



INTRODUCTION

Good data helps a community understand its performance and determine if the right combination of strategies and resources have been deployed. Some Continuums of Care (CoC) may be hesitant to use data because they are not confident in its quality—in other words, they do not know if their data is telling the whole story or providing an accurate picture of what is happening in the community. One of the best ways to improve data quality is to use the data in meaningful ways so that all stakeholders recognize its importance, creating an incentive to improve data quality. This brief assists CoCs to build the confidence to use data for strategic decision-making. It supports CoCs in analyzing the quality of their Homelessness Management Information System (HMIS) data, recommends useful strategies for improving data quality, and offers a year-round approach to managing data quality. The more data is used by community leaders, providers, and others, the more likely they are to continuously improve data quality, which fosters greater assurance in the data that is available for system planning.

The *CoC Data Quality* brief is part of a series of system performance resources and should be read in conjunction with [Data Quality and Analysis for System Performance Improvement](#), which gives key steps to analyzing System Performance Measures results and troubleshooting data quality issues known to influence performance results; and [Strategies for System Performance Improvement](#), which offers guidance on analyzing and interpreting performance data and identifying high-impact strategies for improving performance year-round.

High quality data is essential in developing an accurate picture of the health of a community's homeless Coordinated Entry system and knowing where improvements are needed.

Federal Data Quality Initiatives

Recognizing the importance of being able to measure how well housing and service strategies are ending homelessness, the U.S. Department of Housing and Urban Development (HUD) and other Federal partners have worked closely to align their data efforts and develop data quality resources. For instance, the U.S. Department of Health and Human Services (HHS) and the U.S. Department of Veterans Affairs (VA), collaborated with HUD on [Homeless Management Information System \(HMIS\) Data Standards](#) and share the same data quality principles. Several data quality initiatives are outlined below.

- The [VA Data Guide](#) stipulates that only clients entered into HMIS and successfully uploaded to the Repository can be counted as having been served by Supportive Services for Veteran Families (SSVF) grantees.¹ Poor data quality will cause the entire upload to be discarded.
- HHS's Runaway and Homeless Youth (RHY) repository established similar thresholds for data completeness in the [RHY Data Completeness – Data Quality Report User Manual](#).
- HUD's new HMIS Data Quality Framework, which forms the building blocks of data quality, will be incorporated into various reporting requirements, such as the [CoC Annual Performance Report](#) (APR), [Annual Homeless Assessment Report](#) (AHAR) and the [System Performance Measures report](#) (SPM).

¹ "VA Data Guide" https://www.va.gov/HOMELESS/ssvf/docs/VA_Data_Guide_February2016.pdf (February 23, 2017)

HUD policy notices and guidance articulate data quality standards and responsibilities that enable CoCs and ESG recipients to produce the reports required under the CoC Program and ESG Program interim rules. HUD ties data quality to overall CoC competitiveness for funding.

What is HUD’s vision for Data Quality?

HUD aims to help CoCs talk openly about data quality and its impact on understanding and, ultimately, ending homelessness in a community. The next three sections will support this effort by:

- Describing the components of a sustainable and transparent Data Quality Management Program
- Defining and providing action steps to improve the key elements of data quality improvement
- Describing the connection of these key elements to the HMIS Data Quality Framework, SPM report, APR, AHAR, and Local Data Quality Monitoring Reports

OPERATING A DATA QUALITY MANAGEMENT PROGRAM

In anticipation of the HMIS Final Rule, and in response to the scoring criteria for the CoC Program Competition, many CoCs have created data quality plans. The next step is to implement that plan and assess its impact. A Data Quality Management Program will help ensure these plans are improving data quality. Communities implementing a Data Quality Management Program should consider the following steps:

Identify a Baseline

Determine how many of the homeless assistance and homelessness prevention projects are actively participating in HMIS. Run data quality reports for the full system and the individual projects to understand the baseline level of data quality. When CoC leaders, project staff and HMIS Lead staff review reports, does the data seem accurate?

Read [Increasing Participation in HMIS](#) to learn how to promote benefits and increase HMIS usage.

Secure CoC Buy-in

Clarify up front what the expectations are for the Data Quality Management Program. Note that this work cannot and should not fall just on the shoulders of the HMIS Lead Agency. The table below provides a description of data quality roles and responsibilities for key stakeholders.

Roles	Responsibilities
CoC Leadership	<ul style="list-style-type: none"> ▪ Review and approve the data quality plan ▪ Set data quality benchmarks ▪ Review data quality reports ▪ Determine expectations for monitoring and compliance ▪ Work with providers and the HMIS Lead/System Administrator to develop and implement solutions for improving data quality ▪ Consider data quality in the rating and ranking process for funding decisions

Roles	Responsibilities
HMIS Lead/System Administrator	<ul style="list-style-type: none"> Work with the HMIS vendor to ensure access to data quality reports Understand the data quality elements to be submitted with the SPM and APR Systematically monitor the data Communicate regularly with the CoC and individual providers to ensure stakeholders are informed and have the resources to address data quality concerns
Participating Agencies and HMIS End Users	<ul style="list-style-type: none"> Set the tone for the agency's commitment to data quality Monitor a project's data quality Prepare for APR requirements Resolve any data quality findings as quickly as possible

Develop a Data Quality Plan

Create a clear and concrete plan that is informed by a CoC's data quality baseline and reflects the improvements the CoC wants to make across all key elements. Development and approval of the plan should go through the CoC's governance structure, as identified in the CoC Governance Charter. The table below provides sample elements to include in a CoC's Data Quality Plan.

Roles	Data Quality Plan (Sample Content) Responsibilities
Introduction	<ul style="list-style-type: none"> Explain the local and benefits, federal incentives, and federal requirements Include roles and responsibilities for the agencies, the HMIS Lead/System Administrator, and the CoC leadership
Data Quality Elements and Benchmarks	<ul style="list-style-type: none"> Describe and set benchmarks for Coverage, Utilization, Completeness, Accuracy, Timeliness, and Consistency Include data quality standards for HMIS participation Establish CoC-wide goals for coverage and utilization
Data Quality Monitoring and Reporting	<ul style="list-style-type: none"> Document monitoring roles and responsibilities Document monitoring frequency and compliance requirements Use a locally established or vendor-provided data quality report

Engage Vendors

Proactively address data quality troubleshooting needs related to the HMIS application. HUD cannot place requirements on vendors directly. In the case of identifying and addressing data quality issues for Federal Partner-mandated reports, HMIS Leads may wish to consider requiring the HMIS software vendor to provide reports or tools following standard business rules to facilitate data quality activities.

Execute Enforceable Agreements

Ensure Grant Agreements and HMIS Agreements between the CoC and Grantees include data quality roles and responsibilities and measurable compliance requirements. It is helpful to include the notification process for success and failure to meet standards.

Ongoing Monitoring and Reporting

Be transparent and consistent with the CoC monitoring protocols and reporting frequency documented in the plan. Training and communication will be essential and a grace period will allow providers time to adjust to new standards.

Create Incentives and Enforcement Expectations

Find ways to celebrate data quality successes and allow for growth as providers learn how to value and improve data quality. Develop a formal compliance policy and procedures so everyone understands the CoC's data quality standards, how the CoC will support providers in meeting the standards, and what happens if standards are not met.

KEY ELEMENTS OF DATA QUALITY IMPROVEMENT

"Data quality" is an umbrella term that refers to the reliability and comprehensiveness of a community's data and encompasses several concepts. The table below outlines key terms often associated with data quality.

Data Quality Key Terms	Definitions
Completeness	The degree to which all required data is known and documented. Coverage and utilization are both forms of completeness.
▪ <i>Coverage</i>	The degree to which all homeless assistance providers within a CoC's geography enter all homeless clients into HMIS. Providers include those funded by the CoC and ESG Program, federal partner agencies, foundations, and private organizations.
▪ <i>Utilization</i>	The degree to which the total number of homeless beds within the HMIS are recorded as occupied divided by the total number of homeless beds within the CoC's geographic coverage area.
Accuracy	The degree to which data reflects the real-world client or service.
Timeliness	The degree to which the data is collected and available when it is needed.
Consistency	The degree to which the data is equivalent in the way it is collected and stored.

To improve data quality, CoC leadership, HMIS Lead/System Administrators, and providers need to understand the rationale, primary considerations, and concrete action steps for each data quality element, which are outlined in the table below. Additionally, a regular emphasis on using the data across the community and assessing the data quality will create incentives to further improve and rely on the data.

Action Steps to Improve Data Quality

	Rationale	Considerations	Action Steps
Coverage	<p>Partial participation across the CoC coverage area can negatively affect the ability of the CoC to report on and analyze community performance. If some providers are not participating in the HMIS, it will be difficult to determine whether the data accurately reflects what is happening within projects or across the system.</p>	<p>Are all homeless service providers regardless of funding source entering data into HMIS?</p> <p>Are all programs entering every client served by the programs?</p> <p>Are all programs required to use HMIS entering complete data into HMIS?</p>	<ol style="list-style-type: none"> 1. Create a complete inventory of homeless service providers throughout the CoC; 2. Create a plan to outreach to non-participating providers; 3. Develop incentives to encourage non-participating providers to start using HMIS; and 4. Publish a regular, publicly available report on HMIS bed coverage information
Utilization	<p>Utilization rate, or the number of beds occupied as a percentage of the entire bed inventory, is an excellent barometer of data quality. It is difficult to measure data quality if the utilization rate is too low (below 50%) or too high (105%) without a reasonable explanation.</p>	<p>Are the number of beds recorded in HMIS accurate?</p> <p>Are providers entering HMIS data for every client served (if not, the report may show low utilization)?</p> <p>Are providers properly exiting clients from HMIS (if not, the report may show high utilization)?</p>	<ol style="list-style-type: none"> 1. Update Housing Inventory Count (HIC) quarterly; 2. Verify that bed provider data in HMIS matches HIC data; 3. Require bed providers to confirm client exits on regular basis; and 4. Publish a regular, publicly available report on HMIS bed utilization information.
Completeness	<p>Partially complete or missing data (e.g. SSN digit(s), year of birth, disability or veteran status) can negatively affect the ability to provide comprehensive services and could mean participants do not get the help they need to become permanently housed. It also makes it difficult to unduplicate the number of clients served.</p>	<p>Does the CoC have the required client-level data?</p> <p>Are all the required data elements answered for each client?</p> <p>Are all answers complete?</p>	<ol style="list-style-type: none"> 1. Require providers to review data completeness reports at least quarterly; 2. Establish monitoring practices that identify missing data from a client record; and 3. Consult with vendor about implementing automatic reminders (e.g. warning that date of birth is missing)

Action Steps to Improve Data Quality			
	Rationale	Considerations	Action Steps
Coverage	To ensure data is collected and entered accurately. Accuracy of data in HMIS can be difficult to assess. It depends on the client's ability to provide the correct data and the intake worker's ability to document and enter the data accurately.	<p>Is the data correct? Does it represent the reality of clients and services?</p> <p>Are providers monitoring to ensure that what is in HMIS is consistent with what is in other paper or electronic files?</p> <p>Are households properly entered?</p>	<ol style="list-style-type: none"> 1. Require providers to self-audit, checking the HMIS record against non-HMIS sources; 2. Establish a simple process for HMIS users to report and correct errors as they are discovered; and 3. Consult with vendor about implementing automatic validation checks at data entry (e.g., prevent users from entering infants as veterans)
Utilization	Entering data in a timely manner can reduce human error when too much time has elapsed between data collection and entry. Also, when a user exits a person from one program and enters them into another, this may affect outcomes such as income. Timely data entry ensures data is accessible when it is needed (e.g. monitoring purposes, funded reporting, responding to requests for information).	<p>Is that data entered in a timely manner?</p> <p>Is the data updated as circumstances change and clients move through the system?</p>	<ol style="list-style-type: none"> 1. Establish CoC standard for timeliness of data entry, which may vary per project type (e.g. 24 hours for ES, 72 hours for RRH); and 2. Run reports that indicate the time between the record creation date and the date of the activity (i.e. is the data entered in real time, several days later or several weeks later?)
Completeness	To ensure that data is understood, collected, and entered consistently across all programs in the HMIS. Consistency directly affects the accuracy of data; if an end user collects all the data, but does not collect it in a consistent manner, then the data may not be accurate.	<p>Are the providers in the CoC entering the data in the same way?</p> <p>Do end users share the same understanding of what each data element means?</p> <p>Are end users trained in the same way and given access to the same data entry guidance and training materials?</p>	<ol style="list-style-type: none"> 1. Consult with vendor about implementing dropdown menus, input standards, and required fields (e.g. dates in "mm/dd/yyyy" format would not accept a two-digit year); and 2. Ensure users understand input requirements and have access to field definitions, by providing regular trainings and helpful cheat sheets for requirements and key terms

An important consideration that crosses the key data quality elements is the HMIS data sharing environment. What may appear to be data entry errors caused by an individual or project could be a more systemic issue related to policies and practices for data use and access. Coordinated Entry (CE) processes and Housing First^{2,3} approaches encourage information sharing to end an individual's homelessness quickly through collaboration.

- **A data sharing environment** can support collaboration but may be negatively impacted if end users do not understand how to identify and resolve discrepancies in a shared data element. Be sure to identify who has the authority to make changes and the process for notifying others that a change was made.
- **A non (or limited) data sharing environment** can sometimes sway reluctant agencies to participate in HMIS. However, the CoC may be negatively impacted by multiple records for a single client. The records can be difficult to unduplicate due to variations in data. Be sure to determine and document a standardized practice for unduplicating records for system-level reporting and for resolving conflicting results in the data elements.

For each environment, policies and procedures should include clear steps for the HMIS Lead/System Administrators and End Users to identify, clean and resolve data quality issues.

DATA QUALITY TOOLS

HUD's Data Quality Framework: Recently, HUD worked closely with HMIS vendors to develop detailed instructions on the preparation of a new Data Quality Framework, which forms the building blocks for validating data quality and submitting results with the CoC's SPM and APR reporting. The instructions and purpose for individual reporting tables can be found in the [HMIS Standard Reporting Terminology Glossary](#).

Programming was finalized on April 1, 2017. CoC leadership and HMIS Leads/System Administrators should become familiar with the report and incorporate the report into the CoC's Data Quality Management Program. CoC leadership should review the data quality results at least quarterly and strategize with the HMIS Lead/System Administrator on how to address issues that may arise.

Data Quality and System Performance Measures (SPM) Report: Building from the HMIS Data Quality Framework, HUD has added a new data quality validation tab to the SPM module in the Homelessness Data Exchange (HDX). The addition of data quality elements is a starting place for improving the accuracy of the SPMs. Over time, HUD intends to increase the depth and scope of the data quality review, building from the Data Quality Framework. HUD Webinars and HMIS System Administrator office hours will be available to answer questions regarding the SPM report and data quality submission.

When looking at SPM through the lens of data quality, the SPM results could vary widely from what is true in a homeless service system. The most common issues are related to a CoC's coverage and utilization rate in HMIS. For example, if the coverage rate of Emergency Shelters is low, Measure 1 'Length of Time Homeless' may be much shorter than is true. The community needs to fix this and other data quality issues to accurately understand what is going on and how to develop strategies to improve system performance. HUD's new brief, [Data Quality and Analysis for System Performance Improvement](#), explores how data quality may be impacting a community's

² "Housing First in Permanent Supportive Housing Brief"

<https://www.hudexchange.info/resources/documents/Housing-First-Permanent-Supportive-Housing-Brief.pdf> (July 2014)

³ "Housing First Checklist: Assessing Projects and Systems for a Housing First Orientation"

https://www.usich.gov/resources/uploads/asset_library/Housing_First_Checklist_FINAL.pdf (September 2016)

SPM and provides corrective actions that can be taken. The HUD [System Performance Measures: Guidance to Check SPM Data and Have Confidence in Numbers](#) webinar is another resource for understanding data quality issues related to the SPMs.

As a community works to make SPMs a central part of understanding how well the community is ending homelessness, the following table outlines actions to improve SPM data quality:

Role	Data Quality Action Steps to Improve System Performance Measures
CoC	<ol style="list-style-type: none"> 1. Carefully review SPM data submitted each year 2. Resolve data issues leading to inaccurate reporting 3. Determine if the CoC will resubmit data
HMIS Lead/System Administrator	<ol style="list-style-type: none"> 1. Carefully review SPM data submitted each year 2. Identify data quality issues 3. Recommend solutions to resolve issues
Participating Agencies	<ol style="list-style-type: none"> 1. Carefully review SPM data submitted each year 2. Resolve data quality issues 3. Implement strategies to reduce future issues

Data Quality and the CoC Annual Performance Report (APR): Data quality measures have long been a part of the CoC APR. The new Data Quality Framework has been integrated into the latest revision of the CoC APR and will allow projects to improve the accuracy of their information so the CoC Program recipients can develop informed strategies to improve performance. The data quality measures within the CoC APR stem from the HMIS Data Quality Framework and may continue to evolve in subsequent revisions.

Data Quality and Local Monitoring Reports: The Data Quality Framework could also be used as building blocks for locally developed data quality monitoring reports designed for both the CoC leadership and end users at agencies. These reports could support a culture of striving for high data quality. At the agency level, data entry staff and their supervisors could monitor data quality in real-time or near real-time and take corrective measures immediately. At the CoC level, data quality reports could be used to look at how individual users or projects are doing, and provide assistance and training to increase data quality.

CONCLUSION

Each partner invested in ending homelessness plays a key role in improving the quality of data used to measure the success and challenges of that effort:

- **CoC Leadership** can make the connection between data quality efforts and accuracy of System Performance Measures, other local data analysis, and the ability to support CE system, as well as establish community-wide expectations about providing high quality data.
- **HMIS Lead/System Administrator** can make data quality reports readily available to Participating Agencies and CoC leadership and conduct trainings on a regular basis that include expectations.

- **HMIS Vendors** can be responsive to the evolving data quality needs of communities, ensure CoC leadership and HMIS Leads/System Administrators have access to tools that identify and troubleshoot data quality issues.
- **Participating Agencies** can set the tone for the agencies' commitment to data quality by developing incentives and expectations for individual staff that collect and enter data into HMIS. Make HMIS data quality an element of a staff person's annual performance review and a factor in determining advancements.
- **Other funders** can also set the tone and expectations for high data quality by making funding and resource decisions based on the quality of data submitted in applications and mandatory reports.

HOW TO ACCESS HUD ASSISTANCE?

The CoC can request Technical Assistance [through the HUD Exchange](#) or submit questions on this topic to HUD's [Ask a Question](#) (AAQ) desk (select HMIS for questions on data quality).

USEFUL RESOURCES ON DATA QUALITY

Additional data quality resources are in development for the SPMs, AHAR, APR, and the CoC Program application for funding, and build on resources that already exist:

- [SNAPS In Focus: SNAPS' Data Strategy](#)
- [Data Quality and Analysis for System Performance Improvement](#)
- [HUD System Performance Measures: Guidance to Check SPM Data and Have Confidence in Numbers](#)
- [HUD Data Quality Toolkit](#)
- [Enhancing HMIS Data Quality](#)