MLDS CENTER
Maryland Longitudinal Data System

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MEMORANDUM

TO: MLDS Governing Board

FROM: Mr. Ross Goldstein, Executive Director

DATE: June 6, 2025

SUBJECT: Project Approvals and Updates

Purpose

This agenda item is to update the Board on projects that have been reviewed and approved by the Executive Director under *Project Approval and Management Procedures;* projects that, when necessary, require Board review and approval; and updates on ongoing projects. Please note that in addition to the information presented for each new project, this memorandum also includes the complete project abstract submitted by the researcher for your further information and review.

Projects for Consideration

ERA # 102	Credit Attainment & The College Pipeline
Researcher	Dr. Taylor Delaney University of Oklahoma Affiliate of University of Maryland College of Education
Research Questions	RQ 1: Of Maryland public high school graduates enrolled in a Maryland college, does accumulating college credits via dual enrollment and AP course-taking in high school impact bachelor's degree attainment? RQ 2: Of Maryland public high school graduates enrolled in a Maryland college, do the impacts of college credit attainment in high school on bachelor's degree attainment differ across pathways of credit attainment in college? I will examine how the probability of bachelor's degree attainment varies by college pathways. I will examine degree outcomes for students who accumulate credits at both 2-year to 4-year schools, students who accumulate credits at multiple 4-year schools, and students who accumulate credits at a singular 4-year school.
RPB Review	The RPB was supportive of the project.
Exec. Dir. Determination	Approved. The subject of this project is responsive to the Research Agenda, provides information about student performance that can be used to improve the

	state's education system, requires the use of longitudinal cross sector data, and is being conducted by a qualified researcher.
Board Action	Informational

ERA # 108	Understanding Student Absences and Long-Term Outcomes Pre- and Post-COVID 19
Researcher	Dr. David Blazar University of Maryland College of Education MLDS Center Investigator
Research Questions	RQ 1: How have the effects of student absences on standardized test scores, DJS interactions, and post-K12 (i.e., postsecondary and workforce) outcomes changed since the re-opening of schools following the Covid-19 pandemic? RQ 2: To what extent have student absences contributed to learning loss, and hindered recovery, during and after the Covid-19 pandemic? RQ 3: To what extent do the answers to questions 1, 2, and 3 vary by student grade level, demographic background, and prior performance, as well as by school characteristics (e.g., percent of students eligible for FARMS, Community Schools) and geographic locale?
RPB Review	The RPB was supportive of the project and noted that attendance policy was set at the LEA level. There were questions about the timing of data collection and post-COVID data. Dr. Blazar addressed questions and comments.
Exec. Dir. Determination	Approved. The subject of this project is responsive to the Research Agenda, provides information about student performance that can be used to improve the state's education system, requires the use of longitudinal cross sector data, and is being conducted by a qualified researcher.
Board Action	Informational

ERA # 112	Teachers as Role Models: Impacts on College and Career Outcomes
Researcher	Mr. Cameron Conrad University of Maryland College of Education

Research Questions	RQ 1 - What is the effect of teachers on postsecondary outcomes (e.g. college enrollment, STEM major, degree receipt, STEM degree field) and labor market engagement? RQ 2 - How do teachers' effects on these outcomes vary by subject area and do teachers serve as role models who encourage students to pursue studies in a related field? How does subject-area teachers' influence on the field of study ultimately affect employment and earnings? RQ 3 - To what degree are teachers' long-term impacts mediated by their effects on student test scores and behavior as well as teachers sharing demographic characteristics (e.g. gender, race/ethnicity) with their students? Do teachers influence students to enter industries related to the subject area in which they teach?
RPB Review	The RPB was supportive of the project.
Exec. Dir. Determination	Approved. The subject of this project is responsive to the Research Agenda, provides information about student performance that can be used to improve the state's education system, requires the use of longitudinal cross sector data, and is being conducted by a qualified researcher.

ERA # 113	Characteristics Associated with Postsecondary Outcomes Among Multilingual Learners
Researcher	Dr. Alexandra Shelton Johns Hopkins University
Research Questions	RQ 1: What is the association between **student-level** factors (e.g., newcomer status, college-preparatory math and science course completion, special education status, race/ethnicity) and college enrollment (i.e., 2-year, 4-year, and no college enrollment) for MLs in Maryland? RQ 2: What is the association between **school-level** factors (e.g., percentage of multilingual learners, percentage of dually enrolled students, and percentage of students who enroll in college) and college enrollment (i.e., 2-year, 4-year, and no college enrollment) for MLs in Maryland? RQ 3: Among those who enroll in college, what is the association between **student-level** factors (e.g., college-preparatory math and science course completion, AP or IB exam completion) and degree attainment in three years for 2-year colleges and six years for 4-year colleges separately? RQ 4: Among those who enroll in college, what is the association between **school-level** factors (e.g., percentage of multilingual learners, percentage of dually enrolled students, and percentage of students who enroll in college) and degree attainment in three years for 2-year colleges and six years for 4-year colleges separately?

	RQ 5: Among those who do not enroll in college, what is the association between **student-level** factors (e.g., high school program completion type, high school apprenticeship completion, race/ethnicity) and wages? RQ 6: Among those who do not enroll in college, what is the association between **school-level** factors (e.g., percentage of multilingual learners, percentage of dually enrolled students, and percentage of students who enroll in college) and wages?
RPB Review	The RPB was supportive of the project and it is noted that services for ML learners are an additional research priority for the fiscal year 2026.
Exec. Dir. Determination	Approved. The subject of this project is responsive to the Research Agenda, provides information about student performance that can be used to improve the state's education system, requires the use of longitudinal cross sector data, and is being conducted by a qualified researcher.
Board Action	Informational

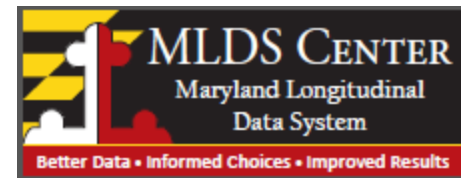| **ERA # 117**	Causal Evidence on Teacher Recruitment: Data to Inform the Effects and Continued Rollout of the Maryland Blueprint
Researcher	Dr. David Blazar University of Maryland College of Education MLDS Center Investigator
Research Questions	RQ 1: What is the effect of the TEACH Grant, the Teaching Fellows for Maryland Scholarship, and the Workforce Shortage Student Assistance Program on persistence in an education major, receipt of a teaching degree, and the likelihood of being hired as a teacher in a Maryland public school? RQ 2: What is the effect of providing stipends to student teachers on persistence in an education major, receipt of a teaching degree, and the likelihood of being hired as a teacher in a Maryland public school? RQ 3: What is the effect of raising the minimum teacher salary on the number of individuals seeking an education degree and a position in a Maryland public school? RQ 4: What is the effect of providing information about hiring prospects for choosing different endorsement areas on persistence in an education major, receipt of a teaching degree in a specific endorsement area, and the likelihood of being hired as a teacher in a Maryland public school in a specific endorsement area? RQ 5: How do these effects differ by race/ethnicity?
RPB Review	The RPB was supportive of the project. There were questions about financial aid

	and measuring teacher openings in the State. Dr. Blazar addressed questions.
Exec. Dir. Determination	Approved. The subject of this project is responsive to the Research Agenda, provides information about student performance that can be used to improve the state's education system, requires the use of longitudinal cross sector data, and is being conducted by a qualified researcher.
Board Action	Informational

Project Updates

ERA # 34	*Long-Term Effects of Multi-Tiered PBIS: A Randomized Controlled Trial in Maryland Public Elementary Schools*
Researcher	Dr. Angela K. Henneberger, University of Maryland School of Social Work and MLDS Center Research Director
Update	This project leverages MLDS data to identify students who participated in an initial randomized controlled trial (RCT) of multi-tiered PBIS and link to secondary school, postsecondary, labor, and juvenile justice outcomes up to 15 years later to examine long term outcomes, generalized outcomes (e.g., relevant for scale up), and cost benefit. Over the past year: ● Data from the initial efficacy trial were transferred to the MLDS Center. ● The data were loaded and linked, then deidentified by the MLDS Center and provided to the research team. ● 99% of students in the initial RCT were found in the MLDS. ● The team completed initial research analyses examining suspensions, test scores, arrests, and high school graduation. ● Findings have been presented in multiple forums, including at national conferences (i.e., American Educational Research Association; Society for Prevention Research).

ERA # 62	*Using Maryland's SLDS to Strengthen and Diversify the Teacher Workforce*
Researcher	Dr. Jane Lincove University of Maryland Baltimore County MLDS Center Investigator
Update	This project is funded by the Institute of Education Sciences and there are two research questions:

RQ1: What are the incentives, pathways, and obstacles for Maryland high school graduates to enter the teacher workforce?

RQ2: What were the pathways into teaching of current teachers in Maryland public schools? Which of these pathways most often produce teachers who persist in long-term employment and positively impact student performance?

The project team is currently completing Year 1. During Year 1, the team completed the following objectives:

- Reviewed analysis plan with critical stakeholders
- Submitted IRB application at UMBC
- Scheduled an in-person convening for October 2025
- Began analyses for research question 1 looking at TAM and AAT participation and access
- Disaggregated analysis by demographics and region
- Started the process of adding Ed Rising data to the MLDS
- Hired two postdoctoral fellows to continue with research analyses
- Disseminated results in a number of forums, including local, state, and national forums.

*This form is subject to disclosure in a Public Information Act request.

Project Title	Agency Control #
Credit Attainment & The College Pipeline	102

Contents

Section 1. Principal Investigator

Principal Investigator (please list additional project team members in Section 7)
Taylor Delaney, PhD
Principal Investigator's Email Address
delaney@ou.edu
Name of University or Organization
University of Oklahoma, Affiliate of UMCP
Principal Investigator Background and Qualification (provide overview of experience and attach a CV)
I am an Assistant Professor at the University of Oklahoma. I completed my Ph.D. in public administration & policy at American University in May 2023. My research focuses on education policy, specifically, the education pipeline of students from high school to college. I have a research affiliation with the MLDS, which began in 2021. I worked on a research team under David Blazar to clean datasets from the MLDS. I have a UMCP affiliation for data access and use purposes through David Blazar. See Attached CV.

Important: Once submitted, this application is a public document that will be shared with stakeholders throughout the project review process and generally made available pursuant to a *Public Information Act Request*.

Section 2. Project Information

Background and Purpose of the Study
(No more than 500 words; please include references; references do not count toward the word count)

Education policymakers have increasingly emphasized college readiness to prepare students to enter postsecondary institutions upon high school completion. College-ready students are academically prepared to function in their new environments, apply critical thinking skills, and gain postsecondary opportunities (Conley, 2007). One intervention that students in high school can take up, and their schools can provide, to build this readiness is taking advanced courses like AP (Advanced Placement), IB (International Baccalaureate), and dual enrollment courses.

AP, IB, and dual enrollment course offerings can help promote more equitable educational outcomes and improve academic achievement by preparing students to take rigorous high-level courses. Further, dual enrollment and AP testing can allow students to earn college credits before enrolling in college (An & Taylor, 2019). Previous research has found that students who take dual enrollment, AP, and IB courses have more favorable academic outcomes. For example, dual enrollment students are more likely to enroll in college immediately after high school and are more likely to complete a college degree within four to eight years than students who did not participate in dual enrollment (Lee & Villarreal, 2023; Lee et al., 2022). Dual enrollment has also been shown to help close achievement gaps for underrepresented students (Lee et al., 2022). Students taking AP courses and those who take the AP exam, on average, have higher GPAs in college, earn more credits, and have an increased likelihood of BA receipt (Hargrove et al., 2008). However, other studies find that taking an AP course without completing the exam produces fewer benefits (Warne et al., 2015). One reason for this may be that taking the exam can result in college credits that allow students to forgo taking some general education introductory courses. Another reason this may be true is that students who struggled in the course may be less likely to take the test, and may be less likely to succeed academically long term. Last, enrollment in IB programs leads to an increased likelihood of high school graduation, and college enrollment (Saavedra, 2014).

In this study, I contribute to this literature by examining bachelor's degree attainment for students who enrolled in AP, IB, and dual enrollment courses in high school. I use different measures of pre-college credit accumulation. I use a series of dummy variables that measure whether students enrolled in these courses, and I quantitatively measure the number of credits accumulated. As an added test, I will also examine results at the LEA level.

Next, I seek to understand whether college pathways and credit accumulation patterns are a moderating factor in this relationship between pre-college credits and BA receipt. While I expect to find that enrolling in these pre-college courses will increase students' likelihood of BA receipt, they nonetheless are valuable regardless and may provide benefits to students that do not translate to increased educational attainment.

In a previous project with MLDS, I examined the impact of vertical transfer on bachelor's degree attainment. I examined how initial enrollment in a community college and subsequent enrollment in a four-year institution impacted the likelihood of bachelor's degree attainment and early career outcomes. Restricting the analysis to college students who accumulated at least 48 credits (2 years of full-time

enrollment), I found that these students who accumulate credits at both two- and four-year schools are 18-20 pp less likely to earn a BA compared to similar students who initially enroll and persist at a four-year college. Last, I found that of BA degree recipients, students who accumulate credits at both two- and four-year schools earn 25% less in wages. The proposed project builds upon this work: I examine the college pathway as a moderating effect. Importantly, students who accumulate credits at multiple institutions may have different average degree outcomes than those who only enroll at one institution. While I expect to find that taking AP, IB, and dual-enrollment courses increases the likelihood of degree receipt, it is important to examine whether that impact varies across different college pathways knowing that nearly 35% of students in Maryland attend more than one institution.

Research Project Question

Research Question 1: Of Maryland public high school graduates enrolled in a Maryland college, does accumulating college credits via dual enrollment and AP course-taking in high school impact bachelor's degree attainment?

Research Question 2: Of Maryland public high school graduates enrolled in a Maryland college, do the impacts of college credit attainment in high school on bachelor's degree attainment differ across pathways of credit attainment in college? I will examine how the probability of bachelor's degree attainment varies by college pathways. I will examine degree outcomes for students who accumulate credits at both 2-year to 4-year schools, students who accumulate credits at multiple 4-year schools, and students who accumulate credits at a singular 4-year school.

Research Methods
(Please include information for: Sample/Cohort and Justification; Definition of Measures and Constructs; Analysis Approach)

The sample consists of cohorts of 12th-grade students who graduated with a high school diploma and enrolled in college between 2013-2016. I limit the sample to these initial enrollment years to ensure that I can follow students' 5-year college graduation. I will focus on first-time, full-time undergraduate students. To be included in the sample, the student has to take at least 12 credits in their first semester of college. I rely on data from MSDE to measure students' pre-college college credit accumulation. I rely on data from MHEC to measure student's credit attainment patterns in college and degree attainment.

I measure pre-college credit accumulation in multiple ways; First, as a binary variable that measures whether a student accumulates credits from dual enrollment courses or completes AP and IB courses. Second, I measure this continuously as the number of credits accumulated in these courses.

The primary outcome of interest is five-year bachelor's degree attainment. I will examine degree outcomes for college enrollees, comparing degree attainment between students who took pre-college AP and IB courses and accumulated pre-college credits and those who did not accumulate any credits or take any advanced classes. To do this, I will use matching and linear regression methods. I plan to use nearest-neighbor matching to create the most comparable treatment and control groups. I will control for, or match on, student demographics and using

high school and year fixed effects, compare students who graduated from the same high school in the same year. I will also conduct this analysis at the LEA level; examining differences at the LEA level will help inform partnerships with community colleges.

The main limitation of these designs (matching and linear regression) is that they do not account for the inherent self-selection issue of students selecting into certain high school courses. Further, omitted variable bias exists as there are many unmeasurable factors that influence high school course-taking, college-going, and degree attainment. Last, these analytic approaches are only as strong as the observable characteristics available in the data.

Next, in a series of heterogeneity analyses, I will examine whether the college pathway impacts their likelihood of bachelor's degree attainment. I will examine degree outcomes for three student groups: (1) students who accumulate credits at both 2-year to 4-year schools, (2) students who accumulate credits at multiple 4-year schools, and (3) students who accumulate credits at a singular 4-year school. This is important, as results will provide implications for which students these pre-college credits may be most helpful for.

How will this research benefit the State of Maryland in terms of state or local policy and/or practice?

Focusing on credit attainment, if students who accumulate credits in high school are more likely to earn degrees after attending multiple institutions, then this could signal for increased emphasis to be placed on college and career readiness initiatives like accumulating college credits in high school. Credit loss has been a significant threat to on-time graduation for students who attend multiple institutions; therefore, understanding the relationship between credit accumulation based upon different sources of credit and time to college degree can provide important insights into college pathways.

This research can also help inform the Blueprint, the State Plan for Higher Education, the Transfer with Success Act, and the continued option for associate degrees to be classified as either career or transfer. This project's results will provide pre-policy policy implications, as the state passed policies recently such as the Transfer with Success Act in 2021. The data and findings from pre-policy periods can provide a valuable baseline to which current conditions can be compared. This allows policymakers and the state to understand the context before and after the policy was passed, helping to identify shifts, improvements, or challenges that may have emerged.

Explain why this research requires longitudinal cross-sector data?

This project is cross-sector because I begin with a cohort of 12th-grade students and focus on college-level credits they earn in high school via dual enrollment, and their AP and IB course-taking behaviors. I explore whether students' college credit attainment in high school impacts   student pathways into college, credit attainment in college, and degree attainment.

Proposed Center Output

(Typical products for the MLDS Center include a research series presentation to stakeholders and a research brief in the MLDS Center template).
I will generate a research policy brief that describes this study and its findings. I will also present to stakeholders in a research series presentation.

Timeline for the proposed project (identify major deliverables and approximate dates)
Creation of analytic file and data dictionary: April - June 2025 Data analyses: June – August 2025 Research Policy Brief: September –November 2025 Further Development: December 2025 - ongoing

Plans for further development (i.e. journal submission, etc.)
Manuscript publication planned for Spring 2025 (likely submission to journals such as Research in Higher Education, Journal of Research on Educational Effectiveness, Education Finance and Policy). Additionally, abstracts will be submitted for conference presentations to conferences such as Association for Public Policy Analysis & Management, American Education Finance and Policy, and the Society for Research on Educational Effectiveness (SREE). Future development will focus on degree outcomes for different college pathways and college credit attainment patterns.

Section 3. MLDS Center Research Agenda

Does your project relate to one of the following areas which the General Assembly has specifically directed the MLDSC to study:	Yes	No
The impact of a State or federal education program?[1]	X	
The performance of educator preparation programs?		X
Best practices regarding classroom instruction?		X
The impact of child welfare programs on the educational and economic outcomes of students?		X
An analysis of social determinants, provided by State agencies[2] and appropriate local agencies, that impact education performance of students and indicate the need for wraparound services for students.		X
Does your project use State or Federal financial aid[3] data?		X
If you are requesting to use FAFSA data please explain how this research will benefit the administration of Title IV federal financial aid.		
Not Applicable.		
Research Agenda Category (page 2 of the Research Agenda) – Which category does the project address? Please explain.		

[1] All projects must relate to a state or federal education program. If you are not sure, please contact ross.goldstein@maryland.gov.

[2] State agencies include: Maryland Department of Health, Department of Human Services, and Department of Juvenile Services

[3] Financial aid data derived from the FAFSA may only be used in research to improve the administration of federal financial aid programs.

This research focuses on the academic preparation of college students and predictors of college enrollment and college degree attainment. This research fits within two agenda categories: (1) Pathways & Pipelines, and (2) Educational, Service, & Workforce Outcomes.

For (1) Pathways & Pipelines, I plan to examine patterns of credit attainment and degree attainment for students beginning in high school and entering college.

For (2) Educational, Service & Workforce Outcomes, I plan to focus on the degree attainment of students in response to different educational pathways. I will provide insights into whether earning credits in high school contributed to any differences in bachelor's degree attainment.

Research Agenda Themes (page 2-3 of the Research Agenda) - Which cross cutting theme is incorporated in the project? Please explain.

This research will incorporate the cross-cutting themes: Supports & Barriers.

Supports & Barriers: this research will consider different policies and support services that may impact students' progression into and through higher education. For example, I can provide insights into the Transfer with Success Act to discuss policies that impact credit attainment and loss for college students. This can also provide insights into college and career readiness programs and whether providing and encouraging students to take rigorous classes in high school benefits them long term.

Section 4. Data and Cross Sector Analysis

Please review the MLDS Center Data Inventory and the MLDS Center Data Gap Analysis prior to completing this section.

Sectors* *The data falling within each sector is outlined below. The purpose of this section is to ensure the project is cross sector. Projects will not necessarily use all data elements within the sector (see methods section for definitions of measures).	X
Early Childhood Education Sector	
K-12 Education Sector	X
Adult Education Sector	
Justice Involved Youth Sector	
Child Welfare Sector	
Postsecondary Education Sector	X
Other Completions and Credentials Sector	
Workforce Sector	

Put an 'x' next to each data sector your project will include. You must have at least 2 sectors.

Do you plan to request to include external data as part of your project?
No

*Sectors

Early Childhood Education Sector
- PreK Academic Engagement

K-12 Public School Education Sector
- Enrollment and attendance
- Assessments
- Courses and grades
- Completions
- Discipline
- Public School Characteristics

Adult Education Sector
- GED/NEDP Exam Results
- Apprenticeship
- Adult Education
- Correction Education

Juvenile Justice Sector
- Juvenile Justice Records
- Juvenile Education Records

Child Welfare Sector
- Out-of-Home Placements

Postsecondary Education Sector
- College and University Enrollment
- College and University Courses, Credits and Grades
- College and University Degrees
- College and University Workforce Training
- Financial Aid

Other Completions and Credentials Sector
- Industry Certifications
- Licenses

Workforce Sector
- Public School Teachers
- Public School Staff
- Workforce visibility/participation
- Workforce Earnings
- Workforce Industry

Section 5. Financial Information

The MLDS Center incurs costs for every project related to: (a) IT support and infrastructure; (b) assistance from subject matter experts, (c) criminal history background checks; and (d) creation of an analytic data set. Average project costs are between $1,000 and $3,000. A detailed, customized estimate will be provided prior to project initiation. (Please indicate your answer with an "X)

	I will reimburse MLDSC for all applicable fees.
	I will only be able to provide partial reimbursement.
x	I will need a waiver.

Grant Funding (indicate with an 'X')

	This project has already received funding
	I plan to apply or am in the process of applying for grant funding
X	No grant funding is planned

Name of Grantor

RFP or Grant Program Information (you may provide a link to the grantor's website)

Amount of grant funds sought or awarded.

Grant Application Date

Do you intend to proceed without grant funding?

Yes

Are you receiving other funding for this proposed project? If yes, how much?

No

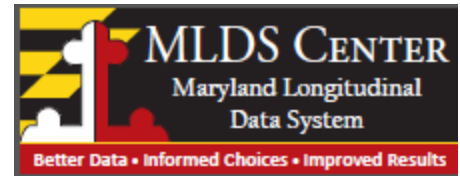## Section 6. Special Considerations

Principal Investigators NOT affiliated with a Maryland College or University – please provide information on:
    a.   **Your familiarity with Maryland policies affecting your research topic; and**
    b.   **How your project meets a specific Maryland research need?**
 	
Please also upload (with this form) any letters of reference or endorsement from a Maryland researcher or a State or local agency that vouches for your qualifications and expertise.

Not applicable. Renewed affiliation status in Spring 2023.
For projects that involve a small population, please confirm that you are aware of the MLDS Center's data suppression policy and explain how you will report your findings while conforming to the suppression requirements.
Not applicable.
For projects that involve a single school system, university, or program, please explain the statewide implications of the project. **Please also upload (with this form) any letters of support from the subject (i.e. school system or university) of the study.**
Not applicable.

Section 7. Project Team

Project Team
Project Team
- **Please list all members of the research team and indicate roles and responsibilities.**
- **If the Principal Investigator listed in Section 1 above is NOT the primary point of contact for the project (including research, data access, and presentations to stakeholders), please indicate which team member is the primary point of contact and provide that individual's contact information.**

Name and Organization	Role	Is system access needed? (Yes/No)
Taylor Delaney	PI, researcher	Yes (I already have it)

Section 8. Submission

Once this form is completed, please complete the online application (here) and upload this form, CVs for all members of the research team, and any other supporting materials.

*This form is subject to disclosure in a Public Information Act request.

Project Title	Agency Control #
Understanding Student Absences and Long-Term Outcomes Pre- and Post-COVID 19	108

Contents

Section 1. Principal Investigator

Principal Investigator (please list additional project team members in Section 7)
David Blazar
Principal Investigator's Email Address
dblazar@umd.edu
Name of University or Organization
University of Maryland College Park
Principal Investigator Background and Qualification (provide overview of experience and attach a CV)
David Blazar has worked with the MLDS Center for 8 years, primarily leading projects related to the teacher workforce. He also oversees several student projects/dissertations touching on a variety of topics. Currently, his MLDS research portfolio includes the following projects: (1) an Institute of Education Sciences (IES)-funded project examining the effect of programs and pathways in Maryland aimed at diversifying the teacher workforce (PI); (2) an IES-funded project through the SLDS call to descriptively examine barriers to entry into teaching (co-PI); (3) an IES-funded project with the CALDER Recruitment and Retention Center also examining the effect of teacher recruitment strategies, including several new policies rolled out under/alongside the Blueprint for Maryland's

Important: Once submitted, this application is a public document that will be shared with stakeholders throughout the project review process and generally made available pursuant to a *Public Information Act Request*.

Future (e.g., student teaching stipends) (MD PI); and (4) a collaborative project with MCCE to examine the effect of Computer Science course taking on student outcomes (co-PI).

A completed form is available [here](#) for your review.

Section 2. Project Information

Background and Purpose of the Study

Absence rates and rates of chronic absenteeism have increased markedly since the Covid-19 pandemic (Dee, 2024). However, much of the established evidence on both the causes and consequences of student absences comes from before the Covid-19 pandemic (e.g., Gershenson et al, 2017; Goodman, 2014; Gottfried, 2009). The pandemic changed many aspects of daily life, including in schools, so it is unclear whether the patterns documented before 2020 hold today. This lack of knowledge limits the ability of schools, policymakers, and parents who seek to address the current crisis of chronic absenteeism.

The proposed research will address this gap in knowledge by carefully investigating both the causes and consequences of student absenteeism, in both the pre- and post-Covid eras. Specifically, after stratifying the data into pre- and post-Covid time frames, we will conduct parallel analyses in both samples that build on prior, pre-pandemic literature to describe the distribution of student absences; estimate the impact of student absences on test scores (e.g., Gershenson et al., 2017), as well as DJS interactions (Ades & Mishra, 2021), and postsecondary and labor market outcomes (e.g., Liu et al., 2021); and identify absences' contributions to pandemic-induced learning loss. We will also examine heterogeneity in these results by grade level, geographic locale, student demographic groups, and student prior achievement.

These results will help us to understand how the education production function may have changed in a post-Covid environment in which absences are more common, remote learning and video conferencing is more mainstream, and many households have reevaluated their priorities and relationships with schools. Based on analyses from the pre-Covid era, scholars estimate that the marginal effect of student absences on other outcomes (e.g., test scores, high school graduation, college going) are roughly one third to one quarter of the marginal effect of higher-quality teachers on similar outcomes (Gershenson et al., 2017; Liu et al., 2021). This suggests that, while aiming to improve student absenteeism and teacher quality are both important, the latter is likely to have larger impacts on students. However, because student absenteeism has increased substantially during and after the pandemic (Dee, 2024), the policy implications may be different. If absences have even larger effects on other student outcomes, then directed resources towards increasing attendance may be as important—or more important—than efforts to increase teacher quality.

Results from this study[1] can also inform what the potential impact of policy proposals under the Maryland Blueprint (and at the local level) may achieve. For example, state representatives have suggested a goal of cutting chronic absenteeism in half over the course of several half, and our study

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[1] The findings from this research will also build on analyses from an already approved project from the same PI that looks at the contribution of teachers (versus schools) to student absenteeism. Prior literature in the pre-Covid era documents large effects of teachers in student absenteeism (e.g., Liu & Loeb, 2021), as well as the effects of teachers on other student outcomes including test scores. This broad literature has been a key source of knowledge for investing in teacher-oriented policies (e.g., teacher evaluation, teacher compensation), which stand in contrast to other reform models focused specifically on school-level interventions. However, there are many sources of student absences that go well beyond teachers and classes, and the sources of absences may have changed since the pandemic.

can infer what the benefits of that reduction might have on other student outcomes. In turn, the findings can also help contextualize for districts—who set and enact local attendance policies—how different Blueprint-related policies and resources might be implemented to have the largest impact. Amidst resource constraints, districts have to make hard decisions about where to focus their time, attention, and dollars.

References

Ades, J., & Mishra, J. (2021). Education and crime across America: Inequity's cost. *Social Sciences*, *10*(8), 283.

Blazar, D. (2024). Why Black teachers matter. *Educational Researcher*, 0013189X241261336.

Dee, T. S. (2024). Higher chronic absenteeism threatens academic recovery from the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, *121*(3), e2312249121.

Gershenson, S., Jacknowitz, A., & Brannegan, A. (2017). Are student absences worth the worry in US primary schools?. *Education Finance and Policy*, *12*(2), 137-165.

Goodman, J. (2014). *Flaking out: Student absences and snow days as disruptions of instructional time* (No. w20221). National Bureau of Economic Research.

Gottfried, M. A. (2009). Excused versus unexcused: How student absences in elementary school affect academic achievement. *Educational Evaluation and Policy Analysis*, *31*(4), 392-415.

Liu, J., Lee, M., & Gershenson, S. (2021). The short-and long-run impacts of secondary school absences. *Journal of Public Economics*, *199*, 104441.

Tran, L., & Gershenson, S. (2021). Experimental estimates of the student attendance production function. *Educational Evaluation and Policy Analysis*, *43*(2), 183-199.

Research Project Questions

1. How have the effects of student absences on standardized test scores, DJS interactions, and post-K12 (i.e., postsecondary and workforce) outcomes changed since the re-opening of schools following the Covid-19 pandemic?
2. To what extent have student absences contributed to learning loss, and hindered recovery, during and after the Covid-19 pandemic?
3. To what extent do the answers to questions 1, 2, and 3 vary by student grade level, demographic background, and prior performance, as well as by school characteristics (e.g., percent of students eligible for FARMS, Community Schools) and geographic locale?

Research Methods

We define the pre-Covid period as 2007-08 (the first year that MLDS data is available) through 2018-19 school years, and the post-Covid period as 2021-22 through 2023-24. We will add more years of data as they become available. We purposefully exclude school years 2019-20 and 2020-21 for two reasons. First, our study does not estimate the effect of Covid-19 itself on student outcomes, but rather examines how the relationship between absences and outcomes changes before versus after the pandemic. Second, because of the pandemic, key data elements (i.e., test scores, absences) are not available, have restricted coverage, or mean something distinct (e.g., absences from virtual learning are different from absences from in-person instruction).

We focus our analyses on "absence rates" because that is how much of the policy conversation is framed. However, we also will examine "attendance rates"—the positive valence of the construct.

To answer RQ1, we will estimate value-added models of the education production function as in Gershenson et al. (2017) that include absences as an input. Because variation in absences is not random, we will control for prior test scores (standardized by grade and year), grade and year fixed effects, and class/class set fixed effects, which aim to account for potential confounders that simultaneously predict absences and other student outcomes. Essentially, we compare one student to other students in the same set of classes, who come from the same schools (and likely neighborhoods) and have similar prior test-score performance.

Key outcomes in our production function models include: end-of-year and longer-run test scores (as in Gershenson et al., 2017), DJS interactions, as well as high school graduation, college enrollment, and post-high school workforce participation (as in Liu et al., 2021). We will split the sample into pre- and post-Covid samples and estimate these models separately for each sample. To formally test whether the pre- and post-pandemic effects are significantly different from one another, we will also pool the data in one sample and fully interact the covariates with a post-pandemic indicator (or just the absence variable). The significance of these interactions will tell us whether the predictors as a whole, and whether absences specifically, had a significantly different effect in the post-pandemic era. We will leverage data starting from 2007-08 to the most recent year of data available and re-run analyses as additional years of data become available.

We recognize that the post-Covid period is fairly limited at present, which limits the ability to conduct cross-sector work. Therefore, we will start by focusing on a cohort of 12th graders from the 2021-22 school year, and we will use their absences/attendance rate from that school year as the key independent variable. One dependent variable of interest is college enrollment in the 2022-23 or 2023-24 school year, further broken out by 2- versus 4-year degree-seeking programs. Another outcome of interest is workforce participation and wages post high school, proxied for by being observed in the UI records in 2022-23 and quarterly wages in 2022-23. While we do not have prior test scores from the 2020-21 school year, we can use the most recent prior test scores in math and ELA as controls (and we will standardize these scores within grade and year to account for differences in when the prior scores come from). We can then augment the analyses in several ways: (i) examine the relationship between 11th grade absences in 2021-22 on post-high school outcomes, (ii) examine the relationship between absences and DJS interactions in the same school year for grade levels 4 through 12, and (iii) extend the analyses as more years of data become available.

To answer RQ2, we will take the findings from RQ1 (i.e., the pre- and post-pandemic effects of absences on test scores) and use the value-added models from RQ1 to simulate what student test scores would be in the post-pandemic years if the level and impact of absences resembled those of

the pre-pandemic era. We will then compare these simulated test scores to actual test scores, to understand the likely role that student absences play in learning loss (and hindering recovery efforts). We may also formalize these results using decomposition techniques (Fortin et al. 2011; Gelbach 2016). RQ2 will focus primarily on test scores as a key outcome, given the centrality of "learning loss" in the public narrative on pandemic recovery. However, we also will extend these analyses to examine effects on high school graduation, college enrollment, and post-high school workforce participation.

To answer RQ3, we will either stratify the analytic sample by characteristics, such as grade level or student gender, or estimate interaction models using the pooled data. For example, to formally test for heterogeneity by gender, we would create a female indicator equal to one if the student is female and zero if not, and then interact the variables of interest with the female indicator, and examine the statistical significance of said interaction term. We also can examine how relationships vary by school-level characteristics, including share of FARMs students and identification as a Community School.

Fortin, N., Lemieux, T., & Firpo, S. (2011). Decomposition methods in economics. In *Handbook of labor economics* (Vol. 4, pp. 1-102). Elsevier.

Gelbach, J. B. (2016). When do covariates matter? And which ones, and how much?. *Journal of Labor Economics*, *34*(2), 509-543.

How will this research benefit the State of Maryland in terms of state or local policy and/or practice?

Addressing student absenteeism is a key policy and practice priority for the Maryland State Department of Education and for the state's education community as a whole, with policy efforts under the Blueprint for Maryland's Future aimed at reducing chronic absenteeism by 50%. The state, districts, and schools will learn whether (and where) absences have become more harmful to student learning and learning recovery effects in the post-Covid environment. This information will inform both reactive and proactive efforts to support student learning and recovery following an absence spell and to focus efforts in reducing absence rates in the first place.

More specifically, and as noted above, local education agencies are tasked under the Blueprint with several lofty goals: increasing student attendance, recruiting and retaining high-quality teachers, and many others. *How* districts approach these goals and *in what* order is an open question, particularly as the Governor proposes pulling back on Blueprint funding. Before the pandemic, the effects of student absences on other outcomes were large and economically meaningful, but were much smaller than effects of other key educational inputs including teachers. If one *had* to choose between allocating resources towards one or the other (improving attendance or raising teacher quality), the latter likely would have a larger payoff. However, given the largest increase in student absenteeism during and post-Covid, the tradeoff may not be the same. If absences have even larger effects on other student outcomes than they did before the pandemic, then the marginal value of increasing attendance is likely to be higher. This information can help the state and local education agencies inform key policy priorities.

Focus on student absenteeism is acute across the state, including in particularly Baltimore City which had the highest rate of chronic absenteeism in 2023. A bill proposed to the city council in January may require the city to use recent data to more deeply understand the causes and consequences of

student absenteeism. To address concerns within Baltimore City, the PI discussed the project with Chris Wohn, Director of Research, in Baltimore City Public Schools, and will coordinate with City Schools throughout the research. City Schools is interested in quantifying the effect of absenteeism on other student outcomes, better understanding the root causes of increased absenteeism during Covid-19, and identifying potential policy solutions and interventions for reducing absenteeism. This project is not a policy evaluation per se, but may lead to additional work focused on evaluating City School strategies aimed at reducing absenteeism.

Analyses will focus on the state as a whole, while also disaggregating by district (for the four largest districts) to inform district-specific policies and priorities.

Explain why this research requires longitudinal cross-sector data?

The project examines absences over time and the longer-run effects of student absenteeism on post-K12 outcomes—in college and the workforce—which requires linking data from K-12, postsecondary, and the workforce. Our work also examines the relationship between K12 absences and concurrent (and future) DJS interactions.

Proposed Center Output
(Typical products for the MLDS Center include a research series presentation to stakeholders and a research brief in the MLDS Center template).

We will write a research brief in the MLDS Center's template, as well as conduct a presentation as part of the MLDS research series.

Timeline for the proposed project (identify major deliverables and approximate dates)

December 1, 2024: Begin data analysis on RQ1
May 1, 2025: Complete draft manuscript for RQ1
May 1, 2025: Finalize research brief and presentation for RQ1
May through December, 2025: Conduct analyses for RQ2 through 3, and incorporate analyses for all RQs into a single manuscript to send to a peer-reviewed journal

We recognize that only a couple of years have passed since the pandemic, and that a limited number of years of data are available. As more years of data become available, we can add those into our sample and analyses. The ambitious timeline described above helps provide quick information to the state and local education agencies who are wrestling with post-Covid attendance policies *now*. Conversations generated from these preliminary findings can inform ongoing analyses as more time passes and more years of data become available.

Plans for further development (i.e. journal submission, etc)

We will coordinate with and present to MLDS and Baltimore City Schools throughout the project. We plan to present findings for RQ1 at a symposium hosted by American Enterprise Institute (AEI) in April or May 2025, alongside related analyses from other state settings. We will prepare one MLDS research brief before then. We also plan to submit a manuscript that includes analyses for RQs 1-3 in late 2025 to academic conferences (e.g., Association for Education Finance and Policy, Association for Public

Policy Analysis and Management) and peer-reviewed journal(s) (e.g., *Economics of Education Review, Education Finance and Policy, Educational Evaluation and Policy Analysis*).

Section 3. MLDS Center Research Agenda

Does your project relate to one of the following areas which the General Assembly has specifically directed the MLDSC to study:	Yes	No
The impact of a State or federal education program?[2]	X	
The performance of educator preparation programs?	X	
Best practices regarding classroom instruction?		X
The impact of child welfare programs on the educational and economic outcomes of students?		X
An analysis of social determinants, provided by State agencies[3] and appropriate local agencies, that impact education performance of students and indicate the need for wraparound services for students.		X
Does your project use State or Federal financial aid[4] data?		X
If you are requesting to use FAFSA data please explain how this research will benefit the administration of Title IV federal financial aid.		
N/A		
Research Agenda Category (page 2 of the Research Agenda) – Which category does the project address? Please explain.		
Educational, Service & Workforce Outcomes: Research and reports on student-level and/or institutional-level characteristics and the importance of these characteristics in predicting outcomes. Our analyses will examine a primary student-level characteristic, absenteeism, and how they predict additional student outcomes including short-term test scores and longer-run college-going and labor market entry. We are interested in the impact of Covid-19 on educational trajectories, which is not an institutional-level characteristics per se, but impacted the structure of schooling.		
Research Agenda Themes (page 2-3 of the Research Agenda) - Which cross cutting theme is incorporated in the project? Please explain.		
Our project is primarily concerned with cross-cutting theme two on social determinants. We will examine how characteristics of students, their educational environments, and the Covid-19 pandemic impacted student absenteeism and the resulting impact of student absenteeism on short- and longer-run student outcomes. Prior literature indicates that student absenteeism varies substantially by student SES and race/ethnicity (e.g., Gershenson et al., 2017). Therefore, analyses that further		

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[2] All projects must relate to a state or federal education program. If you are not sure, please contact ross.goldstein@maryland.gov.

[3] State agencies include: Maryland Department of Health, Department of Human Services, and Department of Juvenile Services

[4] Financial aid data derived from the FAFSA may only be used in research to improve the administration of federal financial aid programs.

disaggregate patterns along these dimensions can speak to cross-cutting theme three on equity and inclusion.

Section 4. Data and Cross Sector Analysis

Please review the MLDS Center Data Inventory and the MLDS Center Data Gap Analysis prior to completing this section.

Sectors* *The data falling within each sector is outlined below. The purpose of this section is to ensure the project is cross sector. Projects will not necessarily use all data elements within the sector (see methods section for definitions of measures).	X
Early Childhood Education Sector	
K-12 Education Sector	X
Adult Education Sector	
Justice Involved Youth Sector	X
Child Welfare Sector	
Postsecondary Education Sector	X
Other Completions and Credentials Sector	
Workforce Sector	X

Put an 'x' next to each data sector your project will include. You must have at least 2 sectors.

Do you plan to request to include external data as part of your project?
N/A

*Sectors

Early Childhood Education Sector
- PreK Academic Engagement

K-12 Public School Education Sector
- Enrollment and attendance
- Assessments
- Courses and grades
- Completions
- Discipline
- Public School Characteristics

Adult Education Sector
- GED/NEDP Exam Results
- Apprenticeship
- Adult Education
- Correction Education

Juvenile Justice Sector
- Juvenile Justice Records
- Juvenile Education Records

Child Welfare Sector
- Out-of-Home Placements

Postsecondary Education Sector
- College and University Enrollment
- College and University Courses, Credits and Grades
- College and University Degrees
- College and University Workforce Training
- Financial Aid

Other Completions and Credentials Sector
- Industry Certifications
- Licenses

Workforce Sector
- Public School Teachers
- Public School Staff
- Workforce visibility/participation
- Workforce Earnings
- Workforce Industry

Section 5. Financial Information

The MLDS Center incurs costs for every project related to: (a) IT support and infrastructure; (b) assistance from subject matter experts, (c) criminal history background checks; and (d) creation of an analytic data set. Average project costs are between $1,000 and $3,000. A detailed, customized estimate will be provided prior to project initiation. (Please indicate your answer with an "X")

X	I will reimburse MLDSC for all applicable fees.
	I will only be able to provide partial reimbursement.
	I will need a waiver.

Our project does not require additional criminal background checks, set up of new virtual machines, nor creation of analytic data sets, as all researchers already have access to the MLDS data. If additional costs associated with IT support are needed, we will reimburse the MLDS Center.

Grant Funding (indicate with an 'X')

	This project has already received funding
	I plan to apply or am in the process of applying for grant funding
X	No grant funding is planned

Name of Grantor

N/A

RFP or Grant Program Information (you may provide a link to the grantor's website)

N/A

Amount of grant funds sought or awarded.

N/A

Grant Application Date

N/A

Do you intend to proceed without grant funding?

Yes

Are you receiving other funding for this proposed project? If yes, how much?

No

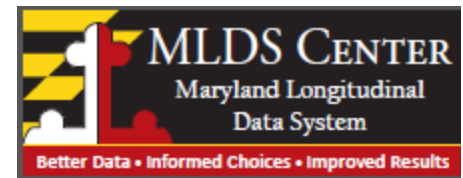## Section 6. Special Considerations

Principal Investigators NOT affiliated with a Maryland College or University – please provide information on:
    a.   **Your familiarity with Maryland policies affecting your research topic; and**
    b.   **How your project meets a specific Maryland research need?**
 	
Please also upload (with this form) any letters of reference or endorsement from a Maryland researcher or a State or local agency that vouches for your qualifications and expertise.

N/A
For projects that involve a small population, please confirm that you are aware of the MLDS Center's data suppression policy and explain how you will report your findings while conforming to the suppression requirements.
N/A
For projects that involve a single school system, university, or program, please explain the statewide implications of the project. **Please also upload (with this form) any letters of support from the subject (i.e. school system or university) of the study.**
N/A

Section 7. Project Team

Project Team		
- **Please list all members of the research team and indicate roles and responsibilities.** - **If the Principal Investigator listed in Section 1 above is NOT the primary point of contact for the project (including research, data access, and presentations to stakeholders), please indicate which team member is the primary point of contact and provide that individual's contact information.**		
Name and Organization	**Role**	**Is system access needed? (Yes/No)**
Yu Hung Yaow	Analyst/Coauthor	Yes (and already have access)
Seth Gershenson, American University	Co-PI / Coauthor	Already has view-only access is
Ethan Hutt, University of North Carolina	Co-PI / Coauthor	No (Dr. Hutt only will view results once they go through suppression review)

Section 8. Submission

Once this form is completed, please complete the online application ([here](#)) and upload this form, CVs for all members of the research team, and any other supporting materials.

MLDS CENTER
Maryland Longitudinal
Data System
Better Data • Informed Choices • Improved Results

*This form is subject to disclosure in a Public Information Act request.

Project Title	Agency Control #
Teachers as Role Models: Impacts on College and Career Outcomes	112

Contents

Section 1. Principal Investigator

Principal Investigator (please list additional project team members in Section 7)
Cameron Conrad

Principal Investigator's Email Address
cconrad3@umd.edu

Name of University or Organization
University of Maryland, College Park (UMCP)

Principal Investigator Background and Qualification (provide overview of experience and attach a CV)
Cameron Conrad is a fifth-year Ph.D. candidate in economics at the University of Maryland at College Park, expected graduation May 2026. He received his BA in economics from The Ohio State University in 2016 and his MA in economics from University of Maryland in 2022. His research focuses on economics of education as well as broader interests in labor and public economics. More specifically, his dissertation examines how education policies influence student pathways from schooling to the workforce. He has prior experience working with the MLDS Center through his co-authored study on the impact of high school computer science courses and a recently approved co-authored project that will use subject-specific competencies to predict economic wellbeing. Cameron has also worked with a state longitudinal data system in Michigan.

Important*:* Once submitted, this application is a public document that will be shared with stakeholders throughout the project review process and generally made available pursuant to a *Public Information Act Request*.

A completed form is available [here](#) for your review.

Section 2. Project Information

Background and Purpose of the Study
(No more than 500 words; please include references; references do not count toward the word count)

Background: Students' postsecondary choices, including whether to go to college and what to study, have important implications for their future careers. One important factor affecting students' postsecondary choices is their role models, who influence skills, behavior, knowledge, and aspirations. Although family members are influential role models outside of school, teachers serve as key role models within school. This proposed study will examine how teachers serve as role models who shape students' college and career choices.

Prior research has shown that teachers impact students' academic skills and behavior, subsequently influencing long-term outcomes ([Chetty et al., 2014b](#); [Jackson, 2018](#); [Petek and Pope, 2023](#); [Rose et al., 2022](#)). Evidence also shows that teachers and role models who are demographically matched to their students have a particularly strong influence on students with similar backgrounds ([Gershenson et al., 2022](#); [Bottia et al., 2015](#); [Bettinger and Long, 2005](#); [Carrell et al., 2010](#); [Porter and Serra, 2020](#)). These findings provide evidence that teachers serve as role models in students' lives, but more research is needed to determine how teachers affect college and career outcomes as well as the mechanisms that explain these long-term impacts.

Research Questions and Approach: This proposed study will extend this literature by examining the impact of teachers on 1) postsecondary outcomes including college degree attainment and field of study; and 2) labor market engagement including employment, earnings, and industry. The analysis will assess how teacher effects vary by subject area and whether teachers influence students to pursue postsecondary studies in a field related to their subject area, likely impacting labor market outcomes. Finally, this project will explore the mechanisms that explain teachers' long-term impacts, including their effects on students' test scores and behavior as well as sharing demographic characteristics with their students. The approach uses value-added methods from prior literature ([Chetty et al., 2014b](#); [Jackson, 2018](#); [Petek and Pope, 2023](#); [Rose et al., 2022](#)) to compute measures of teacher impacts on college outcomes.

Data: This study will use linked K-12, postsecondary, and workforce data from the Maryland Longitudinal Data System (MLDS) Center. The K-12 data include detailed information about students, teachers, and schools, including linked teacher-student data as well as information on course-taking. Postsecondary data include information on college attendance, choice of major, degree receipt, and degree field. Workforce data include information on quarterly earnings and industry. Data are available from 2008 to 2023, although K-12 course data are first available in 2013.

Contributions:
1. **Teacher Effects on College Attainment and Field of Study**: this project will establish novel measures of teacher impacts on college outcomes including degree completion and field. The findings will offer new evidence about which subject areas and courses are most critical for college persistence and closely linked to specific degree fields such as STEM.

2. **Teacher Effects on Labor Market Engagement**: this study will extend past literature on teacher impacts by focusing on longer-term outcomes and quantifying how teacher impacts on college outcomes subsequently influence labor market outcomes.
3. **Mechanisms for Long-Term Impacts**: the findings will provide new insights about whether teachers' impacts on test scores and behavior, or their demographics are most consequential for students' long-term outcomes.

Research Project Question

Research Questions:
1. What is the effect of teachers on postsecondary outcomes (e.g. college enrollment, STEM major, degree receipt, STEM degree field) and labor market engagement?
2. How do teachers' effects on these outcomes vary by subject area and do teachers serve as role models who encourage students to pursue studies in a related field? How does subject-area teachers' influence on the field of study ultimately affect employment and earnings?
3. To what degree are teachers' long-term impacts mediated by their effects on student test scores and behavior as well as teachers sharing demographic characteristics (e.g. gender, race/ethnicity) with their students? Do teachers influence students to enter industries related to the subject area in which they teach?

Research Methods
(Please include information for: Sample/Cohort and Justification; Definition of Measures and Constructs; Analysis Approach)

Analytic Sample: The relevant analytic sample is the population of Maryland public middle and high school students in the K-12 enrollment and course data. I refer to cohorts by Spring of the year students enroll in 12th grade. Because course data begin in 2012-13, the first cohort for which I can observe course-taking is the 2013 12th grade cohort. The last cohort for which I can observe an on-time post-high school outcome is the 2023 12th grade cohort, which would have progressed to the first year of college or career in 2024 assuming on-time grade progression. Thus, my analytic sample comprises the 2013-2023 12th grade cohorts. I can observe on-time college enrollment for all 11 cohorts, associate's degree receipt within two years for 10 of 11 cohorts, bachelor's degree receipt within four years for 8 of 11 cohorts. For workforce data, I can observe post-college earnings outcomes as early as age 23 for 7 of 11 cohorts and an earnings outcome as late as age 29 for one cohort. Post-college workforce outcomes will be measured from 2017 to 2024, so the analysis will not use wage data prior to 2015, which may not be as robust. In robustness analysis, I will also exclude workforce outcomes measured in 2020 and 2021 during the COVID pandemic. I link teachers to the students in their classrooms to compute measures of teacher impacts using the course data.

Explanatory Variables:
The key explanatory variables are measures of teacher impact based on their effectiveness in increasing the likelihood of:
1. Pursuing an apprenticeship or industry certification
2. Enrolling in college

3. Choosing a STEM major[1]
4. Persisting in college or transferring to a more selective college (e.g. based on graduation rates, average post-graduate earnings)
5. Earning a college degree, including associate's (general or career-focused) or bachelor's degree
6. Earning a STEM degree, including associate's or bachelor's

I will use value-added methods from prior literature to compute these measures of teacher impacts (Chetty et al., 2014b; Jackson, 2018; Petek and Pope, 2023; Rose et al., 2022). This approach will residualize college outcomes of the students linked to teachers' classrooms on a rich set of controls to isolate teachers' causal effects on college outcomes. In sum, teachers' value-added effects on college outcomes will serve as the key explanatory variables.

Outcome Variables:
The outcome variables include:
1. **Career**: apprenticeship or industry certification
2. **Postsecondary**: college enrollment, college major choice, college persistence or transfer, college degree receipt, and degree field choice (e.g. STEM)
3. **Workforce**: employment (non-zero earnings), earnings, and industry of employment (e.g. predicted earnings)

Methods Overview: There are three steps to estimate teacher value-added effects and perform validity checks on the research design. First, I compute teacher value-added estimates. Second, I estimate the effects of teacher value-added on outcomes. Third, I test the validity of the research design using excluded observable variables and a teacher switching quasi-experiment.

Estimating Teacher Value-Added: I construct the value-added measures by residualizing college outcomes through a regression of these outcomes on a rich set of controls. These controls include student-level variables such as lagged student achievement, behavior, demographic characteristics as well as classroom-, grade-, and school-level controls. I compute the average residual college outcomes for students assigned to a particular teacher for each year and predict average teacher impacts in the current year with average residualized outcomes in surrounding years. This process yields value-added measures of teacher effects on college outcomes.

Estimating the Effects of Teacher Value-Added on Outcomes: I use the estimates for teacher college value-added constructed in the first step to estimate how having a teacher with a stronger or weaker influence on college outcomes affects students' postsecondary and labor market outcomes. An example of a baseline specification is a regression of an outcome (e.g. college enrollment, earnings) on teacher college enrollment value-added and the rich set of controls from the first step:

$$Y_{it} = \beta \hat{v}^c_{jt} + \Gamma X_{ijt} + \eta_{ijt}, (1)$$

---

where Y_{it} is the outcome for student i at time t, $\hat{v}^{c}_{jt}$ is the teacher college enrollment value-added measure for teacher j, X_{ijt} is the set of controls, and η_{ijt} is the error term. β is the coefficient of interest and represents the impact of having a one standard deviation higher college enrollment value-added teacher on the outcome.

Heterogeneity analysis will assess whether the impact of teacher college value-added on outcomes varies by teacher subject area, whether teachers are staffed within or outside of their subject/grade level expertise, and by licensure pathway. I will also explore mechanisms by assessing to what degree teachers' impacts on college and career outcomes are mediated by their effects on student test scores and behavior or through shared demographic characteristics with their students. The specification to assess the role of teacher impacts on test scores and behavior is as follows:

$$Y_{it} = \beta^{c}\hat{v}^{c}_{jt} + \beta^{s}\hat{v}^{s}_{jt} + \beta^{b}\hat{v}^{b}_{jt} + \Gamma X_{ijt} + \eta_{ijt}, \text{ (2)}$$

where Y_{it} is a college or career outcome, $\hat{v}^{c}_{jt}$ is college value-added, $\hat{v}^{s}_{jt}$ is test score value-added, and $\hat{v}^{b}_{jt}$ is behavior value-added with the respective coefficients measuring the impact of having a one standard deviation higher value-added teacher while conditioning on other measures of value-added. An example of a specification to assess the role of demographic matching is as follows:

$$Y_{it} = \beta^{c}\hat{v}^{c}_{jt} + \beta_{1}F_{i} + \beta_{2}F_{j} + \beta_{3}F_{i}F_{j} + \Gamma X_{ijt} + \eta_{ijt}, \text{ (3)}$$

where Y_{it} is a college or career outcome, $\hat{v}^{c}_{jt}$ is college value-added, F_{i} is an indicator for a student being female, F_{j} is an indicator for the teacher being female, and $F_{i}F_{j}$ is an interaction term for student being female and teacher being female. For example, if Y_{it} represents STEM degree receipt and $\hat{v}^{c}_{jt}$ represents teacher STEM degree value-added, then β_{1} estimates the gender gap in STEM degree receipt, β_{2} estimates the effect of female teachers on male students' STEM degree receipt, and β_{3} estimates the effect of female teachers on female students STEM degree receipt (the matched gender effect). This specification and the corresponding specification with teacher race/ethnicity controls will assess to what degree teacher effects on outcomes are mediated through teacher gender and race/ethnicity. I aim to extend prior research on teacher-student demographic matching by using methods from the literature (Carrell et al., 2010) to compute teacher value-added separately by gender (e.g. females, males) and race/ethnicity (e.g. students of color, White students). Further, I will explore whether teachers encourage students to enter work industries related to their subject area, not just the teaching profession.

Validity Checks: The main limitation in this study is that there may be unobservable omitted variables that affect both teacher college value-added measures and student outcomes but are not related to the observable controls in X_{ijt}. For example, if students with relatively higher- or lower-than-average unobserved chance of enrolling in college systematically sort to teachers with relatively higher or

lower teacher college enrollment value-added, this may bias my estimates. Prior research has shown there is little bias in test score and behavior value-added estimates ([Chetty et al., 2014a](#); [Jackson, 2018](#); [Petek and Pope, 2023](#); [Rose et al., 2022](#)), but this project will assess the validity of novel college value-added measures.

I use two main approaches from prior literature to validate the research design:

1. **Excluded Observable Variables**: if students sort into classrooms based on prior year test scores and behavior as well as test score gains or behavior changes between years, then the omission of twice-lagged test scores and behavior from the main model may lead to biased estimates. To address this concern, I will residualize twice-lagged test scores and behavior on the main controls and use these residuals to predict long-term outcomes. I will then regress predicted outcomes on teacher college value-added measures to estimate forecast bias due to these excluded observables.
2. **Teacher Switching Quasi-Experiment**: I will use teacher turnover (e.g. teachers switching grades and schools) as a quasi-experiment to provide an alternative approach to estimate the effect of teacher college value-added on long-term outcomes. This alternative approach will test the robustness of the main estimates and can also be used to estimate forecast bias by using predicted changes in long-term outcomes from the excluded observable variables as an outcome.

How will this research benefit the State of Maryland in terms of state or local policy and/or practice?

This study aligns with Maryland's Blueprint for Education, emphasizing: 1) college and career readiness pathways, and 2) high-impact, diverse teachers and leaders. The project will establish novel measures of teacher impacts on college outcomes, providing new insights about how subject-area teachers influence college degree attainment and whether they encourage students to pursue studies in closely related degree fields. This study will also explore how teachers' impacts on students' college pathways ultimately shape their labor market engagement. These findings will inform policy discussions about college and career readiness and building the STEM pipeline. Analysis of mechanisms for teacher impacts (e.g. test scores, behavior, demographic matching) will contribute to policy discussions about building a high-impact, diverse teacher workforce. Findings will also inform school decisions regarding personnel, teacher course assignments, and student-teacher placements.

Explain why this research requires longitudinal cross-sector data?

This research focuses on the effect of K-12 teachers on postsecondary and labor market outcomes and thus requires the use of K-12, postsecondary, and workforce data for the analysis.

Proposed Center Output
(Typical products for the MLDS Center include a research series presentation to stakeholders and a research brief in the MLDS Center template).

My proposed Center products are a presentation in the MLDS Research Series and an MLDS Center research brief.

Timeline for the proposed project (identify major deliverables and approximate dates)	
January 2025 – March 2025	● Apply for MLDS data
April 2025 – December 2025	● Data cleaning and analysis
January 2026 – May 2026	● Write draft of paper ● Deliver dissertation defense including this project as a chapter ● Collect feedback from dissertation defense
June 2026 – December 2026	● Write and release MLDS Center research brief ● Release working paper through Annenberg Institute's EdWorkingPapers ● Presentation in MLDS Research Series ● Present paper at conferences (e.g., AEFP, SOLE, WEAI, APPAM) ● Revise paper and prepare for journal submission
January 2027 – December 2027	● Journal submission ● Revise paper using feedback from journal(s) and resubmit

Plans for further development (i.e. journal submission, etc)
I will publish my study in a peer-reviewed journal. This step will help signal the rigor of the research, and the peer review process will improve the quality of the paper while establishing credibility for the findings.

Section 3. MLDS Center Research Agenda

Does your project relate to one of the following areas which the General Assembly has specifically directed the MLDSC to study:	Yes	No
The impact of a State or federal education program?[2]	X	
The performance of educator preparation programs?		X
Best practices regarding classroom instruction?	X	
The impact of child welfare programs on the educational and economic outcomes of students?		X

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[2] All projects must relate to a state or federal education program. If you are not sure, please contact ross.goldstein@maryland.gov.

An analysis of social determinants, provided by State agencies[3] and appropriate local agencies, that impact education performance of students and indicate the need for wraparound services for students.		X
Does your project use State or Federal financial aid[4] data?		X

If you are requesting to use FAFSA data please explain how this research will benefit the administration of Title IV federal financial aid.
N/A
Research Agenda Category (page 2 of the Research Agenda) – Which category does the project address? Please explain.
This study primarily addresses the Education, Service, and/or Workforce Outcomes category since the focus of the research is on how teachers affect college and career outcomes. The project also addresses the Pathways and Pipelines category in mapping subject-area teacher effects to closely related college majors and degree fields (e.g. related to the STEM pipeline).
Research Agenda Themes (page 2-3 of the Research Agenda) - Which cross cutting theme is incorporated in the project? Please explain.
This research incorporates the Social Determinants theme by assessing the role of same demographic teachers (gender and race/ethnicity) in teacher impacts. The research will explore outcomes by gender, race/ethnicity, and socioeconomic status. The project also addresses the Equity and Inclusion theme by examining how access to high-impact teachers, rigorous subject-area coursework, and same demographic teachers affect college attainment, degree field, and workforce outcomes.

Section 4. Data and Cross Sector Analysis

Please review the MLDS Center Data Inventory and the MLDS Center Data Gap Analysis prior to completing this section.

Sectors* ** *The data falling within each sector is outlined below. The purpose of this section is to ensure the project is cross sector. Projects will not necessarily use all data elements within the sector (see methods section for definitions of measures).**	**X**
Early Childhood Education Sector	
K-12 Education Sector	X
Adult Education Sector	X
Justice Involved Youth Sector	
Child Welfare Sector	
Postsecondary Education Sector	X

---

[3] State agencies include: Maryland Department of Health, Department of Human Services, and Department of Juvenile Services

[4] Financial aid data derived from the FAFSA may only be used in research to improve the administration of federal financial aid programs.

Other Completions and Credentials Sector	X
Workforce Sector	X

Put an 'x' next to each data sector your project will include. You must have at least 2 sectors.

Do you plan to request to include external data as part of your project?
No.

*Sectors

Early Childhood Education Sector
- PreK Academic Engagement

K-12 Public School Education Sector
- Enrollment and attendance
- Assessments
- Courses and grades
- Completions
- Discipline
- Public School Characteristics

Adult Education Sector
- GED/NEDP Exam Results
- Apprenticeship
- Adult Education
- Correction Education

Juvenile Justice Sector
- Juvenile Justice Records
- Juvenile Education Records

Child Welfare Sector
- Out-of-Home Placements

Postsecondary Education Sector
- College and University Enrollment
- College and University Courses, Credits and Grades
- College and University Degrees
- College and University Workforce Training
- Financial Aid

Other Completions and Credentials Sector
- Industry Certifications
- Licenses

Workforce Sector
- Public School Teachers
- Public School Staff
- Workforce visibility/participation
- Workforce Earnings
- Workforce Industry

Section 5. Financial Information

The MLDS Center incurs costs for every project related to: (a) IT support and infrastructure; (b) assistance from subject matter experts, (c) criminal history background checks; and (d) creation of an analytic data set. Average project costs are between $1,000 and $3,000. A detailed, customized estimate will be provided prior to project initiation. (Please indicate your answer with an "X)

	I will reimburse MLDSC for all applicable fees.
	I will only be able to provide partial reimbursement.
X	I will need a waiver.

Grant Funding (indicate with an 'X')

	This project has already received funding
	I plan to apply or am in the process of applying for grant funding
X	No grant funding is planned

Name of Grantor
N/A

RFP or Grant Program Information (you may provide a link to the grantor's website)
N/A

Amount of grant funds sought or awarded.
N/A

Grant Application Date
N/A

Do you intend to proceed without grant funding?
Yes, I will proceed without grant funding

Are you receiving other funding for this proposed project? If yes, how much?
I am applying for semester dissertation fellowships available at University of Maryland at College Park. If awarded, this funding will be used to help support my work on this project, but the purpose of the funding is to provide a full-time living stipend to support doctoral candidates in the latter stages of writing their dissertations. Fellowship benefits include a $15,000 Stipend, a Candidacy Tuition award to cover tuition expenses associated with doctoral dissertation research, a credit for mandatory fees associated with doctoral dissertation registration, and reimbursement for the purchase of an individual student health insurance plan for the semester.

Section 6. Special Considerations

Principal Investigators NOT affiliated with a Maryland College or University – please provide information on:
    a.   **Your familiarity with Maryland policies affecting your research topic; and**
    b.   **How your project meets a specific Maryland research need?**
 	
Please also upload (with this form) any letters of reference or endorsement from a Maryland researcher or a State or local agency that vouches for your qualifications and expertise.

N/A - PI Conrad is affiliated with UMCP.
For projects that involve a small population, please confirm that you are aware of the MLDS Center's data suppression policy and explain how you will report your findings while conforming to the suppression requirements.

N/A - My project does not involve a small population, but I am aware of the MLDS Center's data suppression policy, and I will report my findings in accordance with the policy by suppressing data in any cells for which statistics are computed using fewer than 10 observations.
For projects that involve a single school system, university, or program, please explain the statewide implications of the project. **Please also upload (with this form) any letters of support from the subject (i.e. school system or university) of the study.**
N/A – My project focuses on all students enrolled in public K-12 schools in Maryland and therefore the project has statewide implications.

Section 7. Project Team

Project Team		
- **Please list all members of the research team and indicate roles and responsibilities.** - **If the Principal Investigator listed in Section 1 above is NOT the primary point of contact for the project (including research, data access, and presentations to stakeholders), please indicate which team member is the primary point of contact and provide that individual's contact information.**		
Name and Organization	**Role**	**Is system access needed? (Yes/No)**
Cameron Conrad (UMCP PhD Candidate)	PI	Yes

Section 8. Submission

Once this form is completed, please complete the online application (here) and upload this form, CVs for all members of the research team, and any other supporting materials.

*This form is subject to disclosure in a Public Information Act request.

Project Title	Agency Control #
Characteristics Associated with Postsecondary Outcomes Among Multilingual Learners	113

Section 1. Principal Investigator

Principal Investigator (please list additional project team members in Section 7)
Alexandra Shelton

Principal Investigator's Email Address
ashelt18@jhu.edu

Name of University or Organization
Johns Hopkins University

Principal Investigator Background and Qualification (provide overview of experience and attach a CV)
I am an assistant professor in the School of Education at Johns Hopkins University. I conduct research related to outcomes for historically marginalized students, including multilingual learners and students with disabilities, and their teachers. Through this research, I aim to inform both practice and policy. For example, I am the PI of a grant funded by the Maryland State Department of Education (MSDE) to deliver a professional development program with early-career teachers in a local district to support their ability to plan and deliver rich, rigorous instruction for historically marginalized students. I am also the co-PI of another MSDE-funded grant to promote the meaningful inclusion of students with disabilities, particularly those who are socioculturally marginalized, in general education settings.

Section 2. Project Information

Background and Purpose of the Study (No more than 500 words; please include references; references do not count toward the word count)
In the 2021-22 school year, approximately 72% of multilingual learners (MLs) in the United States graduated from high school in four years (National Center for Education Statistics [NCES], 2024). While this proportion has grown from 57% in the 2010-11 school year (NCES, 2014), only 57% of MLs in Maryland *currently* graduate from high school in four years (NCES, 2024. This proportion has largely remained stagnant since at least the 2010-11 school year (NCES, 2014). Considering that high school graduation is associated with positive outcomes related to college (U.S. Department of Health and Human Services, n.d.), it is important to understand the barriers that may hinder MLs with high school diplomas from pursuing postsecondary education.

Kanno and Cromley's (2013, 2015) analyses of national longitudinal data found that MLs are significantly less likely to access and graduate from college than their English-proficient multilingual |

Important: Once submitted, this application is a public document that will be shared with stakeholders throughout the project review process and generally made available pursuant to a *Public Information Act Request*.

peers and English-only peers. The barriers to postsecondary education ML high school graduates experience go *beyond* their ML status. Other potential factors include MLs' limited access to rigorous coursework, aspirations to attend college, and race/ethnicity (Kanno & Cromley, 2015).

Despite these findings, the literature on MLs' access to postsecondary education has important limitations. For example, research in this area often compares MLs with non-MLs. Not only does this normalize the privilege associated with being English-dominant (Arellano, 2022), but it also limits our knowledge about factors associated with MLs' college-going. Second, most of the state-level research on this topic has been conducted in states with large ML populations (e.g., Texas; Holzman et al., 2020). As such, less is known about MLs' postsecondary entrance in states with significantly smaller ML populations, such as Maryland (e.g., Djita et al., 2023). In fact, researching the academic experiences of MLs in Maryland may be especially important considering that the percentage of MLs attending college in Maryland is substantially lower than the national percentage. Therefore, the purpose of the proposed study is to leverage state longitudinal data from Maryland to identify student-level and school-level characteristics that enrollment in college, within the population of ML students.

References:
- Arellano, L. (2022). Questioning the science: How quantitative methodologies perpetuate inequity in higher education. *Education Sciences*, *12*(2), 116. https://doi.org/10.3390/educsci12020116
- Djita, R., Barnes, K., & McKenzie, S. C. (2023). English language learners and their postsecondary education outcomes: Evidence from Arkansas. *Education Reform Faculty and Graduate Students Publications*. https://scholarworks.uark.edu/edrepub/145
- Holzman, B., Salazar, E. S., & Chukhray, I. (2020). *Inequalities in postsecondary attainment by English learner status: The role of college-level course-taking* (Rice University & Houston Education Research Consortium Research Brief, Vol. 9, Issue 2). https://files.eric.ed.gov/fulltext/ED607659.pdf
- Kanno, Y., & Cromley, J. G. (2013). English language learners' access to and attainment in postsecondary education. *TESOL Quarterly*, *47*(1), 89–121. https://doi.org/10.1002/tesq.49
- Kanno, Y., & Cromley, J. G. (2015). English language learners' pathways to four-year colleges. *Teachers College Record*, *117*(12), 1–44. https://doi.org/10.1177/016146811511701202
- National Center for Education Statistics. (2014). *Table 1. Public high school 4-year adjusted cohort graduation rate (ACGR), by race/ethnicity and selected demographics for the United States, the 50 states, the District of Columbia, and other jurisdictions: School year 2010–11*. https://nces.ed.gov/pubs2014/2014391/tables/table_01.asp
- National Center for Education Statistics. (2024). *Table 219.46. Public high school 4-year adjusted cohort graduation rate (ACGR), by selected student characteristics and state or jurisdiction: School years 2011-12 through 2021-22*. https://nces.ed.gov/programs/digest/d23/tables/dt23_219.46.asp?current=yes
- U.S. Department of Health and Human Services. (n.d.). *High school graduation*. https://odphp.health.gov/healthypeople/priority-areas/social-determinants-health/literature-summaries/high-school-graduation

Research Project Question

1. What is the association between **student-level** factors (e.g., newcomer status, college-preparatory math and science course completion, special education status,

race/ethnicity) and college enrollment (i.e., 2-year, 4-year, and no college enrollment) for MLs in Maryland?

2. What is the association between **school-level** factors (e.g., percentage of multilingual learners, percentage of dually enrolled students, percentage of students who enroll in college) and college enrollment (i.e., 2-year, 4-year, and no college enrollment) for MLs in Maryland?

3. Among those who enroll in college, what is the association between **student-level** factors (e.g., college-preparatory math and science course completion, AP or IB exam completion) and degree attainment in three years for 2-year colleges and six years for 4-year colleges separately?

4. Among those who enroll in college, what is the association between **school-level** factors (e.g., percentage of multilingual learners, percentage of dually enrolled students, percentage of students who enroll in college) and degree attainment in three years for 2-year colleges and six years for 4-year colleges separately?

5. Among those who do not enroll in college, what is the association between **student-level** factors (e.g., high school program completion type, high school apprenticeship completion, race/ethnicity) and wages?

6. Among those who do not enroll in college, what is the association between **school-level** factors (e.g., percentage of multilingual learners, percentage of dually enrolled students, percentage of students who enroll in college) and wages?

Research Methods
(Please include information for: Sample/Cohort and Justification; Definition of Measures and Constructs; Analysis Approach)

To answer my research questions, I will require student data from the Maryland State Department of Education and the Maryland Higher Education Commission.

Cohort: My sample will consist of students who were ninth-grade current, exited, or waived MLs (i.e., "ever MLs") in the 2014-15 school year *and* graduated with a diploma by June 2018, indicating on-time graduation.

Analysis Approach: To answer my research questions, I will fit various two-level hierarchical linear models with students nested in their twelfth-grade schools and random intercepts and/or random slopes by school, based on optimal model fit. Additionally, an indicator variable will be included to account for students' twelfth-grade school district. I will investigate college enrollment (i.e., 2-year, 4-year, no college) using multinomial logistic regression. Additionally, I will investigate degree attainment (i.e., degree conferred or not) for 2-year college and 4-year college enrollees in separate binomial logistic regression models. Furthermore, I will investigate wages among those who do not enroll in college using multiple regression.

Outcome Variable: I will have the following outcome variables:
- College enrollment between June 1, 2018, and May 31, 2019 (i.e., 2-year college, 4-year college, no college)
- Degree attainment (i.e., degree conferred or not) within 3 years among 2-year college enrollees and within 6 years among 4-year college enrollees
- Wages from July 1, 2018, to June 30, 2019 (based on quarterly wages)

Student-level Predictors: I will include the following student-level predictors:

- 9th grade ML status (i.e., current, exited, waived)
- 12th grade ML status
- Number of years as an ML (based on the MLDS element English Learner Begin Date)
- English, government, math, and science performance (i.e. whether they passed the standardized test in each area)
- College-preparatory math and science course completion
- Dual enrollment participation
- High school program completion type
- High school apprenticeship completion
- Attendance
- AP or IB exam completion
- Special education status
- Race/ethnicity
- Gender
- FARMS status
- GPA

School-level Predictors: I will also use the following school-level predictors:
- Percentage of students who passed the English, government, math, and science standardized tests
- Percentage of students who enroll in college
- Counselor-to-student ratio
- Percentage of dually enrolled students
- Percentage of students who completed an AP or IB exam
- Percentage of non-white students
- Percentage of students with Individualized Education Programs
- Percentage of MLs
- Percentage of students eligible for FARMS

These school-level variables will be based on school data in students' twelfth-grade year because students will be nested in their twelfth-grade schools.

How will this research benefit the State of Maryland in terms of state or local policy and/or practice?

To my knowledge, research has not predicted college enrollment among MLs in Maryland. Thus, this research will benefit the State of Maryland because it will provide important insights into factors related to postsecondary education access. These findings have the potential to inform school practice and district policy in ways that leverage factors positively associated and mitigate factors negatively associated with postsecondary education enrollment for MLs. Furthermore, this project will reveal insights into postsecondary outcomes for MLs with disabilities, which is a population of focus in my MSDE projects and other research.

Explain why this research requires longitudinal cross-sector data?

This research requires longitudinal cross-sector data because the research requires data from students' freshmen and senior years of high school from the K–12 education sector and data from their first year out of high school from the postsecondary education sector. Specifically, K-12 education

sector data will provide information on student- and school-level predictors, while postsecondary education sector data will provide outcome data on college enrollment.
Proposed Center Output **(Typical products for the MLDS Center include a research series presentation to stakeholders and a research brief in the MLDS Center template).**
I propose submitting a research brief using the MLDS Center template. I would also be interested in presenting findings as part of the MLDSC Research Series.
Timeline for the proposed project (identify major deliverables and approximate dates)
I plan to be approved in April 2025. I will then establish a signed Research Use Data Agreement, obtain IRB approval, and complete a background check in order to receive access to data in May 2025. May – July 2025 – Review MLDS data and build analytic data files August 2025 – Examine descriptive statistics September 2025 – November 2025 – Preliminary analyses December 2025 – Provide preliminary analyses to MLDS Center for discussion January 2026 – Complete updated analyses February 2026 – MLDS Center research brief and/or research series March 2026 and ongoing – Conference submissions and academic publication
Plans for further development (i.e. journal submission, etc)
I will submit a manuscript to a peer-reviewed education journal. Specifically, I plan to submit the manuscript to *Educational Researcher* or *TESOL Quarterly*. I will also submit a proposal to present the findings at a national education conference. I plan to submit a proposal to present this study at an American Educational Research Association Annual Meeting.

Section 3. MLDS Center Research Agenda

Does your project relate to one of the following areas which the General Assembly has specifically directed the MLDSC to study:	Yes	No
The impact of a State or federal education program?[1]	X	
The performance of educator preparation programs?		X
Best practices regarding classroom instruction?		X
The impact of child welfare programs on the educational and economic outcomes of students?		X
An analysis of social determinants, provided by State agencies[2] and appropriate local agencies, that impact education performance of students and indicate the need for wraparound services for students.	X	
Does your project use State or Federal financial aid[3] data?		X
If you are requesting to use FAFSA data please explain how this research will benefit the administration of Title IV federal financial aid.		
N/A		

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[1] All projects must relate to a state or federal education program. If you are not sure, please contact ross.goldstein@maryland.gov.

[2] State agencies include: Maryland Department of Health, Department of Human Services, and Department of Juvenile Services

[3] Financial aid data derived from the FAFSA may only be used in research to improve the administration of federal financial aid programs.

Research Agenda Category (page 2 of the Research Agenda) – Which category does the project address? Please explain.
This project addresses the Educational, Service, and/or Workforce Outcomes category because the project explores how student- and school-level characteristics predict college enrollment among individuals who were MLs in high school.
Research Agenda Themes (page 2-3 of the Research Agenda) - Which cross cutting theme is incorporated in the project? Please explain.
Social Determinants is the cross-cutting theme that will be incorporated into this project. This theme is appropriate because the project will identify student and school characteristics that influence college enrollment, degree attainment, and wages.

Section 4. Data and Cross Sector Analysis

Please review the   MLDS Center Data Inventory and the MLDS Center Data Gap Analysis prior to completing this section.

Sectors* *The data falling within each sector is outlined below. The purpose of this section is to ensure the project is cross sector. Projects will not necessarily use all data elements within the sector (see methods section for definitions of measures).	X
Early Childhood Education Sector	
K-12 Education Sector	X
Adult Education Sector	
Justice Involved Youth Sector	
Child Welfare Sector	
Postsecondary Education Sector	X
Other Completions and Credentials Sector	
Workforce Sector	X

Put an 'x' next to each data sector your project will include. You must have at least 2 sectors.

Do you plan to request to include external data as part of your project?
I do not plan to request to include external data as part of my project.

*Sectors

Early Childhood Education Sector
- PreK Academic Engagement

K-12 Public School Education Sector
- Enrollment and attendance
- Assessments
- Courses and grades
- Completions
- Discipline
- Public School Characteristics

Adult Education Sector
- GED/NEDP Exam Results

Child Welfare Sector
- Out-of-Home Placements

Postsecondary Education Sector
- College and University Enrollment
- College and University Courses, Credits and Grades
- College and University Degrees
- College and University Workforce Training
- Financial Aid

Other Completions and Credentials Sector

- Apprenticeship
- Adult Education
- Correction Education

Juvenile Justice Sector
- Juvenile Justice Records
- Juvenile Education Records

- Industry Certifications
- Licenses

Workforce Sector
- Public School Teachers
- Public School Staff
- Workforce visibility/participation
- Workforce Earnings
- Workforce Industry

Section 5. Financial Information

The MLDS Center incurs costs for every project related to: (a) IT support and infrastructure; (b) assistance from subject matter experts, (c) criminal history background checks; and (d) creation of an analytic data set. Average project costs are between $1,000 and $3,000. A detailed, customized estimate will be provided prior to project initiation. (Please indicate your answer with an "X)

	I will reimburse MLDSC for all applicable fees.
	I will only be able to provide partial reimbursement.
X	I will need a waiver.

Grant Funding (indicate with an 'X')

	This project has already received funding
	I plan to apply or am in the process of applying for grant funding
X	No grant funding is planned

Name of Grantor

N/A

RFP or Grant Program Information (you may provide a link to the grantor's website)

N/A

Amount of grant funds sought or awarded.

N/A

Grant Application Date

N/A

Do you intend to proceed without grant funding?

N/A

Are you receiving other funding for this proposed project? If yes, how much?

No, I am not receiving any funding for this proposed project.

Section 6. Special Considerations

Principal Investigators NOT affiliated with a Maryland College or University – please provide information on:
a. Your familiarity with Maryland policies affecting your research topic; and
b. How your project meets a specific Maryland research need?
Please also upload (with this form) any letters of reference or endorsement from a Maryland researcher or a State or local agency that vouches for your qualifications and expertise.
N/A
For projects that involve a small population, please confirm that you are aware of the MLDS Center's data suppression policy and explain how you will report your findings while conforming to the suppression requirements.
N/A
For projects that involve a single school system, university, or program, please explain the statewide implications of the project. **Please also upload (with this form) any letters of support from the subject (i.e. school system or university) of the study.**
N/A

Section 7. Project Team

Project Team
- Please list all members of the research team and indicate roles and responsibilities.
- If the Principal Investigator listed in Section 1 above is NOT the primary point of contact for the project (including research, data access, and presentations to stakeholders), please indicate which team member is the primary point of contact and provide that individual's contact information.

Name and Organization	Role	Is system access needed? (Yes/No)
Alexandra Shelton, Johns Hopkins University	PI	Yes

Section 8. Submission

Once this form is completed, please complete the online application ([here](#)) and upload this form, CVs for all members of the research team, and any other supporting materials.

*This form is subject to disclosure in a Public Information Act request.

Project Title	Agency Control #
Causal Evidence on Teacher Recruitment: Data to Inform the Effects and Continued Rollout of the Maryland Blueprint	117

Contents

Section 1. Principal Investigator

Principal Investigator (please list additional project team members in Section 7)
David Blazar

Principal Investigator's Email Address
dblazar@umd.edu

Name of University or Organization
University of Maryland College Park

Principal Investigator Background and Qualification (provide overview of experience and attach a CV)
David Blazar has worked with the MLDS Center for 8 years, primarily leading projects related to the teacher workforce. He also oversees several student projects/dissertations touching on a variety of topics. Currently, his MLDS research portfolio includes the following projects: (1) an Institute of Education Sciences (IES)-funded project examining the effect of programs and pathways in Maryland aimed at diversifying the teacher workforce (PI); (2) an IES-funded project through the SLDS call to descriptively examine barriers to entry into teaching (co-PI); (3) an IES-funded project with the CALDER Recruitment and Retention Center also examining the effect of teacher recruitment strategies, including several new policies rolled out under/alongside the Blueprint for Maryland's

Important: Once submitted, this application is a public document that will be shared with stakeholders throughout the project review process and generally made available pursuant to a *Public Information Act Request*.

Future (e.g., student teaching stipends) (MD PI)—which is the focus of this proposal; and (4) a collaborative project with MCCE to examine the effect of Computer Science coursetaking on student outcomes (co-PI).

A completed form is available here for your review.

Section 2. Project Information

Background and Purpose of the Study

When faced with a widespread teacher shortage, how do we build interest in teaching?

Pillar 2 of the Maryland Blueprint is deeply invested in the recruitment and retention of high-quality and diverse teachers (and leaders), with substantial resources—and new policies—being rolled out to achieve this goal. There is great reason to situate teachers at the core of a large-scale educational reform and initiative, such as the Blueprint: evidence consistently shows that teachers are by far the most important within-school resource to support student outcomes (e.g., Hanushek & Rivkin, 2010) and that teachers of color have very large impacts not just on the outcomes of their students of color (Dee, 2004; Gershenson et al., 2022) but also on all students (Blazar, 2024).

However, evidence on workable interventions that would *attract* individuals into the profession is scarce. By contrast, the literature on teacher mobility and attrition is large and underscores that the teacher workforce's problems are not monolithic and raise serious equity concerns. For example, decades of research finds that teachers are more likely to leave schools serving more economically disadvantaged or racially minoritized students (e.g., Scafidi et al., 2007). This unequal attrition contributes to the inequitable distribution of teachers across student subgroups, but there are also differences in the number of applicants to schools serving different populations (e.g., Clotfelter et al., 2023). Indeed, simulation evidence underscores that much of the inequity in teacher distribution is related to differences in *both* turnover and applicant pools across schools (Goldhaber et al., 2023). Although teacher turnover rates are broadly similar across rural, suburban, and urban districts, more nuanced evidence shows the drivers of turnover vary by location (Ingersoll & Tran, 2023).

Compared to research on mobility and attrition, the literature on teacher *recruitment* is less developed. We take a broad perspective on recruitment, focusing on *recruitment into the profession* (i.e., new teacher supply) rather than recruitment as part of a hiring process (e.g., building an applicant pool). This perspective draws attention to the importance of the early stages of the teacher pipeline. Regarding supply, we know that teacher education programs (TEPs) play an important role determining which potential teachers enter the workforce through applicant selection and preparation (e.g., Bartanen & Kwok, 2023). But misalignment between TEPs and school districts can hinder the supply of teachers. For example, districts with the greatest staffing needs may not have TEPs nearby. Or TEPs may not prepare enough teachers in the subjects that districts need, such as STEM. Such breakdowns reflect, in part, the absence of clear signals from the labor market to candidates, suggesting that providing information to candidates about their job prospects might help align demand and supply (Christian et al., 2024; Jäger et al., 2022; Wiswall & Zafar, 2015).

Teacher supply—and potentially quality—is also a function of state licensure requirements. Again, compared to mobility and attrition, the literature here is relatively underdeveloped because state data systems often lack data about individuals pursuing licensure. Where data are available, studies have found that licensure requirements disproportionately screen out potential teachers

of color (e.g., Cowan et al., 2023). Conversely, recent evidence also suggests that relaxed licensure requirements during and after the COVID-19 pandemic led to increases in teacher diversity (e.g., Bacher-Hicks et al., 2023; Backes & Goldhaber, 2023). This is important because teachers of color, especially Black teachers, lead to greater test score gains (e.g., Blazar, 2024; Dee, 2004), improved student disciplinary outcomes (e.g., Holt & Gershenson, 2019; Lindsay & Hart, 2017), and better long-run academic outcomes for students of color, particularly Black male students (Gershenson et al., 2022).

A handful of qualitative and survey studies indicate that finances (e.g., teacher salary, upfront costs to pursuing a teaching degree) can be a hindrance to teacher recruitment, particularly for prospective teachers of color (e.g., See et al., 2022). Data from an information experiment show that expected earnings do influence college students' choice of major, including in teaching, though not as strongly as innate preferences, and students' beliefs about earnings are frequently inaccurate (Christian et al., 2024; Wiswall & Zafar, 2015). To our knowledge, there is very limited evidence on the effect of financial incentives to college students (for an exception, see Steele et al., 2010), and evidence to date has focused on prospective teachers as a whole rather than disaggregating by race/ethnicity.

In summary: Because the problems in the workforce are multifaceted and the ultimate size and makeup of the teacher workforce is the accumulative result of the different stages of the teacher pipeline, *we propose studying policies (referred to as "interventions" in this proposal) that focus on various types of teacher shortages at different stages in the pipeline*. More specifically, we propose using data from the MLDS to evaluate the effects of several initiatives under and related to the Maryland Blueprint regarding teacher recruitment, including: (1) scholarships for teaching majors who commit to working in a Maryland public school (i.e., TEACH Grant, Teaching Fellows for Maryland Scholarship, Workforce Shortage Student Assistance Grant Program)*; (2) stipends to student teachers during their internship; (3) teacher salary minimums; and (4) a novel information experiment that the research team will conduct that seeks to align teacher candidates' choose of endorsement area with district hiring needs.

Most directly, the work will inform the State of Maryland and continued rollout of the Blueprint, particularly as state conversations have turned to budget deficits and potential scaling back of Blueprint initiatives. This study will provide actionable and timely feedback on what works in teacher recruitment activities. Given the dearth of *causal* evidence on this topic as a whole, findings from within Maryland are very likely to have impact outside of the state, and situate Maryland as a leader of implementation and research on teacher recruitment.

*An already approved research proposal and grant-funded project by the same PI describes evaluation of the Teaching Fellows for Maryland Scholarship (and other scholarships in the state). Due to sample size limitations, that project shifted to focus on the effects of the TEACH grant specifically. Therefore, we are revisiting the current version of the Teaching Fellows for Maryland Scholarship in this proposal, alongside other scholarships and teacher recruitment initiatives.

References

- Bartanen, B., & Kwok, A. (2023). From interest to entry: The teacher pipeline from college application to initial employment. *American Educational Research Journal*, *60*(5), 941-985.
- Blazar, D. (2024). Why Black teachers matter. *Educational Researcher*, *53*(8), 450-463.
- Christian, A., Ronfeldt, M., & Zafar, B. (2024). *College students and career aspirations: Nudging student interest in teaching* (No. w32641). National Bureau of Economic Research.
- Clotfelter, C. T., Ladd, H. F., & Clifton, C. R. (2023). Racial differences in student access to high-quality teachers. *Education Finance and Policy*, *18*(4), 738-752.
- Cowan, J., Goldhaber, D., Jin, Z., & Theobald, R. (2023). Assessing licensure test performance and Predictive validity for different teacher subgroups. *American Educational Research Journal*, *60*(6), 1095-1138.
- Dee, T. S. (2004). Teachers, race, and student achievement in a randomized experiment. *Review of economics and statistics*, *86*(1), 195-210.
- Gershenson, S., Hart, C. M., Hyman, J., Lindsay, C. A., & Papageorge, N. W. (2022). The long-run impacts of same-race teachers. *American Economic Journal: Economic Policy*, *14*(4), 300-342.
- Goldhaber, D., & Theobald, R. (2023). Teacher attrition and mobility in the pandemic. *Educational Evaluation and Policy Analysis*, *45*(4), 682-687.
- Hanushek, E. A., & Rivkin, S. G. (2010). Generalizations about using value-added measures of teacher quality. *American economic review*, *100*(2), 267-271.
- Holt, S. B., & Gershenson, S. (2019). The impact of demographic representation on absences and suspensions. *Policy Studies Journal*, *47*(4), 1069-1099.
- Ingersoll, R. M., & Tran, H. (2023). Teacher shortages and turnover in rural schools in the US: An organizational analysis. *Educational Administration Quarterly*, *59*(2), 396-431.
- Jäger, S., Schoefer, B., & Zweimüller, J. (2023). Marginal jobs and job surplus: a test of the efficiency of separations. *The Review of Economic Studies*, *90*(3), 1265-1303.
- Lindsay, C. A., & Hart, C. M. (2017). Exposure to same-race teachers and student disciplinary outcomes for Black students in North Carolina. *Educational Evaluation and Policy Analysis*, *39*(3), 485-510.
- See, B. H., Munthe, E., Ross, S. A., Hitt, L., & El Soufi, N. (2022). Who becomes a teacher and why?. *Review of Education*, *10*(3), e3377.
- Scafidi, B., Sjoquist, D. L., & Stinebrickner, T. R. (2007). Race, poverty, and teacher mobility. *Economics of education review*, *26*(2), 145-159.
- Steele, J. L., Murnane, R. J., & Willett, J. B. (2010). Do financial incentives help low-performing schools attract and keep academically talented teachers? Evidence from California. *Journal of Policy Analysis and Management*, *29*(3), 451-478.
- Wiswall, M., & Zafar, B. (2015). Determinants of college major choice: Identification using an information experiment. *The Review of Economic Studies*, *82*(2), 791-824.

Research Project Questions

More specifically, this project will ask and answer four research questions:

1. What is the effect of the TEACH Grant, the Teaching Fellows for Maryland Scholarship, and the Workforce Shortage Student Assistance Program on persistence in an education major, receipt of a teaching degree, and the likelihood of being hired as a teacher in a Maryland public school?
2. What is the effect of providing stipends to student teachers on persistence in an education major, receipt of a teaching degree, and the likelihood of being hired as a teacher in a Maryland public school?
3. What is the effect of raising the minimum teacher salary on the number of individuals seeking an education degree and a position in a Maryland public school?
4. What is the effect of providing information about hiring prospects for choosing different endorsement areas on persistence in an education major, receipt of a teaching degree in a specific endorsement area, and the likelihood of being hired as a teacher in a Maryland public school in a specific endorsement area?
5. How do these effects differ by race/ethnicity?

Research Methods

All of our research questions are causal and aim to provide unbiased estimates of policy impacts that can be picked up by various decision-makers.

Research question 1 will be answered with a regression discontinuity (RD) design that exploits a GPA threshold as *one* of the conditions for receipt of the TEACH Grant, Teaching Fellows for Maryland Scholarship, and the Workforce Shortage Grant. We already have confirmed in that the data that there does exist a statistically significant discontinuity in the likelihood of scholarship receipt at the relevant GPA thresholds (which vary by scholarship), including for Teaching Fellows which has *multiple* criteria (that also have changed over time). The fact that there is a discontinuity in the likelihood of receiving each scholarship at a given GPA threshold is helpful from a causal inference perspective. Students who score at the GPA threshold or just above are more likely to earn a scholarship, while teachers who score just below are less likely. Importantly, prospective teachers who fall on either side of the GPA threshold should be very similar to each other in terms of academic preparedness. Because the discontinuity is "fuzzy"—meaning that earning a GPA above the threshold does not *perfectly* predict scholarship receipt—we will use standard techniques to adjust our "intent-to-treat" estimates to capture "treatment-on-the-treated", as well as probe the robustness of our findings to possible threats to validity (Calonico et al., 2014; Kolesár & Rothe, 2018; Lee & Lemieux, 2010; McCrary, 2008).

For all three scholarships, we will limit the sample of interest to students at public institutions, given that private institutions have not had to share GPA data to the MLDS in a comprehensive and systematic way. This restriction does not alter the sample much, as most scholarship recipients come from public institutions. Similarly, we will limit the sample to cohorts of students in 2015 and after, as GPA information only is available broadly in 2014. (Teaching Fellows started much later, so this is not a concern here.) Finally, to construct the sample, we will limit the population of eligible students to those who are flagged in the data as majoring in education,

using CIP codes. This strategy may exclude students who are double majors—including in particularly secondary teacher education candidates who major in a content area (e.g., math) and teaching—but is important given that it is a condition of scholarship receipt. For the Workforce Shortage grant in particular, this scholarship is provided to students in several workforce shortage areas, so focusing on teaching majors allows us to narrow in on prospective *teachers* who receive this scholarship.

Research questions 2 and 3 will be answered using a differences-in-differences design that compare changes over time in eligible/affected versus ineligible/unaffected individuals to the student teaching stipend and increased minimum teacher salary (for RQs 2 and 3, respectively). For RQ2, on stipends for student teachers, availability of the stipends can be considered a "policy shock" because of its passage and implementation at a specific point in time, under the Maryland Educator Shortage Act. Further, because only some institutions are eligible (based on share of Pell-eligible students), we can create a comparison group of treated and untreated units, which we can compare over time. Similarly, for RQ3, on raising minimum teacher salaries, the policy is rolled out at a given point in time, with some districts affected more much more than others given salary schedules prior to the policy change. The key assumption embedded in the DID design is that treatment groups would have followed parallel trends to the control groups in the absence of treatment (Bertrand et al., 2004; Freyaldenhoven et al., 2021; Sant'Anna & Zhao, 2020), which we will test in our analyses.

For RQ2, we will examine potential accumulation of funding across three points in time/amounts: initial funds, annual funds, internship funds. For RQ3, given that we look at differences in starting salary pre/post policy and across districts with very different costs of living, we will adjust for cost of living, following state guidance. We also recognize that districts are adjusting salaries over time in a gradual way in order to meet the 2026 deadline. Therefore, we will conduct analyses that look at effects when the final requirement is in place, as well as exploratory analyses on how districts responded between passage of the Blueprint legislation in 2021 and the 2026 deadline.

Research question 4, which explores alignment between teacher candidates' choice of endorsement area and available jobs, will be answered with an experimental design. The "subject shortage experiment" is embedded in a survey of incoming teacher candidates that asks about their perceptions of the demand for teachers in various fields. The experiment is designed to encourage teacher candidates to specialize in high-need subject areas. In the experiment, a random sample of survey recipients will receive supplemental information about the placement rates for recent graduates in the fields offered by their program. The survey will be administered to *undergraduate* candidates soon after initial enrollment in TEPs (typically in their junior year) at three institutions: (1) Bowie State University, (2) Towson University, and (3) University of Maryland College Park. The three institutions provide large samples of undergraduate teacher candidates, while also ensuring representation of predominantly White institutions and an Historically Black College and University.

To answer research question 5, we will disaggregate effects by race/ethnicity, focusing in particularly on Black versus White students where there are large sample sizes to be able to have sufficient statistical power. We may also examine effects for Hispanic and Asian individuals, if sample sizes allow, but treating the analyses as exploratory due to more limited statistical power.

Across all analyses, we will operationalize outcomes similarly. First, for "receipt of a teaching degree", we will identify students who graduate from college with a bachelor's degree *and* are identified either by CIP codes as having a degree in a teaching field or having graduated from an approved Maryland programs (from the MAPCS data collection). For "receipt of a teaching degree in a specific endorsement area", we will use CIP and MAPCS codes to identify teaching subfields. For those individuals who go on to become a public-school teacher in Maryland, we also will examine the subject area associated with their entering certificate/license. Using the public-school records, we also can identify individuals who are teachers (in specific fields) but did not complete a teacher preparation program and instead entered the profession with a conditional license.

References

- Bertrand, M., Duflo, E., & Mullainathan, S. (2004). How much should we trust differences-in-differences estimates?. *The Quarterly journal of economics*, *119*(1), 249-275.
- Calonico, S., Cattaneo, M. D., & Titiunik, R. (2014). Robust data-driven inference in the regression-discontinuity design. *The Stata Journal*, *14*(4), 909-946.
- Freyaldenhoven, S., Hansen, C., Pérez, J. P., & Shapiro, J. M. (2021). *Visualization, identification, and estimation in the linear panel event-study design* (No. w29170). National Bureau of Economic Research.
- Kolesár, M., & Rothe, C. (2018). Inference in regression discontinuity designs with a discrete running variable. *American Economic Review*, *108*(8), 2277-2304.
- Lee, D. S., & Lemieux, T. (2010). Regression discontinuity designs in economics. *Journal of economic literature*, *48*(2), 281-355.
- McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of econometrics*, *142*(2), 698-714.
- Sant'Anna, P. H., & Zhao, J. (2020). Doubly robust difference-in-differences estimators. *Journal of econometrics*, *219*(1), 101-122.

How will this research benefit the State of Maryland in terms of state or local policy and/or practice?

The Blueprint for Maryland's Future is an ambitious and important shift the educational landscape in Maryland, and nationally, that makes sweeping investments in recruiting teachers that are critical to the functioning of schools and the success of children. However, the policy reforms are costly, and the state already is experiencing budget deficits that require pulling back on some elements of the Blueprint. Given this context, as well as the dearth of evidence on teacher recruitment policies generally, our study will provide timely and critical evidence on the success of specific Blueprint policies related to teacher recruitment.

Our study differs from the interim evaluation of the Blueprint (and eventually the final evaluation), which focuses instead on how the Blueprint *as a whole* is being implemented and its prospective impacts. Here, we are evaluating causal effects of specific policies and programs.

Explain why this research requires longitudinal cross-sector data?

The project examines the effects of teacher recruitment policies on eventual teacher supply, which requires linking data across stages of the pathway from school to career. More specifically, three of the four interventions being evaluated (i.e., Teaching Fellows for Maryland Scholarship, stipend for student teachers, information experiment to teacher preparation candidates) occur in higher education, where we will then explore outcomes at the end of college (e.g., receipt of a teaching degree) and in the workforce (i.e., teaching in a Maryland public school). Our evaluation of teacher salary floors specifically targets employees, but still is cross sector in that we will look at changes in teacher supply at the college phase and at the employment phase.

Proposed Center Output
(Typical products for the MLDS Center include a research series presentation to stakeholders and a research brief in the MLDS Center template).

We will write a research brief in the MLDS Center's template for each of the four analyses being conducted, as well as conduct a presentation (or multiple) as part of the MLDS research series.

Timeline for the proposed project (identify major deliverables and approximate dates)

The full timeline of the project runs from 2024 through 2030.

The information experiment will start first, in 2024-2025, though without any requirements from the MLDS data because the survey is being conducted external to MLDS. We eventually will submit an application to integrate the survey data (via PII) to the MLDS data to then link student records over time, through 2030.

Secondary data analyses on the Teaching Fellows scholarship and student teaching stipends will begin in 2025 and will continue through 2030 to add as many cohorts as possible during the timeframe of the study and, thus, increase statistical power.

The policy to raise minimum teacher salaries to $60,000 is set to go into effect in July 2026. Therefore, we will start to prepare these analyses (e.g., collecting district salary schedules, preparing datasets) in late 2025/early 2026. Analyses cannot be started until the 2026-27 school year is underway and teacher hiring data is available from MSDE. Analyses will continue through 2030 to examine effects over time.

Plans for further development (i.e. journal submission, etc)

We will coordinate with and present to MLDS community and other Maryland interest-holders as findings become available. Within Maryland, we expect to present to the MLDS research and policy board, to the Maryland State Department of Education, the Maryland Higher Education Commission, and the Accountability and Implementation Board for the Blueprint for Maryland's Future.

Further development for audiences external to Maryland will include: (1) conference presentations (likely at the Association for Education Finance and Policy, Association for Policy Analysis and Management, Society for Research on Educational Effectiveness); (2) at least one journal article for each of the four evaluations described above (potential journals include *Education Finance and Policy, Educational Evaluation and Policy Analysis, Journal of Human Resources*); and (3) and we will turn each of these into an MLDS-formatted research brief.

Section 3. MLDS Center Research Agenda

Does your project relate to one of the following areas which the General Assembly has specifically directed the MLDSC to study:	Yes	No
The impact of a State or federal education program?[1]	X	
The performance of educator preparation programs?	X	
Best practices regarding classroom instruction?		X
The impact of child welfare programs on the educational and economic outcomes of students?		X
An analysis of social determinants, provided by State agencies[2] and appropriate local agencies, that impact education performance of students and indicate the need for wraparound services for students.		X
Does your project use State or Federal financial aid[3] data?		X
If you are requesting to use FAFSA data please explain how this research will benefit the administration of Title IV federal financial aid.		
RQ1 examines the effects of three scholarship programs for teaching majors, where we will use FAFSA data. RQ1 focuses on the effects of the scholarship on intended outcomes (i.e., earning a degree in teaching, becoming a teacher in Maryland and in a high-needs area) and, thus, seeks to inform administration of Title IV federal financial aid to examining the extent to which the scholarships are achieving their intended aims.		
Research Agenda Category (page 2 of the Research Agenda) – Which category does the project address? Please explain.		
Pathways and Pipelines: Our analyses seek to examine the effects of various teacher recruitment interventions *at various stages of the pathway* from schooling into career. Educational, Service & Workforce Outcomes: Our project focuses on workforce development specifically in teaching.		

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[1] All projects must relate to a state or federal education program. If you are not sure, please contact ross.goldstein@maryland.gov.

[2] State agencies include: Maryland Department of Health, Department of Human Services, and Department of Juvenile Services

[3] Financial aid data derived from the FAFSA may only be used in research to improve the administration of federal financial aid programs.

Program and Policy Evaluations: Our analyses include impact and policy evaluations of three state initiatives focused on teacher recruitment.

Research Agenda Themes (page 2-3 of the Research Agenda) - Which cross cutting theme is incorporated in the project? Please explain.

Our project is primarily concerned with cross-cutting theme one on support and barriers. We evaluate the effects of various financial aid and teacher compensation issues on workforce supply, as finances are seen as a critical barrier for recruiting a high-quality and diverse teacher workforce.

Our project also engages with cross-cutting theme three on equity and inclusion by examining how effects differ by race/ethnicity and in efforts not just to *expand* but also to *diversify* the teacher workforce.

Section 4. Data and Cross Sector Analysis

Please review the MLDS Center Data Inventory and the MLDS Center Data Gap Analysis prior to completing this section.

Sectors* *The data falling within each sector is outlined below. The purpose of this section is to ensure the project is cross sector. Projects will not necessarily use all data elements within the sector (see methods section for definitions of measures).	X
Early Childhood Education Sector	
K-12 Education Sector	X
Adult Education Sector	
Justice Involved Youth Sector	
Child Welfare Sector	
Postsecondary Education Sector	X
Other Completions and Credentials Sector	
Workforce Sector	X

Put an 'x' next to each data sector your project will include. You must have at least 2 sectors.

Do you plan to request to include external data as part of your project?
Yes, we plan on integrating external data from a survey of teacher preparation program candidates into MLDS. A separate application will be submitted for approval of integrating the external data.   We are aware that approval for this project does not mean that approval will be granted for including external data. If the separate request is not granted, that part of the project will continue but will not be part of the MLDS work (as the survey is conducted separately from MLDS).

*Sectors

Early Childhood Education Sector
- PreK Academic Engagement

K-12 Public School Education Sector
- Enrollment and attendance
- Assessments
- Courses and grades
- Completions
- Discipline
- Public School Characteristics

Adult Education Sector
- GED/NEDP Exam Results
- Apprenticeship
- Adult Education
- Correction Education

Juvenile Justice Sector
- Juvenile Justice Records
- Juvenile Education Records

Child Welfare Sector
- Out-of-Home Placements

Postsecondary Education Sector
- College and University Enrollment
- College and University Courses, Credits and Grades
- College and University Degrees
- College and University Workforce Training
- Financial Aid

Other Completions and Credentials Sector
- Industry Certifications
- Licenses

Workforce Sector
- Public School Teachers
- Public School Staff
- Workforce visibility/participation
- Workforce Earnings
- Workforce Industry

Section 5. Financial Information

The MLDS Center incurs costs for every project related to: (a) IT support and infrastructure; (b) assistance from subject matter experts, (c) criminal history background checks; and (d) creation of an analytic data set. Average project costs are between $1,000 and $3,000. A detailed, customized estimate will be provided prior to project initiation. (Please indicate your answer with an "X)	

X	I will reimburse MLDSC for all applicable fees.
	I will only be able to provide partial reimbursement.
	I will need a waiver.

Grant Funding (indicate with an 'X')

X	This project has already received funding
	I plan to apply or am in the process of applying for grant funding
	No grant funding is planned

Name of Grantor

Institute of Education Sciences

RFP or Grant Program Information (you may provide a link to the grantor's website)

Education Research and Development Center Program - 84.305C

https://ies.ed.gov/use-work/awards/calder-recruitment-retention-calder-rr

Amount of grant funds sought or awarded.

The total amount of the IES grant is $10 million, but includes multiple states. The Maryland portion of the budget is $749,032.

The budget includes $10,000 in each of years 2 and 3 to support the integration of external data. The total dollar amount was approved by the Research and Executive Directors of MLDS prior to submission of the grant proposal.

Grant Application Date

The project already has been approved, starting on September 1, 2024. The grant is set to proceed through August 31, 2029.

Do you intend to proceed without grant funding?

N/A, funds already have been awarded.

Are you receiving other funding for this proposed project? If yes, how much?

No

Section 6. Special Considerations

Principal Investigators NOT affiliated with a Maryland College or University – please provide information on:
>   a.   **Your familiarity with Maryland policies affecting your research topic; and**
>   b.   **How your project meets a specific Maryland research need?**

Please also upload (with this form) any letters of reference or endorsement from a Maryland researcher or a State or local agency that vouches for your qualifications and expertise.

N/A

For projects that involve a small population, please confirm that you are aware of the MLDS Center's data suppression policy and explain how you will report your findings while conforming to the suppression requirements.

N/A

For projects that involve a single school system, university, or program, please explain the statewide implications of the project.

Please also upload (with this form) any letters of support from the subject (i.e. school system or university) of the study.

N/A

Section 7. Project Team

Project Team - **Please list all members of the research team and indicate roles and responsibilities.** - **If the Principal Investigator listed in Section 1 above is NOT the primary point of contact for the project (including research, data access, and presentations to stakeholders), please indicate which team member is the primary point of contact and provide that individual's contact information.**		
Name and Organization	**Role**	**Is system access needed? (Yes/No)**
David Blazar, University of Maryland, College Park	PI	Yes (and already have access)

Section 8. Submission

Once this form is completed, please complete the online application ([here](#)) and upload this form, CVs for all members of the research team, and any other supporting materials.