<i>3.c. Satisfaction and Retention in RPS.....</i>	<i>10</i>
<b>Section 4: Criteria.....</b>	<b>13</b>
<i>4.a. Cost Effectiveness for Teachers .....</i>	<i>13</i>
<i>4.b. Cost Effectiveness for Students .....</i>	<i>13</i>
<i>4.c. Political Feasibility .....</i>	<i>14</i>
<i>4.d. Administrative Feasibility .....</i>	<i>14</i>
<b>Section 5: Alternatives and Findings.....</b>	<b>15</b>
<i>5.a. Alternative 1: Maintain the Status Quo .....</i>	<i>15</i>
5.a.i. Cost .....	15
5.a.ii. Cost Effectiveness – Teacher Retention .....	15
5.a.iii. Cost Effectiveness – Student Achievement .....	16
5.a.iv. Political Feasibility.....	16
5.a.v. Administrative Feasibility.....	17
<i>5.b. Alternative 2: Private Partnerships .....</i>	<i>18</i>
5.b.i. Cost .....	19
5.b.ii. Cost Effectiveness – Teacher Retention .....	20
5.b.iii. Cost Effectiveness – Student Achievement .....	20
5.b.iv. Political Feasibility .....	20
5.b.v. Administrative Feasibility .....	21
<i>5.c. Alternative 3: Bi-weekly Substitute Activities .....</i>	<i>22</i>

5.c.i. Cost .....	23
5.c.ii. Cost Effectiveness – Teacher Retention .....	23
5.c.iii. Cost Effectiveness – Student Achievement .....	24
5.c.iv. Political Feasibility .....	25
5.c.v. Administrative Feasibility .....	25
<i>5.d. Alternative 4: Supplement Student Loan Payments</i> .....	26
5.d.i. Cost .....	27
5.d.ii. Cost Effectiveness – Teacher Retention .....	27
5.d.iii. Cost Effectiveness – Student Achievement .....	28
5.d.iv. Political Feasibility .....	28
5.d.v. Administrative Feasibility .....	29
<b>6. Recommendation</b> .....	<b>30</b>
6.a. Outcomes Matrix .....	30
6.b. Recommendation .....	30
<b>7. Implementation</b> .....	<b>32</b>
7.a. Next Steps to Create Private Partnerships .....	32
7.b. Next Steps to Continue Offering Small Bonuses .....	32
7.c. Barriers to Implementation .....	33
<b>Section 8. Conclusion</b> .....	<b>34</b>
<b>V. References</b> .....	<b>35</b>
<b>VI. Appendix A – Additional Formulas and Data used to Estimate Cost</b> .....	<b>42</b>

## II. Executive Summary

This report was prepared for Richmond Public Schools (RPS) to offer insights into how they can shape an appropriate compensation plan to incentivize teacher participation in RPS200, an extended school year pilot program that aims to combat pandemic-driven learning loss.

RPS200 was launched in July of 2023 in two elementary schools. Currently, teachers that work at participating schools receive a \$10,000 participation bonus and could receive an additional \$5,000 bonus if students' scores on standardized tests improve significantly over the course of the year. The division has approved the continuation of the pilot program in both schools and its expansion to at least two others. However, continuing to offer these bonuses may be unsustainable. If the division cannot adequately compensate teachers for participating, it may not have enough teachers to continue RPS200 in future years.

I analyzed four alternative compensation plans the division could pursue: these are maintaining the current bonus structure, partnering with small businesses in Richmond to offer teachers special deals, offering bi-weekly activities to students that would shorten the school day for teachers, and assisting teachers with student loan payments. For each of the alternatives, I assessed cost effectiveness, measuring how the policy would impact teacher retention and improve student achievement. I also analyzed the political and administrative feasibility for each policy option. This analysis led me to conclude that partnering with small businesses to offer teachers special deals in conjunction with offering small participation bonuses is the best course of action for the division. This recommendation is the most cost effective at improving teacher retention, the second most cost effective for improving student achievement, and the most politically feasible option. While it could be administratively challenging, hiring two additional people to manage the small-business partnerships and market the program will make it easier to implement. Lastly, removing bonuses entirely may be detrimental to teacher satisfaction, especially among teachers already participating in the pilot. Consequently, the division should continue offering small bonuses for participation.

To implement this policy, RPS should hire a Small Business Liaison and a Marketing Specialist. They should also conduct a focus group of teachers to identify goods and services teachers want. Using their findings from the focus group, RPS should partner with Richmond's Chamber of Commerce to identify and contact small businesses willing to participate. After negotiating a final package of special deals these businesses can offer to teachers, RPS should communicate this package to teachers and advertise these businesses as "supporters of Richmond Public Schools." RPS should also apply to grants offered by the Virginia Department of Education to school districts looking to pilot extended school year models to fund small bonuses.

By assembling an appropriate package of benefits to teachers in partnership with small businesses in Richmond, RPS will be able to recruit and retain teachers to work at schools piloting RPS200. Appropriately staffing schools will allow the pilot program to continue and scale throughout the division as RPS combats learning loss from COVID-19.

### **III. Mandatory 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.

## IV. Acknowledgements

This paper was made possible only through the support of my wonderful friends, family, and advisors.

First, I would like to thank Professor Jim Wyckoff, Professor Andrew Pennock, Professor Noah Myung, and Professor Dan Player for their continuous support and thoughtful feedback.

I also wish to thank Richmond Public Schools and Professor Jim Wyckoff for allowing me to work on this project. I would also like to thank Andrew Bishop at RPS for his support in making this project possible.

A thank you is also owed to Margaret Sparling, Ben Rosenthal, and Anna Heetderks for assisting me as I thought through each aspect of this project in APP I and APP II.

I would especially like to thank Eileen Powell, who has been my partner in thinking about RPS200 and working on this APP. Thank you, Eileen, for supporting me through the ups and downs of this project and always being willing to take time out of your incredibly busy schedule to help me.

Lastly, I would like to thank my parents. Mom and Dad, thank you for always being my cheerleaders. Without you, none of this would be possible.

# Section 1: Introduction

## 1.a. RPS200: A response to pandemic-driven learning loss

On July 24, 2023, students at two Richmond elementary schools zipped up their backpacks one-month earlier than usual and headed back to the classroom. Just a few months earlier, their parents voted for their school to be part of the pilot for RPS200, an initiative to extend the school year to 200 days instead of the traditional 180 to combat learning loss driven by the COVID-19 pandemic (Barefoot, 2023; MacGillis, 2023).

Students in Richmond attended school remotely for 18 months because of the COVID-19 pandemic (MacGillis, 2023). This policy was designed to protect students, their families, and their communities from COVID-19, but student achievement in RPS declined significantly because of the time they spent outside of the classroom. While schools across the country have grappled with declines in test scores after the pandemic for similar reasons, Richmond is among the hardest-hit school districts in the country (“New Data Show How the Pandemic Affected Learning Across Whole Communities,” 2023).

The extended school year is currently being piloted in Cardinal Elementary School and Fairfield Court Elementary School. The division has incentivized teachers to participate by offering them a \$10,000 bonus and an extra month of salary. Additionally, if the school shows significant gains in student learning, teachers will receive an additional \$5,000 bonus. These bonuses are funded using money the division received through the American Rescue Plan’s Elementary and Secondary School Emergency Relief Fund (ARP ESSER), which were funds from the federal government allocated to school districts to assist with their responses to the COVID-19 pandemic (MacGillis, 2023).

In December 2023, the division’s school board voted 6 to 3 to continue the extended school year program in Cardinal and Fairfield Court and expand it to at least two additional schools (Gonzalez, 2023a; Karmas 2023b). Because the funds used to finance these bonuses are not renewable, it may be unsustainable for the division to continue incentivizing teacher participation through \$10,000-\$15,000 bonuses.

In this report, I explore the efficacy of these bonuses and potential alternative incentives RPS could offer teachers. I project the cost, effectiveness, and feasibility for each policy option. Using these projections, I recommend RPS partner with small businesses to offer discounts to teachers and smaller bonuses in lieu of the \$10,000 participation bonuses they are currently offering. I conclude by discussing how RPS can implement my recommendation.

This first section includes my problem statement. Section 2 describes the problem in the context of RPS. Section 3 provides background on learning loss and teacher retention, both in the United States and in RPS. Section 4 outlines the criteria with which I evaluate my proposed policy alternatives. These alternatives are discussed and evaluated in Section 5. Using these

evaluations, I provide a final recommendation in Section 6. I discuss how RPS can implement my recommendation in Section 7. Lastly, I offer concluding thoughts in Section 8.

### **1.b. Problem Statement: Unsustainable Bonuses**

Given 67 teachers work at both Cardinal and Fairfield Court Elementary Schools, the division will have to spend between \$670,000 and \$1,005,000 in bonuses to teachers alone for just two participating schools (*Cardinal Elementary School (2023-24 Ranking) - Richmond, VA., n.d.*; *Fairfield Court Elementary School (2023-24 Ranking) - Richmond, VA., n.d.*). Because the funds used to pay these bonuses are nonrenewable, these large bonuses may be unsustainable for the division to continue to offer, especially as it expands to more schools in the division.

To make matters more complicated, in the 2021-22 school year, one in five teachers left the division (Clemmons, 2024). This turnover rate is well above the national average for urban school districts, which is 14 percent (Diliberti & Schwartz, 2023). *Although teachers have opted-in to RPS200, if the division cannot adequately incentivize and compensate participating teachers, the long-term feasibility and scalability of the program could be jeopardized.*

## **Section 2: Client Overview**

### **2.a. Teacher satisfaction and retention are a priority for the division**

RPS is the public school system for Richmond, Virginia. It governs 44 schools in total, consisting of 26 elementary schools, seven junior high schools, eight high schools, and three combined schools. Twenty schools are fully accredited; the other 16 are accredited with conditions (*Richmond City Public Schools - Virginia School Quality Profiles, n.d.*).

Jason Karmas is the superintendent of the division. The division is also governed by a nine-member elected school board who represent nine different districts of schools in the division (*Richmond City School Board, n.d.*).

The division's strategic plan for 2018-2023 is outlined in *Dreams4RPS*, and the division is currently engaged in the planning process for their new strategic plan, *Dreams4RPS: Let's Keep Dreaming (Dreams4RPS Strategic Plan, n.d.)*. Because the new strategic plan has not been finalized by the division, I use *Dreams4RPS* as a proxy for the division's goals.

Strategic goal 4, "teacher retention," focuses on increasing teacher retention. Additionally, one of their priorities is having a skilled and supported staff, which they describe to encompass offering teachers competitive pay and a range of incentives to recruit and retain teachers (*Dreams4RPS: The 2018-23 RPS Strategic Plan, 2018*). Strategic Goal 6 is "Satisfaction" and past work on goal 6 has included surveying teachers on the respect they feel in their schools, their



working environments, and the available resources they have access to, among other things (Bishop, 2022a; Bishop, 2022b; *Dreams4RPS: The 2018-23 RPS Strategic Plan*, 2018). Because large sections of *Dreams4RPS* focus on teacher satisfaction, compensation, and retention, evaluating the incentives participating teachers are offered to participate in RPS200 and proposing novel policy alternatives to inform compensation and promote participation is in line with the division's strategic goals.

## **2.b. RPS can and should restructure participation benefits now**

Currently, the bonuses associated with RPS200 are funded with leftover pandemic-era aid. These funds will not be renewed by the Department of Education. Simultaneously, the current bonus structure is extremely expensive.

Notably, teachers are one of the most important factors in determining the success of the program; if RPS cannot adequately staff these schools, they will not be able to implement RPS200. Simply put, they need teachers in front of the classroom for the program to happen at all. They need to properly compensate them for their time and effort to recruit and retain teachers.

Because the RPS administration is central to RPS200, they are primarily responsible for addressing concerns regarding teacher satisfaction and retention. Their human resources staff and benefits and compensation Director, Alyson Davis, have the authority to assemble a package of benefits, bonuses, and other incentives to encourage teachers to participate (*Benefits and Compensation*, n.d.).

# **Section 3: Background**

## **3.a. Pandemic-Driven Learning Loss**

School closures during the COVID-19 pandemic had deleterious effects on student learning across the country. Results from the 2022 National Assessment of Education Progress (NAEP), a nationally representative standardized test of 9-year-old students, revealed that math scores dropped for the first time since the test was introduced in the 1970s and reading scores dropped by more than they had in the last three decades (*NAEP Long-Term Trend Assessment Results: Reading and Mathematics*, n.d.). These learning declines were also significantly worse for the students who were scoring the lowest on the NAEP prior to the pandemic; 90<sup>th</sup> percentile scores only decreased by 2 points in reading and 3 points in math, but 10<sup>th</sup> percentile scores decreased by 10 points and 12 points in reading and math, respectively (Mervosh, 2022; *NAEP Long-Term Trend Assessment Results: Reading and Mathematics*, n.d.).

Richmond was among the hardest hit communities by pandemic-driven learning loss, according to Thomas Kane, the faculty director of the Center for Education Policy Research at Harvard University (“New Data Show How the Pandemic Affected Learning Across Whole Communities,” 2023).

The average student in RPS in 2022 was performing approximately three grade levels below the average student in the United States in 2019 on math and reading tests. In other words, the average fourth grader in RPS in 2022 was performing at the same level as first-graders in the United States in 2019. Moreover, the performance of an average RPS student in 2022 was 1.24 grade levels behind the average RPS student in 2019 in mathematics and 1.33 grade levels behind the average RPS student in 2019 in reading (*The 2019-2022 Education Recovery Explorer*, n.d.).

Learning loss, if left unaddressed, could have massive consequences for both students and their communities. Hanushek (2023) estimates that this learning loss will manifest in a 6 percent decrease in lifetime earnings. This decline is worse for historically marginalized communities; for Black students, the estimated decline in lifetime earnings resulting from school closures during the pandemic is closer to 8 percent. Moreover, economists expect that this pandemic-driven learning loss will result in a lower skilled workforce, costing the U.S. economy an estimated \$28 trillion dollars – more than a year of Gross Domestic Product. For scale, the Great Recession only cost the U.S. economy \$5 trillion (Hanushek, 2023).

### **3.b. RPS200: Policy Details**

The division responded to the pandemic-driven learning loss by implementing RPS200. This policy was inspired by a large body of research indicating that student learning increases as they spend more time in school (MacGillis, 2023).

Elementary school students attend school from 7:45 AM to 2:45 PM, amounting to a seven-hour school day (*Bell Schedule*, n.d.). If at least an hour of the day is spent in recesses and lunch, this would amount to six hours a day of learning time. Thus, under RPS200, students receive an additional 120 hours of classroom instruction.<sup>1</sup>

There are currently two participating schools on RPS200: Cardinal Elementary School and Fairfield Court Elementary School. Table 1 contains information on both elementary schools.

---

<sup>1</sup> If we assume students do not receive lunch or recess, which is unreasonable, students would receive an additional 140 hours of instructional time. This is the absolute maximum.

Table 1: Demographic Characteristics of Participating Schools	
Cardinal Elementary School	Fairfield Court Elementary
<b>47 teachers</b> work at Cardinal and <b>584 students</b> were enrolled for the 2023-24 school year.	<b>20 teachers</b> work at Fairfield Court and <b>245 students</b> were enrolled for the 2023-24 school year.
In 2023, the school was <b>accredited</b> . <b>Zero</b> state-quality indicators were below the state standard.	In 2023, the school was <b>accredited</b> . However, <b>all 6</b> state-quality indicators were below the state standard.
<b>53%</b> of students were classified as economically disadvantaged in the fall of 2022.	<b>96%</b> of students were classified as economically disadvantaged in the fall of 2022.
Sources: <i>Cardinal Elementary - Richmond City Public Schools</i> , n.d.; <i>Cardinal Elementary School (2023-24 Ranking) - Richmond, VA.</i> , n.d.; <i>Fairfield Court Elementary - Richmond City Public Schools</i> , n.d.; <i>Fairfield Court Elementary School (2023-24 Ranking) - Richmond, VA.</i> , n.d.	

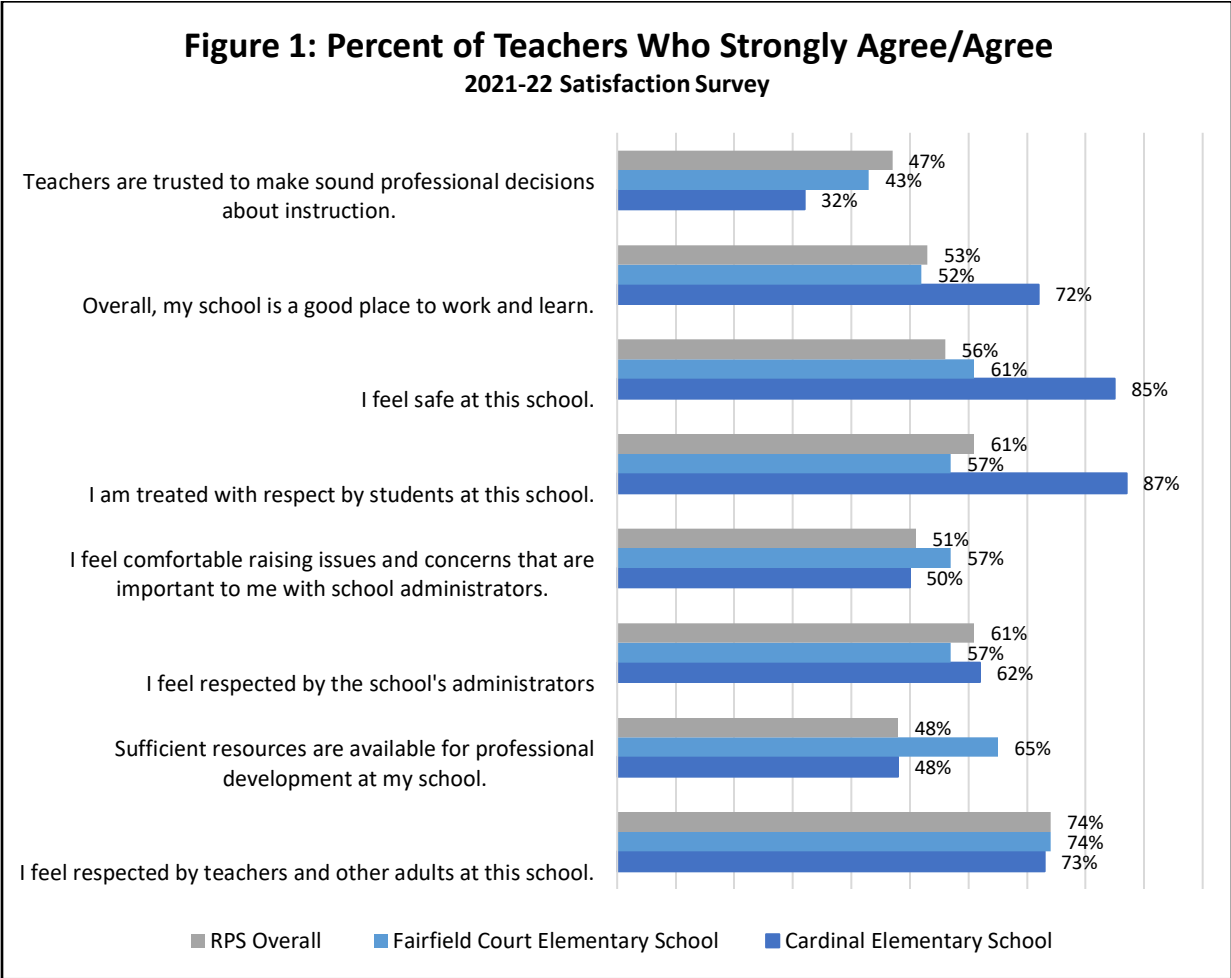
Cardinal Elementary School is much larger than Fairfield Court Elementary School. Despite the lower student-to-teacher ratio at Fairfield Court Elementary School, teachers at Cardinal appear to like their place of work more and the school meets all six of Virginia's quality indicators (*Cardinal Elementary - Richmond City Public Schools*, n.d.). Fairfield Court is below the standard on all quality indicators (*Fairfield Court Elementary - Richmond City Public Schools*, n.d.). Both schools have large populations of disadvantaged students. Almost all students at Fairfield Court and over half of students at Cardinal are economically disadvantaged. Further, at Cardinal (Fairfield Court), 84 (6) percent of students are Hispanic, 13 (92) percent are Black, 18 (3) percent are English Learners, and 6 (10) percent have a disability (*Cardinal Elementary - Richmond City Public Schools*, n.d.; *Fairfield Court Elementary - Richmond City Public Schools*, n.d.).

### 3.c. Satisfaction and Retention in RPS

In a survey of teachers during the 2021-22 school year, only 43 percent of teachers in the division were classified as “satisfied.” This satisfaction rate is well below the national average, which is estimated to be between 70 and 82 percent (*Teacher Satisfaction With Salary and Current Job*, 2021)

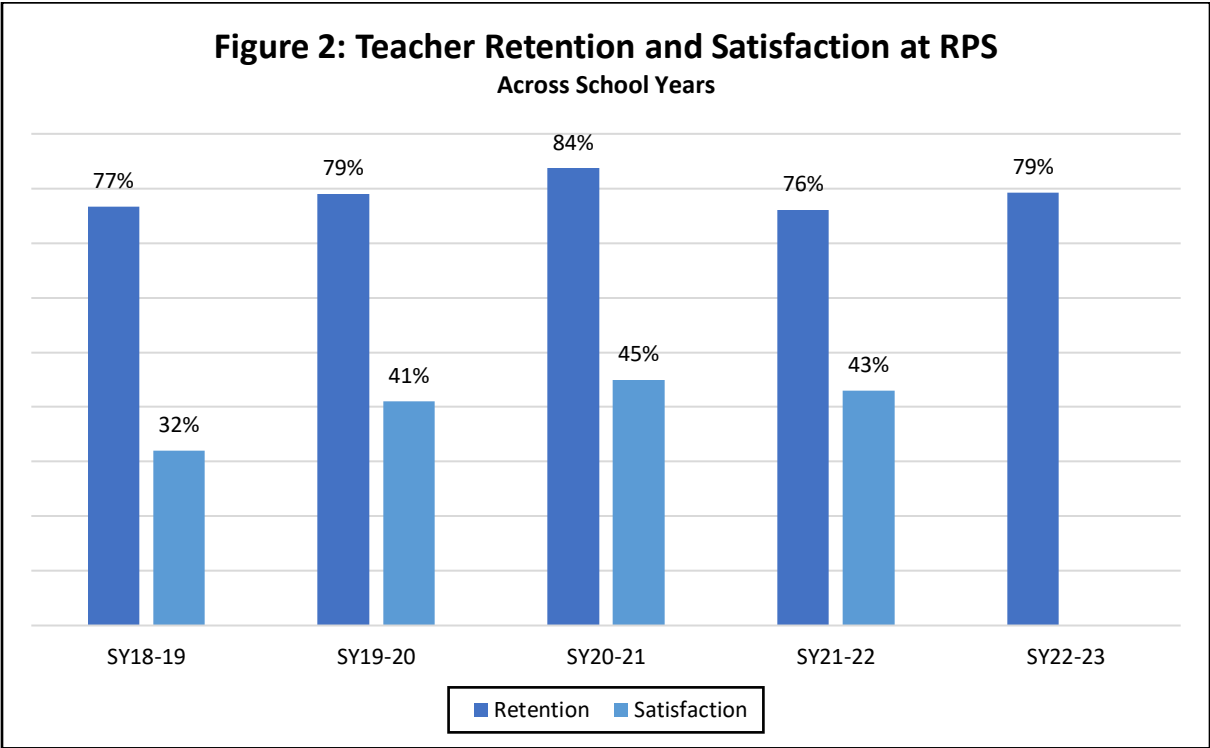
Moreover, the satisfaction rate in RPS in the 2021-22 school year was 2 percentage points less than the share of teachers who reported being satisfied in their jobs in the 2020-21 school year but greater than the shares of satisfied teachers in the 2019-20 and 2018-19 school year (Bishop, 2022b). These satisfaction shares were constructed using the results from a survey of teachers that asked them to rate the extent to which they agreed with a series of statements.

Figure 1 plots the share of teachers who strongly agreed or agreed to each statement on the 2021-22 satisfaction survey by school.



Compared to all teachers at RPS and teachers at Fairfield Court Elementary, teachers at Cardinal were overwhelmingly more likely to indicate that their school was a good place to work and learn, they felt safe, and they were treated with respect by students at the school. Teachers at Fairfield Court were more likely than other teachers to indicate that they felt they had sufficient resources for their professional development. Teachers at Cardinal and Fairfield Court agreed with the sentiment that they felt respected by teachers and other adults at their school at the same rate as most teachers in RPS. However, teachers at both schools lagged behind the division average in the extent to which they agreed that teachers were trusted to make sound professional decisions about instruction (Bishop, 2022b; Clemmons, 2024).

Job satisfaction and retention are strongly correlated (Madigan & Kim, 2021; Richter et al., 2022). Figure 2 summarizes teacher retention and satisfaction over time at RPS. Data on teacher satisfaction is not available for the 2022-2023 school year.



Teacher retention and satisfaction follow similar trends. Between the 2018-19 school year and the 2020-21 school year, both increased. They then both decreased in the 2021-22 school year. These findings further indicate that satisfaction and retention are likely closely related in RPS (Bishop, 2022b; Clemmons, 2024).

Exit surveys of teachers who left between August 23, 2023 and February 20, 2024 indicate that 62 percent of respondents mention the school’s culture and climate as a reason for their leaving. This reason for leaving is followed in frequency of mentions during the exit survey by mentions of the preparation and support offered to teachers (54 percent); compensation, benefits, and career advancement (31 percent); and retirement (23 percent) (Clemmons, 2024).

Teachers are a critical part of the success of RPS200; if teachers choose not to participate, the program cannot be implemented.

Even if RPS can staff schools participating in the pilot school, teacher turnover can still have deleterious consequences on student learning. In a study of New York City fourth- and fifth-

grade students over 8 years, researchers found that students in grades with more teacher turnover scored lower in reading and math. These effects were also not equitably distributed; Black students had larger declines in test scores when they were in grades with higher teacher turnover (Ronfeldt et al., 2013). Simply put, being able to retain teachers participating in the pilot program is critical to the success of the program in remedying pandemic-driven learning loss.

## Section 4: Criteria

In this section, I discuss the criteria used to evaluate my policy alternatives. I describe both the significance and operationalization of each criteria.

### 4.a. Cost Effectiveness for Teachers

Because RPS is constrained in the amount of funding it receives, RPS must care about the effectiveness of the policy to retain teachers relative to the cost of the alternative.

To operationalize this criterion, I sum all accounting costs associated with implementing each alternative for one academic year per school and divide this sum by the expected effectiveness the program has in retaining teachers. I measure effectiveness as the percentage point change in teacher retention for a school in one school year associated with each alternative. I also assume that teacher retention is the exact opposite of teacher turnover.

I further assume that the change in retention that can be attributed to the 20 extra days teachers work is the same for each alternative at baseline. The estimated changes in teacher retention can be understood as the effect of implementing the alternative instead of the net change in teacher retention associated with RPS200 and the incentive.

### 4.b. Cost Effectiveness for Students

Students are at the heart of RPS200 and *Dreams4RPS*. Consequently, the impact of each policy alternative on students must be evaluated.

I will sum all the costs associated with the program for one academic year at one school and divide this sum by the expected effect the program will have on standardized test scores. The expected change in test scores can be negative, positive, or zero. I will report all expected score changes in standard deviation units.

There are many other outcomes for students that the district cares about, including well-being, projected graduation rates, and attendance (*2018-23 Dreams4RPS Outcomes Report, 2024*). I have chosen to focus on test scores because boosting test scores was the key goal of the

RPS200 policy (Karmas, 2023a). Moreover, the effects of each alternative on test scores are easier to quantify than other goals (for example, students' subjective well-being), and are correlated with other factors RPS may care about, like attendance (Gottfried, 2010).

#### **4.c. Political Feasibility**

The school board must approve most policies and actions of the division (*Code of Virginia Code - Chapter 7*, n.d.). Because the school board is an elected body, they are beholden to the political interests of school leaders, parents, community members, and other stakeholders. Any alternative proposed is likely going to need to be presented to the board and may need to receive the board's approval. Thus, the political feasibility of each alternative is a vital criterion to evaluate.

I will evaluate political feasibility by the likelihood their stakeholder groups support or oppose the policy. I identify these stakeholder groups in the analysis below. For each stakeholder group, the alternative will receive (-1) points if the group is likely to oppose the proposition, (0) points if the group is expected to be indifferent to the proposition, and (1) point if the group is likely to support the proposition. Higher scores indicate more community support and, thus, higher political feasibility. I report political feasibility as the sum of scores across stakeholder groups divided by the number of stakeholder groups.

#### **4.d. Administrative Feasibility**

RPS has a large administration that oversees and executes the actions of the division, including gathering and analyzing data, maintaining partnerships, and administering benefits. Any proposed policy alternative thus ought to be evaluated against the ability for RPS's administration to execute the policy alternative among their many competing priorities.

To operationalize this criterion, I will evaluate each alternative for:

- the capacity the division has to execute the alternative,
- the extent to which the division has the necessary resources to implement the alternative,
- and the complexity of the alternative for the administration.

For each of these categories, the alternative will receive a score of (0), (0.5), or (1), with higher scores indicating better administrative capacity. I weigh each of these categories equally. Final administrative feasibility scores are the sum of scores across the three categories.

## Section 5: Alternatives and Findings

In this section, I describe and evaluate alternative incentives RPS could offer participating teachers. These policy alternatives include:

1. continuing to offer teachers \$10,000 to \$15,000 in bonuses each year,
2. establishing partnerships with small businesses throughout Richmond to offer teachers special discounts and deals,
3. biweekly substitute activities for students that shorten the work week for teachers,
4. and a program to offer teachers assistance with student loan payments.

I evaluate each policy alternative as if they are exclusive and independent policy options.

### 5.a. Alternative 1: Maintain the Status Quo

The first policy option involves continuing to offer participating teachers \$10,000-\$15,000 in bonuses as RPS200 continues.

The evidence on the effectiveness of offering teachers bonuses on retention is mixed. In a review of Florida's use of bonuses to attract teachers in hard-to-staff areas, which included Special Education, Math, and Science, researchers found that bonuses of just \$1,200 substantially increased the likelihood that teachers stayed in their jobs, although this effect was largest in the short-run (Feng and Sass, 2017). Similarly, in 2020, Hawaii offered a \$10,000 annual bonus to attract and retain special education teachers. This program attracted new teachers but did not affect teacher retention (Theobald et al., 2023). Thus, maintaining the bonuses offered to teachers may encourage them to participate in the program, but may not boost retention, especially in the long run.

Moreover, in the 2007-08 school year, New York City's Department of Education introduced the Schoolwide Performance Bonus Program (SPBP), which offered bonuses to groups of educators in schools if the school met the district's learning goals. Like RPS's incentive structure, SPBP made groups of teachers accountable for reaching the district's target as opposed to individual teachers. There were no significant gains in student performance or teacher satisfaction under this program (Marsh and McCaffrey, 2011).

#### 5.a.i. Cost

In the first year of the pilot program, RPS estimated that the program cost them \$2,716,000 (Karmas, 2023a). Thus, the average cost per school was **\$1,358,000**.

#### 5.a.ii. Cost Effectiveness – Teacher Retention

Because RPS has not released statistics on the number of teachers who have left the district by school yet, I pull estimates of the effect of a one percent salary increase on teacher turnover in Texas between 1996 to 2012 from Hendricks (2014) to compute the estimated effect of the



boost in pay teachers receive for participating in the program on their turnover rates. These values are included in Table 1 of Appendix A. To estimate the effect of the boost in pay teachers receive on retention rates, I use these estimates, data on the share of teachers with less than 1 and less than 3 years of experience working at Cardinal and Fairfield Court Elementary School, RPS's 2023-24 teacher salary scales, and the share of teachers with a Bachelor's degree, Master's degree, and more than an Master's degree by school. Table 2 of Appendix A contains the 2023-24 salary scales by degree level.

I estimate that receiving an extra month of pay and a \$10,000 participation bonus, will decrease teacher turnover by 4.32 percentage points at Fairfield Court and 6.19 percentage points at Cardinal. Averaging these two scores, I predict that this alternative will decrease teacher turnover by 5.26 percentage points.

If teachers receive the \$5,000 bonus for student performance on top of the extra month of salary and the \$10,000 bonus, I predict teacher turnover will decrease by 5.64 percentage points at Fairfield Court and 8.07 percentage points at Cardinal. The average of these two values is 6.86 percentage points.

I divide the estimated cost of the program by the estimated change in teacher turnover and find that to achieve a one percentage point decrease in teacher turnover, the district must spend between **\$197,959.18 and \$258,397.95** per school.

### ***5.a.iii. Cost Effectiveness – Student Achievement***

It is too early to evaluate the effectiveness of the current RPS200 program in improving student test scores. Consequently, in order to provide an estimate of the effect of the current policy on student test scores, I use a point estimate of the effect of an additional school day on test scores in Maryland. Hansen (2011) found that one additional day of instruction as opposed to losing a day of instruction to a snow day improved student test scores by 0.016 standard deviations. Multiplying this effect by 20 additional school days, I estimate that the extended school year could increase test scores by 0.32 standard deviations.<sup>2</sup> I thus find that to achieve a one standard deviation increase in student test scores, RPS would have to spend approximately **\$4,243,750.00** per school.

### ***5.a.iv. Political Feasibility***

The stakeholder groups associated with this policy include the teachers who would participate and school leadership.

The Richmond Education Association (REA), the union representing teachers in the division, has yet to comment on RPS200 and the bonuses offered to participating teachers. However, leaders in the organization have publicly spoken against the program. Prior to the pilot's implementation, Anne Forrester, REA's Vice President, told the school board "it doesn't make

---

<sup>2</sup> This calculation assumes the returns to an additional day of education are constant.

sense to do that until we've gotten our schools up to where they need to be. You're putting an addition on a house that has a leaky roof" (MacGillis, 2023). At the same time, some teachers spoke in favor of the policy, arguing that it was a much-needed response to pandemic-driven learning loss (MacGillis, 2023). Further, given the success of the program, it is unclear if teachers who opposed the idea of the program continue to oppose it. Given this uncertainty in teacher opinion, this alternative does not receive or lose a point for the opinion of teachers on the policy. This alternative receives (0) points for teacher support.

School leadership is generally supportive of the policy because of the large gains already seen in student test scores. In his presentation to the school board, Karmas recommended continuing the program in Cardinal and Fairfield Court and expanding the program to at least two additional schools (Karmas, 2023b). Thus, this alternative receives (1) point for the support it receives from school leadership.

This alternative receives (1) out of (2) points for the support it receives from school leadership. The final score is therefore **1/2**.

### ***5.a.v. Administrative Feasibility***

Because RPS is currently operating RPS200, there is a team at RPS dedicated to the program, and the division has worked to think about the longevity of the pilot program. Thus, the alternative receives (1) point for the division's capacity to execute it and (1) point for the low complexity of the alternative. However, the current program is funded through left-over pandemic relief funds (MacGillis, 2023). Continuing this pilot requires Richmond to find a new source of funding, which indicates that the division currently lacks the resources to implement this alternative.

Table 2 summarizes these findings in a rubric. The final score for the alternative is **2 points**.

Table 2. Administrative Feasibility Rubric for Alternative 1	
<b>Capacity:</b> The capacity the division has to execute the alternative.	<b>1 point</b>
<b>Resources:</b> The extent to which the division has the necessary resources to implement the alternative.	<b>0 points</b>
<b>Complexity:</b> The complexity of the implementation of the alternative for the administration.	<b>1 point</b>
<b>Final Score</b>	<b>2 points</b>

## **5.b. Alternative 2: Private Partnerships**

RPS could partner with small businesses in the community to offer teachers discounts and deals at local restaurants, entertainment spaces, and retail stores.

To start, RPS should conduct a focus group with a representative set of teachers to assess which products and services teachers would want in a package of discounts and special offers made to them. Then, RPS would likely have to partner with the Chamber of Commerce to identify and communicate with businesses interested in partnering with them that match teachers' preferences. Once RPS has identified a group of businesses willing to partner with them, they should negotiate discounts and deals the businesses will offer to participating teachers. Then, they should design a way of identifying participating teachers to allow them to redeem the discounts. At the start of the school year, RPS should distribute these identification items, a list of partnering businesses, and the deals they offer to participating teachers.

To incentivize businesses in the community to partner with RPS, they should issue a public list of participating businesses, saying that they "support RPS200 teachers." This publication will boost the clout of participating businesses. Additionally, if RPS targets small businesses in the Richmond community to partner with, small businesses may be able to attract new customers from the teachers and people interested in supporting businesses that support teachers.

Many private businesses already offer teachers discounts, including big-name companies like Apple, Target, Microsoft, and Amazon, and entertainment venues and historical sites, including Colonial Williamsburg, the Science Museum of Virginia, and the National Park Service (Cohen, 2023). Some school districts have also partnered with local businesses to offer teachers discounts. For example, Alamance County, North Carolina has previously worked with local restaurants, hotels, and retailers to give new teachers discounts when relocating to teach in schools and special offers to say "thank you" for teaching. Alamance County's Chamber of Commerce facilitated this program (Hayes, 2009). Despite the popularity of offering teachers special deals and other non-monetary incentives, there is little empirical evidence on the effects of non-monetary incentives on teacher satisfaction, retention, and performance (Schildberg-Hörisch and Wagner, 2018).

In general, non-monetary incentives do not worsen workers' job satisfaction, although they may not improve satisfaction as much as cash incentives. To compare the effect of monetary and non-monetary incentives on performance, researchers ran an experiment that rewarded participants for their performances on tasks with cash (the monetary incentive), Lindt chocolates (the non-monetary incentive), and a mix of both. They found no significant differences in the participants' efforts regardless of the incentive. However, they found a few gender differences; in general, women's performance was better with the non-monetary incentives and men's performances were better with the monetary incentives. The researchers attribute this gender difference to the feeling of appreciation and pressure to perform felt by the participants depending on the incentive (Sittenthaler and Mohnen, 2020). These findings indicate that upon receiving non-monetary incentives, individuals - especially women - may feel

more appreciated and less stressed about their performance when they are receiving non-monetary incentives, which culminates in boosting performances. Since women are overrepresented in the teaching profession (Wong, 2019), these findings bolster the idea that non-monetary incentives (like discounts and special offers) may help teachers feel appreciated.

The effectiveness of such community partnerships is also dependent on businesses' participation. By advertising that a business participates in a program that offers discounts to teachers, they can signal to the community that they support RPS teachers. Recently, some brands like Nike and Dove have latched onto social movements to signal their support of the movements, allowing them to attract attention beyond what they could in a normal marketing strategy and differentiate themselves from their competition (Berthon et al., 2023). Additionally, in an assessment of the effects of Airbnb entrepreneurs' use of virtuous language to send "signals" about their business and properties, researchers found that small amounts of "virtue signals" allowed the entrepreneurs to increase their profits (Chandler et al., 2024). Advertising that a business participates in this proposed program can be likened to "virtue signaling."

### **5.b.i. Cost**

Because this policy depends on asking small businesses to provide discounts to participating teachers, the only costs associated with this policy are administrative costs. RPS is likely going to need to hire at least two people. The first person would be responsible for negotiating the discounts, which would likely be a business liaison. The second person would likely be someone with a marketing background who would be responsible for marketing the program to teachers, businesses, and the community. As of 2024, the average Small Business Liaison in Richmond made \$70,084 annually. The pay at the 25<sup>th</sup> percentile is \$59,594 and the pay at the 75<sup>th</sup> percentile is \$80,344 (*Small Business Liaison Officer Salary in Richmond, Virginia*, n.d.). Additionally, the average yearly salary for a Marketing Specialist in Richmond is \$77,499; pay at the 25<sup>th</sup> and 75<sup>th</sup> percentiles are \$66,149 and \$88,901, respectively (*Marketing Specialist Salary in Richmond, VA - Virginia*, n.d.).

Additionally, Richmond would likely need to provide small businesses with materials that could allow them to advertise their participation in the program. At Staples, a set of 50 12"-by-18" standard heavyweight laminated posters costs roughly \$750.00 (*Custom Poster Printing*, n.d.). If 100 small businesses participated in the program, Richmond would have to pay about \$1,500 on marketing materials for these businesses.

If four schools participate in the program, the annual per-school cost would be **between \$31,810.75 and \$42,686.25.**<sup>3</sup>

---

<sup>3</sup> This calculated cost is only the cost the school faces and is not equal to the social cost of the policy alternative.

### ***5.b.ii. Cost Effectiveness – Teacher Retention***

There is very little literature detailing the effectiveness of offering discounts to teachers and employees in other industries on employee retention. Thus, I develop a few parameters on how teachers may value the program in relation to a cash bonus of equal monetary value.

First, if teachers value the bundle of discounts and deals equal to the bonuses they currently receive for participating, I assume their retention rate will rise by the same amount it will if they received the cash bonus. Thus, teacher retention would increase by an average of 5.26 or 6.86 percentage points, as I calculated in Section 5.a.ii, depending on the size of the bonus.

This outcome is unlikely because people generally prefer the choice that comes with receiving money as opposed to discounts and in-kind transfers. On the other extreme, for in-kind programs that offered undesirable goods, researchers found that beneficiaries valued the good at 39.5 percent of its cash value (Currie & Gahvari, 2008). If teachers valued a bundle of discounts and goods provided by small businesses at 39.5 percent of its value, using the estimates from Hendricks (2014), I estimate that teacher retention rates will only increase by 4.68 percentage points for packages that are monetarily equal to \$10,000 and 5.57 percentage points for packages that are equal to \$15,000.

Thus, the lowest expected effectiveness of the policy is a 4.68 percentage point reduction in teacher turnover, and the highest expected effectiveness is 6.86 percentage points. I divide the lowest expected effectiveness by the highest estimated cost and the highest effectiveness by the lowest estimated cost to obtain a range of estimated cost effectiveness measures. The cost effectiveness of this alternative would therefore be **between \$4,640.32 and \$9,120.82**.

### ***5.b.iii. Cost Effectiveness – Student Achievement***

This policy has no direct effects on students. Because students would still be in school for 200 days, I assume the effect of this alternative on student learning will be the same as it would be if the division maintained the status quo (0.32 standard deviations). Dividing the estimated cost of the alternative by the estimated gains in student learning, the cost effectiveness of this policy in terms of student achievement is **between \$99,408.59 and \$133,394.50**.

### ***5.b.iv. Political Feasibility***

The primary stakeholders for this policy are the division's superintendent and administration, teachers, small business owners, and the Chamber of Commerce.

I anticipate that the division's administration would support a public-private partnership to incentivize teacher participation. Currently, they have a section of the RPS website dedicated to community partnerships, promoting interested parties to volunteer and donate to the division (*Community Partnerships*, n.d.). This alternative receives (1) point from the administration's support.

There is little research examining teachers' thoughts on programs that offer them discounts and special deals at local businesses. However, considering this program rests on swapping monetary benefits for in-kind transfers and discounts, I draw on the literature that describes giving cash to recipients as opposed to in-kind transfers. In general, people prefer cash to in-kind transfers because it allows recipients the most flexibility and choice (Gentilini, 2023). Although this alternative does not necessitate that teachers only receive benefits through in-kind transfers, it provides teachers less control over how their benefits can be used as opposed to the option that provides them with cash incentives. Thus, the evidence suggests that teachers would be opposed to this alternative, and this alternative receives (-1) points for teacher support.

I expect small business owners to support this policy because it could bring them new customers and allow them to engage in virtue signaling, which can lead to increased profits (Chandler et al., 2024). This alternative receives (1) point because small businesses are likely to be supportive.

The city's Chamber of Commerce also has a history of engaging in public-private partnerships, including assisting the city recover from the COVID-19 pandemic (*Chamber News*, 2020). Although these partnerships have not been with RPS, I anticipate the Chamber of Commerce would also be enthusiastic in engaging with RPS because of their record of facilitating partnerships within the city. This alternative receives (1) point for their support.

When I add the points and divide by the possible points, I find that this alternative scores **2/4** in political feasibility.

### ***5.b.v. Administrative Feasibility***

RPS has some community partnerships, but the existing infrastructure primarily involves research partnerships, volunteerism, and donations of items, meeting space, or money (*Community Partnerships*, n.d.). Because the alternative requires the formation of a new community partnership, but RPS has a precedent of forming community partnerships, this alternative receives (0.5) points for capacity.

RPS may also need to hire new personnel to implement the policy and purchase resources to create the marketing material, indicating that RPS does not currently have the resources to implement the policy. Thus, this alternative receives (0) points for resources.

Additionally, there are many actors with which the division would have to work with, including teachers, the Chamber of Commerce, and small business owners. Because the implementation of the policy involves coordinating across many groups, it is highly complex. This alternative receives (0) points for complexity.

Table 3 outlines the administrative feasibility for alternative 2. The alternative receives a final score of **0.5 points**.

Table 3. Administrative Feasibility Rubric for Alternative 2	
<b>Capacity:</b> The capacity the division has to execute the alternative.	<b>0.5 points</b>
<b>Resources:</b> The extent to which the division has the necessary resources to implement the alternative.	<b>0 points</b>
<b>Complexity:</b> The complexity of the implementation of the alternative for the administration.	<b>0 points</b>
<b>Final Score</b>	<b>0.5 points</b>

### 5.c. Alternative 3: Bi-weekly Substitute Activities

In a RAND survey of teachers in the US, the average teacher reported working 53 hours per week. However, only 24 percent of teachers were satisfied with their hours worked, 32 percentage points less than the share of working adults satisfied with their hours in the US (Steiner et al., 2023).

RPS could consider lessening the hours worked for participating teachers. This policy would look like reducing every-other Friday to be a “half-day” of school for teachers such that the school day ends at 11:45. This would amount to a 3-hour reduction in teacher’s mandated work time. These three hours should not be supplemented by asking teachers to do more work; instead, teachers would likely use it to reduce their hours worked beyond the school week, including leaving time for them to prepare lessons, grade assignments, or engage in personal matters that they do not otherwise have the flexibility to engage with during the week.

RPS currently partners with the YMCA and the city’s Parks and Recreation Department to offer after-school care to elementary school students, although the YMCA is limited in the schools it serves (*After School Care*, n.d.; *Before & After School Care | YMCA RIC*, n.d.). To ease concerns about where students will go on these shortened days, RPS should still offer lunch to students and strengthen their partnership with the Parks and Recreation Department to extend after-school programs as substitute activities to students.

In the 2017-18 school year, about 1.9 percent of public schools in the United States implemented a shortened school week (de Brey, 2020). In Warren County, Missouri, the school district went to a 4-day weekly calendar after losing many teachers each year to nearby districts that could pay more and failing to raise taxes to pay a competitive wage. Similarly, in China Spring, Texas, voters refused to pay taxes to pay teachers more, and the district opted to pursue a 4-day school week to retain and attract new talent. In some implementations of the 4-

day week, like China Spring, the schools do not offer extra childcare, and parents must seek out and pay for childcare (Gonzalez, 2023b).

Studies of the implementation and outcomes of a four-day school week, and qualitative findings suggest that shorter weeks increased teacher satisfaction and retention rates (Doss et al., 2023; Kilburn et al., 2021). In an analysis of 12 districts in Colorado, Idaho, Missouri, New Mexico, Oklahoma, and South Dakota that had implemented 4-day school weeks, teachers and school staff generally reported that morale in the school received a boost with the shortened weeks (Doss et al., 2023).

### **5.c.i. Cost**

The primary cost associated with this alternative is the cost to the district of supplementing the reduced school hours with after school care. Parents pay for their children to attend the after-school programs offered by Richmond's Parks and Recreation Department and the YMCA (*After School Care*, n.d.). I restrict my analysis to only focus on continuing the partnership with Richmond's Parks and Recreation Department because the YMCA only offers after-school care to some schools.

Richmond's Parks and Recreation Department charges \$120 for registration. Their program runs from after the school day ends at 2:45 p.m. to 6 p.m. each day of the school year, which totals to 585 hours of operating time throughout the typical 180-day school year. Thus, the per-hour per-student cost of the program is roughly \$0.21 (*Out of School Time Program | Richmond*, n.d.). There are 854 students enrolled at Cardinal Elementary School and there are 245 students enrolled at Fairfield Court Elementary School, averaging to 549.5 students (*Cardinal Elementary in Virginia - U.S. News Education*, n.d.; *Fairfield Court Elementary in Virginia - U.S. News Education*, n.d.). If students spend 3 hours in this after school program every two weeks, the average per-school cost of this alternative is **\$13,526.15** per school.

### **5.c.ii. Cost Effectiveness – Teacher Retention**

While the literature on the effect of decreasing one school day to a half-day on teacher retention is not robust, as mentioned before, there is an emerging literature on the effect of 4-day school weeks on teacher retention because many rural school districts are implementing 4-day school weeks to attract and retain teachers (Anglum & Park, 2021).

While reducing the school week to four days tends to increase teacher retention and attraction in rural school districts, in a review of 4-day school weeks in Denver, Colorado, an urban school district like Richmond, researchers found that the schedule change led to a 3.5 percentage point reduction in teacher retention, on average. In other words, teachers left the schools with shortened school weeks in favor of working at schools that could pay their teachers more (Nowak et al., 2023). These findings suggest that teachers who have many schools they can choose to work at may not value the additional time-off associated with shortened school weeks in lieu of receiving higher pay.



One half-day every two weeks implies that, on average, teachers would work one-quarter of a school day less per week than they otherwise would. Considering teachers in Denver worked a full day less per week, I divide their retention rate by four to scale the results to RPS. I estimate that this alternative would decrease teacher retention by 0.875 percentage points. Dividing the cost of the program by this estimate, I find that the cost effectiveness of this alternative on teacher retention is **-\$15,458.50**.<sup>4</sup>

### ***5.c.iii. Cost Effectiveness – Student Achievement***

Evidence surrounding four-day school weeks offers the best estimates of the effect of reducing the number of hours students spend in school on test scores. In a study of Oregon schools operating on 4-day school week calendars, researchers found that test scores declined by an average of 0.042 standard deviations (Thompson, 2019). In the United States, school districts that operate on 4-day weeks often lengthen the school day; consequently, students who attend schools with shortened weeks only spend roughly 3 and a half hours less in school per week than their peers in traditional schools (Thompson, 2021). Assuming these students experienced the same reduction in time in school each week for 36 weeks, this implies that a one-hour reduction of time in the classroom leads to a 0.0003 standard deviation decrease in test scores.

Under this alternative, students would spend an average of 1.5 fewer hours per week in school across 40 weeks. Thus, test scores would decline by approximately 0.02 standard deviations over the course of the school year. I subtract this from my estimated gain in test scores from the extended school year (0.32) to estimate that this policy would lead to a 0.3 standard deviation increase in test scores.

It should be noted that this is an estimate for the lower-bound of the effect of this policy on student learning. Because students spend time with the Parks and Recreation Department, it may be incorrect to liken this policy to 4-day school weeks, which do not provide substitute activities for students. It could be the case that student learning does not reduce as much when students are engaged in the after-school care activity. Thus, I estimate that the maximum effect of this policy would be the same as the effect of the status quo policy, which I estimated to be 0.32 standard deviations in Section 5.a.iii.

In New York City, researchers showed that a one percentage point increase in teacher turnover led to roughly a 0.092 percent standard deviation decrease in test scores (Ronfeldt et al., 2013). Relative to the status quo, student achievement would thus decrease by 0.08 percent. These changes are negligible, rounding to approximately 0.30 and 0.32 standard deviations. Thus, the estimated change in test scores would be 0.30 to 0.32 standard deviations. The cost effectiveness of this alternative would be **between \$42,269.23 and \$45,087.18**.

---

<sup>4</sup> These numbers are negative because the policy is expected to decrease teacher retention, not because the alternative saves the division money. Mathematically speaking, I divide a positive number by a negative number to get this point estimate.

#### **5.c.iv. Political Feasibility**

The key political stakeholders for this policy alternative are the division's administration, parents, and teachers.

I expect the division's administration to oppose this policy. Karmas' initial proposal for RPS200 was inspired by a sizable body of research that documents large returns to student achievement when students spend more time in school (MacGillis, 2023). Because Karmas' entire proposal hinges on the benefits of students spending more time in school, he and the administration are unlikely to support a proposal that promotes less time in school. This alternative receives (-1) points for support from the administration.

In a nationally representative survey of adults, 61 percent of parents with school-age children indicated that they strongly supported or somewhat supported that their child's school moving to a 4-day school week as opposed to the traditional 5-day school week. Opponents noted that their main concerns were about their child's learning and finding childcare (Ritter, 2023). Because childcare would be provided for those shorter days, parents in RPS may not feel as concerned about the policy and may be even more likely to support this alternative. This alternative receives (1) point for support from parents.

In a nationally representative survey conducted in 2023 by EdWeek Research Center survey, 70 percent of teachers indicated they supported 4-day school weeks replacing traditional 5-day school weeks (Peetz, 2024). These surveys indicate that teachers are likely to support the proposed schedule change because it frees up their time. Thus, this alternative receives (1) point for support from teachers.

Adding up these scores and dividing by the number of stakeholders, this alternative receives a final score of **1/3**.

#### **5.c.v. Administrative Feasibility**

There is an existing partnership between RPS and Richmond's Parks and Recreation Department; this alternative only requires building on this relationship, indicating that Richmond is likely to have the capacity and resources to implement the policy, and it is not very complex. Table 4 summarizes this in accordance with the rubric. This alternative receives a final score of **3 points** for administrative feasibility for RPS.

Table 4. Administrative Feasibility Rubric for Alternative 3	
<b>Capacity:</b> The capacity the division has to execute the alternative.	<b>1 point</b>
<b>Resources:</b> The extent to which the division has the necessary resources to implement the alternative.	<b>1 point</b>
<b>Complexity:</b> The complexity of the implementation of the alternative for the administration.	<b>1 point</b>
<b>Final Score</b>	<b>3 points</b>

## 5.d. Alternative 4: Supplement Student Loan Payments

As of 2021, the National Education Association estimates that nearly half of educators have outstanding student loan balances, which average to just over \$55,000 (Hershcopf et al., 2021). Student loans are the second largest source of consumer debt in the nation, and roughly 40 percent of borrowers missed payments after the COVID-19 payment pause was lifted in October 2023, indicating that many people struggle to afford these payments (Smalley, 2020; Kvaal, 2023). Teachers may be especially disadvantaged when it comes to making monthly payments on their student loans because they carry large debt balances relative to their earnings, indicating that the standard 10-year monthly payment accounts for a large share of their income in comparison with other college graduates (Blake, 2024). Surveys of teachers indicate that teachers with large student debt balances are more likely to feel intense anxiety about their student loans and consider leaving the profession because of the financial stress associated with their student loans (Kamenetz, 2017; Lehtinen-Vela, 2024).

To alleviate borrower's repayment struggles, the Biden administration has introduced the Saving on a Valuable Education (SAVE) repayment program. This repayment program is an Income-Driven Repayment (IDR) program that ties monthly payments on student loans to an individual's income and family size. Specifically, monthly payments under SAVE are calculated to be between 5 and 10 percent of income a person earns above 225 percent of the Federal Poverty Level. SAVE is also accompanied by a large interest subsidy; if the monthly payment is less than the interest owed on the loan each month, the government forgives the unpaid interest (*The Saving on a Valuable Education (SAVE) Plan Offers Lower Monthly Loan Payments*, n.d.). Further, public school teachers are eligible to have their loans forgiven under the Public Service Loan Forgiveness (PSLF) program after making 10 years of payments through an IDR plan (*Public Service Loan Forgiveness (PSLF)*, n.d.). The forgiveness promised by PSLF and the low-payments assured by the SAVE program suggest that teachers will likely be able to benefit from using both programs together.

RPS could incentivize teacher participation in RPS200 by covering all student loan payments for teachers who enroll in SAVE and count their payments towards PSLF forgiveness.

I could not find an example of another district assisting teachers with their loan balances using both PSLF and SAVE. However, Georgetown Law School offers the same assistance structure to graduates who enter public service careers, vowing to pay all of the graduates' student loan payments (*Loan Repayment Assistance Program*, n.d.). Further, several private employers already offer to help employees make student loan payments as a way to recruit and retain talent (Napoletano, 2023). Notably, there has not been a rigorous scientific study on the effect of these programs on employment decisions. However, Jacobs et al. (2023) conducted a contingent valuation survey — a type of survey that can estimate the dollar value at which an individual values a good or service — and found that teachers positively value possible debt relief.

Moreover, if annual payments remain less than \$5,250, which is likely under the SAVE program, these loan payments will not be taxed for either state or federal purposes as part of teacher's income. While this provision has only been enacted through 2025, some activists are currently working to make it a permanent fixture of the tax code (Miller, 2021; *Tax Code Section 127: Employer Provided Education Assistance*, n.d.).

### **5.d.i. Cost**

The actual cost of this alternative is hard to estimate because monthly payments under the SAVE program vary by step on the salary scale, family size, and the share of debt from graduate borrowing. Thus, I estimate the absolute maximum monthly payment RPS could expect to pay. To make this estimate, I assume the following of participating teachers:

- every teacher has no other persons in their household (monthly payments decrease as family size increases),
- 100 percent of each teacher's borrowing is from payments for a graduate degree (monthly payments increase as the share of debt from graduate borrowing increases),
- each participating teacher is in the last year of PSLF eligibility, earns an additional month of their salary for participating, and has a Master's degree (this assumption sets their annual income at \$71,117.58; monthly payments increase as income increases).

With these assumptions, the expected monthly payment for teachers is \$282.63. The formula used to calculate monthly payments under SAVE is included in Appendix A. The average number of teachers at Cardinal and Fairfield Court Elementary Schools is 33.5; if all of these teachers were paying the maximum monthly payment, the expected per year per school cost would be **\$113,617.90**.

It should be noted that the actual per school per year cost is likely much lower than this estimate because many teachers at RPS make less than \$71,117.58 per year, have children, do not have graduate degrees, and have borrowed to pay for their undergraduate degree. Moreover, not all teachers have student loans, either because they have already paid off their student loans or because they did not borrow to finance their education.

### **5.d.ii. Cost Effectiveness – Teacher Retention**

The extent to which researchers understand the effect of loan forgiveness and repayment assistance programs on employment decisions is an open question in the academic literature.

Jacobs et al. (2023) estimate that teachers in Michigan value a dollar forgiven at \$0.90 through the aforementioned contingent valuation survey. Assuming teachers value a dollar paid on their student loans by the division at \$0.90 as well and they fit the assumptions specified in Section 5.d.i., they would perceive their monthly earnings to increase by \$254.37. I use the estimates from Hendricks (2014) to assess the estimated change in teacher retention due to this

alternative and find that this alternative is expected to increase teacher retention by 3.01 percentage points.<sup>5</sup>

I divide the estimated cost of the program by the estimated effectiveness and find that the cost effectiveness of this alternative in increasing teacher retention is equal to **\$37,750.92**.

#### ***5.d.iii. Cost Effectiveness – Student Achievement***

This policy has no direct effects on students. Because students would still be in school for 200 days, I assume the effect of this alternative on student learning will be the same as it would be if the division maintained the status quo. Therefore, the cost effectiveness of this policy in terms of student achievement is **\$355,056.10**.

#### ***5.d.iv. Political Feasibility***

There are only two primary stakeholders for this alternative: division leaders and teachers. However, reactions may vary based on if teachers have student loans. I subset teachers into two stakeholder groups: teachers with loans and teachers without loans.

I anticipate that the division leaders will be generally supportive of pursuing this policy because the policy is relatively low-cost and leverages connections with existing federal policy. Moreover, the expertise and infrastructure developed to implement this policy may have additional benefits for all other employees at RPS. Materials that assist teachers in certifying their income to make payments under SAVE can also be distributed to other employees in the division, who would also be likely to benefit from the lower-payments SAVE promises to most borrowers. Additionally, if RPS streamlines the process for certifying employment for PSLF benefits, other employees in RPS will benefit because they are also eligible for forgiveness under PSLF. Thus, this alternative receives (1) point for support from RPS's administration.

Teachers with loans are also likely to support this policy. Researchers have found that teachers with positive student debt balances generally want loan forgiveness and loan relief (Jacobs et al., 2023). Thus, this alternative receives (1) point for support from teachers with positive student loan balances.

Conversely, teachers who never borrowed to attend schools or have already paid off their loans are likely to oppose this alternative because it does not benefit them. If the division only offered teachers loan assistance for participating, it is unlikely that the incentive would entice these teachers to participate in the program, and teachers without loans who are currently participating are likely to oppose the switch because they lose their benefits. This alternative therefore receives (-1) points for support from teachers without positive loan balances.

---

<sup>5</sup> It should be noted that this estimate is an upper bound on the true estimated effectiveness; in reality, it is unlikely that all teachers have student loan debt and would owe \$282.63 per month under the SAVE program.

When I sum these points together and divide by the total number of stakeholder groups, I find that this alternative receives a score of **1/3** for political feasibility.

#### **5.d.v. Administrative Feasibility**

RPS currently has a large human resources team that manages benefits and compensation; they would likely be responsible for helping teachers fill out the required forms and certifying their employment (*Organizational Charts*, n.d.). However, some training may be required to inform the staff on how to help teachers navigate certifying their income and administering benefits. This alternative therefore receives (0.5) points for capacity.

Moreover, RPS is currently classified as a “public service” employer and thus should have an employee responsible for certifying employment, although this is not clear from the organizational chart publicly available. Moreover, the alternative is relatively low-cost for the division. Thus, the alternative receives (0.5) points for resources.

Lastly, the alternative may be complex for the division because it requires identifying eligible teachers and coordinating with them to ensure their payments are made and their income and employment are certified. However, this would all be handled by HR personnel, indicating little cross-administrator work. This alternative receives (0.5) points for complexity.

Table 5 summarizes these scores and calculates the final score of **1.5 points**.

Table 5. Administrative Feasibility Rubric for Alternative 4	
<b>Capacity:</b> The capacity the division has to execute the alternative.	<b>0.5 points</b>
<b>Resources:</b> The extent to which the division has the necessary resources to implement the alternative.	<b>0.5 points</b>
<b>Complexity:</b> The complexity of the implementation of the alternative for the administration.	<b>0.5 points</b>
<b>Final Score</b>	<b>1.5 points</b>

## 6. Recommendation

### 6.a. Outcomes Matrix

Table 6 summarizes my findings for each alternative. For ease of interpretation, I present both the cost and effectiveness estimates prior to presenting each cost effectiveness measure.

Table 6: Outcomes Matrix				
	Alternative 1: Maintain the Status Quo	Alternative 2: Private Partnerships	Alternative 3: Substitute Activities	Alternative 4: Student Loan Assistance
<b>Panel A: Cost</b>				
<i>Dollars per school</i>	\$1,358,000	\$31,811 to \$42,686	<b>\$13,526</b>	\$113,618
<b>Panel B: Effectiveness</b>				
<i>Percentage point change in retention</i>	<b>6.86</b>	4.68 to 6.86	-0.875*	3.01
<i>Standard deviation change in test scores</i>	<b>0.32</b>	<b>0.32</b>	0.30 to 0.32	<b>0.32</b>
<b>Panel C: Cost Effectiveness</b>				
<i>Teacher retention</i>	\$197,959 to \$258,398	<b>\$4,640 and \$9,121</b>	-\$15,458.50*	\$37,751
<i>Student achievement</i>	\$4,243,750	\$99,409 to \$133,395	<b>\$42,269 and \$45,087</b>	\$355,056
<b>Panel D: Feasibility</b>				
<i>Political feasibility (net stakeholder support)</i>	<b>1 of 2</b>	<b>2 of 4</b>	1 of 3	1 of 3
<i>Administrative feasibility</i>	2 points	0.5 points	<b>3 points</b>	1.5 points
*This value is negative because teacher turnover at urban school divisions is expected to increase when shortened weeks are implemented.				

### 6.b. Recommendation

Of the alternatives I have outlined in Section 5, I recommend Richmond partner with the Chamber of Commerce to offer teachers discounts and deals at small businesses within the city if they only have the capacity to pursue one of these compensation plans.

It is likely to be the most efficient policy alternative for improving teacher retention and among the most efficient at increasing student achievement. If done correctly, this policy option is just

as effective at improving teacher retention and student achievement as current bonuses offered to teachers but can have such results at a much lower cost to the division. Even if teachers do not value the benefits they will receive under this plan equally to the cash incentives they receive through bonuses and the alternative costs the maximum I estimated it could, this alternative is still more cost effective than any others outlined above for improving teacher retention and is the second most cost effective for improving student achievement.

This policy is also likely to be the most politically feasible. Small business owners and the city's Chamber of Commerce are likely to support the proposal because of the mutual gains it may provide. This alternative is also in line with the administration's existing priorities surrounding extending the school year, which is not true of offering students substitute activities in lieu of three hours of school bi-weekly. It is much more effective at improving teacher retention than offering bi-weekly days off to teachers. Lastly, the benefits are more universally applicable than assisting teachers with their student loan payments.

It is the least administratively feasible of the four proposed alternatives because of the amount of coordination and complexity associated with the alternative. However, if RPS can hire two workers to assist with the implementation of this alternative, it may become easier for the administration to handle the complexity of the problem by expanding the capacity of RPS's administration.

Notably, removing bonuses can have potentially deleterious effects on employee satisfaction and retention. Pouliakas (2010) estimates that receiving a bonus one year after not receiving it the prior year increases employee satisfaction ratings by 0.005 points, whereas not receiving a bonus one year after having received one decreases employee satisfaction by 0.071 points. In the context of RPS, assuming the magnitudes of these effects are the same, RPS could expect a 1,520 percent reduction in employee satisfaction. Because satisfaction and retention have historically been correlated in RPS, RPS can anticipate that retention will also fall by a large margin if they stop offering the bonuses and choose to offer another form of compensation instead. Therefore, RPS should be skeptical of not continuing to offer any participation bonuses.

If RPS has the capacity to continue offering teachers bonuses alongside the package of discounts and deals, they should look to continue providing small participation bonuses, especially to teachers that are already participating. Offering smaller bonuses alongside these discounts can reduce the costs the division faces to incentivize teacher participation relative to offering \$10,000-\$15,000 in bonuses while mitigating the negative effects of removing bonuses entirely.



## **7. Implementation**

### **7.a. Next Steps to Create Private Partnerships**

To implement the proposed policy, I recommend Richmond pursue the following steps.

First, they should hire two additional personnel to help implement the policy. One new hire should specialize in small business partnerships; their job title would be Small Business Liaison. The second should be a Marketing Specialist who will help create and distribute materials pertaining to the program to small businesses, community members, and participating teachers.

At the same time, the administration should assemble a focus group of teachers to understand which types of benefits they would like to be offered through these partnerships and which businesses they would like to see represented on the list of partners. For example, if it is clear teachers want to see a particular restaurant on the list of partners, RPS should use this to inform its interactions with the Chamber of Commerce and target that restaurant's owner. Similarly, if teachers express that a certain good or service is widely desired, RPS should pursue partnerships with small businesses that offer that good or service. They could specifically ask the REA for assistance with this step, which may increase teachers' excitement for the compensation package because it would be endorsed by their union and the union already acts as a collective bargaining agency that is supposed to be representative of all teachers.

Once they have hired the necessary personnel and assessed teachers' preferences, they should begin working with the city's Chamber of Commerce to identify and communicate with small businesses. This work would largely be done by the small business liaison. As soon as they have assembled a group of willing partners, the small business liaison should begin negotiating deals and discounts these businesses can offer teachers. They should aim to have these discounts and deals be of a value that is equal to or greater than the \$10,000 participation bonus teachers have been offered thus far for participating in RPS200.

After the deals and discounts teachers will be offered are finalized, the marketing specialist should begin creating materials for businesses to advertise their participation in the program, teachers to know about the benefits offered to them, and the division to publish about their partnerships. These materials will have two primary roles: the first role is to inform teachers about the available discounts and deals they will be eligible for, and the second role is to advertise these businesses as partners of RPS so that they can potentially gain additional business from community members.

### **7.b. Next Steps to Continue Offering Small Bonuses**

As discussed in Section 6.b., Richmond should continue offering some bonuses to participating teachers to mitigate the effect removing a bonus can have on employee satisfaction, albeit they

should be smaller to be sustainable. To continue to finance smaller bonuses, the division should apply for funding from Virginia Department of Education (VDOE). Currently, the VDOE is awarding \$300,000 to \$400,000 per school to divisions looking to pilot extended school year programs (*Year Round & Extended Year Schools*, n.d.). While this money cannot finance the \$670,000 to \$1,005,000 in bonuses the division is currently spending, it can be used to extend smaller bonuses to participating teachers.

While VDOE has not updated their instructions for awards in the 2024-25 school year, the application was due on August 5<sup>th</sup> for the 2023-24 school year (*Year Round & Extended Year Schools*, n.d.). Thus, I suggest the division begin to assemble its application while it hires the two necessary personnel and conducts the focus group of teachers.

### **7.c. Barriers to Implementation**

The largest barrier to the success of this alternative is likely going to be teacher opposition to giving up the bonuses current participating teachers are promised. This barrier underscores the importance of the district applying to grants to continue offering smaller bonuses to teachers that participate. The division should also be careful in marketing this program to teachers that underscores the value and desirability of the discounts and deals small businesses offer to teachers. For example, they should never discuss the benefits as substitutes for the current bonuses they receive; rather, they should be talked about as “additional benefits exclusive to participating teachers.” The marketing specialist will also be important to developing effective communication surrounding the benefits.

The second possible barrier to implementation is small business participation. Generally, research suggests that businesses will want to participate because of the signal they can send to other potential customers about the value of the small business. Many businesses also currently offer teacher’s discounts and special deals. However, if small businesses do not see this potential and choose not to participate, the implementation of the alternative collapses. This possibility indicates that the job of the small business liaison should be to convince small business owners of the potential benefits they can receive by extending participating teachers discounts.

Notably, with the expertise of the two additional personnel and money to finance small bonuses to teachers, I do not anticipate either of these potential barriers to implementation to block the success of this policy alternative.

## Section 8. Conclusion

By assembling an appropriate package of benefits for teachers, RPS will be able to recruit and retain teachers to work at schools piloting RPS200. Appropriately staffing schools will allow the pilot program to continue and scale throughout the division as RPS combats learning loss from COVID-19.

I recommend that RPS partner with small businesses throughout the city to offer participating teachers exclusive discounts and deals while maintaining small participation bonuses. This policy can be implemented by hiring two additional personnel to the administration, asking teachers what they would want in their package of exclusive deals, coordinating with the Chamber of Commerce, and applying for grants offered by the VDOE.

If done correctly, this alternative can effectively recruit and retain teachers to participate in RPS200 while lowering the cost for the division, ultimately making RPS200 more sustainable in the years to come.

## V. References

- After School Care*. (n.d.). Richmond Public Schools. Retrieved February 5, 2024, from <https://www.rvaschools.net/students-families/back-to-school/after-school-care>
- Anglum, J. C., & Park, A. (2021, March 18). Keeping Up With the Joneses: District Adoption of the 4-Day School Week in Rural Missouri. *AERA Open*, 7. <https://journals.sagepub.com/doi/full/10.1177/23328584211002842>
- The 2019-2022 Education Recovery Explorer*. (n.d.). The Educational Opportunity Project at Stanford University. Retrieved March 21, 2024, from <https://edopportunity.org/recovery/>
- Barefoot, A. (2023, July 24). Two Richmond elementary schools head back to class with pilot RPS200 program. *WRIC*. <https://www.wric.com/news/local-news/richmond/two-richmond-elementary-schools-head-back-to-class-with-pilot-rps200-program/>
- Before & After School Care | YMCA RIC*. (n.d.). YMCA of Greater Richmond. Retrieved March 12, 2024, from <https://www.ymcarichmond.org/programs/child-care/after-school-care>
- Bell Schedule*. (n.d.). Richmond Public Schools. Retrieved October 12, 2023, from <https://www.rvaschools.net/students-families/bell-schedule>
- Benefits and Compensation*. (n.d.). Richmond Public Schools. Retrieved April 4, 2024, from <https://www.rvaschools.net/talent-office/benefits-and-compensation>
- Berthon, P. R., Ferguson, S. T. L., Pitt, L. F., & Wang, E. (2023). The virtuous brand: The perils and promises of brand virtue signaling. *Business Horizons*, 66(1), 27-36. <https://www.sciencedirect.com/science/article/pii/S0007681321002007>
- Bishop, A. (2022, October 17). *Dreams4RPS Goal 4: Teacher Retention for 10-17-22 Board Meeting*. BoardDocs. Retrieved March 21, 2024, from [https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CK8PZF670977/\\$file/Dreams4RPS%20Goal%204%20Teacher%20Retention%20for%2010-17-22%20Board%20Meeting.pdf](https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CK8PZF670977/$file/Dreams4RPS%20Goal%204%20Teacher%20Retention%20for%2010-17-22%20Board%20Meeting.pdf)
- Bishop, A. (2022, October 17). *Dreams4RPS Goal 6: Satisfaction for 10-17-22 Board Meeting*. BoardDocs. Retrieved March 21, 2024, from [https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CK8PZJ670CBD/\\$file/Dreams4RPS%20Goal%206%20Satisfaction%20for%2010-17-22%20Board%20Meeting.pdf](https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CK8PZJ670CBD/$file/Dreams4RPS%20Goal%206%20Satisfaction%20for%2010-17-22%20Board%20Meeting.pdf)
- Blake, S. (2024, March 15). Student Debt Could Spark Mass Exodus of Teachers. *Newsweek*. <https://www.newsweek.com/teacher-shortage-sparked-student-debt-1879875>
- Cardinal Elementary - Richmond City Public Schools*. (n.d.). Virginia School Quality Profiles. Retrieved December 3, 2023, from <https://schoolquality.virginia.gov/schools/cardinal-elementary-2>
- Cardinal Elementary in Virginia - U.S. News Education*. (n.d.). USNews.com. Retrieved March 12, 2024, from <https://www.usnews.com/education/k12/virginia/cardinal-elementary-213892>
- Cardinal Elementary School (2023-24 Ranking) - Richmond, VA*. (n.d.). Public School Review. Retrieved December 3, 2023, from <https://www.publicschoolreview.com/cardinal-elementary-school-profile/23224>

- Chamber News. (2020, August 10). Chamber RVA. Retrieved March 12, 2024, from <https://www.chamberrva.com/chamber-news/filling-gaps-in-response-the-value-of-local-partnerships-during-a-crisis/>
- Chandler, J. A., Waddingham, J. A., & Wolfe, M. T. (2024). Virtue Signaling in the Sharing Economy: The Effect of Airbnb Entrepreneurs' Virtue Language on Airbnb Price Premiums. *Entrepreneurship Theory and Practice*, 10422587231226114. <https://journals.sagepub.com/doi/full/10.1177/10422587231226114>
- Clemmons, M. (2024, February 20). *Leave Policy, Teacher Retention & Exit Interviews for 2-20-24 Board Meeting*. BoardDocs. Retrieved March 30, 2024, from [https://go.boarddocs.com/vsba/richmond/Board.nsf/files/D2HSEM71AF9C/\\$file/Leave%20Policy%2C%20Teacher%20Retention%20%26%20%20Exit%20Interviews%20for%202-20-24%20Board%20Meeting.pdf](https://go.boarddocs.com/vsba/richmond/Board.nsf/files/D2HSEM71AF9C/$file/Leave%20Policy%2C%20Teacher%20Retention%20%26%20%20Exit%20Interviews%20for%202-20-24%20Board%20Meeting.pdf)
- Code of Virginia Code - Chapter 7. General Powers and Duties of School Boards. (n.d.). Virginia Law. Retrieved February 5, 2024, from <https://law.lis.virginia.gov/vacodefull/title22.1/chapter7/>
- Cohen, S. (2023, May 3). *Virginia Teachers: Save Big with Our Comprehensive 2023 Teacher Discounts List*. Dogwood. Retrieved February 5, 2024, from <https://vadogwood.com/2023/05/03/michigan-teachers-save-big-with-our-comprehensive-2023-teacher-discounts-list-copy/>
- Community Partnerships. (n.d.). Richmond Public Schools. Retrieved March 12, 2024, from <https://www.rvaschools.net/engagement/community-partnerships>
- Currie, J., & Gahvari, F. (2008, June). Transfers in Cash and In-Kind: Theory Meets the Data. *Journal of Economic Literature*, 46(2), 333-383. <https://www.aeaweb.org/articles?id=10.1257/jel.46.2.333>
- Custom Poster Printing. (n.d.). Staples.com. Retrieved March 13, 2024, from <https://www.staples.com/services/printing/custom-posters/>
- de Brey, C. (2020, February 19). *NCES Blog | NCES Releases Two Short Reports on Shortened School Weeks and High School Start Times*. National Center for Education Statistics. Retrieved February 5, 2024, from <https://nces.ed.gov/blogs/nces/post/nces-releases-two-short-reports-on-shortened-school-weeks-and-high-school-start-times>
- Diliberti, M. K., & Schwartz, H. L. (2023, February 16). Educator Turnover Has Markedly Increased, but Districts Have Taken Actions to Boost Teacher Ranks: Selected Findings from the Sixth American School District Panel Survey | RAND. *RAND Corporation*. [https://www.rand.org/pubs/research\\_reports/RRA956-14.html](https://www.rand.org/pubs/research_reports/RRA956-14.html)
- Doss, C. J., Phillips, A., & Kilburn, R. (2023, April 6). The Four-Day School Week: Are the Pros Worth the Cons? *RAND Corporation*. <https://www.rand.org/pubs/commentary/2023/04/the-four-day-school-week-are-the-pros-worth-the-cons.html>
- Dreams4RPS Strategic Plan. (n.d.). Richmond Public Schools. Retrieved March 25, 2024, from <https://www.rvaschools.net/about/dreams4rps>
- Dreams4RPS: The 2018-23 RPS Strategic Plan. (2018). Retrieved March 25, 2024, from <https://resources.finalsite.net/images/v1628623046/rvaschoolsnet/Inw0srtlvbvvy9izxgth/Dreams4RPS-English.pdf>

- Fairfield Court Elementary - Richmond City Public Schools*. (n.d.). Virginia School Quality Profiles. Retrieved December 3, 2023, from <https://schoolquality.virginia.gov/schools/fairfield-court-elementary>
- Fairfield Court Elementary in Virginia - U.S. News Education*. (n.d.). USNews.com. Retrieved March 12, 2024, from <https://www.usnews.com/education/k12/virginia/fairfield-court-elementary-214555>
- Fairfield Court Elementary School (2023-24 Ranking) - Richmond, VA*. (n.d.). Public School Review. Retrieved December 3, 2023, from <https://www.publicschoolreview.com/fairfield-court-elementary-school-profile>
- Feng, L., & Sass, T. R. (2018). The impact of incentives to recruit and retain teachers in “hard-to-staff” subjects. *Journal of Policy Analysis and Management*, 37(1), 112-135. <https://onlinelibrary.wiley.com/doi/full/10.1002/pam.22037>
- Gentilini, U. (2023, June 30). *Why does in-kind assistance persist when evidence favors cash transfers?* | Brookings. Brookings Institution. Retrieved March 12, 2024, from <https://www.brookings.edu/articles/why-does-in-kind-assistance-persist-when-evidence-favors-cash-transfers/>
- Gonzalez, W. (2023, December 4). RPS extends pilot program for year-round class, may add more schools. *WRIC*. <https://www.wric.com/news/local-news/richmond/rps-extends-pilot-program-for-year-round-class-may-add-2-more-schools/>
- Gonzalez, S. (2023, November 8). Schools across the U.S. are trying a 4-day week. Why? To retain teachers. *NPR*. <https://www.npr.org/2023/11/08/1211632901/schools-across-the-u-s-are-trying-a-4-day-week-why-to-retain-teachers>
- Gottfried, M. A. (2010). Evaluating the relationship between student attendance and achievement in urban elementary and middle schools: An instrumental variables approach. *American Educational Research Journal*, 47(2), 434-465. <https://journals.sagepub.com/doi/full/10.3102/0002831209350494>
- Hansen, B. (2011, October 20). School Year Length and Student Performance: Quasi-Experimental Evidence. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2269846#paper-references-widget](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2269846#paper-references-widget)
- Hanushek, E. A. (2023, October 6). Generation Lost: The Pandemic's Lifetime Tax. *Education Next*. <https://www.educationnext.org/generation-lost-the-pandemics-lifetime-tax/>
- Hayes, K. (2009). Key Issue: Recruiting Teachers for Urban and Rural Schools. *National Comprehensive Center for Teacher Quality*. <https://files.eric.ed.gov/fulltext/ED543668.pdf>
- Hendricks, M. (2014). Does It Pay to Pay Teachers More? Evidence from Texas. *Journal of Public Economics*, 109, 50-63. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2252576](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2252576)
- Hershcopf, M., Puckett Blais, M., Taylor, E.D., & Pelika, S. (2021). Student Loan Debt Among Educators: A National Crisis. *National Education Association*. <https://www.nea.org/sites/default/files/2021-07/Student%20Loan%20Debt%20among%20Educators.pdf>
- Jacob, B., Jones, D., & Keys, B. J. (2023, June). The Value of Student Debt Relief and the Role of Administrative Barriers: Evidence from the Teacher Loan Forgiveness Program. *National*

- Bureau of Economic Research, Working Paper 31359.  
<https://www.nber.org/papers/w31359>
- Kamenetz, A. (2017, July 16). Teachers With Student Debt: The Struggle, The Causes And What Comes Next. *NPR*. <https://www.npr.org/sections/ed/2017/07/16/536488351/teachers-with-student-debt-the-struggle-the-causes-and-what-comes-next>
- Kamras, J. (2023, February 20). *200 Instructional Day Pilot Update for 3-6-23 Board Meeting*. BoardDocs. Retrieved March 21, 2024, from [https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CPKRM16E2DE4/\\$file/200%20Instructional%20Day%20Pilot%20Update%20for%203-6-23%20Board%20Meeting.pdf](https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CPKRM16E2DE4/$file/200%20Instructional%20Day%20Pilot%20Update%20for%203-6-23%20Board%20Meeting.pdf)
- Kamras, J. (2023, December 4). *RPS200 Update for 12-4-23 Board Meeting*. BoardDocs. Retrieved April 2, 2024, from [https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CY5P4362BBE2/\\$file/RPS200%20Update%20for%2012-4-23%20Board%20Meeting.pdf](https://go.boarddocs.com/vsba/richmond/Board.nsf/files/CY5P4362BBE2/$file/RPS200%20Update%20for%2012-4-23%20Board%20Meeting.pdf)
- Kilburn, M. R., Phillips, A., Gomez, C. J., Mariano, L. T., Doss, C. J., Troxel, W. M., ... & Estes, K. (2021). Does Four Equal Five? Implementation and Outcomes of the Four-Day School Week. Appendix C. RR-A373-1. *RAND Corporation*.  
[https://www.rand.org/pubs/research\\_reports/RRA373-1.html](https://www.rand.org/pubs/research_reports/RRA373-1.html)
- King, B. (2023, July 24). *Most Fairfield Court Elementary families agreed to send their kids back to school early*. Retrieved March 12, 2024, from <https://www.wtvr.com/news/local-news/fairfield-court-rps200-opening-july-24-2023>
- Kvaal, J. (2023, December 15). *A First Look at Student Loan Repayment After the Payment Pause - ED.gov Blog*. ED.gov Blog. Retrieved March 25, 2024, from <https://blog.ed.gov/2023/12/a-first-look-at-student-loan-repayment-after-the-payment-pause/>
- Lehtinen-Vela, A. (2024, March 14). *71% of teachers with student loan debt are considering quitting due to financial stress, according to survey*. Kansas City Star. Retrieved March 25, 2024, from <https://www.kansascity.com/news/business/article286697855.html>
- Loan Repayment Assistance Program*. (n.d.). Georgetown Law. Retrieved March 25, 2024, from <https://www.law.georgetown.edu/admissions-aid/financial-aid/loan-repayment-assistance-program/>
- MacGillis, A. (2023, June 19). Post-Pandemic Test Scores Show Schools Struggling to Catch Up. *ProPublica*. <https://www.propublica.org/article/pandemic-covid-education-test-scores-schools-students>
- Madigan, D. J., & Kim, L. E. (2021, September). Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. *Teaching and Teacher Education*, 105.  
<https://www.sciencedirect.com/science/article/pii/S0742051X21001499>
- Marketing Specialist Salary in Richmond, VA - Virginia*. (n.d.). Salary.com. Retrieved March 13, 2024, from <https://www.salary.com/research/salary/benchmark/marketing-specialist-salary/richmond-va>
- Marsh, J. A., & McCaffrey, D. F. (2011). What are achievement gains worth—to teachers?. *Phi Delta Kappan*, 93(4), 52-56.  
<https://journals.sagepub.com/doi/full/10.1177/003172171109300413>



- Mervosh, S. (2022, September 1). The Pandemic Erased Two Decades of Progress in Math and Reading (Published 2022). *The New York Times*.  
<https://www.nytimes.com/2022/09/01/us/national-test-scores-math-reading-pandemic.html>
- Miller, S. (2021, January 4). Legislation Extends Student Loan Repayment Benefits for 5 Years. *SHRM*. <https://www.shrm.org/topics-tools/news/benefits-compensation/legislation-extends-student-loan-repayment-benefits-5-years>
- NAEP Long-Term Trend Assessment Results: Reading and Mathematics. (n.d.). The Nation's Report Card. Retrieved March 31, 2024, from  
<https://www.nationsreportcard.gov/highlights/ltt/2022/>
- Napoletano, E. (2023, May 23). Here Are 15 Companies That Can Help You Pay Off Your Student Loans. *US News Money*. <https://money.usnews.com/loans/student-loans/articles/companies-that-help-pay-off-student-loans>
- New Data Show How the Pandemic Affected Learning Across Whole Communities. (2023, May 11). *Harvard Graduate School of Education*.  
<https://www.gse.harvard.edu/ideas/news/23/05/new-data-show-how-pandemic-affected-learning-across-whole-communities>
- Nowak, A. D., Perrone, F., & Smith, P. S. (2023, January). How Do Homeowners, Teachers, and Students Respond to a Four-Day School Week? *Ed Working Paper*.  
<https://edworkingpapers.com/sites/default/files/ai23-721.pdf>
- Organizational Charts. (n.d.). Richmond Public Schools. Retrieved March 31, 2024, from  
<https://www.rvaschools.net/staff/organizational-chart>
- Out of School Time Program | Richmond. (n.d.). RVA.gov. Retrieved March 12, 2024, from  
<https://www.rva.gov/parks-recreation/out-school-time-program>
- Peetz, C. (2024, January 23). *The Popularity of 4-Day School Weeks, in Charts*. Education Week. Retrieved March 12, 2024, from <https://www.edweek.org/leadership/the-popularity-of-4-day-school-weeks-in-charts/2024>
- Pouliakas, K. (2010, October 15). Pay Enough, Don't Pay Too Much or Don't Pay at All? The Impact of Bonus Intensity on Job Satisfaction. *International Review for Social Sciences*, 63(4), 597-626. <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1467-6435.2010.00490.x>
- Public Service Loan Forgiveness (PSLF). (n.d.). Federal Student Aid. Retrieved March 25, 2024, from <https://studentaid.gov/manage-loans/forgiveness-cancellation/public-service>
- Richmond City Public Schools - Virginia School Quality Profiles. (n.d.). Virginia School Quality Profiles. Retrieved December 3, 2023, from  
<https://schoolquality.virginia.gov/divisions/richmond-city-public-schools#desktopT>
- Richmond City School Board. (n.d.). Richmond Public Schools. Retrieved March 25, 2024, from  
<https://www.rvaschools.net/leadership/rps-school-board>
- Richter, E., Lucksnat, C., Redding, C., & Richter, D. (2022, June). Retention intention and job satisfaction of alternatively certified teachers in their first year of teaching. *Teaching and Teacher Education*, 114.  
<https://www.sciencedirect.com/science/article/pii/S0742051X22000786#:~:text=We%20also%20found%20a%20positive,to%20stay%20in%20their%20profession.>



- Ritter, C. (2023, June 8). *Survey Finds Parents Supportive of a Four Day School Week*. EdChoice. Retrieved March 12, 2024, from <https://www.edchoice.org/engage/survey-finds-parents-supportive-of-a-four-day-school-week/>
- Ronfeldt, M., Loeb, S., & Wyckoff, J. (2013). *How Teacher Turnover Harms Student Achievement*. American Educational Research Journal, 50(1), 4-36. <https://doi.org/10.3102/0002831212463813>
- The Saving on a Valuable Education (SAVE) Plan Offers Lower Monthly Loan Payments*. (n.d.). Federal Student Aid. Retrieved March 25, 2024, from <https://studentaid.gov/announcements-events/save-plan>
- Smalley, A. (2020). *Offering Tax Incentives to Ease Student Loan Debt*. National Conference of State Legislatures. Retrieved March 25, 2024, from <https://www.ncsl.org/education/offering-tax-incentives-to-ease-student-loan-debt>
- Steiner, E. D., Doan, S., & Woo, A. (2023). All Work and No Pay—Teachers' Perceptions of Their Pay and Hours Worked: Findings from the 2023 State of the American Teacher Survey. RAND Corporation. [https://www.rand.org/pubs/research\\_reports/RRA1108-9.html](https://www.rand.org/pubs/research_reports/RRA1108-9.html)
- Tax Code Section 127: Employer Provided Education Assistance*. (n.d.). NAICU. Retrieved April 1, 2024, from <https://www.naicu.edu/policy-advocacy/issue-briefs/tax-policy/tax-code-section-127-employer-provided-education-assistance>
- Teacher Satisfaction With Salary and Current Job*. (2021, June). National Center for Education Statistics. Retrieved March 21, 2024, from <https://nces.ed.gov/pubs2018/2018116/index.asp>
- Theobald, R., Xu, Z., Gilmour, A., Lachlan-Hache, L., Bettini, E., & Jones, N. (2023). *The Impact of a \$10,000 Bonus on Special Education Teacher Shortages in Hawai 'i*. CALDER Working Paper 290-0823. <https://caldercenter.org/sites/default/files/CALDER%20WP%20290-0823.pdf>
- Thompson, P. N., Tomayko, E. J., Gunter, K. B., Schuna Jr, J., & McClelland, M. (2023). Impacts of the four-day school week on early elementary achievement. *Early Childhood Research Quarterly*, 63, 264-277. <https://www.sciencedirect.com/science/article/pii/S0885200622001387>
- Schildberg-Hörisch, H., & Wagner, V. (2020). Monetary and non-monetary incentives for educational attainment: design and effectiveness. *The Economics of Education*, 249-268. [https://download.uni-mainz.de/RePEc/pdf/Discussion\\_Paper\\_1821.pdf](https://download.uni-mainz.de/RePEc/pdf/Discussion_Paper_1821.pdf)
- Sittenthaler, H. M., & Mohnen, A. (2020). Cash, non-cash, or mix? Gender matters! The impact of monetary, non-monetary, and mixed incentives on performance. *Journal of Business Economics*, 90(8), 1253-1284. <https://link.springer.com/article/10.1007/s11573-020-00992-0>
- Small Business Liaison Officer Salary in Richmond, Virginia*. (n.d.). Salary.com. Retrieved March 13, 2024, from <https://www.salary.com/research/salary/posting/small-business-liaison-officer-salary/richmond-va>
- Thompson, P. (2019, March). Effects of Four-Day School Weeks on Student Achievement: Evidence from Oregon. IZA, DP No. 12204. <https://docs.iza.org/dp12204.pdf>
- Thompson, P. (2021). The Shrinking School Week. *Education Next*, 21(3), 60-67. <https://www.educationnext.org/shrinking-school-week-effects-four-day-schedule-student-achievement/>

Wong, A. (2019, February 20). The Growing Gender Divide Among U.S. Teachers. *The Atlantic*.  
<https://www.theatlantic.com/education/archive/2019/02/the-explosion-of-women-teachers/582622/>

*Year Round & Extended Year Schools*. (n.d.). Virginia Department of Education. Retrieved March 15, 2024, from <https://www.doe.virginia.gov/teaching-learning-assessment/specialized-instruction/year-round-extended-year-schools>

*2018-23 Dreams4RPS Outcomes Report*. (2024, January). Retrieved February 5, 2024, from <https://resources.finalsite.net/images/v1704727459/rvaschoolsnet/k6qnks0z9g1u2luoz3dp/2024Dreams4RPSOutcomesReport.pdf>

## VI. Appendix A – Additional Formulas and Data used to Estimate Cost

Appendix A. Table 1: Estimated Effects of a 1 Percent Increase in Salary	
Years of Experience	Estimated Effect (Percentage Points)
0-1	-28.32
2-3	-19.79
4-5	-24.04
6-7	-16.43
8-9	-9.16
10-11	-10.18
12-13	-9.42
14-15	-7.25
16-17	-8.92
18+	0
Source: Hendricks, 2013	

Appendix A. Table 2: Salary Scales for RPS Teachers			
Step	BA	MA	MA+30
0	\$56,965	\$59,814	\$62,793
1	\$57,633	\$60,515	\$63,527
2	\$58,306	\$61,222	\$64,270
3	\$58,990	\$61,939	\$65,025
4	\$59,680	\$62,662	\$65,781
5	\$60,378	\$63,395	\$66,554
6	\$61,085	\$64,135	\$67,333
7	\$61,799	\$64,888	\$68,120
8	\$62,522	\$65,647	\$68,916
9	\$63,253	\$66,415	\$69,724
10	\$63,993	\$67,190	\$70,541
11	\$64,740	\$67,979	\$71,366
12	\$65,498	\$68,775	\$72,199
13	\$66,266	\$69,579	\$73,042
14	\$67,040	\$70,394	\$73,900
15	\$67,826	\$71,216	\$74,765
16	\$68,619	\$72,049	\$75,639
17	\$69,423	\$72,894	\$76,524
18	\$70,233	\$73,745	\$77,417
Source: <i>Salary Schedules 2023 – 2024 School Year Effective July 1, 2023, 2023</i>			

### Formula for monthly payments under SAVE

$$p = (0.1\lambda + 0.5(1 - \lambda))(Y - 2.25FPL)$$

Where  $p$  is the monthly payment under SAVE,  $\lambda$  is the share of debt from graduate borrowing,  $Y$  is monthly income, and  $FPL$  is the federal poverty level as determined by household size.