MLDS Center
Maryland Longitudinal Data System

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A Report to the Governor and Maryland General Assembly

Regarding

The Development of the Maryland Longitudinal Data System & Center

December 2015

Contents

Highlights

The Maryland Longitudinal Data System (MLDS) Center has made significant progress in its ongoing efforts to fully implement the data system and generate timely information about student outcomes and performance.

- Completed loading all data from partner agencies (2007-2008 through 2013-2014), which includes over 6.5 million student and worker records.

- Through careful design, data management, and detailed efforts in identity resolution, the Center has successfully matched students across sectors and over time. Specifically, close to 90% of all 12th graders in a given year can be linked to a higher education and/or workforce record.

- Applied for and received a highly competitive federal grant from the U.S. Department of Education in the amount of $2.6 million. The grant project, which will be led by the Research Branch, will develop synthetic data for the purpose of expanding access to the data for research while ensuring absolute privacy and protection of personally identifiable information. The project will also position the MLDS Center as a major innovator in the use of longitudinal data.

- Developed data quality standards to provide a consistent process for assessing the accuracy of information reported to the public. These standards were reviewed by a consultant for the Regional Education Laboratory (REL Mid-Atlantic) who noted that Maryland is ahead of the curve on addressing data reporting standards in writing.

- Completed several research and reporting products including new data dashboards, a data snapshot, a research report, and the 2015 Dual Enrollment Report.

- Expanded the reach and impact of the Center by creating a temporary research staff appointment process to allow outside entities with an important Maryland research question access to the data. The first group to be given an appointment is Baltimore's Promise, a city-wide collaborative that seeks to use data to improve outcomes for city youth.

Introduction

The Maryland Longitudinal Data System (MLDS) is a statewide data system that contains individual student and worker data from all levels of education and the State's workforce. The goal of the system is to allow policy makers to examine student progress and outcomes over time, including preparation for postsecondary education and workforce.

The MLDS Center is responsible for the development, maintenance, and security of the system as well as providing research and reporting to help guide decision making by State and local governments, educational agencies, institutions, teachers and other educational professionals. To accomplish this task the system has partnerships with various state entities.

State Agencies. In addition to providing the vast majority of the student and workforce data comprising the data system, Maryland Higher Education Commission (MHEC), the Department of Labor, Licensing and Regulation (DLLR), and the Maryland State Department of Education (MSDE) each share a staff person with the Center. The shared employees spend half their time on MLDS duties and the other half of their time on duties related to the partner agencies. This model was developed to help the agencies build capacity to support the Center's work on an ongoing basis and ensure efficient communication and cooperation. In addition, MSDE provides additional in-kind support by providing office space, fiscal and personnel management, and hosting of the system within its data center.

University of Maryland. The Center's other critical partners are the University of Maryland School of Social Work (at the University of Maryland, Baltimore) and College of Education (at the University of Maryland, College Park). These two institutions comprise the Research Services Branch of the Center. These schools are both national leaders in research and evaluation and have compiled a team that will ensure in-depth, scholarly analysis of the Center's research questions. The schools are also committed to training new scholars in the use of data and both have engaged various graduate students and doctoral candidates to work on Center related research. The School of Social Work provides additional in-kind support by providing fully equipped office space for the MLDS Center headquarters.

The MLDS Center is overseen by a 12 member Governing Board (*see Attachment)*. Seven of those members are designated by statute, including the Chancellor of the University System, the State Superintendent of Schools, the Secretary of Higher Education, the Secretary of the Department of Labor, Licensing, and Regulation, the President of Morgan State University, the Executive Director of the Maryland Association of Community Colleges, and the President of the Maryland Independent Colleges and Universities Association. The other five members are appointed by the Governor with the advice and consent of the Senate. One appointee must be a representative of local superintendents of schools and another must have expertise in large data systems and data security. The chair of the Governing Board is appointed by the Governor.

This Annual Report is a requirement under Education Article, §24-705, Annotated Code of Maryland, which requires the Governing Board to annually provide information to the Governor and General Assembly on the following:

1. An update on the implementation of the MLDS and activities of the MLDS Center;
2. List of all studies performed by the Center during the reporting period;

3. List of all currently warehoused data that are determined to be no longer necessary to carry out the mission of the Center;
4. Any proposed or planned expansion of data maintained in the database; and
5. Any other recommendation made by the Governing Board.

The following sections of the report will address of each of the five statutorily required topics.

Section 1. Implementation of the MLDS

System Development

As of last year, the development of the MLDS was complete. This past year the focus has been loading vast amounts of data received from partner agencies, addressing data quality issues, and refining identity matching to ensure accurate reporting. These tasks have been far more time consuming and labor intensive than anticipated and has resulted in less output for policy makers and the public to view than originally expected.

Data Loads

Each partner agency provides data based on the data the agency collects throughout the year. Each agency has their own file formats, requirements, and procedures unique to their own reporting requirements. Detailed below is a summary of the source data files provided from each partner agency.

MSDE Source Files	MHEC Source Files	DLLR – Source Files
• Organizational details on Maryland public schools • Attendance and enrollment for public school students • Graduation achievements for public school students • Course taking, completion, and grades earned for public school students • Details on teachers and courses taught in Maryland public schools • Assessment data for all public school students • Postsecondary enrollments for Maryland public high school exiters	• Student enrollments for postsecondary credit bearing courses • Degrees awarded for postsecondary students • Financial aid information for postsecondary students	• Quarterly wage information for workers covered by state Unemployment Insurance (UI) • Claimant information for workers utilizing UI • Adult and Correctional education data including GED and NEDP assessments

Because the data provided by each partner agency is unique, every source file requires a different routine to load and process the data. Adding to the complexity and challenge of loading data, both MSDE and MHEC have recently changed the file formats and requirements for their data collections. The changes will provide better and more complete data to the Center over time. However, these changes require the

MLDS Center team to spend time assessing each new file format and re-designing the data loading process.

To date, the MLDS Center has loaded all data from 2007-2008 to 2013-2104. New files continue to be received as the partner agencies provide them. The following table shows the summary individual person counts from the data loaded into the system from the partner agencies.

Data Source	Distinct count	Identifier Counts		
		SASID	Valid SSN	Name and DOB
K-12 (includes teachers)	1,632,686	1,471,623	1,080,958	1,590,688
MHEC	1,115,425	105,644	1,071,209	578,569
DLLR	4,844,230	395,034	4,841,456	1,371,628
Net Total	6,366,937	1,498,721	5,769,881	2,676,558

As of 12/1/2015

Linking Data Cross Sectors

Simply loading student and workforce data into the system is of little use unless those students can be linked throughout their academic career and into the workforce. Linking students across the different sectors requires the ability to match the student's K-12 record to that same student's higher education record and then to his or her workforce record. That task would be simple if all three sectors consistently used the same set of identifiers. They do not. K-12 consistently uses the State Assigned Identification number (SASID), but does not consistently collect accurate Social Security Numbers on students. Higher education consistently collects Social Security Numbers, but, until recently, has not collected SASIDs. MHEC is now working with the higher education institutions to require collection of SASID, which will greatly improve the ability to accurately link students from K-12 to higher education. Finally, the majority of the workforce data comes from the Unemployment Insurance (UI) database. That database only collects the Social Security Numbers of the employees. Those data are further limited by the fact that they do not contain the employees' full name (only first letter of the first name and first three letters of the last name) or date of birth.

The challenge created by different identification types is determining when to link records across sectors. The MLDS starts by using "deterministic matching" when new data are loaded. Deterministic matching requires an exact match of all personal identifying (PII) data in order for newly-imported data to be merged with an existing record. While deterministic matching results in the highest level of assurance that matched records are accurate, it also leaves open the possibility that records that should have been matched were not matched. For example, deterministic matching would assign three separate records for the following set of fictitious PII values:

Data Source	SASID	SSN	DOB	Last	First	Middle
MHEC Enrollments	-	12345678<u>9</u>	2/3/1998	DOE	THOMAS	JONES
MSDE-SCGT	9876543210	-	<u>3/2</u>/1998	DOE-JONES	THOMAS	-
DLLR Claims	-	12345679<u>8</u>	2/3/1998	DOE	THOMAS	-

As a consequence there are many instances where deterministic matching leaves unmatched records that should have been matched. To address this issue, the Center has developed a process for using "probabilistic matching" to identify highly likely unmatched data from the same individual. Using probabilistic matching, to date just over 220,000 sets of separate identities have been merged into single identities.

Data Quality

MLDS Center staff has also worked to resolve and cleanse K-12 identities in the Master Data Management (MDM) database. Since K-12 is usually the starting point for matching identities to other sectors, considerable time and resources were dedicated to ensuring the accuracy of the records. Staff further determined that identities that were unresolved from previously provided data can now be resolved.

Specifically, the identity resolution efforts included analysis of 1.5 million K-12 students from MSDE (academic years 2008-2014) attendance data to validate the identifiers for these students contained in the MDM database. This analysis resulted in:

- Creating 107,334 new system identities;
- Designating "likely valid" SSN's for 321,569 students using first and/or last initials from wage data;
- Merging 854 students with multiple SASID's who were determined to be the same person based on name and date of birth, race, gender, grade level and school enrollment;
- Performing cleanup in the MDM database tables to remove any incorrect names, dates of birth, SASID's and SSN's associated with these 1.5 million students.

Current Status

The work in developing probabilistic matching techniques and the time spent resolving and cleansing K-12 identities have resulted in a great deal of success in establishing a significantly improved match rate between the different sectors.

Table 1 provides the number of 12th grade public school students for academic years 2007-2008 through 2013-2014 and the number of those students who can be linked to a college record, workforce record, both a college and a workforce record, or cannot be linked at all. The Center is able to match 88% of students across one or more sectors.

Maryland Public School 12th-graders	Total for all seven 12th-grade cohorts	Totals by year of 12th-grade attendance						
		2007-2008[1]	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Total count for 12th-grade cohorts	439,588	63,436	62,092	62,343	62,486	62,213	62,335	64,683
K12 only (no links to other sectors)	52,506	8,067	5,631	5,639	6,519	6,917	7,925	11,808
K12 and College (no Workforce)	79,000	14,461	9,644	9,333	9,741	9,817	11,076	14,928
K12 and Workforce (no College)	74,428	9,046	10,186	10,093	10,790	11,065	11,053	12,195
K12 and College and Workforce	233,654	31,862	36,631	37,278	35,436	34,414	32,281	25,752
Percent matching across all 3 sectors	53%	50%	59%	60%	57%	55%	52%	40%
Percent with 1 or more cross-sector matches	**88%**	**87%**	**91%**	**91%**	**90%**	**89%**	**87%**	**82%**

[1]The numbers in this column differ from later years because labor data from the 4th quarter of 2008 was not available. The lack of labor data results in a lower number of students that match all three categories (K-12, college and workforce) and a higher number that only have a match between K12 and college.

Table 2 provides the same data as Table 1, but broken down by county.

Maryland Public School 12th-graders School Years 2008-2014							
County	**7-Year Total 12th-graders**	**K12 only (no links to other sectors)**	**K12 to College (no Workforce)**	**K12 to Workforce (no College)**	**K12 to College to Workforce**	**Percent visiblity across all 3 sectors**	**Percent with K12 only**
Allegany	4,938	639	646	1,267	2,386	48.3%	12.9%
Anne Arundel	37,367	4,049	6,380	6,188	20,750	55.5%	10.8%
Baltimore City	33,971	4,512	3,281	10,181	15,997	47.1%	13.3%
Baltimore County	54,941	4,478	6,126	11,301	33,036	60.1%	8.2%
Calvert	9,812	429	938	2,089	6,356	64.8%	4.4%
Caroline	2,727	239	154	901	1,433	52.5%	8.8%
Carroll	16,362	3,740	6,268	610	5,744	35.1%	22.9%
Cecil	8,189	647	737	2,446	4,359	53.2%	7.9%
Charles	15,818	2,045	3,188	2,676	7,909	50.0%	12.9%
Dorchester	2,247	205	125	742	1,175	52.3%	9.1%
Frederick	22,153	1,681	2,800	3,573	14,099	63.6%	7.6%
Garrett	2,413	93	112	684	1,524	63.2%	3.9%
Harford	20,439	1,586	3,050	3,381	12,422	60.8%	7.8%
Howard	28,176	2,107	6,550	1,798	17,721	62.9%	7.5%
Kent	1,187	122	73	410	582	49.0%	10.3%
Montgomery	77,114	8,918	20,329	6,540	41,327	53.6%	11.6%
Prince George's	62,929	14,335	15,344	9,582	23,668	37.6%	22.8%
Queen Anne's	4,186	181	201	994	2,810	67.1%	4.3%
Somerset	1,277	158	104	356	659	51.6%	12.4%
St. Mary's	8,760	663	959	2,185	4,953	56.5%	7.6%
Talbot	2,527	144	161	580	1,642	65.0%	5.7%
Washington	11,348	790	902	3,136	6,520	57.5%	7.0%
Wicomico	6,906	521	442	1,829	4,114	59.6%	7.5%
Worcester	3,801	224	130	979	2,468	64.9%	5.9%
Total Maryland	439,588	52,506	79,000	74,428	233,654	53.2%	11.9%

Table 3 provides the number of Maryland college and university students for whom there are no K-12 records and the number of those students that can be linked to a workforce record. The Center is able to match 65.5% of these college students to a workforce record.

Maryland College and University Students with no K12 link School Years	Total for all years	Totals by year of first college and university enrollment						
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014[2]
College Only (no K12)	810,455	290,512	107,478	100,390	86,085	77,472	67,077	81,441
College and Workforce (no K12)	530,877	214,266	73,344	69,146	55,911	47,038	37,376	33,796
Percent with match to workforce	**65.5%**	**73.8%**	**68.2%**	**68.9%**	**64.9%**	**60.7%**	**55.7%**	**41.5%**

System Security

System security is a key focus of the MLDS system development efforts. Security procedures are detailed in the *Data Security and Safeguarding Plan* (DSSP). The DSSP was developed by outside experts and reviewed by security experts at the Department of Information Technology and at the partner agencies. Staff has been working to implement and document all of the security procedures required under the DSSP. To date, the majority of the DSSP has been implemented.

The Center plans to conduct an annual security audit. This past year an independent audit was not done because the Office of Legislative Audits (OLA) conducted its first IT security audit of the agency. OLA had several recommendations – most of which were resolved by moving the data Center to MSDE where the Center staff have more control over system updates, security patches, and firewall rules. All security recommendations have been implemented. The Center will commission an independent security audit for the second quarter of 2016.

Activities of the Center

Data Quality Standards

The 2014 Annual Report included a recommendation by the Governing Board for Center staff to develop a set of standards and protocols for assessing the accuracy of information reported to the public. The Board recommended that the standards include:

1. An assessment of whether the data relied upon for a report are sufficiently complete to support the information reported;
2. An assessment of whether the information presented can be reconciled against other sources;
3. Criteria for determining whether information based on incomplete data is appropriate to be reported; and
4. Methods for informing the public regarding the information published by the Center.

Based on this recommendation, staff created the *Data Reporting Standards* , which were reviewed by the

[2] The number of college to workforce matches is lower in the later years of this table because there are less year of labor data to match against. Example: in 2007-2008 there are 7 years of labor data in which to find a match for a college student, whereas 2013-2014 there is only one year of labor data.

Board at the March 13, 2015 meeting. The standards are used prior to releasing web content—dashboards with tables, graphs, or other figures—that are based on Center data. The goal of the standards is not to eliminate reporting of information in instances where data are of limited quality. Instead, the goal of the standards is to assess the data limitations and the impact of those limitations on reporting, but still find ways to provide valid, credible, and meaningful information from the data.

The *Data Reporting Standards* were developed as a step-by-step process in which each step builds on the next. The *Data Reporting Standards* are designed so that each step in the process can be evaluated and refined. The steps are as follows:

1. Identify the question
2. Determine available data
3. Refine the question and population
4. Determine the value-added
5. Assess the Identity matching
6. Assess the robustness of the data elements
7. Verify results against other data sources

The *Standards* also specify the need to inform the public about the data quality standards and recommends providing information to help the public understand the data being reported.

Staffing

Progress has been made in hiring permanent State employees. Currently, 11 of the 15 positions have been filled. The Center still relies on the services of three contractors. One of the contracts will end this fiscal year and will not be needed moving forward. Another contract ends in early 2016, and the Center believes it has a candidate for a permanent State position to take over the duties fulfilled by that contract.

Under the intergovernmental agreement with the University of Maryland, Baltimore, School of Social Work, the Center funds a full time Research Coordinator. That position was filled in January of 2015.

Federal Grant

The Center was one of several agencies to partner with MSDE on a successful application to the United States Department of Education, Institute for Education Sciences for a grant under the Statewide Longitudinal Data Systems program. In total, the State was awarded $6.9 million over four years. The MLDS Center will receive $2.6 million of the award for its project, which plans to address one of the grant objectives to improve the access and capacity to conduct research and evaluations with longitudinal data.

The project, which will be led by the Research Branch of the Center, will address research capacity by expanding secure access to MLDS data. While the Center has an obligation to make data accessible to researchers, policy makers, and stakeholders, state and federal laws strictly limit the ability of the Center to make its data accessible to anyone other than staff of the Center. The Research Branch seeks to address the competing interests of confidentially and accessibility to the collected data by developing synthetic data sets (a strategy that other agencies, such as the U.S. Census Bureau, have started using). As a general overview, the raw, confidential, data are used to produce artificial data that are similar but

not identical to the raw data. In this way, researchers have access to microdata that closely statistically mimic the properties of the raw data which they can then analyze to answer a variety of important research questions that cannot be addressed with data provided as weighted, aggregated, or masked using statistical disclosure methods. Importantly, with the use of synthetic data, those who collect and are ultimately responsible for data can be assured that the true data remain confidential and that individuals about who the data were collected are not exposed to adverse risk. Thus this process, in theory, allows confidentiality to be strongly maintained, while also giving both researchers and policy analysts access to individual-level data, which allow any appropriate data analyses to be utilized.

Research Series

The Research Branch of the Center conducts a monthly Research Series during the academic year on a topic about or related to the Center's research. This year the following topics were presented:

Date	*Topic*	*Presenter*
February 6th	The Business Case for Sustained Investment in the MLDS Center's Research Capability	Ms. Treva Stack, Dr. David Stevens, and Dr. Ting Zhang, Jacob France Institute
April 3rd	Postsecondary College Enrollment and Assessed Need for Developmental Coursework	Dr. Faith Connolly and Dr. Rachel Durham, Baltimore Education Research Consortium
May 1st	Visual Representations of Data: Review and Recommendations	Ms. Alison Preston, Student Fellow, MLDSC Research Branch
October 2nd	Clustered Data: Are Multilevel Models Really Necessary?	Dr. Daniel McNeish, Research Analyst, MLDSC Research Branch
November 6th	Expanding MLDS Data Access and Research Capacity with Synthetic Data Sets	Dr. Laura Stapleton, MLDSC Research Branch

Access to Center Data

The Governing Board approved a process whereby the Executive Director of the Center may provide a limited number of staff appointments to allow an outside researcher limited access to MLDS data. The research must be for the purpose of analyzing and improving Maryland education and workforce outcomes by auditing and evaluating state and federal education programs. These appointments are limited to two at a time, and priority will be given to researchers who are working on grant funded projects for which the Center has committed to providing support. Each proposed appointee must receive a letter of support from a member of the Governing Board and be reviewed by the Center's *Research and Policy Advisory Board.* The Advisory Board will review the credentials of the researcher and whether the project seeks to address an important Maryland education policy question and then make a recommendation to the Executive Director. If the Executive Director decides to issue the staff appointment, the Governing Board must be notified. Finally, the appointee must undergo the same security background checks and compliance procedures as regular staff of the Center. The appointee must also conduct all research at a Center facility and be responsible for any costs associated with the appointment.

The Center has granted one research staff appointment to a researcher on behalf of *Baltimore's Promise*.

Baltimore's Promise is a collaborative effort dedicated to improving outcomes for the City's youth. *Baltimore's Promise* plans to use system data to understand:

1. The percentage of Baltimore City students enrolling in two or four year institutions;
2. The percentage of Baltimore City students who complete a postsecondary degree or certification program; and
3. Information on disengaged youth (individuals 18-24 who are not attending school, not working, and do not possess a postsecondary degree).

Consumer Guide

The Research Branch created a *Consumer Guide to MLDS Center Data, Dashboards, and Research Reports.* The purpose of the guide is to provide more information about the Center's research to help consumers of that information to better understand the data, dashboards, and research reports. The guide includes information about the structure of the Center's data, the complexity of the data, and guidelines for interpreting the data.

Section 2. List of all studies performed by the Center.

Data Limitations

The ability to conduct studies using system data has been limited as staff continues to work through the data issues discussed above. Nonetheless, a lot of work has been done by the Research Branch to understand and analyze the data in the system and help assess data quality issues and troubleshoot anomalies. Further, the Research Branch has done much of the initial research on topics that are awaiting Center data for analysis.

Online Education Report

The Research Branch did complete and submit a report for MSDE in fulfillment of the MSDE 2012 SLDS Grant Project 5.2 (*Assess the need for inclusion of online education data*). The report, *The Inclusion of Online Education Data in the MLDS Inventory*, notes a rapid growth in online education and concludes that that the MLDS is an ideal repository for data about this new and growing format for delivery of education and training. Incorporating data about these digital opportunities in the MLDS will provide both portal dashboards about online education and opportunities to engage in research to inform policy and programming about online education in the state. The report notes that the collection of these data poses challenges, not the least of which is the absence of uniform definitions or standards for reporting about online education data. Despite the challenges, working towards inclusion of these data will provide a richer picture of the educational landscape in Maryland, one that can better inform state policy in the years to come.

Dual Enrollment Report

The 2015 Dual Enrollment Report is the first report written using cross sector data from the MLDS. Data from MSDE, MHEC, and NSC are used to identify dually enrolled students with overlapping enrollment dates in a Maryland high school and a Maryland postsecondary institution. We also provide an update on the MHEC dual enrollment flag that has been used in prior reports to identify dually enrolled students. We provide information on the demographic characteristics of dually enrolled students and the types of

postsecondary institutions attended. Additionally, the postsecondary education enrollment outcomes of dually enrolled students are examined in comparison to the population of 12th grade students in Maryland. The report includes future directions for research that will be possible as more years of longitudinal data are added into the MLDS.

Web Content

The Center's web specific content is in the form of dashboards and data snapshots. Dashboards provide the status of key performance indicators that can be used to help decision makers assess outcomes. Dashboards are dynamic and update as new data are received. Data snapshots will provide a series of data graphs, charts, and analyses to guide the user through topics and understand outcomes. The snapshots reflect a point in time and do not change as the data changes.

At the time of writing this report, the Center has eight dashboards on the website. These dashboards are responsive to Research Agenda Question # 2, *"What percentage of Maryland high school exiters go on to enroll in Maryland postsecondary education?"* The dashboards include:

- Dashboard 1: High School Graduates with Initial Postsecondary Enrollments
- Dashboard 2: High School Graduates with Initial Postsecondary Enrollments by County
- Dashboard 3: High School Graduates with Initial Postsecondary Enrollments by Gender
- Dashboard 4: High School Graduates with Initial Postsecondary Enrollments by Race/Ethnicity
- Dashboard 5: Initial Postsecondary Enrollments – In-state vs. Out-of-State
- Dashboard 6: Initial Postsecondary Enrollments – Type of Institution
- Dashboard 7: Initial Postsecondary Enrollments by Gender
- Dashboard 8: Initial Postsecondary Enrollments by Race/Ethnicity

In addition to the above dashboards, the Center completed a Charter School Data Snapshot. The snapshot looks at the five Maryland charter high schools with students who graduated between 2008 and 2013. The subject of the data snapshot is 1,062 charter high school students who graduated between 2008 and 2013, including:

- A breakdown of the charter schools they attended;
- The number and percent who enrolled in college;
- A breakdown of when the students enrolled in a college (i.e. the 1st, 2nd, 3rd, 4th, or 5th year post graduation).
- The characteristics of the students who enrolled and did not enroll in colleges; and
- A breakdown of the colleges attended.

Section 3. Data Determined to be Unnecessary

Data Removed

At this time, no data received by the MLDS Center and loaded into the system has been determined to be unnecessary.

Staff has reviewed the data that were in the P20W system, developed by MSDE, which was the precursor to the MLDS. Along with the agency partners, staff has determined that the data should be purged from

the P20W system. The data in that system has already been incorporated into the MLDS and no longer serves a purpose.

Section 4. Proposed or Planned Expansion of Data

Data Inventory

Md. Ed. Art. §24-701(f) defines the permissible types of student and workforce data that the MLDS may collect. Data that falls under that definition and are determined to be necessary to carry out the mission of the Center are presented to the Governing Board for approval to be included in the data inventory. The Data Inventory represents the complete list of data that the MLDS Center collects.

Motor Vehicle Administration (MVA) Data

Prior sections of this report discussed the Center's efforts to improve *Linking Data Across Sectors* and resolve *Data Quality* issues. While those efforts have been very successful, staff have reached the practical limit of what can be done to identify duplicate data and match data across sectors using only MLDS internal data. For example, MLDS contains records for approximately 470,000 students who exited 12th grade in school years 2008-2014. About 75,000 of these (17%) are without a valid SSN in the system. The identities for these students cannot be related to wage data, because SSN is the only PII identifier supplied for wage data received from DLLR.

The solution to this type of issue is to utilize a data source with highly reliable personally identifiable information. One such source is the Maryland driver's license and identification card information maintained by the MVA. The attached data inventory includes a list of the data fields to be shared. The data are limited to the following demographic information: name, address, date of birth, Social Security Number, and race and ethnicity.

MVA has the authority to transfer these data to the MLDS Center pursuant to Md. Code, General Provisions Article §4-320(f) and Md. Code, Transportation Article § l2-112(d)(5)(i). The MLDS Center has the authority to incorporate demographic data related to students and workers within its system, as set forth in Maryland Code, Ed. Art., 24-701(f)(2)(viii). The Governing Board has approved the inclusion of these data.

Section 5. Recommendation by the Governing Board

The Governing Board recommends that the Maryland State Department of Education and the Maryland Higher Education Commission continue to enhance the data provided to the Center.

The Governing Board also recommends a detailed review of at risk populations with a focus on identifying appropriate information to better research and understand the educational and workforce outcomes of those populations.

Attachment – Roster of Governing Board Members

1. Dr. Robert Caret, Chancellor of the University System of Maryland
2. Dr. Jack Smith, Interim State Superintendent of Schools
3. Dr. Jennie Hunter-Cevera, Acting Secretary of Higher Education
4. Ms. Kelly M. Schulz, Secretary of the Department of Labor, Licensing and Regulation
5. Dr. David Wilson, President of Morgan State University
6. Dr. Bernie Sadusky, Executive Director of the Maryland Association of Community Colleges
7. Ms. Tina Bjarekull, President of the Maryland Independent College and University Association
8. Dr. Renee Foose, Superintendent of Howard County Public Schools, (member representing local superintendents of schools)
9. Mr. Steven Rizzi, Vice President of PAR Government (member with expertise in large data systems and data security as required under §24-704(c))
10. Ms. Jennifer Strong Mullinex, Teacher with Howard County Public School
11. Mr. Brian Roberts, Change Management Specialist for the Montgomery County Government and parent of a public school student
12. Vacant