

Overview

While *System Performance Measures (SPMs)* are intended to provide a snapshot into the homeless response system as an entire coordinated initiative, *Project Performance Measures (PPMs)* allow policy makers and community leaders to evaluate both the proficiency and impact of each specific resource. More details on the intersect between SPMs and PPMs can be found in the white paper we wrote on the subject found [here](#).

HUD has created formal specifications for SPMs but has yet to really delve into project performance measures themselves. The Annual Performance Report (APR)¹ is the closest candidate but, if the results are viewed in isolation, the APR figures lack context. For a project to be measured for its *proficiency*, the results of the project need to be compared to the APR results of its peers. For a project to be measured on *growth*, the results of the project need to be compared to past results for that same project. This document provides an outline of the underlying technical work required to greatly simplify the process of preparing PPMs that can measure both proficiency and growth.

Project Performance Dashboard –Peer Benchmarking with APR Results (click [here](#) for live demo)



Overview of the Proposed Approach to Create Meaningful Dashboards

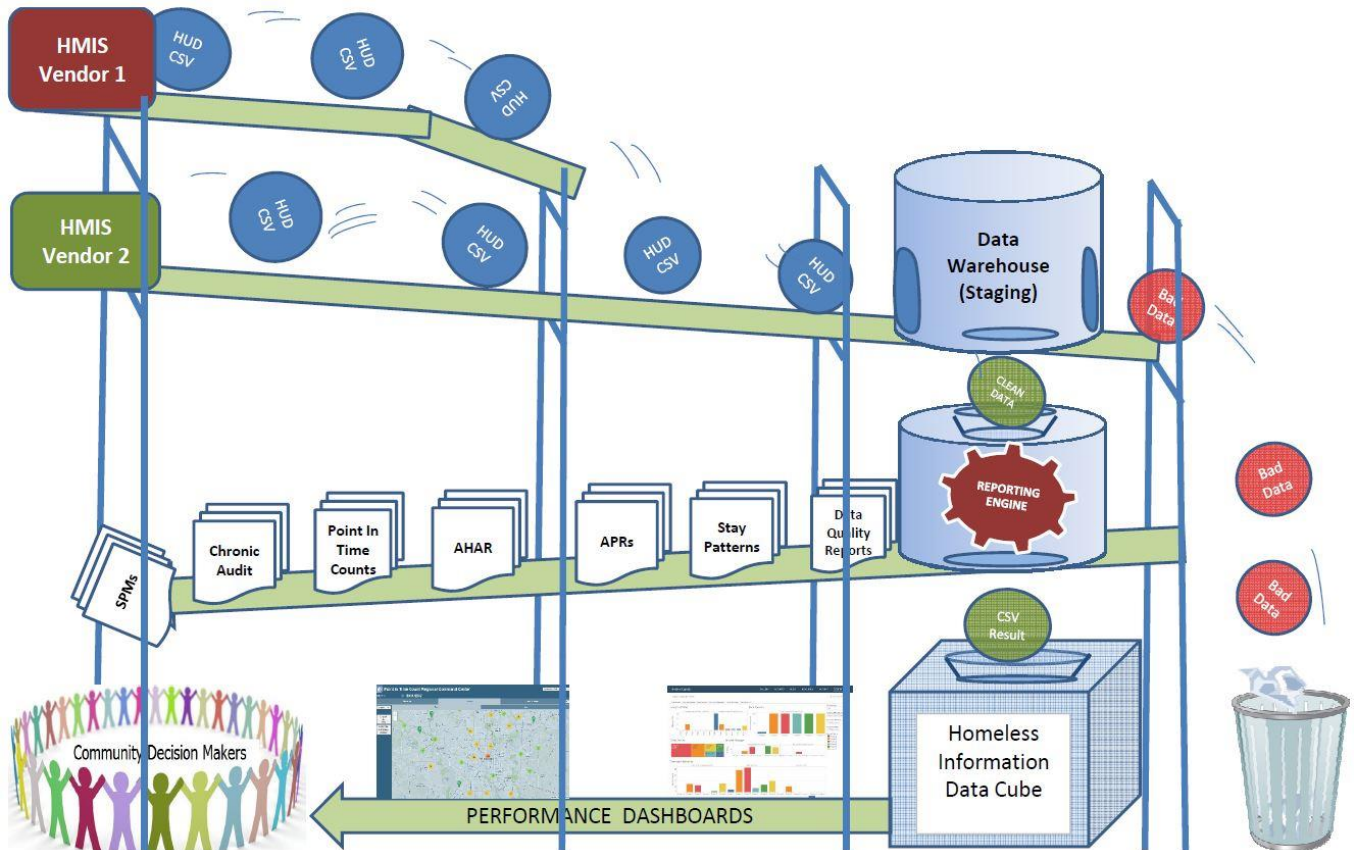
Data visualization tools such as Tableau would perform poorly, and the work of creating the visualizations would be arduous, if the tools had to be run directly off the tens of thousands of client-level records in HMIS. Instead, we can look to other HMIS dashboard work that has been done, such as [LAHSA’s Veteran’s Dashboard](#), and see that these visualizations rely on data that has already been

¹ Simtech Solutions Inc., [HUD Annual Performance Report \(APR\) Programming Specifications](#)

“prepped” to simplify the creation of meaningful output. Unfortunately, that prep work can be cumbersome which is likely why the most recent refresh date for the LA dashboard was September 2016.

Our proposed approach is similar but, rather than creating a new output format to build visualizations over, we envision leveraging the eCART CSV Output Format. This format is utilized by ESG CAPER Reports already, and as of April 1, 2017, this same format is to be used for submitting HUD APR data to the new *SAGE HMIS Reporting Repository* that will replace e-Snaps. Since the intent is for these dashboards to be publicly shared, it is much “cleaner” from a security perspective to be working off aggregate results. No client-level data is ever exposed. These aggregate results are posted to a “Data Cube” that will provide ready-access for data visualization tools such as Tableau to produce meaningful dashboards.

The diagram below illustrates how data can flow through from either a single, or multiple, HMIS software solutions, be validated to determine if it is worthy of publishing to the data cube, and how the final dashboards present this timely information to community decision makers.



What this document seeks to do is to talk through some of the key considerations, and provide the region with a strategic plan, for how to make these performance dashboards a reality.

Work with Common, Structured Data Formats

The software design practice of Service-Oriented Architecture (SOA) relies upon well defined communication protocols to allow for disparate software applications to work seamlessly with one another. In the flow diagram illustrated on the previous page, the software applications consist of the

HMIS software, the data warehouse, and the software that writes the data to the data cube, and the data visualization tool (i.e. Tableau) that can consume this data to produce the dashboards. The communication protocols that these software applications rely upon include the [HUD HMIS CSV Data Exchange Format](#) and the eCART CSV Format. In the future, if HUD publishes common formats for Point in Time, AHAR, and/or SPM results then these too could be added to the data cube.

Utilizing publicly endorsed data exchange formats reduces the overall complexity of the work. It also allows for interchangeability of the software applications used within the framework. For example, any HMIS software solution that can produce HUD CSV data can be an originating source of data for the dashboards. The tool that produces the eCART CSV output that is published to the data cube can be the HMIS software itself, a HMIS data warehouse such as HomelessData.com, or even the Excel-based [APR Generation Tool](#).

Determine the Data Refresh Cycle

The frequency of the data refresh will depend on both the reporting need and the available resources. The data required will ideally be for all HMIS projects that have activity between the present day and the “lookback stop date” of 10/1/2012 that is used in the HUD SPMs. Data to be exchanged will either be the entire set of data for the region at each exchange interval or just the records that were changed, added, or deleted.²

Determine if the Data is Worthy of Inclusion

Of course, dashboards that might be used to impact public policy should have built in quality management controls. Simtech currently has Data Quality Scorecards within HomelessData that allow for project data to be reviewed for accuracy. Data review can be a tedious process, even with the proper tools in place. To accommodate this, we propose developing a “Data Quality Dashboard” within HomelessData.com that will allow administrators to set the minimum criteria that data for each project must meet if the results are to be posted to the data cube. In this way, the data review process will be completely automated.

Review the Quality of the Community Resource Directory Data

Regions should have a full inventory of community resources that is maintained in a centralized location and is easily accessible and consumable by other software applications. Many regions, including Detroit and LA County, use external tools such as SurveyMonkey and Excel to manage the Housing Inventory information. This information is vital for capacity utilization reporting, proximity based resource and referral directories, and coordinated entry systems in general so it is important to capture this in a central place whenever possible.

Publish the Results to the Data Cube

The approach for how to produce such dashboards is dependent on the capacity within the region to automate the creation of the structured dataset from which these data visualizations are run over.

To build up a historical database that can be trusted for decision making takes effort. How the *structured data files* (ideally in the eCART format for project performance measures, and a custom format for system performance measures) are produced, and subsequently published, are key aspects of the process.

² Simtech Solutions currently supports the HMIS data reporting for over 2,600 projects around the US with data sourced from a variety of HMIS software solutions.

The approach to be taken depends on a variety of factors, but since each region is different, it is helpful to have options. The SOA approach taken in the design of this framework allows for the various option to exist. Below are three potential approaches...

1. Use a job scheduler in HomelessData.com to produce the structured data files that are then automatically sent to the Data Cube.
2. Ask the HMIS Vendor(s) to automate the creation of the series of the structured data files.
3. Utilize the Excel-based [HMIS Report Generation Tool](#)³ to produce the structured data files.

Below are three potential approaches for publishing the results contained within the *Structured Data Files* to the *Data Cube*...

1. Automate the receipt of the data files through the support of an API or secure FTP. This is the ideal option as the automation greatly simplifies the work for the regional HMIS administrators and reduces the likelihood of errors.
2. Develop and share a simple user interface that allows the results to be uploaded. This would be similar to how AHAR XML data can be submitted to HUDHDX.info.
3. Develop a custom web form to gather the results. This is similar to how eSnaps is set up to receive results from Annual Performance Reports (APRs).

The first options listed for both the production of the Structured Data File, and the publishing of this file to the data cube, are the ideal. With three years of HMIS data for a project, it would be possible to run APRs for twenty-four consecutive months and have a wealth of data to work with. Repeating this process for each project in the region will produce a tremendous trove of data that is readily-accessible by dashboarding tools such as Tableau.

Work with Publicly Accessible Data Whenever Possible

The approach for automating the deployment of near real-time data dashboards, with data that decision makers can have confidence the integrity of, is not a simple undertaking. It takes a plan such as this one and some hard work. The long-term benefits however are tremendous. For the short-term though, it is important to engage stakeholders using the data and processes that currently exist. These data sets include:

- Annual Point in Time Counts
- Housing Inventory Charts
- US Census Data
- HUD CoC Funding Awards

Simtech has developed [these regional dashboards](#), which leverage these existing data assets.

Develop the Performance Dashboards and Scorecards

Not only will this data allow for trend analysis and peer benchmarking, and therefor helpful for establishing *proficiency*, but it can also be used to show the *growth* of a project over time. Even poor golfers can enjoy the game if they are comparing the score from their last outing with how they regularly perform. By looking at growth and proficiency in unison, the *project level report cards* and *project level performance dashboards* can account for some of the unique circumstances of each project.

³ Developed by Simtech Solutions and licensed to HUD. The tool can produce the eCART files.