

Data Impact Challenge Answer Submission Template

Question 1:

- Question: What is the rate of repeated laboratory tests within a ninety (90) day period?
- Team and list of all team member names:
 - Health Quality Innovation Collaborative:
 - Dr. Sanjeev Goel – Team Leader
 - Bogdan Pinzaru – eHealth Intern
 - Diana Malinovskaya – Analyst/Programmer

(all team members must have agreed to challenge rules through registration)

Describing the Data and Analysis

- Data Custodian Organization(s) and data sources: Health Quality Innovation Collaborative (HQIC).
- List of Datasets Used (e.g. names of database and/or data origins): HQIC database, from all medical clinics involved, Roster and Active Patients, Type of tests limited to Low density lipoprotein (LDL), Glycated Hemoglobin (HbA1C), Thyroid Stimulating Hormone (TSH), Hemoglobin (HB).
- Exclusions: excluded multiple other tests due to server limitations on running the query. Furthermore, due to multiple input errors of the same test only four common tests were selected.
- Nature and Size of Cohort (e.g. geographic area covered, number of patients included): Medical clinics within the HQIC database, n = 270120 mutually exclusive tests separated into three years (58582 tests in 2013, 126834 tests in 2014 and 42352 tests in half of 2015).
- Data timeframe: January 1st, 2013 to January 1st, 2014; January 1st, 2014 to January 1st, 2015; January 1st, 2015 to May 29th, 2015.

Methodology

1. The data is stored on the custodian organization's server in MySQL databases.
2. A query was run to extract all possible test inputs.
3. After careful filtration, all the input possibilities for the tests chosen were selected.
4. Multiple queries for each year and test was run to receive the inputs from all clinics.
 - a. The 90 day repeat query looked at creating a 90 day expiry date and if a test would fall in that range then it would be included.
 - b. Additionally, it excluded over or undercounting tests.
5. A query was run for each test and each year to get the total number of tests.

Describing the Findings

	2013	2014	2015	
• Numerator	Total repeated tests	N=8369	N=17006	N=4882

- Denominator

Total tests	N=58582	N=126834	N=42352
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- Findings: The proportion of laboratory test repeated within 90 days is 14.29% in 2013, 13.41% in 2014 and predicted to be 11.53% in 2015 (based on half of 2015). Considering the rate of repetition mentioned by Vest, Kaushal, Silver, Hentel, and Kern (2014) of 17.6%, the current system indicates that the rate of repeated tests are below those found within the article. Based on the data provided overall there is a decline in repeated tests within a 90 day period. However, there is need for more data and more research on individual clinics and each test fluctuates considerably from year to year.
- Recommendation: The recommendation is to continue to ensure that clinics are aware of the testing guidelines for primary care to further reduce unnecessary repeat tests.
- Key limitations: The reason for the tests being repeated has not been taken into account. Due to the considerable database size, multiple tests were excluded due to server limitations. Moreover, it would be crucial to look at which test was the initial and which were repetitions. In our instance, the query recycled every test as being initial. Multiple laboratory tests have been excluded due to database size.
- Figures:

