MLDS Center
Maryland Longitudinal Data System

Better Data • Informed Choices • Improved Results

| July 1, 2023 | Research Agenda and Research Governance |

Research Agenda
Maryland Longitudinal Data System Center

The Maryland Longitudinal Data System (MLDS) Center receives data from multiple sources to establish a data system that contains detailed information about Maryland students, their educational experiences and outcomes, their interaction with child welfare and juvenile services, the degrees and credentials they obtain, and their workforce experiences and outcomes. State law[1] directs the Center to use the MLDS to conduct research to improve the State's education system and guide decision making by state and local governments, educational agencies, institutions, teachers, and other education professionals.

Specifically, the Center is directed to[2]:
1. Conduct research relating to:
    a. The impact of State and federal education programs;
    b. The performance of educator preparation programs;
    c. Best practices regarding classroom instruction, education programs and curriculum, and segment alignment; and
    d. The impact child welfare programs have on the educational and economic outcomes of students;
2. Analyze social determinants from the following State agencies and appropriate local agencies that impact the education performance of students and indicate the need for wraparound services of students:
    a. The Maryland Department of Health;
    b. The Department of Juvenile Services; and
    c. The Department of Human Services;
3. To the extent practicable, conduct longitudinal studies of the items under this section to evaluate the impact of the Blueprint for Maryland's Future on the State.

As required by state law, the MLDS Governing Board is required to establish a *Research Agenda*.[3] The *Research Agenda:*
1. Delineates the Governing Board's priorities for research topics and areas of analysis;
2. Establishes the parameters for acceptable use of the system;
3. Ensures that the work of the Center is in compliance with the above statutory requirements;
4. Provides guidance to the Center on annual output priorities, and
5. Informs the decision on approval of research and reporting project proposals.

State Law

Research Agenda

Annual Research and Reporting Priorities

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[1] See Education Article § 24-703(f)(4), Annotated Code of Maryland
[2] See Education Article § 24-703(f)(5), Annotated Code of Maryland
[3] *See* Education Article § 24-704(g)(5), Annotated Code of Maryland

Section 1. Research Agenda

Categories

The research agenda at the MLDS Center is guided by four broad categories of inquiry:

- **Pathways & Pipelines:** Research and reports on the entry, transition, and exit points students take into specific education, service and labor sectors. The focus of pathway and pipeline studies are typically descriptive to identify patterns rather than focus on causal relationships.
- **Educational, Service & Workforce Outcomes:** Research and reports on student-level and/or institutional-level characteristics and the importance of these characteristics in predicting outcomes.
- **Program & Policy Evaluations:** Research and reports intended to determine whether a given program or policy has been successful.
- **Methodological Inquiries:** Research and reports intended to improve the selection and application of research and statistical methods when using MLDS data.
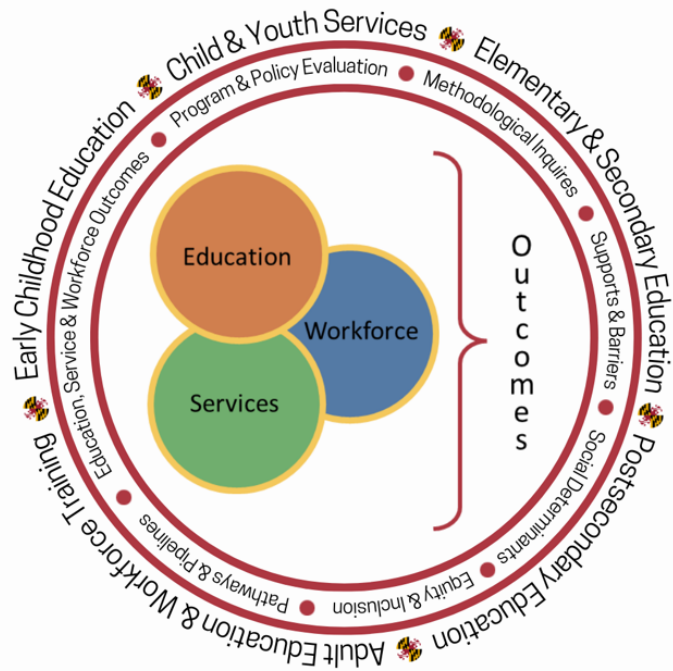
All proposed research, reports and other output must fall within one or more of these broad categories. See chart below for examples of research and reporting questions for each category.

Themes

Further, all research, reports, and other output shall incorporate one or more of the cross cutting themes: Supports & Barriers, Social Determinants, and/or Equity & Inclusion. Cross cutting themes provide a framework to design studies and interpret results produced under all of the research agenda categories. Themes can be incorporated into research, reports or other outputs in a number of ways, for example as descriptive statistics, control variables, interaction terms or as a direct subject of the study.

Supports and Barriers	Social Determinants	Equity and Inclusion
Research and reporting that considers the structural and administrative factors, including policies, that impact progressions between and within education and workforce sectors.	Research and reporting that considers the environmental conditions in the places where people live, learn, and work that affect a wide range of educational or workforce outcomes.	Research and reporting that considers the access and opportunities available to individuals who have been historically under-represented throughout their education and careers.
Examples: ● Applying for financial aid for college ● College admissions applications ● Enrolling in Apprenticeship programs ● Attendance policies in high school ● Discipline policies in high school ● Diversifying the students entering the Nursing pipeline	Examples: ● Socioeconomic conditions ● Neighborhood violence ● Same race, ethnicity & gender of teachers and students ● School characteristics ● Community resources ● Outcomes by Racial/Ethnic and/or Gender groups ● Outcomes by economic status	Examples: ● College admission policies ● Geographic distribution of colleges and majors ● Student support structures ● Diverse teacher workforce

Research Agenda Definitions and Examples

Pathways and Pipelines: Study of the entry, transition, and exit points students take into specific education, service and labor sectors. The focus of pathway and pipeline studies are typically descriptive to identify patterns rather than focus on causal relationships.	
Pathways, by definition, are intentionally designed to direct a specific desired or positive outcome or disrupt an unwanted or negative current outcome. The focus of pathway studies is on movement through a planned sequence and whether the planned sequence results in the intended outcome or serves to disrupt an unintended outcome.	1. Do students who complete career and technical education (CTE) programs in high school enter college or the workforce in the subject area of the program? How do those results vary by region? 2. Do students who complete Teacher Academy of Maryland (TAM) education in high school enter teacher education programs in college? Do they end up teaching in Maryland public schools? How do those results vary by demographic group? 3. Do students who complete public administration degrees in college work in the government labor sector? Do the earnings for those in the government sector vary by economic or demographic group? 4. Do students who graduate from college with a healthcare degree obtain a license in the healthcare field and work in the healthcare labor sector? Does the degree and license type vary by demographic group? 5. Does dual enrollment participation in high school increase college enrollment for high school students with lower economic status? 6. Does the tuition waiver for high school graduates in out-of-home placement increase college enrollment?
Pipelines seek to backward map the contributions of planned pathways into the workforce or educational systems and to identify and quantify the contribution of unplanned pathways into the workforce or educational systems.	1. What is the academic preparation of public school teachers? What is the academic preparation of teachers who are retained for more than 5 years? Does retention vary by gender? 2. What is the academic preparation of college students? 3. How many college students in healthcare majors completed healthcare CTE education? 4. How many students enrolled in rural colleges came from rural and urban areas? 5. How many public school teachers of color were themselves taught by a teacher or color? 6. How many college graduates experienced out-of-home placement or were justice-involved? 7. How do students move between college majors and labor sectors? 8. Who completes workforce sequence training and apprenticeship programs? 9. How many college graduates in the healthcare or education labor sectors are out-of-state students? How long do they remain in the Maryland labor market?

Educational, Service, and/or Workforce Outcomes: Study of student-level and/or institutional-level characteristics and the importance of these characteristics in predicting outcomes.	
These studies place outcomes in social, economic or equity context to identify needs for policies or programming to improve outcomes for students and institutions.	1. What is the relationship between concentrated poverty and educational and workforce outcomes? 2. What are the postsecondary and workforce outcomes of students who do not drop out of high school but do not graduate on time (i.e., persisting students)? 3. What is the relationship between student mobility and long-term college and career outcomes? 4. What are the predictors of college enrollment and college degree attainment? Do these vary by different student characteristics? Including justice-involved youth or youth in out-of-home placement? 5. What are the causal effects of schoolwide socioemotional learning programs on long-term educational outcomes? 6. How effective are alternative teacher preparation programs at attracting and retaining teachers? 7. How do neighborhood characteristics influence student outcomes?
Program and Policy Evaluation: Program and policy evaluation is intended to determine whether a given program or policy has been successful. The evaluation may be used to improve program effectiveness, efficiency (distribution of costs and benefits), and/or equity and to inform policy or program changes (including reforming or discontinuing programs), program renewals and/or program expansions.	
These studies are situated within one or more framework. These include *public policy* (i.e., studying the intended outcomes or goals of a policy that leverages the tools of government), *social policy* (i.e., studying the effectiveness of social intervention programs to inform and improve social conditions), or *education program evaluation* (i.e., studying the effectiveness of educational programs or policies).	1. Do subsidies for dual enrollment increase participation for lower economic status high school students? 2. Does the Maryland College Campaign increase college enrollment in selective and highly selective colleges? 3. Does the Nursing Support Grant program increase the production of nurses in underrepresented demographic groups? 4. What are the long-term impacts of the Positive Behavioral Intervention and Supports (PBIS) multi-tiered systems of supports framework? 5. What are the long-term effects of a statewide, top-down ban on suspensions in early grades?

Methodological Inquiries and Measurement: Studies to improve the selection and application of research and statistical methods used when using MLDS data.	
This type of research, like other MLDS research and reporting, must be cross-sector. However, unlike other MLDS research, methodological research is not intended to directly answer program or policy questions but rather improve the tools used to answer those program or policy questions in the future. Methodological work is also intended to improve the selection of descriptive and comparative techniques selected for research and reporting.	1. **Student mobility.** Frequently in educational research hierarchical or multilevel modeling is used to account for the nesting of students within schools. However, in the longitudinal context, students usually belong to multiple schools over time, due to either normative mobility (such as students transferring from elementary to middle school) or non-normative mobility (such as students changing schools due to residential moves). Failing to statistically account for this nesting may lead to erroneous conclusions about effectiveness. To what degree does mobility exist in the MLDS data? What are potential statistical strategies for accounting for this mobility? What are the benefits and drawbacks of these strategies? 2. **Application of data science methods**. Machine learning is a type of artificial intelligence that is becoming increasingly popular in educational research. This approach to discerning patterns and making predictions of outcomes in large datasets may be more efficient than traditional methods. However, relatively little is known about the application of machine learning to data that are multilevel in nature, like that in the MLDS. How can machine learning algorithms be designed that account for multilevel data? Does this approach improve upon prior methods? 3. **Missingness and Time Varying Characteristic**s. What is the best option to address missingness in wage data? When a student has more than one race, ethnicity and/or gender reported, which should be selected? 4. **Classifications and Groupings.** When should race be reported independent of ethnicity? Which racial groups could be pooled to minimize suppression? Should race be analyzed independent of other characteristics or compounded using models such as the Undergraduate Transformative Effectiveness Ratings or UTERM model? Which labor sectors, college degrees and/or college majors can be pooled for research and reporting? How should researchers calculate grade point averages when scales differ by LEA? How should researchers calculate grade point averages when a student attends multiple colleges which may have varying methods for calculating GPAs? 5. **Contextual Indicators.** What are the pros and cons of various contextual indicators that can be used to interpret research and reports? What indicators can be used across multiple states? For example, the Living Wage, lagging wages by six months after degree attainment, measures of "Some College", intersecting college degree-level and college major with labor sector data and patterns of under or over-representation in college majors and labor sectors. 6. **Descriptive statistics.** What are the best practices for reporting descriptive statistics? 7. **Suppression.** What are the implications for suppressing versus perturbing data? 8. **Synthetic Data**. What is the feasibility of creating synthetic data for external use?

Section 2. Governance

1. Applicability – This Research Agenda guides all research and reporting conducted using the MLDS. This includes research and reporting conducted by the MLDS Research Branch, MLDS Reporting Services, and individuals outside the MLDS Center who seek to conduct research or make inquiries or research requests.
2. Design – This is intended to be a broad agenda that defines topics of interest and areas of focus. The Agenda is not an exhaustive list of specific research questions or topics. The Agenda is to be read expansively to allow for the inclusion of innovative research and reporting topics. The goal is not to limit research and reporting but to focus it and ensure that it is relevant to the needs of state or local policy makers.
3. Review Criteria – The MLDS Center reviews all research and reporting projects to ensure they meet the requirements established herein. The project application and review process can be found in the Project Approval and Management Procedures (still under review).
4. Revision Schedule – The MLDS Center will annually review and, if needed, update the Agenda to ensure that it reflects the needs of stakeholders and includes any new data sectors.
5. Limitation – Use of the MLDS requires all analyses to use data from two or more of the following sectors. This requirement originated at the start of MLDS Center governance. The purpose was to ensure that research and reporting with MLDS data went above and beyond the analyses that any one partner agency could complete with its own data linkages. There are two ways that this is operationalized: (a) linking files across agencies; and (b) linking files that are not linked within an agency (e.g., adult education and wage data both come from Labor but represent different sectors).

   - **Early Childhood Education Sector;**
     - ➢ PreK Academic Engagement
   - **K-12 Education Sector;**
     - ➢ Public School Student Education Records (Attendance, Assessments, Grades, Completions, Discipline, etc.)
     - ➢ Public School Characteristics
   - **Adult Education Sector;**
     - ➢ GED/NEDP Exam Results
     - ➢ Apprenticeship
     - ➢ Adult Education
     - ➢ Correctional Education
   - **Justice Involved Youth Sector;**
     - ➢ Juvenile Justice Records
     - ➢ Juvenile Education Records
   - **Child Welfare Sector;**
     - ➢ Out-of-Home Placements
   - **Postsecondary Education Sector;**

- ➢ College & University Enrollments, Courses, Credits, Grades, Degrees & Financial Aid
- ➢ College & University Student Workforce Training
- **Other Completions and Credentials Sector; and/or**
  - ➢ Industry Certifications
  - ➢ Licenses
- **Workforce Sector.**
  - ➢ Public School Teacher Characteristics and Credentials
  - ➢ Public School Staff Characteristics and Credentials
  - ➢ Workforce Earnings
  - ➢ Workforce Labor Sectors

6. This Agenda is intended to work in conjunction with the following documents:
   a. Regulations regarding Longitudinal Data Requests (see COMAR 14.36.04.01 et seq.), which take precedence over the Agenda;
   b. Project Approval and Management Procedures;
   c. Research and Reporting Priorities Policy and Procedures;
   d. Data inventory, gap analysis, and known data limitations;
   e. Publically available and supplemental, contextual data;
   f. Limitations on the Use of Data and Limitations of the Data; and
   g. List of research topics from MLDS stakeholders.

This Research Agenda was approved by the Maryland Longitudinal Data System Governing Board at the June 9, 2023 Meeting.