Human Capital Data Use: Building a System that Informs Strategic Human Capital Management

September 2019

Over the past decade, education agencies have focused increasingly on strategic human capital management as a critical element of a comprehensive approach to improving student outcomes. A departure from more traditional and compliance-focused personnel functions, strategic human capital management efforts are heavily data informed and focus on one or more of the following levers in order to ensure educator effectiveness and to improve student outcomes:

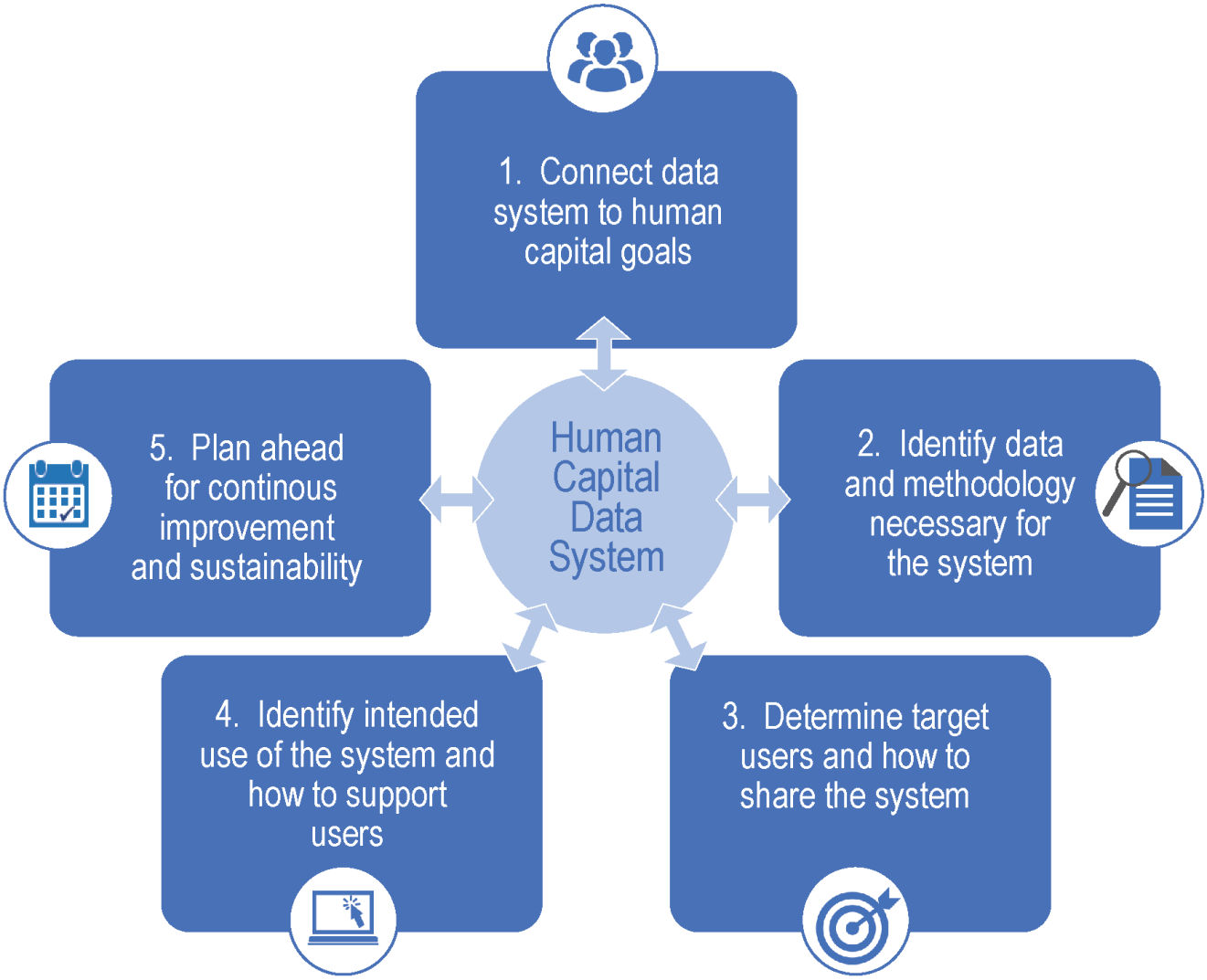
- Educator pipelines/Preparation
- Recruitment and hiring
- Deployment/Assignment
- Compensation
- Retention
- Mentoring and induction
- Professional development
- Evaluation
- Recognition/Appreciation
- Promotion
- Tenure and layoff decisions
- Working conditions

These human capital efforts are most effective when they are informed by data. Answering questions like *what happened in the past and why, what is happening now, where are bright spots or areas for growth, what will happen in the future, and what relationships do we see between these levers and student outcomes* are fundamental to using these levers strategically to improve educator quality and in turn student learning.

Answering these types of questions requires a deeper set of data than is traditionally collected, such as educators' certification area, level of education, and years of service. Building a more robust data set requires not only utilizing a richer collection of human capital data but also combining it with other data sets, such as student outcomes. Doing so is often challenging as education agencies may need to revise existing data collection practices and the way data are stored. Further, education agencies are also faced with the challenge of making these data understandable and transparent to the stakeholders who will use them to inform human capital decisions.

Supported in part by federal grants such as the Teacher Incentive Fund (TIF), Teacher and School Leader Incentive Fund (TSL), and Teacher Quality Partnership Program (TQP), school districts, state education agencies, higher education institutions, and other education organizations have invested resources and attention toward strategically developing and managing an effective educator workforce. Based on the experience of several TIF and TSL grantees, this resource was created to identify the main workstreams involved in building a human capital data system and includes tips and thoughtful questions to guide an education agency through the work. Real examples from these grantees are also provided to demonstrate how other education agencies have approached similar efforts. (Note that the workstreams are not necessarily accomplished in succession. In practice, the workstreams are interconnected and may run concurrently over the course of a design project.)

The Main Workstreams Involved in Building a Human Capital Data System



1. Connect your human capital data system to your human capital goals

Alignment between goals, strategies, and actions is critical to maximize the impact of building and using a human capital data system. As an initial step, consider your organization's overarching human capital goals; then, identify the questions you will need to ask of your human capital data to inform actions aligned to those goals.

Potential questions to consider include:

- What human capital management problem (or set of problems) do you want to address using human capital data?
- Within this problem area, what is your goal? This could be program related (e.g., increasing students' equitable access to effective teachers) or connected to overarching organizational goals (e.g., improving retention of effective teachers), or both.
- What strategy or strategies do you plan to implement to meet the goal?
- In what ways could a human capital data system inform how you implement your strategy?
- How will you know you have made progress toward addressing the problem and eventually meeting the goal? What data will tell you that you have succeeded?

Keep in mind:

- ✓ It is important to be specific in identifying problems and the strategies you intend to use to address them. Specificity will set the foundation upon which you can build your human capital data system requirements for design. Conversely, inadequate specificity will impede the data system design.
- ✓ Developing a theory of action or logic model for how you will address the problem will help you to clarify the relationship between the goals, strategies, actions, and their outcomes and to specify the data you need. Identifying specific grant or program strategies, measures of successful implementation, and expected outcomes will inform which human capital data is needed to understand whether the strategy is having its intended effect and how implementation can be improved. The AEM Logic Model Toolkit is a helpful resource that can be accessed at https://eed.communities.ed.gov/#communities/pdc/documents/14586.
- ✓ Consider an example problem: Some schools within your district are experiencing high turnover of new teachers. Your district has set a goal to reduce turnover in the five schools with the highest turnover rates and has identified implementing an improved induction process as the strategy to meet that goal. A strategically designed human capital data system can inform this strategy by identifying which schools have consistently had high turnover among new teachers, which schools are projected to have high turnover in future years, and even which new teachers are likely to leave. Further, the data system can support the district in assessing how well the strategy is being implemented by tracking whether new teachers participated in induction, what supports they received in the new program, and their perceptions of the program. Also, it can help to assess overall success of the strategy and identify areas for improvement by allowing the district to see the relationship between the induction supports provided, teacher retention, and teacher effectiveness.
- ✓ If goals and strategies have not already been established, it might be necessary to define them in collaboration with different stakeholders across your organization. If this is the case, consider who

might need to be a part of this process and keep in mind that broader collaboration often yields more cooperation down the line. For more information on engaging stakeholders, see the Stakeholder Engagement Plan Guide & Template at https://slds.ed.gov/#communities/pdc/documents/3083.

Connecting a human capital data system to human capital goals: Texas Center for Educator Excellence (TxCEE) Spotlight

TxCEE's Texas Educator Excellence Management System (TEEMS) supports the human capital goals of participant school districts. Each component of TEEMS is designed to empower district and school administrators to make a range of human capital decisions and ultimately improve student outcomes.

For example, a number of TxCEE's partner districts have established a goal of implementing career pathways to extend the impact of the most effective educators and improve student outcomes. The corresponding theory of action or logic model for these participating districts is that IF effective educators are offered career pathway positions with additional responsibility and compensation THEN they will apply for these positions and be selected by schools that are a good fit for their skills, AND THEN positively impact the instructional practices and engagement of the educators they support and ultimately improve student outcomes.

Articulating this theory of action prior to designing the career pathways functionality of TEEMS illuminated a number of questions the data system would need to address for users, including:

- *What are the eligibility requirements for career pathway positions?*
- *What is the candidate pool of educators eligible for each position?*
- *Are eligible applicants applying for each position?*
- *Are the educators selected into each position improving key outcomes?*

The identification of these questions guided the TxCEE team in designing TEEMS functionality to support the goals of filling these positions with the most eligible educators while also providing a way to track whether these positions are having their intended impact.

2. Identify which data and methodology is necessary to build your system

Once goals and strategies are clear, you can begin to identify the actual data you will need in your human capital data system. This workstream requires you to plan out which metrics or analytics could inform your human capital management strategy. It also requires you to begin thinking about data architecture, i.e., how data are formatted and stored, and how the identified data elements will be linked from separate source systems.

Potential questions to consider include:

- What types of metrics or analytics are necessary to inform the strategy you're using to address the human capital management problem and meet your goal?
- Which data elements would you need to create the metrics and conduct the analytics?

- Are any of these elements not currently available within your organization? If so, how might you go about collecting them?
- What is the data quality of these elements? Is there any foundational work that must be done to improve the quality before they can be used in the human capital data system?
- Where are these data elements stored? How will they be linked from different source systems?
- Who will conduct the analysis and how?
- What will the quality control (QC) process look like for these metrics and analytics to make sure they are accurate?

Keep in mind:

- ✓ You may find that you need a combination of both metrics (i.e., measures, such as school retention rate) and analytics (i.e., relationships, such as between induction program attendance and teacher effectiveness). Your needs will be largely determined by the answers to questions in workstream 1.
- ✓ As in workstream 1, it is important to be as specific as possible. It may be helpful to create a table with a row for each necessary metric or analytic you identified. Build out the table by adding columns that include greater detail, such as what type of methodology should be used to calculate the metric or analytic, what data elements are necessary, where those data elements are stored, how often the data elements are collected, and any notes on the data quality of those elements. Following the retention and induction example on the bottom of page three, a sample table is included in Appendix A. The sample table includes the identified metrics and analytics in the first column, followed by a methodology for calculating the metric, a list of needed data elements and their storage locations, information about when the data element is collected, and a column for notes on data quality.
- ✓ Once you have a sense of the data elements you need and where they are stored, you will need to determine how to query, extract, and merge them. Check if your agency already has a way of combining data from different source systems. Database design and development can facilitate how efficiently you can collect and store human capital data as well as increase your capacity to retain important relationships within the data (e.g., historical teacher assignments).
- ✓ To make the metrics and analytics both credible and actionable, the underlying data inputs must be accurate and valid. Moreover, the metrics and analytics themselves must also be sound. This can be thought of as a two-step process:

    1) Determine how you'll maximize the data quality. This will require ensuring the accuracy, reliability, completeness, timeliness, and usability/relevance of the data elements you've identified to include in your human capital data system.

What exactly is data quality?

Data quality is the assessment of whether data are fit to serve a particular purpose in a given context. ED's EDFacts Data Governance Board (EDGB) adopted definitions and measures for five data quality attributes: timeliness, completeness, accuracy, validity, and usability.

For details see EDGB's data quality process overview here: https://www2.ed.gov/about/inits/ed/edfacts/edfacts-data-quality-process-overview.pdf

2) Plan for how the metrics and analytics will be checked to ensure the methodology and output are accurate and measure what is intended. Be sure to decide on and document a QC process and decide who is responsible for QC.

Identification of data and methodology to build a human capital data system: Maricopa Education Service Agency (MCESA) Spotlight

In its' effort to support the local education agencies (LEAs) that it serves, MCESA has embarked on an ongoing effort to build a human capital data system that supports multiple human capital levers, including recruitment, selection, assignment/deployment, compensation, and recognition. Each lever requires different data to facilitate the metrics and analytics that can inform LEAs' efforts to support effective instruction within their systems.

MCESA engages in an ongoing and iterative research process to consider how additional metrics and analytics can strengthen these levers, and the data that would be needed to develop them. Through this process, MCESA identified a practice called ***Stay Interviews****.*

Stay Interviews *are an HCMS strategy with the potential to capture qualitative data to support LEAs in making informed human capital decisions. If gathered coherently and consistently, these data could provide a wealth of information related to employees' experiences working in schools, why they choose to stay at their school, effective forms of recognition, and more. Principals and administrators can then use these data to inform strategies surrounding recognition efforts, feedback loops, and communication plans on campuses.*

A key activity for MCESA was to determine how the data would be effectively collected and analyzed so the LEAs had actionable data and educator voices were heard. MCESA considered factors such as when the interviews happen, who participates in them, and how the interviews are conducted. A review of the data was then conducted in order to analyze trends and identify actionable steps toward improvement.

3. Determine target users and how they'll access the system

As with any data-informed effort, simply producing metrics and analytics is not sufficient to meet your goals. Thoughtful consideration is required to identify who will need to use these insights and how the users will access them. Often the answers to these questions require an analysis of stakeholder roles, the functionality of your reporting system, and any applicable policies regarding data privacy and security. Potential questions to consider in this step include:

- Which stakeholders should use these metrics and analytics? Who should be the system's primary users?
- At what points during the school year will these users need to use the metrics and analytics?
- How will you disseminate the metrics and analytics to them – via static reports, an online dashboard, or another vehicle? What data displays will you want to show them?
- How will you manage different levels of permissions to various people and roles within the organization? How will you ensure users have appropriate access to data and that data sharing is in compliance with any federal and state laws or policies governing data privacy and security?

Keep in mind:

- ✓ This workstream requires consideration of different individuals and roles within, and sometimes outside, the organization who play a part in achieving the goal identified in workstream 1. Often, this could be a collection of staff members across multiple departments. Consider making a list of everyone who has a role in achieving the goal and then identifying the specific type of work they do to further the goal. From there, you can list the types of actions they may rely on the human capital data system to inform. Consult the Talent Decision Planner resource for ideas at https://eed.communities.ed.gov/#communities/pdc/documents/18242.
- ✓ This is a great opportunity to engage with the potential users. Ask them about how they currently perform their work related to the identified goals and strategies and what information would make this work easier and better.
- ✓ As you're considering this list, you may think of additional data that these stakeholders might need to see. These can be added to what you compiled in workstream 2 above. Consider this an iterative cycle until you feel confident you have identified each user group and their primary human capital data needs.
- ✓ After identifying the potential users and their needs, consider what might be the best delivery mechanism to share the data with them. Some users might require the greater flexibility that a spreadsheet provides. Others might simply need a graphical report highlighting the most relevant metrics for their role. The delivery mechanism could look very different for different user groups.
- ✓ This workstream requires both conceptual and technical effort. In addition to brainstorming your list, you will also need to consider how to implement different permissions within the system. This could be done in an automated way (i.e., based on an individual's role or job title that is pulled directly from a source system that houses this information) or manually (i.e., regularly reviewing the list of those who require access and manually adding or removing users as needed). This determination will be based on the technical capacity of the system. Regardless, in order to be a responsible steward of this collection of human capital data, it will be necessary to plan for a process that continually manages and audits permissions.
- ✓ Be sure to consult any MOUs, local policies, or state and federal laws governing data privacy and security that might influence whether and how these data may be shared. Consult the SLDS Technical Brief #2: Data Stewardship: Managing Personally Identifiable Information in Electronic Student Education Records (https://nces.ed.gov/pubs2011/2011602.pdf) and the SLDS Issue Brief: Securing Your SLDS (https://slds.ed.gov/services/PDCService.svc/GetPDCDocumentFile?fileId=28697) for more information on ensuring data privacy and security in education data systems.

Determining target users and access:
Mastery Charter Schools Spotlight

When taking stock of the availability of data to inform strategic human capital management efforts, Mastery Charter Schools in Philadelphia, PA identified a couple immediate barriers to building an effective human capital data system: 1) data quality and 2) user groups' access to self-service reports and information (eliminating Human Resources as a bottleneck in the process).

Therefore, Mastery began a process to implement a new human resources information system that could support greater data quality and more self-service functionality to inform strategic human capital levers.

Part of this work included identifying different user groups, mapping out workflows and their common data needs, and using this information to build self-service functionality within the system. Mastery was thoughtful in building a training plan for every user group who would access the new system. As a result, on average, 86% of users log in during a single month.

From here, Mastery plans to build out more advanced facets of its human capital data system to provide analytics that can inform more strategic human capital management levers such as selection and retention.

4. Identify intended use of the system and how you'll support users

Having the data is important, but it is data-informed *action* that will make an impact on progress toward your goals. Therefore, it is critical that you focus the same level of attention on defining and supporting intended uses of the data system as you do on building the system.

Potential questions to consider in this step include:

- How can or should these metrics and analytics be used in support of your previously identified human capital goals and primary users? How do these uses fit within the day to day and week to week working lives of your users?
- How will the expectation for use be communicated to primary users? Is the system simplifying an already present process or decision or is the system adding on to users' workloads?
- How will users be supported as they engage with the system and take action?
- What resources would help make the data actionable for these stakeholders (e.g., an FAQ, in-person training, a recorded webinar, reflection question worksheets, etc.)?

Keep in mind:

- ✓ This workstream will likely require a cross-functional approach, extending beyond Human Resources and IT. For example, a large primary user group for your human capital data system may be school leaders, and so you might consider partnering with the school supervision team and professional development team to plan how you might support school leaders in using the data system.

- ✓ Users can't use the data system if they don't know it exists or what it can do for them. Consider building a communication plan to make sure users are aware of what they can access and how to find it. This plan might include being explicit about how the system will inform the work that they are already expected to be doing, rather than being a new thing to do.
- ✓ In order to maximize usage aligned to the strategies and goals identified in workstream 1, build a customized training and support plan for users. Think about trainings that go beyond the technical (i.e., which buttons do I click, how do I log on, etc.) to cover interpretation and use of the data (i.e., what questions do these data raise, what conclusions might be drawn, what next steps might be appropriate?). Also consider multiple mediums for training and support, such as pairing in-person, role-specific sessions with self-serve written documentation and guides.
- ✓ Planning training and support is another great opportunity to engage with the users themselves. Ask a few trusted users to help you understand what kind of training, resources, or support they might need to interpret and use the data provided to them. Consider piloting the training with these trusted users.

Identifying intended users and supporting them: Hillsborough County Public Schools (HCPS) Spotlight

Recognizing the need to hire and retain highly effective teachers in order to best serve its students, HCPS identified high turnover rates and inconsistent hiring outcomes across schools as two key strategic human capital management problems to address.

To inform these efforts, Hillsborough worked with an external partner to develop an online reporting tool that predicted schools' hiring and retention outcomes based on historic information. HCPS was explicit in how it envisioned the tool to be used. The district wanted to be able to identify: 1) schools that were outperforming similar schools in hiring and/or retaining high-performing teachers, and 2) schools that do not hire or retain high-quality teachers compared to similar schools. From this information, HCPS wished to learn promising practices from outperforming schools, provide additional support to struggling schools, and pair leaders from outperforming and struggling schools together for peer learning.

Given this intended use, HCPS identified Area Specialists and Area Superintendents as the primary users of the tool because these role groups work directly with school leaders to coach and support them in their human capital management efforts at the school level.

To ensure these groups understood how to interpret and apply the data in the tool, HCPS held role-specific in-person workshops where users oriented themselves with the tool and worked collaboratively to think through what next steps they might take based on the data. To accompany the workshop, written resources were provided for future reference.

5. Plan ahead for continuous improvement and sustainability

Conditions in education agencies are ever-changing; therefore, the contexts surrounding human capital management goals change frequently. Human capital data systems should not be expected to be static, either. Continuous improvement of the system and regular updates of the data should be a part of any plan to build and use a human capital data system.

Potential questions to consider include:

- How will you monitor if the metrics and analytics from the system are supporting the goal/strategy?
- How will you know if users are accessing and using the system? How will you identify barriers users might encounter to using the data system?
- At what points in the year are particular data most relevant to inform actions? At what regular intervals will the data need to be updated and re-shared with stakeholders?
- What is your sustainability plan to ensure that the system remains relevant and utilized? What impact might leadership changes have on the system and how can you plan for this?

Keep in mind:

- ✓ You might wish to plan for usability testing or otherwise gather feedback from users to ensure that they are able to use the system as it was intended. To keep informed about changing needs, you might also establish a user group to provide ongoing feedback about potential changes in programs and strategies.
- ✓ An important overarching consideration as you build and maintain a human capital data system is timing. Different data elements are available at different points in the year and are updated at different rates. For example, teacher effectiveness data are typically only available once a year while teacher attendance rates change on a daily basis. It will be necessary to consider users' work and the points at which they make decisions or take action so that you can appropriately balance the needs of users with the availability of updated data. Consider building a data calendar to ensure you are clearly communicating when actions and decisions should occur and how data that are relevant to those decisions will be refreshed. Examples of human capital decision and data availability calendars can be found at https://eed.communities.ed.gov/#communities/pdc/documents/18242.
- ✓ Building a human capital data system and subsequently maintaining it once it is built are two distinct work streams, and you should plan for them as such. Often, grant funds or other support can buoy the initial development of a system but might expire once the maintenance phase begins. Similarly, the build and maintain phases might also require different staff resources. Be sure that just as you carefully plan for the initial build of the system, you are also planning for future maintenance and enhancements.

Conclusion

As education agencies strive to include strategic human capital management as part of comprehensive efforts to improve outcomes and meet student needs, they are relying on more robust and integrated

data sets that can help to inform human capital decision making. Building a human capital data system to support such data use can be a complex cross-functional endeavor. This product was developed based on the experience of TIF and TSL grantee organizations to help agencies plan and implement a comprehensive approach to building and using human capital data systems. Not all agencies are at the same starting place, however. Users of this guide are encouraged to review the guidance in the document above, assess their current status within each of the five workstreams, and then develop a plan that incorporates the guidance that is relevant to their starting point.

Some agencies might wish to focus their efforts first on building a human capital data system that will support one human capital management lever (e.g., recruitment and hiring, retention, etc.) and then move on to another. Others might wish to build a more comprehensive system that is relevant to multiple levers. Ultimately, agencies are encouraged to build comprehensive data systems that touch on all human capital management levers that are strategically connected to their overarching organizational goals. Once comprehensive data systems are in place, these systems can be used as part of an overarching continuous improvement system to track key performance indicators, gauge whether their strategic human capital management efforts are having the intended impact on the goals, and adjust if needed.

Appendix A – Sample Metric/Analytic Table (Workstream 2)

Metric/Analytic	Methodology	Necessary Data Elements and Locations	Collection timing	Data Quality Notes
Historical school-level turnover among new teachers	The ratio of new teachers (no prior experience within the district) remaining in a school from one year to the next averaged over three years	• Teachers' school assignments at beginning of school year (2015-16 through 2018-19) – available as a field in Human Resources Information System (HRIS) • Indictor if teacher had prior teaching experience within district – can create data element using fields in HRIS	• Annually, September • Calculated value	• Teacher location data is relatively high quality. • Prior teaching experience indicator is also expected to have high quality after determining business rules for what is considered prior teaching experience.
Overall perception of induction experience, by school	Average response among new teachers by school	• Individual teacher responses on a five-point scale. • This is not currently an available data element and would require implementation of a perceptions survey	• TBD	• n/a – data element not currently collected
Relationship between induction program and new teacher retention	Regression controlling for teacher and school characteristics with induction participation as x variable and school-level retention in school as y variable	• Teacher characteristics such as age, race, and education level – available as fields in HRIS • School characteristics such as size, poverty rate, and racial demographics - available as fields from SIS system • Indictor if teachers had prior teaching experience within district – can create data element using fields in HRIS • Indicator if new teachers participated in induction program – available as field in a spreadsheet maintained by Professional Development team • Indictor if teacher was retained from one year to the next - can create data element using fields in HRIS	• At hiring • September • Calculated value • TBD • Calculated value	• Teacher and school characteristics are generally of high quality • Indicators for new teachers and retention are also likely to be of high quality • Data quality of induction participation is unknown – will need to consult with PD team to determine how this data is captured

*The **Teacher Quality Programs Technical Assistance Center (TQP TA Center)*** provides technical assistance and resources to organizations funded by the U.S. Department of Education. The TQP TA Center's purpose is to support these grantees as they 1) pilot programs to improve the quality of teacher and leader preparation, induction, and ongoing development; 2) test strategies to more equitably distribute highly effective teachers and leaders across LEAs and schools; and 3) monitor implementation.

This product was prepared under the U.S. Department of Education Contract ED-OII-17-O-0045 with AEM Corporation. The views expressed herein do not necessarily represent the positions or policies of the U.S. Department of Education. No official endorsement by the Department is intended or should be inferred