



Department of Higher Education SSI Monitoring Audit

Audit Period: July 1, 2017 – March 31, 2018

Results Summary:

Objective	Conclusion*
Data Integrity	Improvement Needed
Funding Model Calculation	Improvement Needed

* Refer to Appendix A for classification of audit objective conclusions.



Executive Summary

Background

The Ohio Department of Higher Education's (DHE) main responsibilities include authorizing and approving new degree programs, managing state-funded financial aid programs and developing and advocating policies to maximize higher education's contributions to the State and its citizens.

The State Share of Instruction (SSI) is Ohio's primary mechanism of subsidizing the instructional costs at Ohio's public institutions of higher education for the purpose of reducing the cost of tuition for Ohio residents. SSI funding in each fiscal year is allocated to public institutions according to a performance-based funding formula that incentivizes student course and degree completion, among other things. SSI provides unrestricted operating subsidies to Ohio's 37 public colleges and universities, funding a portion of the operating costs of serving approximately 357,000 full-time equivalent (FTE) students enrolled in those colleges and universities. SSI is distributed to campuses in approximately equal monthly payments during a given fiscal year. The budget is \$1.98 billion in state fiscal years 2018 and 2019. These amounts represent approximately 75% of DHE's total operating budget.

Colleges and universities submit student enrollment information electronically through the Higher Education Information (HEI) data input site. Funding is derived from course completions and degrees earned with additional funding for at-risk students that complete courses and earn degrees.

During the audit, OIA identified opportunities for DHE to strengthen internal controls and improve business operations. OIA conforms with the *International Standards for the Professional Practice of Internal Auditing*. OIA would like to thank DHE staff and management for their cooperation and time in support of this audit.

This report is solely intended for the information and use of agency management and the State Audit Committee. It is not intended for anyone other than these specified parties.

Scope and Objectives

OIA staff was engaged to perform an assurance audit related to SSI Monitoring processes. This work was completed March through June 2018. The scope of this audit included SSI monitoring of the following:

- Data Integrity
- Select Funding Model Components
- Enrollment

The following summarizes the objectives of the review:



- Evaluate the design and effectiveness of controls over data integrity.
- Evaluate the design and effectiveness of controls over funding model calculations.

Additionally, OIA performed a consulting objective to evaluate the proposed design of enrollment audits for state fiscal year 2019 implementation and provide recommendations to improve operational efficiency and effectiveness and mitigate risks. OIA provided recommendations for the consulting objective to DHE management in a separate document that was not part of the public report.

Detailed Observations and Recommendations

The Observations and Recommendations include only those risks which were deemed high or moderate. There were no low risk observations as part of this report.



Observation 1 – Access to HEI

A system access policy serves to maintain an adequate level of security to protect data and information from unauthorized access. Procedures should outline the necessary communication of significant changes in users' duties or employment status so that access may be timely updated or removed. User access reviews are designed to monitor and verify the appropriateness of users' system access.

The HEI system is a comprehensive relational database that includes student enrollment, courses, financial aid, personnel, facilities, and finance data submitted by Ohio's colleges and universities.

According to the HEI Data Access and Security Policy, a "Request for Access to Restricted Data Authorization Form" must be signed and completed by any campus user or Regents approved user who is to have access to restricted data areas and must be approved by the institution's president or designee. However, DHE no longer utilizes the "Request for Access to Restricted Data Authorization Form" as described in the HEI Data Access and Security Policy, but has not updated the policy to reflect the current HEI access process.

The current practice is for campus HEI Liaisons to add or disable access to the HEI system for their institution's staff members. This puts the users into a pending status for the DHE Data Management and Analysis staff to approve in HEI. Data Management and Analysis staff are also responsible for adding or disabling the HEI Liaisons' access to the HEI system.

Additionally, DHE does not have a documented process to periodically review user access to the HEI system. OIA obtained a listing of 440 HEI users with an active status, as of March 26, 2018, from DHE and noted the following:

- One of 27 (4%) DHE users was no longer employed by DHE. DHE disabled the user's access on April 5, 2018. This user had one user role of HEI data analyst. According to DHE, the user's state accounts were disabled which prevented access to HEI.
- From a sample of six colleges and universities, two of 72 (3%) users were no longer employed by the institution or transferred to a new position. The two users were each assigned four user roles.

Lack of regular processes to review user access roles for current and separated employees as well as processes to confirm external user access for appropriateness may result in unnecessary exposure to sensitive data, increasing the risk of fraud and/or abuse as well as misuse of sensitive information. Additionally, data integrity may be compromised when unauthorized users have access to key systems.



Recommendation		
<p>DHE should immediately review access and roles for all users for appropriateness and disable/remove inappropriate access for the users identified above.</p> <p>Develop, implement, and document a process to periodically review user access and assigned roles and facilitate communication between all parties involved at institutions and DHE regarding HEI access (updates, changes, additions, etc.) for all users. Evidence of the system access review should be documented and maintained.</p> <p>Update the HEI Data Access and Security Policy to reflect the current processes for adding/disabling user access to the HEI system. The “Request for Access to Restricted Data Authorization Form” should be used to grant HEI user access to the Campus Liaisons and maintained by DHE. Require campus HEI Liaisons to use and maintain the forms for their institutions so that DHE may request forms to review and validate the appropriateness of HEI system access and roles for institutions’ users.</p>		
Management Response		
<p>ODHE revoked user access for the institutional user mentioned above that was no longer an employee as soon as it was brought to our attention. The other user needed an update to their email address but had the correct permissions in the system. The institutions were also notified and reminded to review their active users and disable access for any employees that leave or change roles.</p> <p>Based on the HEI Authorization management application, annually ODHE will send an email to the person with the role ‘Institution HEI Administrator / Liaison’ or ‘Institution FinAid Administrator/Liaison’ to review the staff with access to the system at their institutions. Additionally, ODHE staff members with the role ‘Administrator’ will review internal staff to ensure that the access list is up to date. When a staff member resigns or is re-assigned, the access will be adjusted appropriately within 2 days of the change.</p> <p>We will update the policy and procedures.</p>		
Risk*	Remediation Owner	Estimated Completion Date
High	Director, Data Management & Analysis	October 31, 2018



Observation 2 – Controls Over Data Accuracy

It is management's responsibility to develop and implement controls to ensure the department's objectives are achieved. A well-designed system of internal controls includes procedures to ensure completeness and accuracy of data received. These controls typically include performing reviews of internal records to the external source to ensure transactions have processed accurately and completely. Policies and procedures help ensure the actions initiated by management to address risks are achieved and the entity's objectives are effectively carried out. Procedures should define roles, designate responsibilities, and detail actions necessary to achieve management's objectives and help ensure compliance with applicable laws and regulations. In addition, detailed procedures help ensure the continuity of the process in the event of personnel turnover. Generally, spreadsheets should be used to analyze data and trends, while databases should be utilized for data storage with understandable and meaningful data formats. The use of spreadsheets could be suitable if appropriate controls are in place to prevent data manipulation and deletion.

The Ohio Technology Consortium (OH-TECH) functions as an umbrella organization for Ohio's statewide technology infrastructure organizations, including the Ohio Academic Resources Network (OARnet). As a division of DHE's Ohio Technology Consortium, OARnet delivers technology-based solutions by meeting the networking and technology needs of Ohio colleges and universities. In addition, OARnet provides information technology services to DHE for support of the HEI system.

The DHE Data Management & Analysis Department (DMAD) is responsible for reviewing data files submitted by the institutions in HEI and creating SSI spreadsheet based on the data provided to allocate funding to the institutions. However, key controls are lacking or weak to assure data integrity throughout the process. For instance:

- DMAD analysts approve or deny data files submitted by institutions for upload to HEI after reviewing any warnings or errors. DMAD has guidelines on the necessary actions to take for each warning. However, formal policies and procedures for reviewing the data files submitted by the institutions do not exist. DMAD has a training guide for analysts from 2001, but neither the guidelines nor the training manual outline instances in which analysts are required to contact the institutions for additional information or explanations, documentation requirements to maintain communication contacts with institutions, or methods to determine if institutions' explanations are reasonable to approve data files for upload into HEI. Additionally, the HEI system has the capability for analysts and institutions' users to add comments to data files. However, comments are not required and instead the analysts use email to communicate and document any concerns and outcomes regarding the warnings and errors. There is also not a formal supervisory review of the files approved or denied by the analysts for upload to HEI to ensure consistency and appropriateness.



- DMAD relies on OH-TECH to provide notification of any overnight batch process errors to the HEI data warehouse. Notification of any errors is necessary to know if the data files are complete. However, DMAD does not have a formal policy to outline requirements (i.e. timing and format) for OH-TECH to provide notifications of errors. According to DMAD, OH-TECH is inconsistent in providing such notifications.
- DMAD uses SAS/Oracle queries to retrieve data from HEI for specific components of the funding formula. The DMAD director copies the results of the queries into the SSI spreadsheet, but there are no formalized and documented review procedures to ensure the information from the queries is accurately and completely pasted into the SSI spreadsheet.
- DHE DMAD completes and maintains the SSI funding calculation within an unsecured spreadsheet (it is not a password protected document and the formulas are not locked). The spreadsheets are maintained in a shared drive folder where all DHE DMAD staff have access. The calculation uses summary level data from the institutions and contains no sensitive information. There is no mechanism within Excel which allows users to easily track changes made to the spreadsheet. There is an audit trail maintained on a separate tab of the spreadsheet; however, the users must manually document all changes.

Manual processes with few controls increases the likelihood of data integrity issues without detection. Specifically, a lack of formal procedures may result in inconsistent or inappropriate approval processes of data files. Inconsistent and informal notifications about batch process errors and limited assurance over the accuracy and completeness of the data retrieved from HEI increases the likelihood that data used to determine SSI funding distributions is inaccurate or incomplete or that the data sets differ from those required to meet regulations. Failure to adequately secure the SSI spreadsheets also may ultimately result in data being altered without timely detection.

Recommendation

Create and implement formal procedures for reviewing and approving data files submitted by the institutions in HEI. Consider utilizing the warnings and response guidelines during the review of data files and incorporating into the formal procedures. Continue to review and revise the warnings and response guidelines regularly to ensure warnings are sufficient to detect data errors. Procedures should include necessary actions for each type of warning and requirements for approving or denying data files. Continue supervisory oversight of the analysts' data file review processes to ensure consistent and appropriate processes. Document results of all supervisory reviews and/or include results in annual performance evaluations.

Seek an upgrade to the HEI system to require institutions to add comments to the data files containing warnings prior to submission and require analysts to add comments when reviewing



data files with steps taken to resolve and approve data files to eliminate reliance on email as a communication and documentation tool.

Document formal procedures for verifying the accuracy of the data retrieval from HEI using SAS/Oracle queries. Document procedures to ensure query results are accurately and completely populated into the SSI spreadsheet.

Work with OH-TECH to create and implement a formal policy to help ensure OH-TECH provides timely notification of batch process errors to the HEI data warehouse and for DMAD to be included in Failure Mailing List notifications.

All written procedures should define roles and responsibilities for all tasks to complete the process. The procedures should be sufficient so individuals not fully familiar with the process can assist and perform tasks effectively and efficiently.

Secure the master SSI spreadsheets so only appropriate individuals have the required password to access the spreadsheet. The formulas within the spreadsheet should also be locked with a separate password to help mitigate the risk inappropriate changes are made to the funding calculations and/or funding amounts.

As part of a long-term solution, continue to upgrade the HEI system to automate the process to reduce or eliminate reliance on manual processes and spreadsheets and to assure data integrity and protect the funding calculation.

Management Response

ODHE, in partnership with OH-Tech, completed a re-design of the HEI Core application (which includes student and faculty related data, as well as financial aid) which began use as the production data collection system in January 2018. The development of the new HEI system has been a multi-year project that started in 2015. The update includes the ability for institutions to provide comments before sending a file through for approval by ODHE data analysts. The comment feature is optional and is expected to remain that way in the system.

Due to this change in HEI systems and knowing the reporting mechanisms would be updated, the data analyst training manual is in the process of being re-written to reflect procedures in the new system. This will include formal procedures for reviewing and approving data files submitted by the institutions in HEI. It will also include definitions of roles and responsibilities for all tasks to complete the process and written to use as training for individuals not fully familiar with the process so they can assist and perform tasks effectively and efficiently.

The process for verifying the accuracy of the data for SSI is also changing due to the new HEI system. The institutions will be able to see the preliminary and final reports containing the data used as the basis for the course completions, degree selection, and success points throughout the data reporting period. This will allow ample time for the institutions to review and verify their data that will be used for the SSI allocation process. This automated process will improve the



efficiency of the reviews of the final spreadsheet because it will be a verification of data already available, rather than a new report. Once the data is copied from the HEI report to the SSI spreadsheet, a data analyst (other than the Director) will verify the numbers used in the SSI calculations are matching the subsidy reports. We will document the procedures for this process specifying responsibilities for the institutions and ODHE data analysts.

Once the SSI spreadsheet has been deemed final, it is posted on the ODHE website under the 'budget and financial' section, and the copy stored on the shared drive will be password protected.

ODHE staff will work with OH-Tech to ensure we are included on the email notifications about any failed database procedures or similar issues that would impact our work.

Risk*	Remediation Owner	Estimated Completion Date
Moderate	Director, Data Management & Analysis	October 31, 2018

Observation 3 – Controls Over SSI Funding Formula Accuracy

Per Am. Sub. H.B. No. 49, section 381.140, the Chancellor of Higher Education shall establish procedures to allocate the foregoing appropriation item 235501, State Share of Instruction (SSI), based on the formulas detailed in this section that utilize the enrollment, course completion, degree attainment, and student achievement factors reported annually by each state institution of higher education participating in the higher education information system.

The SSI appropriation of approximately \$2 billion for state fiscal year 2018 is the largest component of the DHE core institutional support program to provide unrestricted operating subsidies to Ohio's 37 public institutions of higher education. The SSI appropriations are distributed through a complex formula that pays for a portion of the costs of different levels of instruction and is driven by course completions (as measured by full-time equivalent), success points, and degrees awarded and specific set-asides for doctoral and medical education. Therefore, robust controls throughout the formula processes are crucial to ensure accuracy.

However, the DHE Data Management and Analysis Department's (DMAD) processes over the appropriation formula include manual processes that are prone to error and have weak or lacking key controls to ensure accuracy. For instance:

- The first step in the formula calculation process involves projections of the numbers of degrees awarded, at-risk students, and full-time enrollment for the current academic year.



The projections are used to calculate the SSI funding allocation to the institutions for the first half of the fiscal year. The following weaknesses exist in the projection process:

- Manual processes exist to create the SSI projection spreadsheet from data retrieved from the HEI system and populate the master projection spreadsheet with institutions' projection information.
 - Email is used to send each institution its projection spreadsheet with instructions to update, communicate issues, track all correspondence, and receive updated projection information.
 - The DMAD Director reviews the institutions' projections to identify any that appear incorrect or unreasonable. However, potential issues are not centrally tracked for resolution and procedures do not exist to ensure the projections are thoroughly reviewed for reasonableness and appropriateness.
 - The DMAD Director is solely responsible for creating the projection spreadsheet with no trained backup or formal written procedures. Heavy reliance is placed on the institutions to review the spreadsheets and provide feedback on potential errors or omissions.
- OIA selected a sample of nine institutions to test the accuracy of the state fiscal year 2019 first half projected SSI distributions and noted that for three of nine (33%) institutions, the fiscal year 2018 projected completed FTE and projected access points (colleges) or at-risk (university) amounts provided by the institutions did not match the amounts recorded on the fiscal year 2019 first half projected SSI distributions master spreadsheet. According to the DMAD Director, this was due to the selected institutions not using an optional formula in the spreadsheet; however, the formula was copied and pasted into the master spreadsheet.
 - At the end of each term, institutions submit course completion and student enrollment data in the HEI system. The DMAD Director uses this information to prepare the master SSI spreadsheet with actual data for the funding formula for the second half of the fiscal year. However, the following weaknesses exist:
 - The DMAD Director utilizes a checklist to review the master SSI spreadsheet for accuracy. However, the checklist and results of the review are not maintained.
 - The Vice Chancellor of Finance does a final review of the SSI calculation spreadsheet looking for trends and outliers. The review is typically documented by sending an email to the DMAD Director with any questions or comments. There are no documented guidelines for the Vice Chancellor to follow when reviewing the spreadsheets and no subsequent reviews to ensure all review comments were addressed.



- The DMAD Director is solely responsible for creating the SSI calculation spreadsheet with no trained backup and no formal written procedures to ensure the spreadsheet is accurate and adheres to statutory formula requirements.
 - Heavy reliance is placed on the institutions to review the spreadsheets and provide feedback on potential errors or omissions.
 - DHE reviews and updates the formulas within the SSI calculation spreadsheet when there are statutory changes to the funding formula. However, the annual review of the formula is not formally documented.
- OIA selected one college to test the accuracy of the access point calculation and one university to test the accuracy of the at-risk calculation in the master SSI calculation spreadsheet. For the university, the number of degrees awarded for 2017 on the SSI calculation spreadsheet was three fewer than the number in HEI for one subject (10,806 instead of 10,809). Although the error has no material impact to the formula calculation, it illustrates the potential for manual errors and the need for a formal review of the spreadsheets.

Manual processes over large data sets and complex formulas, along with inconsistently documented reviews, increases the likelihood for inaccurate or incomplete data and formula calculations. Failure to implement proper segregation of duties or detailed supervisory reviews may result in the SSI spreadsheets being inaccurate or incomplete and errors may not be timely detected. Lack of formal written procedures for the creation and approval of the SSI spreadsheet may result in processes not completed accurately or timely in the event of staff turnover in key positions. Weaknesses in the process may ultimately result in incorrect funding distributions and non-compliance with statutory requirements.

Recommendation

As part of a long-term solution, continue to upgrade the HEI system to automate the process to reduce or eliminate reliance on manual processes, spreadsheets, and institutions to detect errors.

In the short-term, develop and implement calculations in the spreadsheets to identify errors or exceptions to document and resolve.

Develop and implement procedures to promote an adequate segregation of duties for creating the projection and SSI calculation spreadsheets. Procedures should specifically segregate the duties of contacting institutions for projections, pulling data queries from HEI, and creating, reviewing, and approving the spreadsheets. Management should monitor the processes to ensure the segregation of duties is occurring and perform detailed supervisory reviews to timely detect errors.



Develop and implement a formal procedure for conducting a final review of the SSI spreadsheet, to include verifying the accuracy of the formulas within the spreadsheet along with the data inputted into the spreadsheet for all institutions. The procedure should detail review processes, documentation to review, timing, and evidence to maintain to document completion of reviews. All corrections and final approval of the SSI spreadsheets should be maintained electronically.

Formalize the annual review process of the formulas within the spreadsheet to ensure alignment with statutory requirements and maintain documentation to evidence completion of the reviews.

Management Response

ODHE, in partnership with OH-Tech, completed a re-design of the HEI Core application (which includes student and faculty related data, as well as financial aid) which began use as the production data collection system in January 2018. The development of the new HEI system has been a multi-year project that started in 2015. Due to the change in systems and knowing the data model, as well as the reporting mechanisms would be changing, the documentation of the current SSI process was put on hold. Now that the new system is in place and the SSI process has been updated along with it, ODHE will create a procedures document for the SSI. This will include an explanation of segregation of duties, methods to review and double check the accuracy of the data, creating, reviewing, and approving the final SSI spreadsheets with the allocations.

ODHE will use the additional functionality of the new system to automate some reports used as the basis of the SSI, but to maintain calculation transparency, flexibility needed due to legislative changes, and to provide data to the institutions and public about the funding model, the use of the spreadsheet for a portion of the SSI calculations will continue. In the long-term, ODHE can explore more automation of the process, keeping in mind the goal of transparency and flexibility.

ODHE will also continue to perform an annual review of the formulas within the spreadsheet to ensure alignment with statutory requirements and maintain documentation of evidence that reviews were completed.

Risk*	Remediation Owner	Estimated Completion Date
Moderate	Director, Data Management & Analysis	October 31, 2018

* Refer to Appendix A for classification of audit observations.

Due to the limited nature of our audit, we have not fully assessed the cost-benefit relationship of implementing the observations and recommendations suggested above. However, these observations reflect our continuing desire to assist your department in achieving improvements in internal controls, compliance, and operational efficiencies.



Appendix A – Classification of Conclusions and Observations

Classification of Audit Objective Conclusions

Conclusion	Description of Factors
Well-Controlled	The processes are appropriately designed and/or are operating effectively to manage risks. Control issues may exist, but are minor.
Well-Controlled with Improvement Needed	The processes have design or operating effectiveness deficiencies but do not compromise achievement of important control objectives.
Improvement Needed	Weaknesses are present that compromise achievement of one or more control objectives but do not prevent the process from achieving its overall purpose. While important weaknesses exist, their impact is not widespread.
Major Improvement Needed	Weaknesses are present that could potentially compromise achievement of its overall purpose. The impact of weaknesses on management of risks is widespread due to the number or nature of the weaknesses.

Classification of Audit Observations

Rating	Description of Factors	Reporting Level
Low	Observation poses relatively minor exposure to an agency under review. Represents a process improvement opportunity.	Agency Management; State Audit Committee (Not reported)
Moderate	Observation has moderate impact to the agency. Exposure may be significant to unit within an agency, but not to the agency as a whole. Compensating controls may exist but are not operating as designed. Requires near-term agency attention.	Agency Management and State Audit Committee
High	Observation has broad (state or agency wide) impact and possible or existing material exposure requiring immediate agency attention and remediation.	Agency Management and State Audit Committee