AHRQ Quality Indicators[TM]

QUALITY INDICATORS[™] SOFTWARE
Results of Comparison Testing
Between SAS v2019 ICD-10-CM/PCS
and WinQI v2019 ICD-10-CM/P Software

Prepared for:

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The Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QI) were developed specifically to meet the short-term needs for information on healthcare quality using standardized, user-friendly methods and existing sources of data. The AHRQ QI program is unique in that it provides free, publicly-available software tools that calculate the AHRQ QI rates. The software allows users to calculate QI rates based on their own administrative data using a standard desktop computer.

Each version of the QIs is released with software in two different platforms: a SAS®† application and a Windows application. The SAS software was first released in the late 1990s. It consists of several modules of SAS code and requires a SAS license to run. The Windows-based software, known as WinQI, was first released in 2005. It was created in order to provide an easy-to-use, low-cost option for calculating the QIs that was not dependent on licensed software. Developed on Microsoft® Visual Studio using C# and .NET, AHRQ WinQI runs on Windows operating systems and requires only freely available software components: AHRQ-produced software, Microsoft .NET (for runtime environment and core software libraries), and Microsoft SQL Server Express (for data storage and manipulation).

Table1 lists the differences between SAS QI v2019 ICD-10-CM/PCS and WinQI v2019 ICD-10-CM/PCS Both the SAS and WinQI software are available in Version 6.0 as either 32-bit or 64-bit applications. The 32-bit applications are targeted for Windows XP operating systems, and the 64-bit applications are targeted for Windows 7 and 8 operating systems.

Table 1. Differences between SAS QI v6.0 and WinQI v6.0

SAS QI v6.0	WinQI v6.0
Requires licensed SAS software	Requires free downloadable software
User can modify the software	User is unable to modify the software
Data load and error checking at the discretion of the user	Includes data load and error checking functions
User must run a set of programs for each module, and all indicators in a module are displayed in output	All four QI modules calculated in a single program, and user can select which indicators to output
Observations with FIPS codes not present in the population file are excluded from Area level metrics.	Observations with FIPS codes not present in the population file are included in Area level measures with no FIPS assigned.

Both versions of the QI software are updated on an annual basis to reflect changes in the AHRQ QI technical specifications. New software versions and updated technical specifications are released simultaneously. Routine annual updates include yearly International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM/PCS), Medicare Severity-Diagnostic Related Groups (MS-DRG), Major Diagnostic Categories (MDC), updated version of the limited license 3M™ APR-DRG grouper, new Census population files, and newly derived risk adjustment parameters.

The AHRQ QI software goes through rigorous testing prior to release, including the following:

- Comparison of rates produced through AHRQ QI SAS and AHRQ WinQI, aggregated and detailed provider/county-level
- User testing on the installation.

This document summarizes the testing results for AHRQ QI v2019 ICD-10-CM/PCS software for WinQI (released in July 2019) and SAS (released in July 2019). Testing was performed using AHRQ Healthcare Cost and Utilization Project (HCUP) data: 3,746,387 discharges in the Arizona, Maine, Michigan, Nebraska, North Carolina, Utah, and Vermont 2016 HCUP State Inpatient Databases (SID). To ensure comparability of Area rates, the year of all observations was set to 2016 and observations with a FIPS code not in the 2016 population file were removed.

The rates were calculated using SAS QI v2019 ICD-10-CM/PCS and AHRQ WinQI v2019 ICD-10-CM/PCS.

Test Results

- We observed no variances in the observed and risk adjusted rates between v2019 SAS QI and WinQI for all indicators contained in PQI, IQI, and PSI modules.

[†] SAS® is a statistical software package distributed by the SAS Institute, Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA. The company may be contacted directly regarding the licensing of their products. The SAS Institute, Inc. has no affiliation with AHRQ nor involvement in the development of the AHRQ QI. For more information, visit the SAS Institute website at http://www.sas.com.

[‡] HCUP Databases. Healthcare Cost and Utilization Project (HCUP). 2016.