Innovation in Education

Analysis and Recommendations

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Disclaimer

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments 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.

Honor Statement

On my honor as a student, I pledge that I have not neither given nor received unauthorized aid on this assignment.

Executive Summary

Virginia's high school students, particularly those from low-income and minority backgrounds, face persistent barriers in accessing and completing college-level coursework, limiting their

readiness for postsecondary education and the workforce. While Virginia currently offers dual enrollment and credit-by-exam programs (AP), structural inequities, including limited teacher capacity, inadequate advising, and information gaps, prevent many students from fully benefiting from these opportunities. Background on this problem will be provided to contextualize where education policies have been introduced. The background will review different programs, political salience, subpopulations of interests, and the context of this problem for Richmond Public Schools.

This report evaluates three policy alternatives aimed at expanding rigorous learning opportunities and promoting equitable postsecondary outcomes in Richmond:

1. **Dual Enrollment Equity Pathway (DEEP)** – A targeted initiative that enhances advising, addresses teacher credentialing shortages, and provides outreach and support to increase equitable access to dual enrollment.
2. **CLEP Expansion** – An initiative to increase the use of College-Level Examination Program (CLEP) exams to provide an alternative pathway for students to earn college credit by fulfilling class requirements and proceeding with taking the CLEP exam.
3. **Competency-Based Learning (CBL) Pilot Program** – A system-level redesign of coursework, assessment, and progression based on demonstrated mastery rather than seat time in math and sciences courses.

Each alternative was assessed against four key criteria: **cost**, **effectiveness**, **equity**, and **feasibility**.

While **CLEP Expansion** provides a low-cost and flexible option for some students, its benefits are less pronounced for traditional high school students and may not address underlying access barriers. The **Competency-Based Learning Pilot** shows promise in increasing high school graduation rates but presents significant feasibility challenges, including high implementation costs, limited stakeholder support, and potential negative impacts on postsecondary enrollment.

After a thorough analysis, the report recommends the implementation of the **Dual Enrollment Equity Pathway (DEEP)** as the most viable and impactful policy for improving outcomes in Richmond Public Schools. DEEP is uniquely positioned to advance educational equity by proactively expanding dual enrollment access, offering individualized advising, aligning courses

with postsecondary and career pathways, and directly addressing teacher credentialing gaps. Evidence from similar programs shows that structured dual enrollment initiatives can increase college participation, reduce time-to-degree, and improve long-term workforce readiness, especially for historically underserved students.

By prioritizing DEEP, Virginia Learns and Richmond City Schools can take a major step toward ensuring that all students have meaningful opportunities to graduate high school and are prepared for success in college, careers, and life. DEEP can also serve as a scalable model for statewide adoption as Virginia modernizes its high school experience.

Introduction

Education in Virginia is at a pivotal moment. While the state has long prided itself on maintaining high academic standards, these benchmarks have remained largely unchanged for many years, even as innovative approaches to teaching and learning have emerged. The evolving needs of students and the demands of a modern workforce require a reevaluation of these standards to ensure every student has the opportunity to thrive.

This document explores how Virginia Learns could work to address this challenge. By examining the potential for updating long-standing educational practices and integrating new strategies, it seeks to identify ways to better support high school students and unlock opportunities that remain underutilized. Through my work with Virginia Learns, I aim to analyze how we can set a new precedent for success, one that incorporates modern frameworks and ensures all students have access to the tools they need to succeed in an ever-changing world. Richmond is serving as the test site for evaluating these alternatives and criteria, providing valuable insights to refine and strengthen the approach before broader implementation across the State.

Problem Statement

Virginia's education system faces significant challenges in modernizing its learning measurement and delivery methods. The continued reliance on time-based metrics, like the Carnegie Unit, has hindered student engagement and restricted progress. This outdated approach

limits opportunities for students to personalize their education, leaving them unable to optimize their high school years fully. These challenges are particularly pronounced in underserved communities, exacerbating inequities in access and outcomes. **Without adopting innovative and student-centered models, Virginia risks leaving its graduates ill-prepared to meet the demands of a rapidly evolving economy and society.**

Client Overview

This analysis is being done for Robert Nomberg and Tina Manglicmot for Virginia Learns which is a 501 (c)(3) nonprofit organization that collaborates closely with the Commonwealth Learning Partnership and the Virginia Department of Education (VDOE). The main goal of Virginia Learns is to create a more innovative, relevant, and equitable public education system in Virginia. Supporting and evolving the K-12 classroom experience so students graduate prepared for success in the 21st-century world and workforce. The organization is committed to implementing these innovations equitably across all school systems.

By providing targeted policy recommendations, I can assist in developing frameworks for effectively integrating different programs and learning styles into Virginia's education landscape. My client, Virginia Learns, aims to have this analysis done to be well-informed once Virginia's next governor takes office and to support the candidates efforts to modernize the high school experience. My client possesses a strong network and knows the appropriate authority to drive these policy changes.

Background on the Problem

To contextualize the challenges faced by Virginia Learns, this section examines the historical and political factors shaping Virginia's current public education system. It highlights enduring precedents alongside emerging legislative proposals designed to help high school students make the most of their educational experiences.

Carnegie Unit

In Virginia, the Carnegie unit metric system tracks students' mastery of subjects. Students must take 120 hours of contact time with the instructor or one hour 5 days a week for twenty-four weeks (Silva et al., 2015). The Carnegie Foundation established the Carnegie unit over a century ago to measure readiness for college-level academics. The goal of incorporating the Carnegie unit was to standardize students' exposure to subject material by ensuring they received consistent amounts of instructional time. However, the goal was not for it to function as a measure of what students learned. But at this point, it has become a method to track what students have learned primarily through exams and instructional time.

Political Salience

The issue of modernizing education in Virginia has gained significant attention from multiple stakeholders, including policymakers and advocacy groups. House Bill 1477, introduced in the Virginia General Assembly, directly challenges the traditional reliance on time-based metrics, such as the Carnegie Unit, by advocating for competency-based learning (Virginia General Assembly, 2024). This bill aims to allow students to progress based on mastery rather than mandated instructional time, thus addressing the limitations on student engagement and progress (Virginia General Assembly, 2024). House Bill 1087 focuses on expanding dual enrollment opportunities, offering high school students a chance to earn college credits at no cost, which aims to increase access and equity in higher education pathways (Virginia General Assembly, 2024). However, according to the Joint Legislative Audit and Review Commission (2022), there's not enough high school teachers with the necessary credentials to teach these courses. In addition to legislative efforts, Governor Glenn Youngkin has introduced a plan to expand dual enrollment, emphasizing the need for better collaboration between high schools and community colleges (Cardinal News, 2022). This initiative has captured the attention of school administrators and educators across the state as they await specific details on how this plan will be implemented and funded (Cardinal News, 2022). Advocacy groups, such as Virginia Learns, and media outlets have closely followed these developments, reflecting growing public interest in how these reforms will reshape the educational landscape. Policymakers and organizations alike are focused on aligning educational practices with workforce needs to prepare students for success in the 21st century.

Legal and Regulatory Environment

Several government entities, including the Virginia Department of Education (VDOE) and various local school boards, are involved in this issue. VDOE has a mandate to oversee the implementation of educational policies and frameworks, such as the Early College Scholars Program, which helps facilitate dual enrollment (Virginia Department of Education, n.d.). This initiative is guided by VDOE's broader goal of ensuring that all students have access to high-quality education. VDOE, along with the Virginia Community College System (VCCS), will need to allocate resources to support these new programs (Joint Legislative Audit and Review Commission, 2022).

Sub-populations or Vulnerable Groups of Interest

Expanding dual enrollment and competency-based learning frameworks could address these disparities by providing more personalized learning experiences and early college opportunities. Dual enrollment has increased 54% over the last 10 years in comparison to Advanced Placement (AP, which has decreased 2% since 2019 (Mattingly, 2023). Dual enrollment is accepted by many universities, while AP classes are only considered if a student scores high enough (Mattingly, 2023). The expansion of dual enrollment programs could significantly impact various vulnerable groups within Virginia's public school system. It is reported that dual enrollment is primarily paid for by high schools that receive state and local funding, which makes it more affordable to low-income students who would otherwise be unable to afford it (Joint Legislative Audit and Review Commission, 2022). These programs could help close the educational attainment gap between students in wealthier suburban areas and those in lower-income or rural regions.

Advanced Placement (AP)

The current status quo option that aims to expose students' to advanced course work is Advanced Placement (AP). Maximizing the curriculum requires students to enroll in advanced classes and college-level courses in high school (Bastedo et al., 2016). Advanced Placement (AP) was introduced in 1952 and provides an opportunity for high school students to take college-level courses and possibly obtain college credit or placement out of introductory college courses (Owens, 2024). According to the Virginia Department of Education, 25.2% of Virginia's 2022

graduating seniors scored a three or higher on at least one AP test, down from 26.9% in 2021 and 30% in 2014.

Stephanie Owen's *"The Advanced Placement Program and Educational Inequality"* (January 2024) examines the impact of expanding AP course offerings in Michigan schools. The study finds that increasing AP availability minimally improves participation for disadvantaged students, while advantaged students with higher achievement, non-underrepresented minority status, or higher incomes further increase their AP participation. Additionally, there is little evidence that expanded AP access significantly improves college enrollment, quality, or degree attainment. Without targeted equity-focused interventions, the AP program may perpetuate or even widen existing educational inequalities.

A randomized study by Conger, Long, and McGhee (2023) examined the impact of offering AP science courses to over 1,800 students in 23 schools that previously lacked these courses. The study found no significant effects on college entrance exam scores (SAT/ACT). While AP course participants were more likely to take the AP exam, many opted out, and most did not achieve passing scores. Additionally, although there was some evidence of increased aspirations to attend higher-quality colleges, this did not lead to higher enrollment in such institutions.

This opportunity to take advanced classes is only available to some students. Smaller high schools are less likely to provide these opportunities, with only 40% of high schools with fewer than 500 students reporting offering any AP or dual enrollment (Bastedo et al., 2016, p. 391). This disadvantage affects different subpopulations. An analysis conducted by the National Educational Longitudinal Survey suggests that the socioeconomic composition of a school's student body predicts whether such students have access to advanced courses (Attewell & Domina, 2008). It is crucial to consider equity in planning to enhance the high school experience for all students.

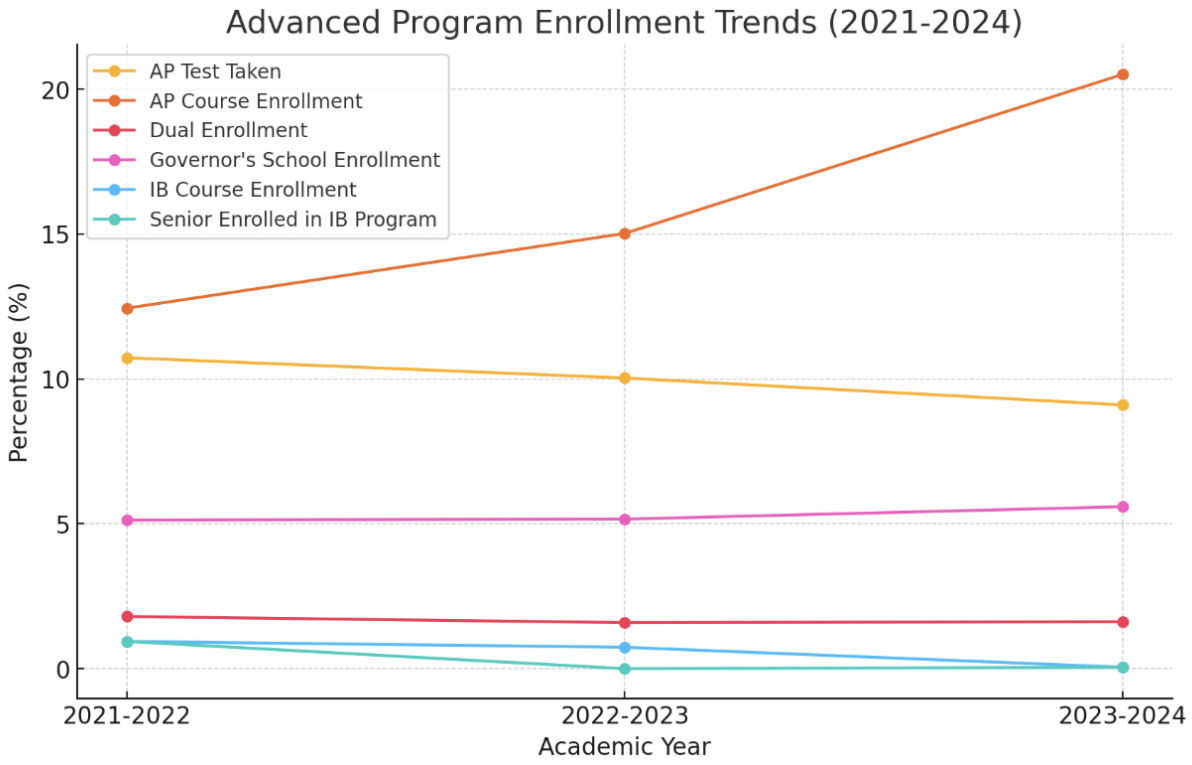
Dual Enrollment

Dual enrollment allows students to learn from a college-level professor and earn college credits in high school. During the Obama administration 'No Child Left Behind' was repealed and the passage of the 'Every Student Succeeds Act' (ESSA) occurred in 2015, which the federal

government emphasized College and Career readiness, and one way in which states have responded is by developing partnerships that can enable students to earn college credits while in secondary school (Malin, Bragg & Hackman, 2017). In 2019, 108 bills intended to expand DE programs were introduced in 37 state legislatures, with 36 becoming law (Hornbeck, 2021, p. 2). These are some examples of how strides have been made to improve dual enrollment access.

Dual enrollment programs offer positive impacts, such as increased college access and exposure to advanced coursework, but they also present challenges that must be considered in policy formulation. While these programs can boost college enrollment, they may increase dropout rates among less prepared students and do not always lead to full-time attendance at four-year institutions (Cowan and Goldhaber, 2015).

Figure 1: Advanced Program Enrollment Trends (2021-2024)



Competency-Based Learning

Competency-Based Learning (CBL) is a more personalized instructional model that permits students to progress when they have demonstrated mastery of the subjects they are studying, "moving on when ready" instead of advancing or failing at the end of a course (Silva et al., p. 21). CBL is an important reform because the interdisciplinary field of learning sciences suggests that students learn in different ways and at different paces. Research suggests that students learn best when they have opportunities to integrate knowledge across disciplines by applying information in the context of the real world and learning in collaborative settings that rely not just on classroom teachers.

The Department of Education has said that CBL leads to higher student engagement and can help institutions save both time and money; however, its primary purpose is to improve student outcomes (Henri, Johnson, & Nepal, 2017). Engineering specifically has shifted towards CBL in the United States, South America, Australia, and Asia (Henri, Johnson, & Nepal, 2017). A reason why engineering has shifted to CBL is because it is a student-centered approach that leads to students being more autonomous. Autonomy is crucial in student achievement (Fazey &

Fazey, 2001). Research indicates that when students have a higher sense of control over their own education, they tend to perform better (O'Reilly, 2014).

Non-College-bound Students

In Virginia, high school Career and Technical Education (CTE) programs serve more than 670,000 students in one or more CTE courses in grades 6-12 (Virginia Department of Education). The programs are designed to prepare middle and high schoolers for productive futures while meeting the commonwealth's need for well-trained and industry-certified technical workers (Virginia Department of Education). This report understands the importance of Career and Technical education but is geared more towards innovative strategies for higher education.

In the Context of Richmond

Although the previous sections discussed Virginia at large the next section of the paper will focus the alternatives to Richmond Public Schools (RPS). Richmond Public Schools faces significant challenges in college and career readiness compared to state averages. While 37.8% of RPS students earn advanced diplomas, this is notably lower than the 51.0% statewide rate. The percentage of students receiving standard or other diplomas is nearly the same, 40.2% in Richmond versus 41.8% statewide. However, RPS's 17.9% dropout rate is significantly higher than the state average.

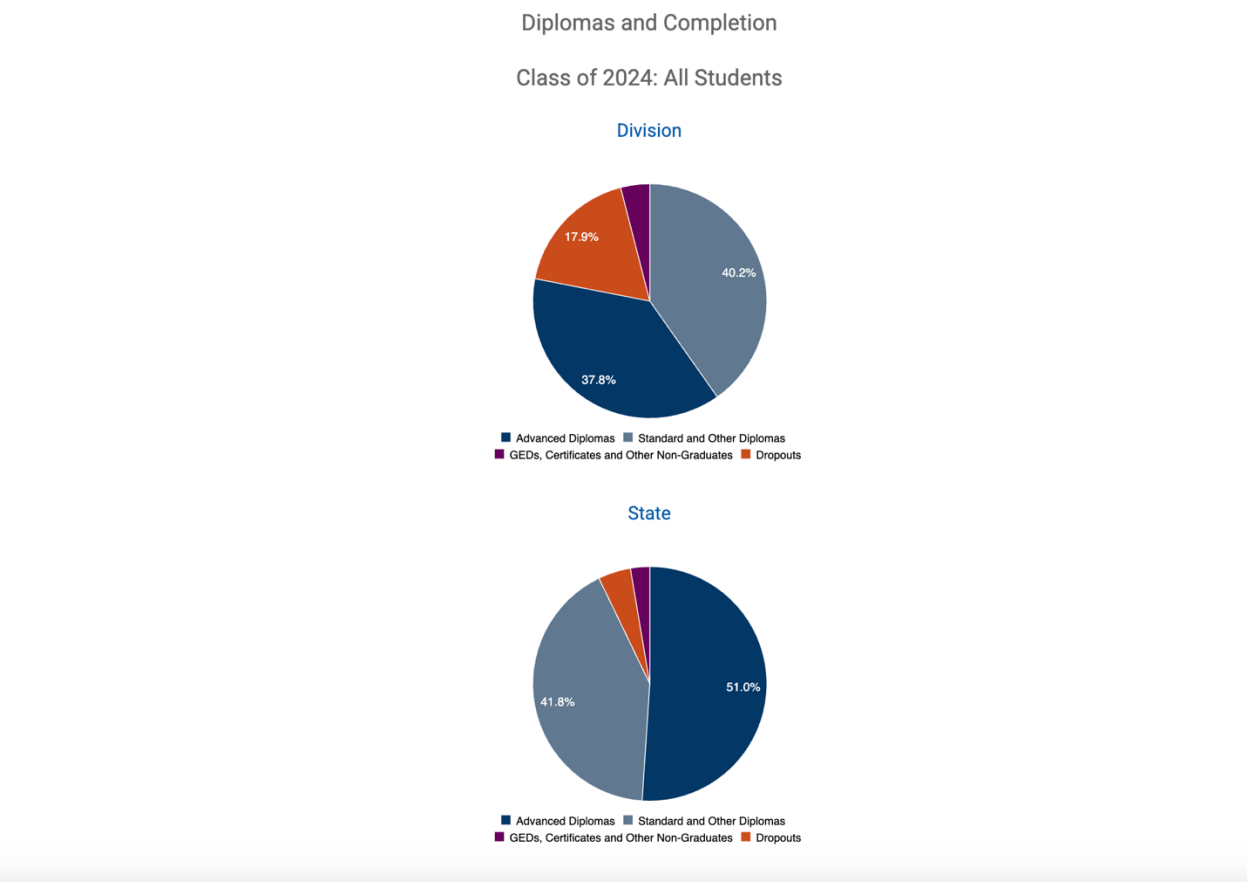


Figure 2: Diplomas and Completion Class of 2024
Via: Virginia Department of Education School Quality Index

These disparities highlight the importance of targeted educational policies and interventions to improve student outcomes in Richmond. By focusing on RPS, we can explore whether these alternatives are viable at the local level as pilot programs and, if successful, how they could be expanded statewide. The chart below depicts how Advanced Programs are currently used in Richmond Public Schools.

Consequences of the Problem

High School is a crucial point in many young students' lives. Limited access to coursework leaves students unprepared for college. Many of the decisions made during this era affect lifetime earnings and upward mobility. An individual that does not get the necessary opportunities may be disadvantaged in the long term. For households, this may perpetrate a cycle of poverty reinforcing racial and economic disparities.

Alternatives and Criteria

This section evaluates three alternatives for Richmond Public Schools: expanding the Dual Enrollment Equity Pathway (DEEP) framework, increasing access to the College-Level Examination Program (CLEP), and implementing competency-based learning (CBL) pilot programs. All three alternatives take place over a three-year period to analyze impact over time. Each of these alternatives provides a distinct method for optimizing high school education by allowing students to access rigorous coursework. The evaluation will be based on four key criteria:

Cost: This criterion considers both the direct and indirect expenses of implementing the alternatives. Costs will be quantified using data from similar programs implemented in other states, providing a realistic estimate of financial investment and sustainability. The cost will be calculated over three years to understand the program's impacts.

Effectiveness: This will be assessed by determining how well the alternative allows students to maximize their high school experience. Success will be measured by increased enrollment in higher education after graduation for DEEP and CLEP. While CBL will be measured with degree attainment overall. The measurement is different due to the differing goals of the programs.

Equity: This criterion examines whether the alternative effectively addresses barriers to opportunity for students in Richmond, with a specific focus on reducing racial and income disparities in access to advanced learning opportunities.

Feasibility: The feasibility of each alternative will be assessed based on its likelihood of adoption by Richmond Public Schools and the willingness of key stakeholders, including parents, faculty, and colleges, to support and engage with the proposed changes. This criterion will also consider whether implementation requires new local policies or additional funding and the likelihood of securing necessary resources within the district.

Analysis

Alternative 1: Dual Enrollment Equity Pathway (DEEP)

Virginia Learns should advocate for incorporating the Dual Enrollment Equity Pathway (DEEP) framework in Richmond City High Schools as a pilot program to expand access, increase participation, and improve postsecondary readiness for underserved students. Richmond Public Schools currently have an ongoing partnership with Reynolds Community College. To ensure equitable access and success, this initiative should focus on the following four components.

1) Focus on targeted outreach to underserved students and families by increasing awareness, providing early exposure to dual enrollment opportunities, and offering parent engagement sessions to help families understand the benefits of dual enrollment (Griffin et al., 2024).

2) Strengthening course alignment is also critical. Ensuring that dual enrollment offerings connect with desired career paths and establishing clear partnership expectations with Reynolds Community College. This approach will help map dual enrollment courses to clear postsecondary pathways.

3) The pilot should integrate individualized career and college advising to further support students. Advising should be structured with meetings to keep students on track for degree completion. The meetings should occur three times a semester.

4) Additionally, ensuring high-quality instruction must be a top priority, with a particular focus on addressing teacher credentialing gaps. A key solution is to advocate for a rule change allowing teachers who are certified to teach Advanced Placement (AP) courses to also be eligible to instruct dual enrollment courses. This change would help alleviate capacity constraints and expand access, enabling more students to participate in dual enrollment opportunities. This effort would require targeted lobbying to the Virginia Department of Education to implement the necessary policy adjustment.

This DEEP pilot offers an actionable and high-impact opportunity for Virginia Learns to strengthen postsecondary access, address existing disparities, and demonstrate the power of targeted dual enrollment reform in Richmond.

Cost

The cost of DEEP will include hiring two outreach coordinators and a community engagement director, changing teacher credentialing, and conducting outreach across Richmond City high schools. The cost of this program assumes that no additional counselors and college advisors would be needed, but the coordinators/director would be the largest cost factor. Richmond Public Schools also pays for the dual enrollment courses so the cost will not be factored in. The total cost is **$895,411.05,** which is considered a medium cost for Richmond City Schools.

Effectiveness

The DEEP framework would be effective in improving secondary and postsecondary outcomes for Richmond Public Schools students. Research on dual enrollment programs highlights the potential to increase college access and success.

A study that does report on college enrollment is Cowan and Goldhaber (2015). This study investigates the impact of Washington's "Running Start" dual enrollment program on high school completion and college enrollment outcomes. Utilizing a state longitudinal data system, the study enhances previous research by incorporating comprehensive college enrollment records and analyzing student data prior to program participation. The findings reveal that students in dual enrollment programs are more likely to attend any college immediately after high school; however, they are not more likely to enroll full-time or attend four-year universities. The availability of detailed data is crucial, as it shows that earlier studies may have underestimated the benefits of dual enrollment due to a lack of information on private or out-of-state college attendance. The study also highlights significant variability in outcomes based on students' initial academic preparation. Low-achieving students tend to enroll in college at higher rates than expected, but they also face a higher risk of dropping out of high school or failing to earn a diploma within four years. This suggests that while dual enrollment can increase college access, it may also contribute to higher dropout rates among less prepared students. Cowan and Goldhaber emphasize the need for policymakers to balance the benefits of increased college access with the potential risks of high school dropout. Running Start (RS) participants are **5.4 percentage points** more likely to enroll in any college immediately after high school. However, participants are 9.1 percentage points less likely to enroll full-time in a four-year college. The study highlights the complexity of dual enrollment programs and the necessity for targeted

interventions to support student success in both high school and postsecondary education. Therefore, this alternative is rated high in terms of effectiveness.

Theres another study conducted by Allen and Dadgar (2012) which evaluates the effectiveness of the College Now dual enrollment program at the City University of New York (CUNY). College Now is a dual enrollment program offered by the City University of New York (CUNY). It allows New York City high school students to take college-level courses while still in high school, earning both high school and college credit. The program operates across 17 CUNY campuses and aims to improve college readiness and increase postsecondary success. The study uses a difference-in-differences (DID) approach, which compares outcomes between students who participated in the College Now program and those who did not, and students from schools that offered the program versus those from schools that did not. They find that participating in College Now not only allows students to earn college credits before attending college but also encourages them to take more college courses once enrolled. Dual enrollment leads to a reduction in time to degree and improves students' academic performance, as indicated by higher college GPAs. The study supports previous research showing that dual enrollment programs enhance post-secondary attainment and efficiency in completing degrees. This study did not measure for college degree pursuit or completion however it measures the increase for credits earned, GPA, and retention into the 3rd semester. While this study does not have specific effects on enrollment it highlights the overall effectiveness in dual enrollment once in college.

Equity

DEEP is designed to reach low-income, first-generation, and minority students through proactive outreach and engagement with underrepresented high schools (Fink et al., 2023). Evidence from field studies in Florida and Texas suggests that similar initiatives have increased participation among Black, Hispanic, and low-income students by up to 15% (Fink et al., 2023). DEEP would limit the barriers to opportunity for students in Richmond Public Schools. The DEEP framework aligns strongly with the equity goals of increasing racial and income diversity in dual enrollment by expanding access, providing structured advising, and aligning coursework with high-opportunity careers. Therefore, this alternative is rated high in terms of equity.

Feasibility

The DEEP framework presents a moderately feasible policy alternative for Richmond City Schools, considering the structural requirements for implementation and the support from key stakeholders. Securing funding for teacher credentialing, student outreach, and advising will be crucial for its success. DEEP could gain momentum as a pilot initiative in Richmond and other high-need districts. Key stakeholders will play a critical role in the successful adoption of this policy. Teachers may be receptive to DEEP, as it addresses the credentialing gap while providing additional support to dual enrollment students. High school and college administrators, however, may be more hesitant due to the significant planning required for implementation. Richmond's administration is likely to be open to adopting DEEP if it demonstrates the potential to increase college enrollment rates. Parents are likely to be supportive of DEEP, as it aims to strengthen academic opportunities and resources for their children. This option is rated medium in terms of feasibility.

Alternative 2: CLEP Expansion

Virginia Learns could advocate for expanding the College-Level Examination Program (CLEP) in Richmond Public Schools as an alternative pathway for students to earn college credit and accelerate their academic progress. The CLEP exam, administered by the College Board, allows students to test out of introductory college courses and advance to higher-level coursework sooner, ultimately saving time toward degree completion (College Board, n.d.). While Richmond Public Schools already offer AP courses through the ‘AP for All’ initiative, CLEP provides a flexible and cost-effective option for students facing barriers to AP or dual enrollment participation.

Under this model, students would continue to enroll in their standard high school courses such as Algebra I, Algebra II, Biology, General Chemistry, and U.S. History I and II without the need for a specially designated AP or dual enrollment course. These courses will be aligned to CLEP exam content, ensuring that instruction prepares students to meet both high school graduation

requirements and the expectations of the CLEP assessment. At the conclusion of these courses, students would have the option to register for and take the corresponding CLEP exam.

CLEP exams could be offered on-site at high schools or at nearby testing centers, depending on available infrastructure. Upon passing the CLEP exam, students would earn college credit recognized by many public and private colleges, including institutions within the Virginia community college system and several public four-year universities.

This structure would allow students to progress through their regular high school schedules while still having the opportunity to gain advanced standing in college. The CLEP program would function alongside existing AP and dual enrollment offerings providing a third flexible option for students to earn college credit based on their individual circumstances, learning preferences, and course availability.

Cost

The cost of the CLEP exams includes the exam fees 524 Richmond Public School students, representing the 20% gap between state and division-level college enrollment rates, as well as transportation to the exams, and advertising for the CLEP opportunity. CLEP is especially cost-effective and accessible, providing an alternative pathway for students who may lack the resources or support to participate in more rigorous AP or dual enrollment programs (College Board, n.d). The total cost is **$228,000,** which is considered a low cost for incorporating this into Richmond Public Schools.

Effectiveness

The CLEP exams would be effective in providing students with the opportunity to pursue higher education. The largest research on CLEP uses a regression discontinuity design (RDD) to estimate the causal impact of passing a College-Level Examination Program (CLEP) exam on college completion (Boatman, Hurwitz, Lee, & Smith, n.d.). The data for this RDD comes from over 800,000 first-time CLEP test-takers between 2008 and 2015. The research found that CLEP credit has the most significant impact on degree attainment for nontraditional students, which are considered military members and home-schooled individuals, rather than traditional high school graduates. CLEP credit increases degree attainment across all groups. However, military

members see a 6.4% increase, and home-schooled students see a 4.9% increase in earning any higher education degree.

Additionally, the impact is stronger for students pursuing associate's degrees rather than those attending four-year colleges. Traditional high school students who took the CLEP exams saw a **2-3 percentage point** increase in college degree completion. Although this is smaller than non-traditional students it is still statistically significant and positive. Since the success of this alternative would be measured by its ability to help students maximize their high school experience and increase enrollment in higher education, the benefits for high school students suggest that CLEP exams may be an effective option.

Implementing CLEP exams in Richmond City High Schools would be a significant pivot that could yield the desired results of degree attainment. The effectiveness of implementing CLEP exams as an alternative for high school students appears to be medium.

Equity

The largest study on CLEP reports a participation breakdown of 55% White, 25% Latino, 9% Black, and 4% Asian (Boatman, Hurwitz, Lee, & Smith, n.d.), indicating that racial disparities persist in program uptake. The study primarily emphasizes degree completion rather than equity as a core objective, highlighting a significant gap in addressing access barriers for underrepresented groups. However, the approach taken by Virginia Learns in Richmond Public Schools would focus on making CLEP easier to access for marginalized communities that tend not to have the opportunity to access these exams. Therefore, the equity criterion for CLEP is considered medium due to the intended focus of addressing racial and economic disparities among participants while also factoring in the existing research on the usual program uptake.

Feasibility

The CLEP exam diverges from the established AP exam framework currently followed by Richmond Public Schools. Integrating CLEP exams into the budget would require significant effort to promote the initiative, reallocation resources, and manage additional logistical complexities. The limited selection of exams could be a challenge, but since they cover core subject areas relevant to higher education goals, they may still provide meaningful benefits.

Stakeholder perspectives will be important in assessing this option's feasibility. Teachers and school administrators may have mixed reactions, weighing the benefits of increased college credit opportunities against the need for new training and adjustments to existing curricula. Parents might be supportive if CLEP provides a more flexible and affordable path to college credit. Higher education institutions' acceptance of CLEP credits will also influence stakeholder buy-in. Therefore, this alternative is ranked low for feasibility due to the preexisting resources put toward AP exams and classes.

Alternative 3: Competency-Based Learning Pilot Program

Virginia Learns could support the implementation of competency-based learning (CBL) in Richmond City Schools to provide students with more flexible pathways to earning high school credits. By integrating CBL into core subjects, students could demonstrate proficiency through performance assessments or portfolios rather than just written exams or coursework completion. Competency Based Learning is mainly going to focus on 11th and 12th graders. The regular courses students take in these subjects are Algebra II, Pre-Calculus, Chemistry, and Physics. For example, in a math class, a performance assessment might involve students applying algebraic concepts to real-world problems, such as budgeting, rather than completing a traditional test. In a science class, students might demonstrate understanding through designing and conducting experiments or creating models to explain scientific concepts. A portfolio-based approach would likely require a shift toward more project-based learning, where students compile evidence of their learning over time, such as lab reports, mathematical models, and reflective essays. Richmond Public Schools already have a comprehensive CTE program, so CBL could complement this by focusing on core math and science classes (Richmond Public Schools, 2023). The proposed implementation would specifically target 11th and 12th-grade students, providing upperclassmen with flexible options to demonstrate their competencies while preparing them for postsecondary education.

This shift would necessitate adjustments to both curriculum design and instructional methods to support deeper, applied learning. Implementing CBL would entail significant costs, including course redesign, development of specialized assessments, teacher training, hiring curriculum specialists, and providing technology to help teachers transition to new instructional methods. Strategic investment in professional development and curriculum resources would be essential to ensuring a smooth and effective transition.

Cost

Implementing competency-based learning entails significant costs related to curriculum development, instructional support, technology investment, program coordination, and community outreach. A key expenditure will be to hire two full-time instructional coaches to support the instructional shifts required by CBE. Additionally, the district will invest in developing a Richmond-specific Competency Framework aligned to the Virginia Profile of a Graduate. A LMS platform capable of tracking student competencies will be needed as well. Community outreach will ensure that families and students understand and support the shift to competency-based learning. The estimated total cost of this pilot program is **$534,044**, which is considered medium.

Effectiveness

Significant evidence suggests that CBL results in higher graduation rates but does not necessarily impact degree attainment. In a Competency Based Education (CBE) pilot program conducted in Illinois, researchers employed a quasi-experimental design combining binary logistic regression and a between-group matched pair approach, utilizing propensity score matching (PSM) and exact matching on key variables such as race/ethnicity, free and reduced lunch eligibility, English language learner status, SAT scores, and participation in advanced coursework, to evaluate the impact of CBE participation on high school graduation and postsecondary enrollment outcomes (Blankenberger, Kerr, & Dooley, 2023). The sample included 5,767 seniors from 84 Illinois high schools participating in the CBE pilot, of which 554 were identified as CBE participants; through propensity score and exact matching, 461 matched pairs of CBE and non-CBE students were created for the final analysis. The study focused on high school completion and postsecondary outcomes found that CBL students had lower postsecondary enrollment rates (51.1%) than non-CBL students (55.7%).

CBL has a positive and significant effect on graduation rates in high school, which suggests that students are twice as likely to graduate. The estimated increase in graduation rates for students in CBE programs is approximately **4.15 percentage points** compared to non-CBE participants. The effectiveness score is medium since CBL participation led to improved postsecondary enrollment outcomes, which is a key indicator of program success.

Equity

The equity criterion for CBL is considered low. In the Illinois study, black and Latino students' participation in CBL reduced their likelihood of enrolling in postsecondary education. Students on free and reduced-price lunches also face lower graduation rates and postsecondary enrollment when engaged with CBL courses. The implementation of CBL in Illinois highlighted how racial disparities may not be addressed through CBL.

Feasibility

The most difficult aspect of this alternative lies in the modification of preestablished state guidelines for high school students. CBL has low feasibility due to the significant resources required to revise assessment methods, update school policies, and retrain educators in new instructional approaches. Stakeholder perspectives will be critical in determining the feasibility of CBL. Teachers may resist the shift due to the need for additional training and the challenges of adapting to a new grading and instructional system. High school administrators might be hesitant, given the complexity of integrating CBL into existing structures and ensuring consistency in assessment. Parents may have mixed responses. Some could appreciate the focus on mastery and student-centered learning, while others may be concerned about how CBL will affect college admissions. Given these barriers, CBL is unlikely to be adopted, resulting in a low feasibility rating.

Analysis

Outcome Matrix

	Cost	Effectiveness	Equity	Feasibility
DEEP	High (**$895,411**)	5.4 pp High	High	Medium
CLEP Expansion	Low (**$498,849**)	2-3 pp Medium	Medium	Low
CBL Pilot	Medium (**$534,044**)	4.15 pp Medium	Low	Low

Recommendations

Dual Enrollment Equity Pathway

The matrix above illustrates that the DEEP framework outperforms both CLEP expansion and the CBL pilot program in terms of equity, feasibility, and effectiveness. A comparison by criterion, beginning with cost, shows that the DEEP program is priced higher than the other two alternatives. While the CBL pilot shows a moderate percentage point increase in high school graduation rates, the DEEP framework demonstrates stronger effectiveness in supporting postsecondary achievement. DEEP offers a balanced approach, with moderate costs and strong potential for improving the education outcomes of high school students.

Implementation Plan for Dual Enrollment Equity Pathway (DEEP)

The successful implementation of the Dual Enrollment Equity Pathway (DEEP) framework requires a structured approach that ensures all stakeholders remain aligned with the program's objectives. The first step in launching the DEEP framework is to secure approval Richmond Public Schools. This involves developing a comprehensive proposal that outlines the objectives, benefits, and alignment of the DEEP program with the state's education goals. Engaging in lobbying efforts and establishing clear communication channels with board members will be essential to address potential inquiries. To mitigate risks such as delayed approval or additional requirements, it will be crucial to prepare thorough documentation and anticipate potential questions or concerns from the board. Upon receiving approval, the next step will be to form a joint committee with representatives from Richmond City Public Schools (RCPS) and Reynolds Community College. This committee will be responsible for defining clear roles, responsibilities, and a shared vision for the DEEP initiative. Meetings will help maintain alignment and address emerging challenges promptly. Following the formation of the joint committee, a document will be developed to formalize the partnership. The document will specify the program's goals, timelines, and resource commitments. Ensuring that both institutions are clear on their responsibilities. This step will also outline critical milestones, such as hiring outreach coordinators and a program director with a proven track record of success in serving underserved populations. Ensuring a smooth timeline will be vital to prevent delays or misunderstandings. After the establishment of roles, it will be essential to start the outreach to

families. The initial outreach for the program will start with students entering high school to make sure we have new enrollees. The initial introduction of the dual enrollment will take place at freshmen year orientation for students to familiarize themselves with the opportunities they could have. Additionally, parent teacher night will be crucial for getting the dual enrollment equity program focus out. As time goes on it will be important for the community outreach representatives to shift the attention to families with children in middle school. Based on the effort put forth in the first half of the school year students should start signing up for dual enrollment courses in the second half the school year. Enrollment will be facilitated before winter break with support from school counselors to guide students through course selection and a streamlined application process. The school counselor will then connect them with the community colleges councilor to ensure students are on track for their intended degree. After the first set of students that opted to take dual enrollment courses it will be necessary to evaluate the program after the end of each semester. Program evaluation will include collecting and analyzing student performance data, gathering stakeholder feedback, and adjusting to improve accessibility and effectiveness.

Key Dependencies for Implementation Success

The first key dependency of the DEEP Framework being put into effect is Richmond Public Schools being open to hearing about a new initiative. Without the support of Richmond Public Schools administrators, it will be extremely hard to get this program running. The next key dependency is that the DEEP framework aligns with the goals of Richmond Public Schools. If the goals of the proposal don't align with both Richmond and state standard it will not be pursued. A third key dependency is that Reynolds Community College is willing to take on more students and provide the resources to coordinate efforts. Reynolds Community college is an important stakeholder in the success of this project. A fourth crucial dependency is securing funding for outreach coordinators, professional development, and credentialing incentives. The budget must allocate funds for materials, advising, and community engagement. Success of DEEP is dependent on receiving funding for the initiative otherwise the coordination efforts and student support will be limited. In addition to administrative support, alignment with educational goals, and funding, the successful implementation of DEEP will also depend on sustained communication, community trust, and staff capacity. In order to make sure this program is successful it is important for trust to be built within the community.

Risks and Mitigation Strategies

Approval Shortfalls

Risk: Richmond Public Schools is not receptive to the programs purpose or thinks they already have the necessary programs in place. I

Mitigation: Prepare a detailed plan that focuses on the reasons why this would be good for Richmond Public Schools. Highlight how the current status quo model is failing students.

Funding Shortfalls

Risk: Insufficient funding could delay or scale down outreach, teacher credentialing, and advising services.

Mitigation: Prepare a detailed budget plan prioritizing outreach and credentialing if full funding is unavailable.

Limited Teacher Capacity for Dual Enrollment

Risk: Lack of credentialed teachers could limit the number of DE courses offered.

Mitigation: Explore virtual DE courses taught by Reynolds Community College instructors to supplement in-person offerings.

Low Participation from Underserved Students

Risk: Barriers such as lack of awareness, parental skepticism, or transportation challenges may limit participation.

Mitigation: Ask Children who get involved how they learned about dual enrollment. Invest in sustained outreach targeting community organizations. Establish parent liaisons to build trust and educate families on the benefits of dual enrollment.

Reynolds Community College Hesitancy

Risk: Reynold Community College could be hesitant to expand counseling services to more meetings.

Mitigation: Explore potential incentives to make Reynold community college more receptive to providing support.

Lack of Communication Between Richmond Public Schools and Reynolds Community College

Risk: The communication channels between Reynold and Richmond fall through and do not work as well as the program intended.

Mitigation: The staff that is hired needs to check which communication methods have been most successful in the past in order to prevent any communication issues.

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Appendix
DEEP Cost Figure 3.1

	School Year	*School Year*	*School Year*	**Pay Links**		
	2025-2026	***2026-2027***	***2027-2026***		Disclaimer	Virginia Learns will work with the pre-established dual enrollment courses that are already being offered. DEEP aims to improve outreach and teacher credentialing. Additionally, the community outreach director will be in charge of coordinating with the prexisting advisors at Reynolds community colleges. Richmond Public Schools pays for all courses.
Outreach Coordinators	$119,238	$119,238	$119,238	https://www.rvaschools.net/talent-office/talent-acquisition/job-descriptions/description/~board/job-descriptions/post/academic-coordinator		Two out reach coordinators salary to help with this program
Modifying Teacher Requirments (Lobbying)	$71,040.50	$71,040.50	$71,040.50	https://resources.finalsite.net/images/v1721741869/rvaschoolsnet/vxhrqgobqk9snxdi8yjy/FY25SalaryScheduleJuly12024.pdf		The chief engagement officer salary is divided in half because it assumes the cheif engagement officer is working half the time to get the credntiaing done. This is considered a lobbing effort to get the state to switch credentialing.
Director Family and Community Engagement	$106,019	$106,019	$106,019	https://www.rvaschools.net/talent-office/talent-acquisition/job-descriptions/description/~board/job-descriptions/post/community-engagement-specialist		The cost is hiring a director for this program to be successful across the public school system
Engagment Materials	$5,244.00	$5,244.00	$5,244.00			$2.00 per brochure X number of students
Total	$296,297.50	$302,816.05	$296,297.50		**Total:**	**$895,411.05**

Teacher Credentialing	$151,920	$151,920	$151,920			This assumes four teachers are getting certified each academic year. This is based on the average cost of tutuion for three virginia universities.
Engagment Materials Cost per Item	$0.20 to $2.00 per brochure	$2.00		https://www.superior-resource.com/blog/brochure-print-cost/#:~:text=The%20cost%20of%20brochure%20printing%20varies%20depending%20on%20factors%20such,$0.20%20to%20$2.00%20per%20brochure.		
Chief Engagement Officer Divided in Half	$71,040.50	$71,040.50	$71,040.50			The chief engagement officer salary is divided in half because it assumes the cheif engagement officer is working half the time to get the credntiaing done.
Outreach Coordinators Salary	$59,619	$59,619	$59,619			
Number of coordinators		2	2			
Number of Directors	**2**	1	1			
Credntialing for Masters	$37,980					
Important Numbers	**Richmond City High School Students**	2,622				
	Inflation Assumption 2026	1.022		https://www.cbo.gov/publication/61136#:~:text=Measured%20from%20the%20fourth%20quarter,and%202.0%20percent%20in%202027.		
	Inflation Assumption 2027	1.021		https://www.cbo.gov/publication/61136#:~:text=Measured%20from%20the%20fourth%20quarter,and%202.0%20percent%20in%202027.		

CLEP Cost Figure 3.2

	School Year	School Year	*School Year*	Link:		
	2025-2026	***2026-2027***	***2027-2026***		**Disclaimer:**	This assumes that all junior and senior students take atleast one exam. This also assumes that teachers do not need to provide additional time to support students.
CLEP Exams	$49,780	$49,780	$49,780	https://schoolquality.virginia.gov/divisions/richmond-city-public-schools?utm_source=chatgpt.com#desktopTabs-4	The difference between the state-level enrollment rate in higher education (65) and the division-level rate (45) is 20, therfore 20% of 2,622 to be 524.4, Richmond Public School students represent that 20% difference.	
Student transportation	$5,240	$5,240	$5,240	https://trustedcare.com/costs/after-school-transportation-cost	$10 per student X 524 students	
CLEP Coordinator	$106,019	$106,019	$106,019	https://www.rvaschools.net/talent-office/talent-acquisition/job-descriptions/description/~board/job-descriptions/post/academic-coordinator	Salary for a director position to coordinate this effort across the district	
Informational Outreach	$5,244.00	$5,244.00	$5,244.00	https://www.superior-resource.com/blog/brochure-print-cost/#:~:text=The%20cost%20of%20brochure%20printing%20varies%20depending%20on%20factors%20such,$0.20%20to%20$2.00%20per%20brochure.	Distribution of informational material valued at $2.00	
Total:	$166,283	$166,283	$166,283		**Total:**	**$498,849**

Engagment Materials Cos	$0.20 to $2.00 per brochure	$2.00		erior-resource.com/blog/brochure-print-cost/#:~:text=The%20cost%20of%20brochure%20printing%20varies%20depending%20on%20factors%20such,$0.20%20to%20$2.00%20per%20brochure.		
Director Family and Community Engagement	$106,019	$106,019	$106,019	https://www.rvaschools.net/talent-office/talent-acquisition/job-descriptions/description/~board/job-descriptions/post/community-engagement-specialist		The cost is hiring a director for this program to be successful across the public school system
	Number of Students Actually Taking exams	524	65% is the state level and the division is 45% for enrollment in higher education (20% diffrence).	2,622×0.20= 524.4 or 524		
	Transportation	**$10**	Per Student			
Important Numbers	**Richmond City High Schools Students**	2,622				
	CLEP Cost	$95				
	Inflation Assumption 2026	1.022		https://www.cbo.gov/publication/61136#:~:text=Measured%20from%20the%20fourth%20quarter,and%202.0%20percent%20in%202027.		
	Inflation Assumption 2027	1.021		https://www.cbo.gov/publication/61136#:~:text=Measured%20from%20the%20fourth%20quarter,and%202.0%20percent%20in%202027.		

CBL Cost Figure 3.3

	School Year	School Year	*School Year*	*Link*			
	2025-2026	**2026-2027**	***2027-2026***	**LINK:**	Disclaimer:	This cost analysis is drawn from the RPK group analysis on CBL in the university setting and scaling it down for amount of student.	
Ciriculum Redesign	$250,000.00			https://rpkgroup.com/wp-content/uploads/2016/10/rpkgroup_cbe_business_model_report_20161018.pdf	Cost are slashed in half from the RPK group university programs	This is an upfront cost for changing the structure	
Outreach & Family Engagement (Introduce CBL model, show grade conversion, Q&A)	$11,088.00	$11,088.00	$11,088.00	2 school-based family sessions	**This will include cost for handouts $2 X 2622 students =5244**	Staf Extra Time $30 dollars X 2 Hr X 5 staff = 300	5244 x 2 = 10,488 300 x 2=600
Teacher Curriculum Stipends	$75,000			https://www.edweek.org/teaching-learning/what-teacher-pay-and-benefits-look-like-in-charts/2024/11#:~:text=Teachers%20did%20pick%20up%20on,them%20to%20leave%20the%20profession.	30 teachers x $2,500 each for curriculum redesign (math & science only)	**This takes into account the additional time teachers in math and science are putting into the hands on activities**	
Program Manager	$91,604	$91,604	$91,604	https://resources.finalsite.net/images/v1721741869/rvaschoolsnet/vxhrqgobqk9snxdi8yjy/FY25SalaryScheduleJuly12024.pdf	**Salary of Manager Adult Education Capital Region Program**		
Technology (LMS System)	$39,330	$39,330	$39,330	https://www.instructure.com/k12/products/mastery/mastery-connect	Mastery Connect Costs $15-20 Per Student.		
Total:	$250,000.00	$142,022.00	$142,022.00		**Total:**	**$534,044.00**	

Individualized Cost				
Important Numbers	**Richmond City High School**	2,622		
	Inflation Assumption 2026	1.022		https://www.cbo.gov/publication/61136#:~:text=Measured%20from%20the%20fourth%20quarter,and%202.0%20percent%20in%202027.
	Inflation Assumption 2027	1.021		https://www.cbo.gov/publication/61136#:~:text=Measured%20from%20the%20fourth%20quarter,and%202.0%20percent%20in%202027.

AI Disclosure: I used AI to help me proofread this document, interpret regression outputs, and design estimates for cost calculations with links.