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Current Longitudinal Database Capacity

The Missouri state workforce agency, the Missouri Department of Economic Development (DED) - Division of Workforce Development (DWD), currently has storage and reporting capacity for unit records in its existing state workforce data systems, but lacks a developed workforce longitudinal data system (LDS) that: 1) consists of unit records from all workforce programs; 2) regularly and systematically links those unit records to data systems describing customer experience outside the workforce system (e.g., the statewide longitudinal data system); and 3) includes all available work- and education-related data reflecting experiences occurring sequentially over a span of several years for the purpose of longitudinal research. Current data management, storage, and reporting systems in Missouri have been primarily developed in tandem with career center staff needs for serving and tracking customer progress through workforce programs and with reporting requirements for various federal and state funding. Outcome information is typically captured for individuals having exited a program at only three subsequent points in time; employment information is less frequently available for three additional points in time before program participation. Service dates are required data elements to be reported on customer records transmitted to the Employment and Training Administration of the Department of Labor. However, required information focuses on the earliest or most recent receipt of services. Thus the current Missouri workforce data system does not thoroughly and systematically track individual step-by-step progress through the workforce training system. Nor does the system link individual experience across programs or even across multiple participations in the same program at different times.



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Missouri workforce program participant data is currently entered and stored in an Internet-based case management system managed by the state's centralized information technology agency, the Office of Administration - Information Technology Services Division (OA ITSD) which allows program staff to readily enter and retrieve information on a given customer as well as to generate customer lists and limited types of reports using aggregated data. For higher-level aggregated reports, analyses, and data verification and validation, OA ITSD produces intermediate workforce data storage products from the case management system such as Oracle data tables that are queried by DWD staff and flat comma-delimited data files of individual records that are used with statistical analysis packages, uploaded to web-based reporting products and, most significantly for this proposal, can be matched to unit records in other data files by a matching key such as the Social Security Number. This latter product, the flat files of individual workforce participant data, would comprise the central workforce data component of the proposed Missouri workforce longitudinal data system (hereafter LDS) and the mechanism by which complete workforce program participant information will in turn be linked to additional unit record datasets from other state agencies in addition to the statewide longitudinal data system (SLDS), developed under US Department of Education funding.

The Missouri state workforce agency, the Missouri Department of Economic Development (DED) – Division of Workforce Development (DWD), has been actively involved in the past two years in the development of a pilot workforce longitudinal data system for Missouri under a National Governor's Association (NGA) – Kaufmann Foundation Honor State's Grant for Longitudinal Data Analysis. Under the NGA grant, the DWD in collaboration with other Missouri

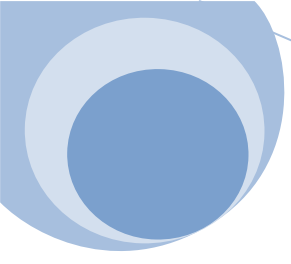


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agencies such as the Missouri Department of Elementary and Secondary Education (DESE) and the Missouri Department of Higher Education (MDHE) jointly developed a pilot longitudinal data system which was housed at the University of Missouri – Columbia (UMC) and provided the basis for data linkage between the existing SLDS and workforce information, culminating in the release of three LDS Stakeholder Feedback Reports in early 2010.

Although the NGA grant demonstrated many of the difficulties of matching K-12 education data with employment outcomes, one important benefit of the project came from the P-20 Data Sharing Governance Document which was approved by the Missouri DED, DESE, and MDHE in December 2008. The document detailed the oversight responsibility of the interdisciplinary state agencies for reviewing and approving research requests and uses of data linkages across data systems. Additional benefits from the NGA grant came from the experience gained by the Missouri agencies in working through the process of linking and analyzing unit records from the various agency databases. Key to the process was the understanding of the limitations of linking unit records from education to labor force data via valid Social Security Numbers (SSN) as the SLDS and the DESE K-12 database, the Missouri Student Information System, do not require the SSN as a data field and instead use a MOSIS ID as the unit record identifier. The linking process, limitations of data linkage, and analysis conducted under the NGA grant were documented in a white paper in early 2010 for SLDS planning and implementation.

The current proposal builds on the expertise in longitudinal data analysis, and makes use of existing data structures. The state's economic and education agencies were focused in previous



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efforts on providing linkages between students from preschool through post-secondary education, while the Interagency Workgroup has worked to open lines of communication and data exchange between agencies to facilitate data sharing. Funding from IES to establish the Missouri SLDS has provided a rich set of links within public secondary and elementary schools (K-12), including extensive longitudinal information on student performance and achievement, and longitudinal information on teachers and their class assignments. The Missouri SLDS also links public K-12 student data with enrollment in public post-secondary schooling within the state. In contrast, links between K-12 and the labor market—for example, wage record data—are much more tentative: the pilot work supported by Kaufmann showed the potential for such links but also documented difficulties in implementation.

Missouri DWD proposes to construct a system that emphasizes the links between the existing educational enrollment data the labor force outcome measures (UI wage record data), adult training programs (WIA, TAA, AEL, GED, Vocational Rehabilitation), social support services (TANF and Food Stamps), and job search support (Wagner-Peyser and UI). The primary link between the education data and labor market measures will be through individual records providing post-secondary enrollment and graduation. The proposed workforce LDS will also provide links to wage record data from employers not covered by state UI wage records using FEDES and WRIS systems.



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Plan Outline

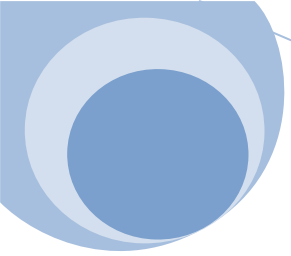
Missouri does not currently have a formally developed workforce longitudinal database and does not currently systematically link to the state's developing SLDS. While unit level workforce data (e.g. wage records) are sent upon request to DWD from other agencies or entities for matching, this matching and reporting is done periodically and only for federal reporting requirements and selected research projects. Unit level workforce data from all programs are not stored together systematically for longitudinal analysis, and records are not cross-linked against third party state agency datasets for additional matching. Under the proposed plan, Missouri would develop a formalized workforce LDS containing unit records derived from the workforce program case management system to unit records from various state agencies (DESE, MDHE, DOLIR, and FSD). Additionally, Missouri would develop a formalized data exchange system with the SLDS, adhering to already-developed meta data standards. Access to the developed workforce LDS would be granted to members of the Interagency Workgroup, including members of the UMC – Department of Economics, whose prior work with the ADARE workgroup and other longitudinal education and workforce research is substantial. While the state would be developing a new workforce LDS, Missouri would be utilizing much of the knowledge and partnerships gained through recent work establishing an SLDS to move the state forward in its understanding of the data gaps in student and job seeker transition points throughout the education and workforce systems.



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The Missouri DWD currently uses an internet-based case management and tracking system known as Toolbox 2.0 into which workforce program participant data is entered. The Toolbox system serves as a database consisting of customer information related to enrollment, assessment, customer service tracking, and outcomes of all of the programs operated by DWD. For performance reporting, DWD's ITSD produces intermediate workforce data storage products originating with Toolbox: query-capable Oracle data tables, and flat comma-delimited data files of individual records that, among other uses, are entered into reporting software that generates performance reports. Participant data is maintained in Oracle data tables which are unique to the workforce program, (e.g., a table for WIA Title I customers, an Employment Services table for Wagner-Peyser participants) but are not linked systematically at a unit record level.

Currently, wage matching from the state UI wage file, the Wage Record Interchange System (WRIS), and the Federal Employee Data Exchange System (FEDES) are used only for federal reporting purposes for select dates and cohorts. Prior to producing and updating the program-specific tables and data files derived from them, wage data from DOLIR is requested for the workforce program participants in the reporting cohorts. The wage information is linked by OA ITSD to workforce program participant records during the creation of data tables. In addition, for WIA participants' out-of-state wages from WRIS and federal wages from FEDES are requested, returned and linked to the corresponding participant records. In all cases, the wage record files are not systematically linked to unit records in other workforce program datasets within the workforce data system.



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Similarly, TAA reporting in the Missouri workforce data system uses only a flat data file consisting of the demographic and individual information, program participation, and outcome information as required for federal reporting. Flat data files are produced for state and federal WIA and Wagner-Peyser performance reporting. Those data sets are uploaded separately to federal agency-produced reporting software to produce performance reports for each program separately. In the proposed workforce LDS, Missouri OA ITSD would work with DWD and UMC staff to develop an intentional architecture of data tables and data marts from which unit records from the workforce system would be systematically linked across workforce programs and for selected state agency datasets.

Missouri DWD currently uses several data base reporting components to ensure a standardized data system and a reporting process that meets federal reporting requirements. DWD continues to use the Data Reporting and Validation Software (DRVS) to create reports from the participant record files described previously. Significant amounts of in-house data cleaning and verification activities are currently undertaken before submission of data files to the DRVS system, or as a consequence of questionable DRVS performance output and resubmission of cleaned and corrected data. Supplemental management reports beyond those required for federal reporting are also continuously evaluated. Data are gathered and maintained from the state's job matching system and data tables and files derived from the workforce data system that allows Missouri to report aggregate detailed information about customer activities as well as job order information for Labor Exchange customers. While it is not the intent of DWD to replace the current federal workforce reporting systems, it is perceived that the systematically



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developed reporting from the proposed workforce LDS may improve upon current workforce reporting.

As the existing workforce data system does not currently operate nor was designed as a data warehouse for longitudinal linking, OA ITSD would work with DWD and UMC to undergo an internal review of the current data environment to improve the data integrity and functionality of the current workforce data production environment. Automated data validation procedures would be incorporated to minimize the amount of staff time needed to clean and verify data in the proposed workforce LDS. This internal review would incorporate the meta data standards already developed for the Missouri SLDS, making the exchange of data between the SLDS and proposed workforce LDS nearly seamless.

The developed workforce LDS would serve to inform the decision-making process for adult training and education and workforce professionals, as well as key stakeholders at the state and local levels. A unified data repository and analysis of wage record data, workforce case management systems, and training program information from education providers would allow Missouri to accomplish three goals in analyzing dislocated worker and non-traditional student data, as well as adult training and education program performance:

- (1) Examine and assess adult training and education programs and their outcomes. The addition of an adult training and education program component that assesses outcomes would aid in decisions about the development, improvement, or funding of programs and institutions within a state, region, or local area. This component provides a reliable



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measure to determine which training and education programs are working within selected local areas and which are not, as well as differences in specific program success. We expect such measures to contribute to the performance management measures that currently inform program administration.

(2) Track trends in the employment and earnings of individuals facing economic downturns.

We expect to trace the labor market experiences of individuals who are displaced from their jobs, what efforts they undertake in training and education, and the long-term outcomes achieved in employment and earnings.

(3) Allow studies of the articulation between college studies and employment outcomes.

Focused analyses will consider the role of high technology training (science, technology, engineering and mathematics, or STEM) in helping align college preparation with labor market needs. Particular attention will be focused on college graduates' entry into teaching as a career.

(4) Additionally, the same type of information could be used by local leaders for planning and

evaluating their own strategies of improvement and expansion. For example, such a component could provide valuable information to local leaders about: (a) job growth by industry and occupation in their area and others, (b) earnings of graduates from different training and education programs, and (c) information about program enrollments and trends.



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Partnerships

Missouri is developing an SLDS under a current IES SLDS grant, received by the Missouri DESE. To date, DESE has worked to develop a thorough review of the current unit record education data system, the Missouri Student Information Data System (MOSIS), and has developed meta data standards and documentation surrounding various unit records from MOSIS to be included in the SLDS. There are currently 19 dimension data tables in the SLDS which have been linked in the form of 3 data marts in a Microsoft SQL server which are used for creating various ad hoc reports which will be available to both internal users as well as to the public via internet based reports on SQL server reporting services. The three existing data marts in the SLDS will be fully operational in the Fall of 2010 with aggregate reporting data for the public and at a more detailed level for specific education stakeholders. The SLDS currently contains mostly K-12 unit records from MOSIS but will be linked with selected data from DED and MDHE files as part of the pilot study supported by the Kaufman NGA project in the Fall of 2010.

The Missouri DWD will work under the project plan with OA ITSD to fully document current Extract-Translate-Load (ETL) processes by which external datasets are incorporated in the current DWD datasets and to both develop and implement recommended improvements in such processes for the implementation of the workforce LDS. Such improvements will simplify the data exchange process for DWD and the key stakeholders in the proposed grant.

Missouri DWD already has an established, working relationship with DESE for the sharing and use of linked unit records through various agreements. DWD and DESE also participate in the



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Missouri Interagency Workgroup which is comprised of data managers and researchers from DED, DESE, MDHE, and UMC. DESE and DWD have been active partners in the development and implementation of the Missouri SLDS which is being developed by DESE under an existing IES grant. DWD has developed a productive partnership with DESE with a focus on other mutual concerns. To comply with provisions of Title 1(B) (Section 122) of the Workforce Investment Act, DWD has executed a Confidentiality Agreement with both DESE and the Missouri Department of Higher Education (MDHE) that enables DESE to establish a list of eligible training providers. DWD collaborated with DESE and the administrators of the Federal Employee Data Exchange System (FEDES) to execute a Memorandum of Agreement between DWD, DESE, and the Maryland Department of Labor, Licensing and Regulation to add DESE as a participant in FEDES and permit DWD to obtain wage records through FEDES for DESE for federally required reporting purposes, assessing outcomes of participants in DESE's AEL program. This document is founded on the original memorandum of agreement between DWD and the Maryland DLLR to permit DWD's participation in FEDES.

DWD has played an active role in WRIS Advisory Board efforts to develop a system permitting workforce agency access to out-of-state wage data on the behalf of state education agencies for performance measurement of educational programs. In Missouri, DESE would be the beneficiary of this system as it would provide additional outcome information for AEL participants, with DWD staff, rather than DESE staff, charged with processing and aggregating the outcome information for DESE. This system is still in the planning stage as it would be contingent upon the USDOL adoption and implementation of the WRIS2 program. The initial



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“WRIS2 Data Sharing Agreement” would be executed among DWD, DOLIR and ETA and a separate agreement executed between DWD, DOLIR, and DESE. DWD and DESE have previously engaged discussions of methodologies for obtaining greater access for DESE to wage information for education program evaluation aimed at the improvement of student programs. With the institution of a WRIS2 wage interchange system longitudinal education databases, and thus the SLDS, will contain more thorough information on the outcomes of adult literacy programs and any other DESE programs benefitting from WRIS2. Additional Memorandums of Agreement will also be developed under the proposed grant between DWD and the MDHE for the exchange of EMSAS postsecondary enrollment and completers unit record data to be included in the workforce LDS.

The DED and University of Missouri – Columbia (UMC) Department of Economics already have an established relationship for data exchange and web development. Since 1999 the currently affective State of Missouri MOA has existed between DED – DWD and the UMC. It permits the transfer of workforce program data to very specific research personnel at UMC for research on workforce issues and labor market outcomes for the USDOL and may be modified under the proposed grant to provide additional and appropriate access to the proposed workforce LDS.

The DED MERIC currently has agreements in place with UMC’s Center for Family Policy and Research for the exchange of UI wage records for analysis of pre-k education provider workforce trends. The UMC Office of Social and Economic Data Analysis also provides DED MERIC with interactive web development for display of various career-related data contained in the Missouri Workforce Information Database and provided the support for the development



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and housing of the Missouri pilot SLDS under the NGA LDS grant. Additionally, DESE currently has agreements in place with UMC for the exchange of matched education and WIA/Wagner Peyser datasets for analysis of high school exiter workforce trends for federal reporting.

Each of the data exchange arrangements with UMC assures that data security is fully protected. Agreements specify that under no conditions at any time can individuals or firms be identified in any material released by UMC. Extensive safeguards are in place to assure that confidential data cannot be breached.

The Missouri DWD has an existing partnership with the Missouri DOLIR for the exchange of UI wage record data for federal workforce reporting. This partnership is governed by a Memorandum of Agreement which describes obligations of the parties related a variety of data exchange activities and administrative functions pertaining to numerous workforce programs including WIA, Labor Exchange, Trade Adjustment Assistance, and WRIS. It is expected that this MOA will be modified in the future to allow DWD to receive from DOLIR cumulative totals of unemployment benefits received by claimants for later addition to the workforce LDS. In addition, DWD has agreements with other entities to fulfill its federal reporting responsibilities which include creation of data files of individual records that contain all federally-required data elements.

Additionally, DWD and DESE have an existing contract agreement for DESE to provide training services for WIA or National Emergency Grant participants. DESE is required to process ITA



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payments, reimburse training providers, track expenditures for each participant, and exchange of WIA ITA data with DWD.

An MOA between DWD and FSD allows for the transfer of data related to the employment and training functions of temporary assistance programs. Additional Memorandums of Agreement will also be developed under the proposed grant between DWD and the Missouri Department of Social Services – Family Support Division (FSD) for the exchange of Food Stamp (federal SNAP) and Temporary Assistance for Needy Families (TANF) unit record data to be included in the workforce LDS.

Design, Data Quality and Security

Social Security Number and other identifying elements will be used to effectively merge data from different transactional systems or other longitudinal data platforms in the workforce LDS. A linking reference table will be established in the workforce LDS that stores unique identifiers for other data platforms where records have been matched. The ClientId (workforce LDS unique identifier) and MOSISID (education data system and SLDS unique identifier) would be fields included in this table and represent workforce data and education data respectively. Additional fields stored in the linking reference table would include SSN (unique identifier for DOLIR, MDHE, and non-SLDS DESE datasets), and Department Client Number (DCN – unique identifier in Food Stamp and TANF data).

The OA ITSD would work with DWD, UMC and other state agency partners to develop a comprehensive plan to identify potential areas of improvement in the current data validation



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and quality assurance processes in place for the data to be included in the workforce LDS.

Current verification for workforce program data by DWD consists of two stages: 1) error detection and correction of selected characteristics of data files for monthly uploads, which feed into federal quarterly and annual reporting, and 2) re-computation of the performance measure rates generated by federal reporting software (DRVS) and participant counts on the ARRA monthly reports. Only staged data files, which are in the process of transition to the system, are currently subjected to error detection and verification steps.

Statistical management programs were developed and are used to check for completeness of each separate data file and for a range of critical data errors (e.g., extraneous characters, out-of-range values, errors preventing data readability, missing values, and anomalous frequency distributions). Building the data check process has been an iterative process; checks are regularly added based on examinations of new data files or on problems uncovered by data users.

Performance measures verification involves two staff members using different statistical and query software to calculate each of the WIA, Wagner-Peyser and Trade Act common performance measures, after which discrepancies are investigated and resolved. Accuracy of data on federal workforce and monthly ARRA reports is also verified by DWD staff members using different programming to produce the report, and detecting and resolving the sources of discrepancies. When necessary, OA ITSD staff produce corrected data files which are then subjected to the same standard data checking and editing procedure.



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The primary focus of the proposed grant will be to link DED, DESE, MDHE, and FSD data in a developed longitudinal workforce database suitable for analysis, to provide unit records from the aforementioned database to DESE for future integration into the state's education and SLDS databases, and to provide access to unit records and linked data for longitudinal research.

Security under the proposal will also be insured by use of three key provisions: 1) a comprehensive and innovative confidentiality and information security policy; 2) a confidentiality acknowledgement administration and education program; and 3) a confidentiality and information security planning document. Over the course of the past four years, DWD has developed these policy guidance documents to support its participation in the WRIS system. Because confidentiality and information security is the hallmark of an effective WRIS business practice, the DWD developed a confidentiality policy in 2006. Using the concepts of education and acknowledgement as key practices to enforce confidentiality, DWD developed an Internet based product, CourseInsite, to provide the delivery of a confidentiality training curriculum. In order for any individuals to gain access to DWD's confidential data, they must register, take and successfully pass the confidentiality test, and sign their acknowledgement that they are both aware of the confidentiality policy provisions, best practices in the use and security of confidential data, and they further attest they have been trained about their acknowledgement. This system debuted to accolades by USDOL as a best practice in WRIS administration. DWD would require all individuals under the various workforce LDS agreements to likewise attest to their knowledge and upholding of confidentiality and data security.



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The UMC Economics Department has maintained a secure server housing confidential data provided by Missouri and other state agencies for more than a decade. Agreements preclude the release ever of any information that would allow individuals or firms to be identified.

Access to data is strictly limited to identified staff who are responsible for specified analyses, and identifiers used for merging files, which could identify individuals, are encrypted. Both hardware and operating procedures are in place to prevent any breach of system security and to monitor the activities of all those with access to the system.

Reports

Reports of analyses using the workforce LDS created under this project are designed to provide State agencies with performance information to aid in administering programs, to provide the public with information about services and their efficacy, and to support wider understanding of the processes by which participants in State programs impact participants' experiences. Six written reports will be produced:

- (1) *Outcome analyses for WIA and TAA adult training programs.* Participants in program years 2007-2010 (July 2007-June 2010) for the WIA Adult and Dislocated Worker programs, and TAA will be examined, separating analyses by the level of service in order to compare participants receiving training with those receiving less intensive services. These tabulations will be undertaken for each year of program entry as well as for each of the 14 local Workforce Investment Boards (WIBs) in the state. An initial analysis will examine patterns over time in the demographic characteristics of participants, as well as



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their prior employment and earnings. Based on UI wage record data, subsequent employment and earnings will be examined, tabulating outcomes by length of time since participation. The primary audience for this report will be the Missouri agency that administers these programs, DED-DWD.

(2) *Wagner-Peyser and UI recipients.* Parallel analyses will be undertaken for participants in Wagner-Peyser activities and Unemployment Insurance benefit recipients, who generally receive low-intensity services. Again, tabulations will be provided for the 14 WIBs in the state and over time. A primary concern will focus on the impact of the recent recession, which has precipitated a dramatic decline in employment opportunities in the State as well as the nation. The primary audience for this report will be DWD.

(3) *Matching Analyses.* Matching analyses will compare outcomes for participants receiving training (Adult and Dislocated Worker programs, TAA) with individuals receiving only Wagner-Peyser service or UI benefits. These analyses permit a comparison of individuals who have similar demographic characteristics and prior employment and earnings histories, allowing inferences about the value of training. A similar analysis involving 12 states for 2004-2005 appears in Heinrich, Mueser and Troske (2009). Although estimates of the impact of training are of interest, changes in the face of the current recession are expected to be of greatest interest, as they address the question of the degree to which the outcomes associated with training have shifted in the face of the current recession.



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Workforce professionals throughout the state are expected to be the primary audience for this report.

(4) *Field of study and labor force outcomes.* This study will focus on the articulation between college studies and labor market outcomes examining graduates from public post-secondary institutions in the State for the period July 2006-June 2011. College major will be tabulated by general area, and employment following graduation coded by broad industry category, recognizing differences in the role of technology by industry. Recent work suggests that those who graduate during a recession may face particularly difficult career options, and the analysis will consider whether employment for recent graduates is less commensurate with training than is the case for prior graduates. This report will aim to address issues of general interest to students and college administrators throughout Missouri and the nation.

(5) *College choice and teaching careers.* For this report, college graduates will be matched both with the UI wage record data and with the DESE dataset providing information on public school (K-12) teachers. The analysis will examine the determinants of the decision to enter teaching, including college major, individual characteristics, and, for those who attended secondary school in Missouri, high school grades and test scores. Using data on graduates as early as 2006, it will be possible to count the extent to which graduates' move out of teaching after a short period in the field, and the degree to which those who



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initially have jobs in other fields move into teaching. This study will be of interest to Missouri and national policymakers concerned with attracting talent into K-12 teaching.

(6) *Evaluation of the registered apprenticeship program.* This case study is an outcome evaluation of the federally funded Registered Apprenticeship program for 2000-2005 in the state of Missouri. Overseen by Mathematica Policy Research, with the University of Missouri serving as the local partner of the ADARE collaborative, the analysis examines earnings and employment outcomes based on UI wage record data. In addition to examining outcomes for Registered Apprenticeship program participants, the analysis considers outcomes for participants in Wagner-Peyser (Employment Service) activities, Based on matching methods using demographic characteristics as well as prior pre-participation employment information, the approach produces estimates of the Registered Apprenticeship program's causal impact.

Activities

Year 1:

- Identify datasets and data dictionaries for review by team members at first meeting in January.
- Review contracts between agencies to present to team members at first meeting in January.
- Conduct meeting with project administrators and key IT staff to discuss datasets to include and key partners.
- Conduct meeting with education partners about WIA Incentive Grant and get overview of project coordination.
- Present data structure, data dictionary and governance structure for each agency records to workgroup.



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- Analyze FETPIP website for model of Missouri proposed system and facilitate discussions with Florida administrators.
- Conduct meeting with all partners for three DQI grants occurring (MOSIS Education System, WDQI, WIA Incentive Grant) and discuss overlapping functions and end goal of each project.
- Meet with and facilitate discussions with administrators of state data center for compatibility of project objectives, storing capacity, software/server purchases, etc.
- Review previous data quality initiatives and reports conducted under the NGA P-20 Grant.
- Set up share point site for document sharing and communication among group.
- Share documents, such as FERPA guidelines, data dictionaries, technical proposal, etc. on share point site.
- Schedule initial meetings of WDQI partners.
- Identify software and users to implement LDS.
- Write MOU for contract with University of Missouri Department of Economics to conduct analysis and reporting for five (5) research questions.
- Conduct series of meetings to develop data dictionaries and consistent definitions and file format structure across agencies for similarly matched records.
- Purchase software and licenses to implement LDS.
- Meet with IT vendors to secure consulting services for statewide LDS implementation.
- Develop record sharing agreements among state agencies.
- Formalize method for deidentifying individual unit records in a statewide or workforce LDS environment.
- Coordinate with state data center to formulate a systematic approach to store unit level workforce data.
- Review structure of current workforce case management system focusing on improving data integrity and functionality of the current data environment.
- Explore methods to automate data validation procedures to incorporate in case management system to minimize staff time to clean and verify data to be included in state LDS.
- Explore architecture of data tables and data marts from which unit records from the workforce system would be linked across workforce programs.
- Explore additional research opportunities for linkage of workforce and education unit record data.
- Review data sharing agreements with surrounding states for the exchange of education and workforce records.
- Develop data sharing agreements with surrounding states for the exchange of education and workforce records.
- Link records for the five (5) reports to be done by University of Missouri Department of Economics. Records will include workforce records (WIA, TAA adult training program, Wagner-Peyser, UI recipients, adult and dislocated worker program data), education (K-12 teacher data), higher education (graduates of public post-secondary institutions).



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- Facilitate discussions about presentation of data to a public website for aggregated data display.

Year 2:

- Continue to share documents, such as FERPA guidelines, data dictionaries, technical proposal, etc. on share point site.
- Continue to coordinate with state data center to formulate a systematic approach to store unit level workforce data.
- Continue to link records for the five (5) reports to be done by University of Missouri Department of Economics. Records will include workforce records (WIA, TAA adult training program, Wagner-Peyser, UI recipients, adult and dislocated worker program data), education (K-12 teacher data), higher education (graduates of public post-secondary institutions).
- Develop five (5) research reports using linked data from DESE and DWD.
- Secure server space and staff to manage LDS.
- Incorporate further linkages of the 16 identified data tables between workforce, education and higher education datasets to develop LDS.
- Develop public website for aggregated data display. Use as example FETPIP site.

Year 3:

- Continue to share documents, such as FERPA guidelines, data dictionaries, technical proposal, etc. on share point site.
- Maintain with state data center a systematic approach to store unit level workforce data.
- Continue to develop five (5) research reports using linked data from DESE and DWD.
- Continue to incorporate further linkages of data tables not listed in grant between workforce, education and higher education datasets to develop LDS.
- Develop public website for aggregated data display. Use as example FETPIP site.