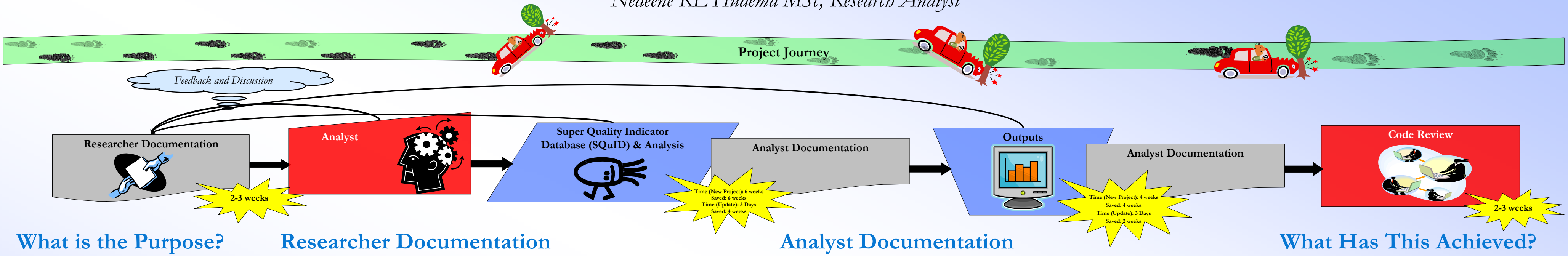
Measure Twice and Cut Once: Planning and Documentation Tools for Quality Indicators

Nedeene RL Hudema MSc, Research Analyst



What is the Purpose?

The Heath Quality Council (HQC) aims to produce error-free reports through:

- *Improved project planning by considering data quality and methodological issues early on.*
- *Developing a historical record of how and why decisions were made in the course of a project.*
- *Developing documentation that contains enough detail to facilitate reproduction of the analysis if necessary and assist in a code review process.*
- *Facilitating communication between team members.*

Researcher Documentation

- *Records all methodological steps and decisions made from the very beginning of a project (conceptualizing the indicators), to the very end (how to report and present the indicators)*
- *It is from the perspective of the researcher; logically outlining per indicator the definition, inclusion/exclusion criteria*
- *Can include a section called 'common criteria' – inclusion/exclusion criteria applied to all those in the cohort – criteria that applies to all indicators*
- *Includes not only the methodological decision, but also the rationale for the decision (how the decision was made). Extensive investigations are documented separately and hyperlinked.*
- *Is linked to the analyst documentation by a number and letter system for each 'step'*

Example

The researcher would start off with the following table in Word to create the population denominator for post-AMI incidence

Table A

Steps		Criteria	Rationale
SK_pop_den *Create a separate file for each fiscal year, 97/98 to 04/05*			
1		*unique people, and birth date, RI status, sex, who have health coverage and a regional health authority (rha) assigned*	
2		*create age var for each fiscal year file and include those who are 20+*	*To match criteria that a person has to be 20+ to have an ami.*

The analyst assesses and asks questions, reorganizes and/or adds information based on their experience and knowledge of the data.

The documentation is adjusted and rearranged, according to discussions and resulting decisions made to look like:

Table B

Steps		Criteria	Rationale
SK_pop_den *Create a separate file for each fiscal year, 97/98 to 04/05*			
1	*a*	*From the PRS info file, keep all unique people, and vars for birth month and year, RI status, and sex*	
2	*a*	*Include flag for each fiscal year file for health coverage from the PRS Coverage files when:* • **For those that die of an ami** *during the year: must be covered up until their death or 182 days, whichever comes first* • **Those that die that are not ami** *patients will be excluded*	*For those that* **die from** [illegible] **ami**, *since you can only have one ami in a year they've met the criteria.* *For those that* **die** [illegible] **not from an ami**, [illegible] *they didn't di*[illegible] *would still be at risk for an* [illegible]
	b	*For those that* **don't die** *during the year – must be covered 182 days.*	
	c	*Regional health authority (rha) assigned from the geography files:* • *if have no rha at all in the year, they will be excluded from the denominator* • *if have some rha information during the year: i. if had an ami, rha at the time of the ami is assigned, ii. if did not have an ami, rha of the majority of time is assigned*	*If had an ami, we want the rha to reflect when a* [illegible] *For more detail see doc: Investigation of PRS*
	d	*Create age based on beginning of year, and include those who are 20+. Age is based on the given birth month and year, and use day 15 as b*[illegible]	*Admit dates for an ami start on Day 1 of the year, and age is computed upon admit, therefore age for denominator of incidence is beginning of year. Day 15 is arbitrary, assuming an even distribution of birth days over a month.*

Facilitates Communication

The analyst lets the researcher know that the information in the first step (Table A) is actually in 3 separate data sources, so that step needs to be split up into at least 3 steps (Table B Steps 1a, 2a-2c)

Improved project planning

A hyperlink to an 11-page document is added, which outlines the investigation that led to the methods used for health coverage and regional health authority assignment

Numbering and Lettering

- *Step 1 must be completed before Step 2*
- *Steps 2a, 2b, 2c, 2d can be completed in any order, it is up to the analyst*
- *There are other steps for denominators and numerators; Step 1 and 2 might actually be completed after other steps*

Historical Record

Explanation of age reference date, and choosing a birth day is added for future reference

Analyst Documentation

- *Records how the datasets were created, from the data extractions, to the indicator dataset (SQuID), through analysis, and creation of tables and graphs*
- *It is from the perspective of the analyst; logically documenting how the criteria in the researcher documentation is applied to create datasets and tables in the most efficient way possible*
- *Includes a list of inputs (e.g. data files, links to macros used, drug lists), file path where the source code is located, and a list of outputs (data files)*
- *Can include further description of how criteria was coded; for particularly complicated inclusion/exclusion criteria*
- *Is linked to the researcher documentation by a number and letter system for each 'step'*

Example

After consensus has been reached and numbering/lettering has been applied, the analyst takes this information and conducts the analysis. They also document their procedure:

	Libraries:		Colour legend	
	ami "P\CVD\Rx use Post AMI\PostAMI_07\Data"	*Secure Server (SS)*	*Blue*	*SAS Data files*
	extract "P\CVD\Rx use Post AMI\PostAMI_07\Extracted Data"	*Secure Server (SS)*	*Red*	*Macros*
	eoc "/SAS_data/dw0/HQC_share/clean_files_Sept2006"	*Health90 (H90)*	*Purple*	*Code files*
	ami "/SAS_data/dw0/HQC_sh[illegible]**ema/Post AMI 07"**	*Health90 (H90)*	*Green*	*Supplementary information files (excel, word documents)*
Steps	**Tasks**	**SAS Macros and other inputs**	**Source Code File (on health90 or HQC secure server)**	**Output File (on health90 or HQC secure server)**
1a, 2a	*For all Saskatchewan residents, add death date to the prs info file*	*H90: /SAS_data/dw0/prs/*[illegible] *H\90: \Sas_data\dw0\hqc_*[illegible]	*H90:* [illegible]*_data\dw0\hqc_share\nhudema\post ami 07\population denominator*	*H90: work file pop_cvg_death)*
2a, 2b, 2d	*One year at a time: add file from secure server that has an ami flag, create start and end dates for coverage, calculate age. Run coverage macro to get days of coverage for the time period. Create flags for coverage, based on researcher specs, using ami flag*	*H90: work.pop_cvg_death* *ami.ami_hsns (from SS*[illegible] *H90: \S*[illegible]*dw0\hqc_sh*[illegible]	*SS: \P\CVD\Rx post ami\post_ami_07\update code\postami_nh.sas* *H90: \Sas_data\dw0\hqc_share\nhudema\post ami 07\population denominator*	*H90: work files (yrs, pop, pop_cvg, sk_cov,sk_pop)*
2c	*One year at a time: create start and end dates for rha assignment, run rha macro, create flags for rha for the critical period. Create permanent files to transfer to SS*	*H90: /SAS_data/dw0/prs/geo/geo_subregions_20061214* *H90: /SAS_data/dw0/prs/geo/_qaippe_imp_20060901* *H90: /SAS_data/dw0/prs/prs_info_20060817* *H90: \Sas_data\dw0\hqc_share\Macros\demog_assign.sas*	*H90: \Sas_data\dw0\hqc_share\nhudema\post ami 07\population denominator*	*H90: ami.sk_pop_XXXX (for each fiscal year)* *SS:: ami.sk_pop_XXXX (for each fiscal year)*
Stop Point	**Check with researcher to see if number of people deleted with the following all make sense: missing RHA's, under 20, and not covered by PRS.**			

Numbering and Lettering

- *As requested Step 1 is completed before Step 2*
- *Steps 2a, 2b, 2c, 2d are done in a different order – as they are lettered, this is okay*
- *Steps 2a, 2b, and 2d were done simultaneously in the code*

Analyst Logic

- *Look at all criteria as a whole to ascertain what is the most efficient way to create the indicators*

Input, Code, and Output Files

- *Are color coordinated for easy readability of type of file (data, macro, code, other)*
- *With these pieces of information, very easy to follow and review code*

Stop Point

- *Inserted for data quality checks, investigation, or comparison to other studies*

Documentation Technical Notes

Number and letter system:

Once the document has gone back and forth between researcher and analyst, and a consensus is reached, step numbers/letters are added

- *Each section is 'named': common criteria, denominator indicator name, numerator indicator name; however numbering* ***does not*** *restart with a new section*
- *1,2,3… ordering specifies sequential order* ***within*** *a denominator or numerator, not* ***between*** *denominators and/or numerators*
- *a, b, c… lettering* ***does not*** *specify sequential order, at any time*

In the Source Code Files (files that contain code that is run for the indicators):

- *In addition to the above documentation, the steps (numbers/letters) are also commented in the code; this allows an analyst the ability to search for particular steps in the code review process*

Stop Points:

- *These are added by the researcher and/or analyst to where the analyst should stop in the course of creating the indicators, and conduct checks (compare numbers to previous year, or to literature), or conduct methodological investigation*

What Has This Achieved?

- *Time savings for new projects as well as for yearly updates of previous indicators.*
- *Increased planning has decreased the number of 're-runs' due to missed detail.*
- *Decreased the 'catch-up' time for yearly updates of indicators; can easily find the what, why and how.*
- *Considerable impact as a communication tool between the two viewpoints.*
- *Both pieces of documentation are crucial to completing a comprehensive code review, important to assuring accuracy.*
- *Increased methodological standardization between projects.*
- *Reference tools for public inquires of methods.*

For more information contact: Nedeene Hudema @ nhudema@hqc.sk.ca

HEALTH QUALITY COUNCIL