

Introducing the HMIS Data Quality Framework

Meradith Alspaugh & David Durkalski



Putting It All Together:
Uniting Data, Technology, and People



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Data Quality Framework Development

WHY do we need it?

- Data quality nationwide is not where we need it to be.
- HUD, along with HMIS users and administrators, realize that DQ has moved beyond “missing”.
- SPM’s require DQ across the full implementation, not just the HUD-funded projects.
- Notable issues in DQ looking at SSVF and RHY imports.

WHO developed it?

- HMIS Vendors, TA Providers, Data Lab Staff, & HUD worked collaboratively to develop the framework over several months in 2016.

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Data Quality Framework Development

WHAT is the Data Quality Framework?

- Specifications for a DQ report written into the HMIS Reporting Glossary
- This is a single report that can be used by one project, across all projects in a project type, & across the CoC.
- Implements a standard “starting point” across the country.
- Can use the same report for APR, CAPER, SPMs, etc.



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Data Quality Framework Development

HOW is it used?

- User can enter a start and end date for the report (able to generate for any time period).
- Run by one project or many projects, project type, and whole system.
- Each section has an aggregate mode with totals.
- Each section must have details mode for users to locate records.
- Use data from each client's latest project stay.
- Run report frequently to identify problem records.
- Street Outreach clients only count after engagement.





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Data Quality Framework Development

Implementation Timeline

- Vendors provided with specs - December 2016
- Stand-alone report - April 1, 2017
- APR - April 1, 2017
- System Performance Measures - April 3, 2017
- CAPER – Fall 2017





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DQ Report – Q1 Validation

Report Validation Table

- Uses standardized Glossary methods for calculation.
- Defines “youth”.
- In the DQ report, it is used to create percentages.
- APR and CAPER use the table to help programmers verify totals.

	A	B
1	Total number of persons served	
2	Number of adults (age 18 or over)	
3	Number of children (under age 18)	
4	Number of persons with unknown age	
5	Number of leavers	
6	Number of adult leavers	
7	Number of adult and head of household leavers	
8	Number of stayers	
9	Number of adult stayers	
10	Number of veterans	
11	Number of chronically homeless persons	
12	Number of youth under age 25	
13	Number of parenting youth under age 25 with children	
14	Number of adult heads of household	
15	Number of child and unknown-age heads of household	
16	Heads of households and adult stayers in the project 365 days or more	



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DQ Report – Q2 Personally Identifiable Information (PII)

- Critical for a system’s ability to un-duplicate & merge records.
- Un-duplicating clients yields more accurate SPMs.



	A	B	C	D	E
1	Data Element	Client Doesn't Know/Refused	Information Missing	Data Issues	% of Error Rate
2	Name (3.1)	= [8 or 9]	= missing	= [2]	= [total]/VAL.B1
3	Social Security Number (3.2)	= [8 or 9]	= missing	= [rule]	= [total]/VAL.B1
4	Date of Birth (3.3)	= [8 or 9]	= missing	= [2]	= [total]/VAL.B1
5	Race (3.4)	= [8 or 9]	= missing		= [total]/VAL.B1
6	Ethnicity (3.5)	= [8 or 9]	= missing		= [total]/VAL.B1
7	Gender (3.6)	= [8 or 9]	= missing		= [total]/VAL.B1
8	Overall Score				= [total]/VAL.B1



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DQ Report – Q3 Universal Data Elements

- Veteran Status
 - Not Missing
 - Veterans are 18 or older
- Project Entry Date
 - Looking to ensure that there are not overlapping project stays for the client in the same project.
- Relationship to Head of Household
 - Everyone has a relationship
 - A HoH is identified (“self”)
 - There is not more than one HoH per household
- Client Location
 - Not missing
 - Valid CoC code
- Disabling Condition
 - Not missing
 - Set to “Yes” if special need of long-term duration is identified



	A	B	C
1	Data Element	Error Count	% of Error Rate
2	Veteran Status (3.7)	= [8, 9, missing or rule]	= B2/VAL.B2
3	Project Entry Date (3.10)	= [rule]	= B3/VAL.B1
4	Relationship to Head of Household (3.15)	= [missing or rule]	= B4/VAL.B1
5	Client Location (3.16)	= [missing or rule]	= B5/(VAL.B14+VAL.B15)
6	Disabling Condition (3.8)	= [8, 9, missing or rule]	= B6/VAL.B1

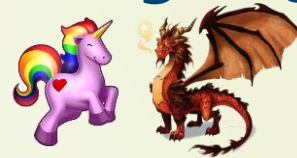


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DQ Report – Q4 Income & Housing DQ

Destination

- 8,9, 99 or 30 – Left without an Exit



Income

- Errors are any record where information is not present because the client didn't know the response, refused to provide a response, or the information was just plain missing...
- ...or where the response of client has income "yes" or "no" at a data collection stage is inconsistent with the income source information.



	A	B	C
1	Data Element	Error Count	% of Error Rate
2	Destination (3.12)		=B2/VAL.B5
3	Income and Sources (4.2) at Entry		=B3/(VAL.B2+VAL.B15)
4	Income and Sources (4.2) at Annual Assessment		=B4/VAL.B16
5	Income and Sources (4.2) at Exit		=B5/VAL.B7





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DQ Report – Q5 Chronic Homelessness

- 3.917A and B are the building blocks for determining Chronic Homelessness.
- Missing data prevents the HMIS from accurately reporting chronic homelessness, and from knowing how long someone has been homeless.



	A	B	C	D	E	F	G	H
1	Entering into project type	Count of total records	Missing time in institution (3.917.2)	Missing time in housing (3.917.2)	Approximate Date started (3.917.3) DK/R/missing	Number of times (3.917.4) DK/R/missing	Number of months (3.917.5) DK/R/missing	% of records unable to calculate
2	ES, SH, Street Outreach							
3	TH							
4	PH (all)							
5	Total	=B2+B3+B4						




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DQ Report – Q6 Timeliness

- Timely data entry is critical to ensuring data accuracy and completeness.
- This section identifies how quickly project entries and project exits are entered into HMIS after they occur.
- Communities can use this to further their own standards and goals for timeliness.



	A	B	C
1	Time for Record Entry	Number of Project Entry Records	Number of Project Exit Records
2	0 days		
3	1-3 days		
4	4-6 days		
5	7-10 days		
6	11+ days		



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DQ Report – Q7 Inactive Records in Street Outreach & Emergency Shelter

- Data quality includes maintaining accuracy in the number of active records in a system.
- Records often remain open and hamper the project and community’s ability to generate accurate performance measurement.
- This section sets a 90-day limit on inactive records and reports how many records within the report range are inactive (i.e. should have been exited but were not) based on contact with the client for outreach or bed nights for shelter.

	A	B	C	D
1	Data Element	# of Records	# of Inactive Records	% of Inactive Records
2	Contact (Adults and Heads of Household in Street Outreach or ES – NBN)			=C2/B2
3	Bed Night (All clients in ES – NBN)			=C3/B3





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Using the DQ Report for System Performance Measures

- Unduplicated count of persons served (Q1 – Validation Table)
- Total HMIS Leavers (Q1 – Validation Table)
- Destination Don't Know, Refused, or Missing (Q4 Income & Housing DQ)

	A	B
1	Total number of persons served	
2	Number of adults (age 18 or over)	
3	Number of children (under age 18)	
4	Number of persons with unknown age	
5	Number of leavers	
6	Number of adult leavers	

	A	B	C
1	Data Element	Error Count	% of Error Rate
2	Destination (3.12)		
3	Income and Sources (4.2) at Entry		
4	Income and Sources (4.2) at Annual Assessment		
5	Income and Sources (4.2) at Exit		



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Resources:

Data Quality Programming Specs (Glossary)

- <https://www.hudexchange.info/resource/4489/hmis-standard-reporting-terminology-glossary/>

APR Programming Specs

- <https://www.hudexchange.info/resource/4696/hmis-programming-specifications/>