

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). Table 1 lists the differences between SAS QI v4.5 and WinQI v4.5. Both the SAS and WinQI software are available in Version 4.5 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 operating systems.

Table 1. Differences between SAS QI v4.5 and WinQI v4.5

SAS QI v4.5	WinQI v4.5
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
Area-level indicator denominators are adjusted based on the combination of county, age, gender and race in the numerator (adjustments are generally small (<.01%) in absolute terms)	Area-level indicators denominators are not adjusted
	Suppresses expected rate, risk-adjusted rate, and smoothed rate of PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate
Condition-specific denominators can be used in place of overall population denominators for diabetes-related PQIs using data from the CDC National Diabetes Surveillance System	Condition-specific denominators are not available for any of the PQIs

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, 9th revision, Clinical Modification (ICD-9-CM), Medicare severity-Diagnostic

[†] 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>.

Related Groups (MS-DRG), Major Diagnostic Categories (MDC), updated version of the 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
- Comparison of rates produced based on previous versions of the software, Version 4.5 compared to Version 4.4
- User testing on the installation.

AHRQ QI v4.5 software included applications that are compatible with 32-bit and 64-bit environments, and thus additional testing comparing rates across these environments was performed.

This document summarizes the testing results for AHRQ QI v4.5 software for SAS and WinQI released in May 2013. Testing was performed in the 32-bit and 64-bit environment, using AHRQ Healthcare Cost and Utilization Project (HCUP)[‡] data. Specifically, 9,223,624 discharges in the California, Florida, and New York 2010 HCUP State Inpatient Databases (SID) and 7,800,441 discharges in the 2010 HCUP Nationwide Inpatient Sample (NIS). The table in this document compares the calculated rates using AHRQ QI SAS to AHRQ WinQI in a 64-bit environment, using the 2010 HCUP NIS. There should be no to little variation in the rates (as evidenced by a SAS/WinQI rate ratio=1), with two exceptions. Small differences may occur due to rounding of the estimates and slight variation in the number of providers in area-level indicators due to area denominator adjustments. The table confirms that the results produced with AHRQ QI SAS are consistent with the results produced with AHRQ WinQI. More detailed tables showing aggregated estimates for SAS and WinQI (Appendix A) and comparisons at the provider or county level (Appendix B) are provided in the appendices.

[‡] HCUP Databases. Healthcare Cost and Utilization Project (HCUP). 2010. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/databases.jsp. Additionally, the AHRQ QI Program would like to acknowledge the following HCUP Partners who allowed their SID data to be used for testing purposes in the development of the AHRQ QI software: **California** Office of Statewide Health Planning and Development, **Florida** Agency for Health Care Administration, **New York** State Department of Health.

Table 2: Comparison of Rates from AHRQ QI SAS software to AHRQ WinQI, Version 4.5

QI	Type	Ratio of SAS statistic over WinQI statistic					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
Prevention Quality Indicators (PQIs)							
PQI #1 Diabetes Short-Term Complications Admission Rate	AREA	0.997	1	0.997	1	0.997	0.997
PQI #2 Perforated Appendix Admission Rate	AREA	0.9977	0.997	1.0007	0.9999	1.0008	1.0008
PQI #3 Diabetes Long-Term Complications Admission Rate	AREA	0.9978	1	0.9977	1	0.9977	0.9977
PQI #5 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	AREA	0.9983	1.0002	0.9982	1	0.9982	0.9982
PQI #7 Hypertension Admission Rate	AREA	0.9979	1	0.9979	1	0.9979	0.9979
PQI #8 Heart Failure Admission Rate	AREA	0.9987	1.0001	0.9986	1.0002	0.9984	0.9984
PQI #9 Low Birth Weight Rate	AREA	1	1	1	1	1	1
PQ #10 Dehydration Admission Rate	AREA	0.9983	1	0.9982	1	0.9982	0.9982
PQI #11 Bacterial Pneumonia Admission Rate	AREA	0.9982	1.0001	0.9982	1.0001	0.998	0.998
PQI #12 Urinary Tract Infection Admission Rate	AREA	0.9986	1	0.9985	1.0001	0.9984	0.9984
PQI #13 Angina Without Procedure Admission Rate	AREA	0.9975	1	0.9974	1	0.9974	0.9974
PQI #14 Uncontrolled Diabetes Admission Rate	AREA	0.9974	1	0.9974	1	0.9974	0.9974
PQI #15 Asthma in Younger Adults Admission Rate	AREA	0.9983	1.0012	0.9972	1	0.9972	0.9972
PQI #16 Lower-Extremity Amputation among Patients with Diabetes Rate	AREA	0.9979	1	0.9979	1	0.9979	0.9979
PQI #90 Prevention Quality Overall Composite	AREA	0.9983	1.0002	0.9981	1.0006	0.9975	0.9975
PQI #91 Prevention Quality Acute Composite	AREA	0.9983	1.0001	0.9982	1.0003	0.9979	0.9979
PQI #92 Prevention Quality Chronic Composite	AREA	0.9982	1.0001	0.9981	1.0002	0.9979	0.9979
Inpatient Quality Indicators (IQIs)							
IQI #1 Esophageal Resection Volume	PROVIDER	1					
IQI #2 Pancreatic Resection Volume	PROVIDER	1					
IQI #2A Stratum A	PROVIDER	1					
IQI #2B Stratum B	PROVIDER	1					
IQI #4 Abdominal Aortic Aneurysm (AAA) Repair Volume	PROVIDER	1					
IQI #4A Stratum A	PROVIDER	1					
IQI #4B Stratum B	PROVIDER	1					
IQI #4C Stratum C	PROVIDER	1					
IQI #4D Stratum D	PROVIDER	1					
IQI #5 Coronary Artery Bypass Graft (CABG) Volume	PROVIDER	1					
IQI #6 Percutaneous Coronary Intervention (PCI) Volume	PROVIDER	1					
IQI #7 Carotid Endarterectomy Volume	PROVIDER	1					
IQI #8 Esophageal Resection Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #9 Pancreatic Resection Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #9A Stratum A	PROVIDER	1	1	1	1	1	
IQI #9B Stratum B	PROVIDER	1	1	1	1	1	
IQI #11 Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate	PROVIDER	1	1	1	1	1	1

Table 2: Comparison of Rates from AHRQ QI SAS software to AHRQ WinQI, Version 4.5

QI	Type	Ratio of SAS statistic over WinQI statistic					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
IQI #11A Stratum A	PROVIDER	1	1	1	1	1	
IQI #11B Stratum B	PROVIDER	1	1	1	1	1	
IQI #11C Stratum C	PROVIDER	1	1	1	1	1	
IQI #11D Stratum D	PROVIDER	1	1	1	1	1	
IQI #12 Coronary Artery Bypass Graft (CABG) Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #13 Craniotomy Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #14 Hip Replacement Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #15 Acute Myocardial Infarction (AMI) Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #16 Heart Failure Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #17 Acute Stroke Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #17A Stratum A	PROVIDER	1	1	1	1	1	
IQI #17B Stratum B	PROVIDER	1	1	1	1	1	
IQI #17C Stratum C	PROVIDER	1	1	1	1	1	
IQI #18 Gastrointestinal Hemorrhage Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #19 Hip Fracture Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #20 Pneumonia Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #21 Cesarean Delivery Rate, Uncomplicated	PROVIDER	1	1	1			
IQI #22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated	PROVIDER	1	1	1			
IQI #23 Laparoscopic Cholecystectomy Rate	PROVIDER	1	1	1			
IQI #24 Incidental Appendectomy in the Elderly Rate	PROVIDER	1	1	1			
IQI #25 Bilateral Cardiac Catheterization Rate	PROVIDER	1	1	1			
IQI #26 Coronary Artery Bypass Graft (CABG) Rate	AREA	0.9978	1.0001	0.9977	1	0.9977	0.9977
IQI #27 Percutaneous Coronary Intervention (PCI) Rate	AREA	0.997	1.0002	0.9969	1	0.9968	0.9968
IQI #28 Hysterectomy Rate	AREA	0.9995	1	0.9994	1	0.9994	0.9994
IQI #29 Laminectomy or Spinal Fusion Rate	AREA	0.9982	1	0.9982	1	0.9982	0.9982
IQI #30 Percutaneous Coronary Intervention (PCI) Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #31 Carotid Endarterectomy Mortality Rate	PROVIDER	1	1	1	1	1	1
IQI #32 Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	PROVIDER	1	1	1	1	1	1
IQI #33 Primary Cesarean Delivery Rate, Uncomplicated	PROVIDER	1	1	1			
IQI #34 Vaginal Birth After Cesarean (VBAC) Rate, All	PROVIDER	1	1	1			
Patient Safety Indicators (PSIs)							
PSI #2 Death Rate in Low-Mortality Diagnosis Related Groups (DRGs)	PROVIDER	1	1	1	1	1	1
PSI #3 Pressure Ulcer Rate	PROVIDER	0.9984	1	0.9984	1	0.9984	0.9984
PSI #4 Death Rate among Surgical Inpatients with Serious Treatable Complications	PROVIDER	1	1	1	1	1	1
PSI #4A Stratum A	PROVIDER	1	1	1	1	1	

Table 2: Comparison of Rates from AHRQ QI SAS software to AHRQ WinQI, Version 4.5

QI	Type	Ratio of SAS statistic over WinQI statistic					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
PSI #4B Stratum B	PROVIDER	1	1	1	1	1	
PSI #4C Stratum C	PROVIDER	1	1	1	1	1	
PSI #4D Stratum D	PROVIDER	1	1	1	1	1	
PSI #4E Stratum E	PROVIDER	1	1	1	1	1	
PSI #5 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	1					
PSI #6 Iatrogenic Pneumothorax Rate	PROVIDER	1	1	1	1	1	1
PSI #7 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	1	1	1	1	1	1
PSI #8 Postoperative Hip Fracture Rate	PROVIDER	1	1	1	1	1	1
PSI #9 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	1	1	1	1	1	1
PSI #10 Postoperative Physiologic and Metabolic Derangement Rate	PROVIDER	0.9977	1	0.9977	1	0.9977	0.9977
PSI #11 Postoperative Respiratory Failure Rate	PROVIDER	1	1	1	1	1	1
PSI #12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	PROVIDER	1	1	1	1	1	1
PSI #13 Postoperative Sepsis Rate	PROVIDER	1	1	1	1	1	1
PSI #14 Postoperative Wound Dehiscence Rate	PROVIDER	1	1	1	1	1	1
PSI #15 Accidental Puncture or Laceration Rate	PROVIDER	1	1	1	1	1	1
PSI #16 Transfusion Reaction Count	PROVIDER	1					
PSI #17 Birth Trauma Rate – Injury to Neonate	PROVIDER	1	1	1			
PSI #18 Obstetric Trauma Rate – Vaginal Delivery With Instrument	PROVIDER	1	1	1			
PSI #19 Obstetric Trauma Rate – Vaginal Delivery Without Instrument	PROVIDER	1	1	1			
PSI #21 Retained Surgical Item or Unretrieved Device Fragment Rate	AREA	1	1	1			
PSI #22 Iatrogenic Pneumothorax Rate	AREA	1	1	1			
PSI #23 Central Venous Catheter-Related Blood Stream Infection Rate	AREA	1	1	1			
PSI #24 Postoperative Wound Dehiscence Rate	AREA	1	1	1			
PSI #25 Accidental Puncture or Laceration Rate	AREA	1	1	1			
PSI #26 Transfusion Reaction Rate	AREA	1	1	1.0001			
PSI #27 Perioperative Hemorrhage or Hematoma Rate	AREA	1	1	1			
Pediatric Quality Indicators (PDIs)							
NQI #1 Neonatal Iatrogenic Pneumothorax Rate	PROVIDER	1	1	1	1	1	1
NQI #2 Neonatal Mortality Rate	PROVIDER	1	1	1	1	1	1
NQI #3 Neonatal Blood Stream Infection Rate	PROVIDER	1	1	1	1	1	1
PDI #1 Accidental Puncture or Laceration Rate	PROVIDER	1	1	1	1	1	1
PDI #2 Pressure Ulcer Rate	PROVIDER	1	1	1	1	1	1
PDI #3 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	1					
PDI #5 Iatrogenic Pneumothorax Rate	PROVIDER	1	1	1	1	1	1
PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate	PROVIDER	1	1	1			
PDI #7 RACHS-1 Pediatric Heart Surgery Volume	PROVIDER	1					

Table 2: Comparison of Rates from AHRQ QI SAS software to AHRQ WinQI, Version 4.5

QI	Type	Ratio of SAS statistic over WinQI statistic					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
PDI #8 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	1	1	1	1	1	1
PDI #9 Postoperative Respiratory Failure Rate	PROVIDER	1	1	1	1	1	1
PDI #10 Postoperative Sepsis Rate	PROVIDER	1	1	1	1	1	1
PDI #11 Postoperative Wound Dehiscence Rate	PROVIDER	1	1	1	1	1	1
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	1	1	1	1	1	1
PDI #13 Transfusion Reaction Count	PROVIDER	1					
PDI #14 Asthma Admission Rate	AREA	0.9994	1	0.9994	1	0.9994	0.9994
PDI #15 Diabetes Short-Term Complications Admission Rate	AREA	0.9989	1.0134	0.9858	1	0.9857	0.9857
PDI #16 Gastroenteritis Admission Rate	AREA	0.9982	1	0.9982	1	0.9982	0.9982
PDI #17 Perforated Appendix Admission Rate	AREA	1	1	1	1	1	1
PDI #18 Urinary Tract Infection Admission Rate	AREA	0.9992	1	0.9992	1	0.9992	0.9992
PDI #90 Pediatric Quality Overall Composite	AREA	0.9993	1.0134	0.9861	1	0.9862	0.9862
PDI #91 Pediatric Quality Acute Composite	AREA	0.9989	1.0134	0.9857	0.9999	0.9858	0.9858
PDI #92 Pediatric Quality Chronic Composite	AREA	0.9995	1.0134	0.9863	1	0.9863	0.9863

SOURCE: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project. 2010 Nationwide Inpatient Sample (unweighted) and AHRQ Quality Indicator SAS and WinQI Version 4.5 Software.

NOTE: Blank cell = N/A.

Appendix Table A.1 Key to Appendix Table A

Column Heading	Description
OBS num	Number of discharges in the numerator
OBS den	Number of discharges in the denominator
OBS rate	Observed rate
EXP rate	Expected rate
ADJ rate	Risk adjusted rate
Smoothed rate	Smoothed rate

Appendix Table A.2 AHRQ QI SAS Version 4.5 Aggregate Estimates

QI	Type	SAS Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
Prevention Quality Indicators (PQIs)							
PQI #1 Diabetes Short-Term Complications Admission Rate	AREA	31842	234847374	0.000136	0.000621	0.000136	0.000136
PQI #2 Perforated Appendix Admission Rate	AREA	13136	43270	0.303582	0.298288	0.303024	0.303014
PQI #3 Diabetes Long-Term Complications Admission Rate	AREA	57096	234847599	0.000243	0.00116	0.000243	0.000243
PQI #5 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	AREA	153121	143094263	0.00107	0.004967	0.001069	0.001069
PQI #7 Hypertension Admission Rate	AREA	29961	234847499	0.000128	0.000591	0.000128	0.000128
PQI #8 Heart Failure Admission Rate	AREA	169129	234853973	0.00072	0.003427	0.00072	0.00072
PQI #9 Low Birth Weight Rate	AREA	50518	781563	0.064637	0.062395	0.06464	0.064637
PQ #10 Dehydration Admission Rate	AREA	61559	234848336	0.000262	0.001211	0.000262	0.000262
PQI #11 Bacterial Pneumonia Admission Rate	AREA	149261	234853625	0.000636	0.002968	0.000636	0.000636
PQI #12 Urinary Tract Infection Admission Rate	AREA	95374	234850011	0.000406	0.00189	0.000406	0.000406
PQI #13 Angina Without Procedure Admission Rate	AREA	9435	234847399	0.00004	0.000189	0.00004	0.00004
PQI #14 Uncontrolled Diabetes Admission Rate	AREA	9202	234847341	0.000039	0.000188	0.000039	0.000039
PQI #15 Asthma in Younger Adults Admission Rate	AREA	10236	91757950	0.000112	0.000526	0.000112	0.000112

Appendix Table A.2 AHRQ QI SAS Version 4.5 Aggregate Estimates

QI	Type	SAS Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
PQI #16 Lower-Extremity Amputation among Patients with Diabetes Rate	AREA	7599	234847363	0.000032	0.000157	0.000032	0.000032
PQI #90 Prevention Quality Overall Composite	AREA	780300	234891419	0.003322	0.015568	0.00332	0.00332
PQI #91 Prevention Quality Acute Composite	AREA	306194	234861946	0.001304	0.006071	0.001304	0.001304
PQI #92 Prevention Quality Chronic Composite	AREA	474118	234866970	0.002019	0.009493	0.002018	0.002018
Inpatient Quality Indicators (IQIs)							
IQI #1 Esophageal Resection Volume	PROVIDER	1351					
IQI #2 Pancreatic Resection Volume	PROVIDER	3972					
IQI #2A Stratum A	PROVIDER	2094					
IQI #2B Stratum B	PROVIDER	1878					
IQI #4 Abdominal Aortic Aneurysm (AAA) Repair Volume	PROVIDER	8335					
IQI #4A Stratum A	PROVIDER	430					
IQI #4B Stratum B	PROVIDER	1466					
IQI #4C Stratum C	PROVIDER	324					
IQI #4D Stratum D	PROVIDER	6127					
IQI #5 Coronary Artery Bypass Graft (CABG) Volume	PROVIDER	43144					
IQI #6 Percutaneous Coronary Intervention (PCI) Volume	PROVIDER	111764					
IQI #7 Carotid Endarterectomy Volume	PROVIDER	19653					
IQI #8 Esophageal Resection Mortality Rate	PROVIDER	50	1114	0.044883	0.049441	0.045444	0.046311
IQI #9 Pancreatic Resection Mortality Rate	PROVIDER	136	3946	0.034465	0.034975	0.033534	0.033537
IQI #9A Stratum A	PROVIDER	80	2084	0.038388	0.039215	0.037922	
IQI #9B Stratum B	PROVIDER	56	1862	0.030075	0.029748	0.027673	
IQI #11 Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate	PROVIDER	310	8292	0.037385	0.040788	0.03779	0.037884
IQI #11A Stratum A	PROVIDER	132	417	0.316547	0.373554	0.317065	
IQI #11B Stratum B	PROVIDER	64	1459	0.043866	0.046827	0.043863	
IQI #11C Stratum C	PROVIDER	64	316	0.202532	0.22028	0.216255	
IQI #11D Stratum D	PROVIDER	54	6112	0.008835	0.008641	0.008436	

Appendix Table A.2 AHRQ QI SAS Version 4.5 Aggregate Estimates

QI	Type	SAS Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
IQI #12 Coronary Artery Bypass Graft (CABG) Mortality Rate	PROVIDER	1010	42351	0.023848	0.025155	0.024463	0.024471
IQI #13 Craniotomy Mortality Rate	PROVIDER	1810	30118	0.060097	0.06042	0.056706	0.056707
IQI #14 Hip Replacement Mortality Rate	PROVIDER	52	55878	0.000931	0.000943	0.000935	0.000935
IQI #15 Acute Myocardial Infarction (AMI) Mortality Rate	PROVIDER	6418	108161	0.059337	0.059909	0.060111	0.060112
IQI #16 Heart Failure Mortality Rate	PROVIDER	6440	201676	0.031932	0.032284	0.032941	0.032941
IQI #17 Acute Stroke Mortality Rate	PROVIDER	10519	112059	0.09387	0.093087	0.092074	0.092074
IQI #17A Stratum A	PROVIDER	1212	5326	0.227563	0.229942	0.22444	
IQI #17B Stratum B	PROVIDER	4663	20206	0.230773	0.230808	0.234503	
IQI #17C Stratum C	PROVIDER	4643	86526	0.05366	0.052761	0.052588	
IQI #18 Gastrointestinal Hemorrhage Mortality Rate	PROVIDER	2348	100069	0.023464	0.023644	0.023935	0.023936
IQI #19 Hip Fracture Mortality Rate	PROVIDER	1421	51277	0.027712	0.027488	0.028029	0.028028
IQI #20 Pneumonia Mortality Rate	PROVIDER	7254	185186	0.039171	0.038993	0.0404	0.0404
IQI #21 Cesarean Delivery Rate, Uncomplicated	PROVIDER	202969	685999	0.295874			
IQI #22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated	PROVIDER	10730	112684	0.095222			
IQI #23 Laparoscopic Cholecystectomy Rate	PROVIDER	57080	68050	0.838795			
IQI #24 Incidental Appendectomy in the Elderly Rate	PROVIDER	884	85206	0.010375			
IQI #25 Bilateral Cardiac Catheterization Rate	PROVIDER	2820	203092	0.013885			
IQI #26 Coronary Artery Bypass Graft (CABG) Rate	AREA	42618	143090122	0.000298	0.00153	0.000298	0.000298
IQI #27 Percutaneous Coronary Intervention (PCI) Rate	AREA	109116	143092570	0.000763	0.004074	0.000762	0.000762
IQI #28 Hysterectomy Rate	AREA	73277	120835068	0.000606	0.003	0.000607	0.000607
IQI #29 Laminectomy or Spinal Fusion Rate	AREA	137402	234848823	0.000585	0.002596	0.000585	0.000585
IQI #30 Percutaneous Coronary Intervention (PCI) Mortality Rate	PROVIDER	2016	108383	0.018601	0.018279	0.017639	0.017637
IQI #31 Carotid Endarterectomy Mortality Rate	PROVIDER	66	19593	0.003369	0.003833	0.003528	0.003549
IQI #32 Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	PROVIDER	1376	18299	0.075195	0.069081	0.069608	0.06955
IQI #33 Primary Cesarean Delivery Rate, Uncomplicated	PROVIDER	101015	573315	0.176195			
IQI #34 Vaginal Birth After Cesarean (VBAC) Rate, All	PROVIDER	12131	128440	0.094449			

Appendix Table A.2 AHRQ QI SAS Version 4.5 Aggregate Estimates

QI	Type	SAS Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
Patient Safety Indicators (PSIs)							
PSI #2 Death Rate in Low-Mortality Diagnosis Related Groups (DRGs)	PROVIDER	393	1474847	0.000266	0.000274	0.000274	0.000274
PSI #3 Pressure Ulcer Rate	PROVIDER	641	1562737	0.00041	0.000402	0.000413	0.000413
PSI #4 Death Rate among Surgical Inpatients with Serious Treatable Complications	PROVIDER	5881	50334	0.11684	0.117805	0.11641	0.116412
PSI #4A Stratum A	PROVIDER	638	8383	0.076106	0.078488	0.077102	
PSI #4B Stratum B	PROVIDER	2751	26778	0.102734	0.102265	0.102968	
PSI #4C Stratum C	PROVIDER	1976	8337	0.237016	0.234183	0.239269	
PSI #4D Stratum D	PROVIDER	1882	5313	0.354225	0.362118	0.350081	
PSI #4E Stratum E	PROVIDER	597	8622	0.069241	0.06816	0.068797	
PSI #5 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	186					
PSI #6 Iatrogenic Pneumothorax Rate	PROVIDER	2009	5310785	0.000378	0.000367	0.000452	0.000452
PSI #7 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	1841	4297404	0.000428	0.000426	0.000411	0.000411
PSI #8 Postoperative Hip Fracture Rate	PROVIDER	21	971923	0.000022	0.000028	0.000024	0.000025
PSI #9 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	8888	1551658	0.005728	0.005766	0.005702	0.005702
PSI #10 Postoperative Physiologic and Metabolic Derangement Rate	PROVIDER	435	804822	0.00054	0.000486	0.000523	0.000523
PSI #11 Postoperative Respiratory Failure Rate	PROVIDER	6344	667745	0.009501	0.008782	0.009003	0.009003
PSI #12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	PROVIDER	7480	1608992	0.004649	0.004545	0.004471	0.004471
PSI #13 Postoperative Sepsis Rate	PROVIDER	1866	162215	0.011503	0.011741	0.011565	0.011565
PSI #14 Postoperative Wound Dehiscence Rate	PROVIDER	459	250899	0.001829	0.001845	0.001853	0.001853
PSI #15 Accidental Puncture or Laceration Rate	PROVIDER	13390	5499494	0.002435	0.00247	0.002393	0.002393
PSI #16 Transfusion Reaction Count	PROVIDER	19					
PSI #17 Birth Trauma Rate – Injury to Neonate	PROVIDER	1529	761208	0.002009			
PSI #18 Obstetric Trauma Rate – Vaginal Delivery With Instrument	PROVIDER	5387	38439	0.140144			
PSI #19 Obstetric Trauma Rate – Vaginal Delivery Without Instrument	PROVIDER	10980	481999	0.02278			
PSI #21 Retained Surgical Item or Unretrieved Device Fragment Rate	AREA	463	234847312	0.000002			
PSI #22 Iatrogenic Pneumothorax Rate	AREA	3520	234847312	0.000015			

Appendix Table A.2 AHRQ QI SAS Version 4.5 Aggregate Estimates

QI	Type	SAS Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
PSI #23 Central Venous Catheter-Related Blood Stream Infection Rate	AREA	5440	234847312	0.000023			
PSI #24 Postoperative Wound Dehiscence Rate	AREA	883	234847312	0.000004			
PSI #25 Accidental Puncture or Laceration Rate	AREA	17047	234847312	0.000073			
PSI #26 Transfusion Reaction Rate	AREA	29	234847312	0			
PSI #27 Perioperative Hemorrhage or Hematoma Rate	AREA	19314	234847312	0.000082			
Pediatric Quality Indicators (PDIs)							
NQI #1 Neonatal Iatrogenic Pneumothorax Rate	PROVIDER	7	50927	0.000137	0.000198	0.000133	0.000135
NQI #2 Neonatal Mortality Rate	PROVIDER	2156	782518	0.002755	0.002654	0.002223	0.002223
NQI #3 Neonatal Blood Stream Infection Rate	PROVIDER	431	19147	0.02251	0.02416	0.021579	0.021584
PDI #1 Accidental Puncture or Laceration Rate	PROVIDER	427	670966	0.000636	0.000559	0.000609	0.000608
PDI #2 Pressure Ulcer Rate	PROVIDER	9	72137	0.000125	0.000163	0.000102	0.000102
PDI #3 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	9					
PDI #5 Iatrogenic Pneumothorax Rate	PROVIDER	89	607504	0.000147	0.000146	0.000138	0.000138
PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate	PROVIDER	155	4251	0.036462			
PDI #7 RACHS-1 Pediatric Heart Surgery Volume	PROVIDER	4856					
PDI #8 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	121	26791	0.004516	0.004798	0.004351	0.004362
PDI #9 Postoperative Respiratory Failure Rate	PROVIDER	227	21310	0.010652	0.01068	0.010155	0.010155
PDI #10 Postoperative Sepsis Rate	PROVIDER	318	20415	0.015577	0.015992	0.015607	0.015612
PDI #11 Postoperative Wound Dehiscence Rate	PROVIDER	15	14398	0.001042	0.000665	0.001653	0.001535
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	392	527706	0.000743	0.000825	0.000592	0.000592
PDI #13 Transfusion Reaction Count	PROVIDER	1					
PDI #14 Asthma Admission Rate	AREA	17255	66052779	0.000261	0.00124	0.000261	0.000261
PDI #15 Diabetes Short-Term Complications Admission Rate	AREA	2840	49933398	0.000057	0.000264	0.000057	0.000057
PDI #16 Gastroenteritis Admission Rate	AREA	10345	73089313	0.000142	0.000658	0.000141	0.000141
PDI #17 Perforated Appendix Admission Rate	AREA	4736	15458	0.306379	0.307992	0.304614	0.304625
PDI #18 Urinary Tract Infection Admission Rate	AREA	6084	73089298	0.000083	0.000373	0.000083	0.000083

Appendix Table A.2 AHRQ QI SAS Version 4.5 Aggregate Estimates

QI	Type	SAS Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
PDI #90 Pediatric Quality Overall Composite	AREA	16860	49933423	0.000338	0.001608	0.000338	0.000338
PDI #91 Pediatric Quality Acute Composite	AREA	5503	49933400	0.00011	0.000516	0.00011	0.00011
PDI #92 Pediatric Quality Chronic Composite	AREA	11357	49933409	0.000227	0.001092	0.000227	0.000227

SOURCE: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project. 2010 Nationwide Inpatient Sample (unweighted) and AHRQ Quality Indicator SAS and WinQI Version 4.5 Software.

NOTE: Rates are reported as output from the software and not multiplied by any factor; Blank cell = N/A.

Appendix A.3 AHRQ WinQI Version 4.5 Aggregate Estimates

QI	Type	WinQI Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
Prevention Quality Indicators (PQIs)							
PQI #1 Diabetes Short-Term Complications Admission Rate	AREA	31938	234838448	0.000136	0.000621	0.000136	0.000136
PQI #2 Perforated Appendix Admission Rate	AREA	13166	43399	0.303371	0.298329	0.302771	0.302762
PQI #3 Diabetes Long-Term Complications Admission Rate	AREA	57224	234838448	0.000244	0.00116	0.000244	0.000244
PQI #5 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	AREA	153375	143070324	0.001072	0.004967	0.001071	0.001071
PQI #7 Hypertension Admission Rate	AREA	30024	234838448	0.000128	0.000591	0.000128	0.000128
PQI #8 Heart Failure Admission Rate	AREA	169354	234838448	0.000721	0.003426	0.000721	0.000721
PQI #9 Low Birth Weight Rate	AREA	50518	781563	0.064637	0.062395	0.06464	0.064637
PQ #10 Dehydration Admission Rate	AREA	61665	234838448	0.000263	0.001211	0.000263	0.000263
PQI #11 Bacterial Pneumonia Admission Rate	AREA	149526	234838448	0.000637	0.002967	0.000637	0.000637
PQI #12 Urinary Tract Infection Admission Rate	AREA	95512	234838448	0.000407	0.00189	0.000407	0.000407
PQI #13 Angina Without Procedure Admission Rate	AREA	9459	234838448	0.00004	0.000189	0.00004	0.00004
PQI #14 Uncontrolled Diabetes Admission Rate	AREA	9226	234838448	0.000039	0.000188	0.000039	0.000039
PQI #15 Asthma in Younger Adults Admission Rate	AREA	10253	91649940	0.000112	0.000526	0.000112	0.000112
PQI #16 Lower-Extremity Amputation among Patients with Diabetes Rate	AREA	7615	234838448	0.000032	0.000157	0.000032	0.000032
PQI #90 Prevention Quality Overall Composite	AREA	781648	234838448	0.003328	0.015559	0.003329	0.003329
PQI #91 Prevention Quality Acute Composite	AREA	306703	234838448	0.001306	0.006069	0.001306	0.001306
PQI #92 Prevention Quality Chronic Composite	AREA	474957	234838448	0.002022	0.009491	0.002023	0.002023
Inpatient Quality Indicators (IQIs)							
IQI #1 Esophageal Resection Volume	PROVIDER	1351					
IQI #2 Pancreatic Resection Volume	PROVIDER	3972					
IQI #2A Stratum A	PROVIDER	2094					
IQI #2B Stratum B	PROVIDER	1878					
IQI #4 Abdominal Aortic Aneurysm (AAA) Repair Volume	PROVIDER	8335					
IQI #4A Stratum A	PROVIDER	430					
IQI #4B Stratum B	PROVIDER	1466					

Appendix A.3 AHRQ WinQI Version 4.5 Aggregate Estimates

QI	Type	WinQI Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
IQI #4C Stratum C	PROVIDER	324					
IQI #4D Stratum D	PROVIDER	6127					
IQI #5 Coronary Artery Bypass Graft (CABG) Volume	PROVIDER	43144					
IQI #6 Percutaneous Coronary Intervention (PCI) Volume	PROVIDER	111764					
IQI #7 Carotid Endarterectomy Volume	PROVIDER	19653					
IQI #8 Esophageal Resection Mortality Rate	PROVIDER	50	1114	0.044883	0.049441	0.045444	0.046311
IQI #9 Pancreatic Resection Mortality Rate	PROVIDER	136	3946	0.034465	0.034975	0.033534	0.033537
IQI #9A Stratum A	PROVIDER	80	2084	0.038388	0.039215	0.037922	
IQI #9B Stratum B	PROVIDER	56	1862	0.030075	0.029748	0.027673	
IQI #11 Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate	PROVIDER	310	8292	0.037385	0.040788	0.03779	0.037884
IQI #11A Stratum A	PROVIDER	132	417	0.316547	0.373554	0.317065	
IQI #11B Stratum B	PROVIDER	64	1459	0.043866	0.046827	0.043863	
IQI #11C Stratum C	PROVIDER	64	316	0.202532	0.22028	0.216255	
IQI #11D Stratum D	PROVIDER	54	6112	0.008835	0.008641	0.008436	
IQI #12 Coronary Artery Bypass Graft (CABG) Mortality Rate	PROVIDER	1010	42351	0.023848	0.025155	0.024463	0.024471
IQI #13 Craniotomy Mortality Rate	PROVIDER	1810	30118	0.060097	0.06042	0.056706	0.056707
IQI #14 Hip Replacement Mortality Rate	PROVIDER	52	55878	0.000931	0.000943	0.000935	0.000935
IQI #15 Acute Myocardial Infarction (AMI) Mortality Rate	PROVIDER	6418	108161	0.059337	0.059909	0.060111	0.060112
IQI #16 Heart Failure Mortality Rate	PROVIDER	6440	201676	0.031932	0.032284	0.032941	0.032941
IQI #17 Acute Stroke Mortality Rate	PROVIDER	10519	112059	0.09387	0.093087	0.092074	0.092074
IQI #17A Stratum A	PROVIDER	1212	5326	0.227563	0.229942	0.22444	
IQI #17B Stratum B	PROVIDER	4663	20206	0.230773	0.230808	0.234503	
IQI #17C Stratum C	PROVIDER	4643	86526	0.05366	0.052761	0.052588	
IQI #18 Gastrointestinal Hemorrhage Mortality Rate	PROVIDER	2348	100069	0.023464	0.023644	0.023935	0.023936
IQI #19 Hip Fracture Mortality Rate	PROVIDER	1421	51277	0.027712	0.027488	0.028029	0.028028
IQI #20 Pneumonia Mortality Rate	PROVIDER	7254	185186	0.039171	0.038993	0.0404	0.0404

Appendix A.3 AHRQ WinQI Version 4.5 Aggregate Estimates

QI	Type	WinQI Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
IQI #21 Cesarean Delivery Rate, Uncomplicated	PROVIDER	202969	685999	0.295874			
IQI #22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated	PROVIDER	10730	112684	0.095222			
IQI #23 Laparoscopic Cholecystectomy Rate	PROVIDER	57080	68050	0.838795			
IQI #24 Incidental Appendectomy in the Elderly Rate	PROVIDER	884	85206	0.010375			
IQI #25 Bilateral Cardiac Catheterization Rate	PROVIDER	2820	203092	0.013885			
IQI #26 Coronary Artery Bypass Graft (CABG) Rate	AREA	42711	143070324	0.000299	0.00153	0.000298	0.000298
IQI #27 Percutaneous Coronary Intervention (PCI) Rate	AREA	109441	143070324	0.000765	0.004074	0.000764	0.000765
IQI #28 Hysterectomy Rate	AREA	73316	120830434	0.000607	0.003	0.000607	0.000607
IQI #29 Laminectomy or Spinal Fusion Rate	AREA	137643	234838448	0.000586	0.002596	0.000586	0.000586
IQI #30 Percutaneous Coronary Intervention (PCI) Mortality Rate	PROVIDER	2016	108383	0.018601	0.018279	0.017639	0.017637
IQI #31 Carotid Endarterectomy Mortality Rate	PROVIDER	66	19593	0.003369	0.003833	0.003528	0.003549
IQI #32 Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	PROVIDER	1376	18299	0.075195	0.069081	0.069608	0.06955
IQI #33 Primary Cesarean Delivery Rate, Uncomplicated	PROVIDER	101015	573315	0.176195			
IQI #34 Vaginal Birth After Cesarean (VBAC) Rate, All	PROVIDER	12131	128440	0.094449			
Patient Safety Indicators (PSIs)							
PSI #2 Death Rate in Low-Mortality Diagnosis Related Groups (DRGs)	PROVIDER	393	1474847	0.000266	0.000274	0.000274	0.000274
PSI #3 Pressure Ulcer Rate	PROVIDER	642	1562738	0.000411	0.000402	0.000414	0.000414
PSI #4 Death Rate among Surgical Inpatients with Serious Treatable Complications	PROVIDER	5881	50334	0.11684	0.117805	0.11641	0.116412
PSI #4A Stratum A	PROVIDER	638	8383	0.076106	0.078488	0.077102	
PSI #4B Stratum B	PROVIDER	2751	26778	0.102734	0.102265	0.102968	
PSI #4C Stratum C	PROVIDER	1976	8337	0.237016	0.234183	0.239269	
PSI #4D Stratum D	PROVIDER	1882	5313	0.354225	0.362118	0.350081	
PSI #4E Stratum E	PROVIDER	597	8622	0.069241	0.06816	0.068797	
PSI #5 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	186					
PSI #6 Iatrogenic Pneumothorax Rate	PROVIDER	2009	5310785	0.000378	0.000367	0.000452	0.000452

Appendix A.3 AHRQ WinQI Version 4.5 Aggregate Estimates

QI	Type	WinQI Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
PSI #7 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	1841	4297404	0.000428	0.000426	0.000411	0.000411
PSI #8 Postoperative Hip Fracture Rate	PROVIDER	21	971923	0.000022	0.000028	0.000024	0.000025
PSI #9 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	8888	1551658	0.005728	0.005766	0.005702	0.005702
PSI #10 Postoperative Physiologic and Metabolic Derangement Rate	PROVIDER	436	804823	0.000542	0.000486	0.000524	0.000524
PSI #11 Postoperative Respiratory Failure Rate	PROVIDER	6344	667745	0.009501	0.008782	0.009003	0.009003
PSI #12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	PROVIDER	7480	1608992	0.004649	0.004545	0.004471	0.004471
PSI #13 Postoperative Sepsis Rate	PROVIDER	1866	162215	0.011503	0.011741	0.011565	0.011565
PSI #14 Postoperative Wound Dehiscence Rate	PROVIDER	459	250899	0.001829	0.001845	0.001853	0.001853
PSI #15 Accidental Puncture or Laceration Rate	PROVIDER	13390	5499494	0.002435	0.00247	0.002393	0.002393
PSI #16 Transfusion Reaction Count	PROVIDER	19					
PSI #17 Birth Trauma Rate – Injury to Neonate	PROVIDER	1529	761208	0.002009			
PSI #18 Obstetric Trauma Rate – Vaginal Delivery With Instrument	PROVIDER	5387	38439	0.140144			
PSI #19 Obstetric Trauma Rate – Vaginal Delivery Without Instrument	PROVIDER	10980	481999	0.02278			
PSI #21 Retained Surgical Item or Unretrieved Device Fragment Rate	AREA	463	234838448	0.000002			
PSI #22 Iatrogenic Pneumothorax Rate	AREA	3520	234838448	0.000015			
PSI #23 Central Venous Catheter-Related Blood Stream Infection Rate	AREA	5440	234838448	0.000023			
PSI #24 Postoperative Wound Dehiscence Rate	AREA	883	234838448	0.000004			
PSI #25 Accidental Puncture or Laceration Rate	AREA	17047	234838448	0.000073			
PSI #26 Transfusion Reaction Rate	AREA	29	234838448	0			
PSI #27 Perioperative Hemorrhage or Hematoma Rate	AREA	19314	234838448	0.000082			
Pediatric Quality Indicators (PDIs)							
NQI #1 Neonatal Iatrogenic Pneumothorax Rate	PROVIDER	7	50927	0.000137	0.000198	0.000133	0.000135
NQI #2 Neonatal Mortality Rate	PROVIDER	2156	782518	0.002755	0.002654	0.002223	0.002223
NQI #3 Neonatal Blood Stream Infection Rate	PROVIDER	431	19147	0.02251	0.02416	0.021579	0.021584
PDI #1 Accidental Puncture or Laceration Rate	PROVIDER	427	670966	0.000636	0.000559	0.000609	0.000608
PDI #2 Pressure Ulcer Rate	PROVIDER	9	72137	0.000125	0.000163	0.000102	0.000102

Appendix A.3 AHRQ WinQI Version 4.5 Aggregate Estimates

QI	Type	WinQI Version 4.5					
		OBS num	OBS den	OBS rate	EXP rate	ADJ rate	Smoothed rate
PDI #3 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	9					
PDI #5 Iatrogenic Pneumothorax Rate	PROVIDER	89	607504	0.000147	0.000146	0.000138	0.000138
PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate	PROVIDER	155	4251	0.036462			
PDI #7 RACHS-1 Pediatric Heart Surgery Volume	PROVIDER	4856					
PDI #8 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	121	26791	0.004516	0.004798	0.004351	0.004362
PDI #9 Postoperative Respiratory Failure Rate	PROVIDER	227	21310	0.010652	0.01068	0.010155	0.010155
PDI #10 Postoperative Sepsis Rate	PROVIDER	318	20415	0.015577	0.015992	0.015607	0.015612
PDI #11 Postoperative Wound Dehiscence Rate	PROVIDER	15	14398	0.001042	0.000665	0.001653	0.001535
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	392	527706	0.000743	0.000825	0.000592	0.000592
PDI #13 Transfusion Reaction Count	PROVIDER	1					
PDI #14 Asthma Admission Rate	AREA	17265	66052765	0.000261	0.00124	0.000261	0.000261
PDI #15 Diabetes Short-Term Complications Admission Rate	AREA	2843	49274916	0.000058	0.000264	0.000058	0.000058
PDI #16 Gastroenteritis Admission Rate	AREA	10364	73089289	0.000142	0.000658	0.000142	0.000142
PDI #17 Perforated Appendix Admission Rate	AREA	4736	15458	0.306379	0.307992	0.304614	0.304625
PDI #18 Urinary Tract Infection Admission Rate	AREA	6089	73089289	0.000083	0.000373	0.000083	0.000083
PDI #90 Pediatric Quality Overall Composite	AREA	16872	49274916	0.000342	0.001608	0.000342	0.000342
PDI #91 Pediatric Quality Acute Composite	AREA	5509	49274916	0.000112	0.000516	0.000112	0.000112
PDI #92 Pediatric Quality Chronic Composite	AREA	11363	49274916	0.000231	0.001092	0.000231	0.000231

SOURCE: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project. 2010 Nationwide Inpatient Sample (unweighted) and AHRQ Quality Indicator SAS and WinQI Version 4.5 Software.

NOTE: Rates are reported as output from the software and not multiplied by any factor; Blank cell = N/A.

Appendix Table B.1 Key to Appendix Table B

Column Heading	Description
QI	Quality Indicator
TYPE	Provider-level or Area-level indicator
N_SAS	Number of providers (or counties) for which the QI calculation was reported by SAS
N_WINQI	Number of providers (or counties) for which the QI calculation was reported by WinQI
N_NUM	Number of providers (or counties) with a numerator difference between SAS and WinQI
MAX DIFF NUM	Maximum difference in the numerator for any one provider (or county) as calculated by SAS and WinQI
N_DEN	Number of providers (or counties) with a denominator difference between SAS and WinQI
MAX DIFF DEN	Maximum difference in the denominator for any one provider (or county) as calculated by SAS and WinQI
N_OBS	Number of providers (or counties) with a difference between SAS and WinQI in the observed rates
MAX DIFF OBS	Maximum difference in the observed rate for any one provider (or county) as calculated by SAS and WinQI
MAX %DIFF OBS	Maximum difference (expressed as a percentage of the SAS estimate) in the observed rate for any one provider (or county) as calculated by SAS and WinQI
N_EXP	Number of providers (or counties) with a difference between SAS and WinQI in the expected rates
MAX DIFF EXP	Maximum difference in the expected rate for any one provider (or county) as calculated by SAS and WinQI
MAX %DIFF EXP	Maximum difference (expressed as a percentage of the SAS estimate) in the expected rate for any one provider (or county) as calculated by SAS and WinQI
N_RAR	Number of providers (or counties) with a difference between SAS and WinQI in the risk-adjusted rates
MAX DIFF RAR	Maximum difference in the risk-adjusted rate for any one provider (or county) as calculated by SAS and WinQI
MAX %DIFF RAR	Maximum difference (expressed as a percentage of the SAS estimate) in the risk-adjusted rate for any one provider (or county) as calculated by SAS and WinQI
N_SR	Number of providers (or counties) with a difference between SAS and WinQI in the smoothed rates
MAX DIFF SR	Maximum difference in the smoothed rate for any one provider (or county) as calculated by SAS and WinQI
MAX %DIFF SR	Maximum difference (expressed as a percentage of the SAS estimate) in the smoothed rate for any one provider (or county) as calculated by SAS and WinQI

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

QI	Type	Number of Providers or Counties		Difference between SAS and WinQI															
				Numerator		Denominator		Observed Rate (Ratio [†])			Expected Rate (Variance [†])			Risk Adjusted Rate (Standard Error [†])			Smoothed Rate (Weight [†])		
		N_SAS	N_WinQI	N_NUM	MAX DIFF NUM	N_DEN	MAX DIFF DEN	N_OBS	MAX DIFF OBS	MAX % DIFF OBS	N_EXP	MAX DIFF EXP	MAX % DIFF EXP	N_RAR	MAX DIFF RAR	MAX % DIFF RAR	N_SR	MAX DIFF SR	MAX % DIFF SR
Prevention Quality Indicators (PQIs)																			
PQI #1 Diabetes Short-Term Complications Admission Rate	AREA	3124	3121	0	0	36	7	5	0.000003	0.16	0	0	0.04	6	0.000003	0.12	0	0	0.00
PQI #2 Perforated Appendix Admission Rate	AREA	1940	1940	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PQI #3 Diabetes Long-Term Complications Admission Rate	AREA	3124	3121	0	0	133	14	9	0.000014	0.27	7	0.000001	0.10	23	0.000015	0.36	0	0	0.00
PQI #5 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	AREA	3124	3113	0	0	326	250	131	0.000524	1.70	112	0.00004	0.77	170	0.000545	2.37	9	0.000344	2.04
PQI #7 Hypertension Admission Rate	AREA	3124	3121	0	0	99	23	10	0.000003	0.14	13	0.000002	0.29	26	0.00001	0.40	0	0	0.00
PQI #8 Heart Failure Admission Rate	AREA	3124	3121	0	0	439	289	148	0.000196	1.41	256	0.000141	2.71	282	0.000173	3.45	1	0.000113	2.32
PQI #9 Low Birth Weight Rate	AREA	2749	2749	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PQ #10 Dehydration Admission Rate	AREA	3124	3121	0	0	247	41	52	0.000018	0.42	86	0.000016	1.20	110	0.000062	1.64	0	0	0.00
PQI #11 Bacterial Pneumonia Admission Rate	AREA	3124	3121	0	0	415	221	149	0.000139	1.06	229	0.000161	3.41	251	0.000382	4.63	4	0.000127	2.20
PQI #12 Urinary Tract Infection Admission Rate	AREA	3124	3121	0	0	290	135	91	0.001976	4.55	168	0.000122	1.94	184	0.000312	2.90	0	0	0.00
PQI #13 Angina Without Procedure Admission Rate	AREA	3124	3121	0	0	58	6	5	0.000003	0.17	2	0	0.08	14	0.000003	0.24	0	0	0.00

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

[illegible]

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

QI	Type	Number of Providers or Counties		Difference between SAS and WinQI															
				Numerator		Denominator		Observed Rate (Ratio [†])			Expected Rate (Variance [†])			Risk Adjusted Rate (Standard Error [†])			Smoothed Rate (Weight [†])		
		N_SAS	N_WinQI	N_NUM	MAX DIFF NUM	N_DEN	MAX DIFF DEN	N_OBS	MAX DIFF OBS	MAX % DIFF OBS	N_EXP	MAX DIFF EXP	MAX % DIFF EXP	N_RAR	MAX DIFF RAR	MAX % DIFF RAR	N_SR	MAX DIFF SR	MAX % DIFF SR
IQI #4C Stratum C	PROVIDER	144	144	0	0														
IQI #4D Stratum D	PROVIDER	334	334	0	0														
IQI #5 Coronary Artery Bypass Graft (CABG) Volume	PROVIDER	250	250	0	0														
IQI #6 Percutaneous Coronary Intervention (PCI) Volume	PROVIDER	353	353	0	0														
IQI #7 Carotid Endarterectomy Volume	PROVIDER	471	471	0	0														
IQI #8 Esophageal Resection Mortality Rate	PROVIDER	189	189	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
IQI #9 Pancreatic Resection Mortality Rate	PROVIDER	273	273	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
IQI #9A Stratum A	PROVIDER	206	206	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00			
IQI #9B Stratum B	PROVIDER	232	232	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00			
IQI #11 Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate	PROVIDER	372	372	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
IQI #11A Stratum A	PROVIDER	185	185	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00			
IQI #11B Stratum B	PROVIDER	264	264	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00			
IQI #11C Stratum C	PROVIDER	143	143	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00			
IQI #11D Stratum D	PROVIDER	334	334	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00			
IQI #12 Coronary Artery Bypass Graft (CABG) Mortality Rate	PROVIDER	249	249	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

QI	Type	Number of Providers or Counties		Difference between SAS and WinQI															
				Numerator		Denominator		Observed Rate (Ratio [†])			Expected Rate (Variance [†])			Risk Adjusted Rate (Standard Error [†])			Smoothed Rate (Weight [†])		
		N_SAS	N_WinQI	N_NUM	MAX DIFF NUM	N_DEN	MAX DIFF DEN	N_OBS	MAX DIFF OBS	MAX % DIFF OBS	N_EXP	MAX DIFF EXP	MAX % DIFF EXP	N_RAR	MAX DIFF RAR	MAX % DIFF RAR	N_SR	MAX DIFF SR	MAX % DIFF SR
IQI #23 Laparoscopic Cholecystectomy Rate	PROVIDER	856	856	0	0	0	0	0	0	0.00									
IQI #24 Incidental Appendectomy in the Elderly Rate	PROVIDER	881	881	0	0	0	0	0	0	0.00									
IQI #25 Bilateral Cardiac Catheterization Rate	PROVIDER	462	462	0	0	0	0	0	0	0.00									
IQI #26 Coronary Artery Bypass Graft (CABG) Rate	AREA	3124	3113	0	0	225	36	74	0.000015	0.36	82	0.000009	0.49	115	0.000021	0.72	0	0	0.00
IQI #27 Percutaneous Coronary Intervention (PCI) Rate	AREA	3124	3113	0	0	360	373	153	0.000033	0.57	125	0.000015	0.33	188	0.000043	0.78	0	0	0.00
IQI #28 Hysterectomy Rate	AREA	3124	3121	0	0	149	55	70	0.000056	0.61	44	0.000013	0.45	84	0.000099	1.06	0	0	0.00
IQI #29 Laminectomy or Spinal Fusion Rate	AREA	3126	3123	0	0	319	188	75	0.00001	0.28	29	0.000008	0.24	100	0.000016	0.52	0	0	0.00
IQI #30 Percutaneous Coronary Intervention (PCI) Mortality Rate	PROVIDER	349	349	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
IQI #31 Carotid Endarterectomy Mortality Rate	PROVIDER	471	471	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
IQI #32 Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	PROVIDER	475	475	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

[illegible]

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

QI	Type	Number of Providers or Counties		Difference between SAS and WinQI															
				Numerator		Denominator		Observed Rate (Ratio [†])			Expected Rate (Variance [†])			Risk Adjusted Rate (Standard Error [†])			Smoothed Rate (Weight [†])		
		N_SAS	N_WinQI	N_NUM	MAX DIFF NUM	N_DEN	MAX DIFF DEN	N_OBS	MAX DIFF OBS	MAX % DIFF OBS	N_EXP	MAX DIFF EXP	MAX % DIFF EXP	N_RAR	MAX DIFF RAR	MAX % DIFF RAR	N_SR	MAX DIFF SR	MAX % DIFF SR
PSI #6 Iatrogenic Pneumothorax Rate	PROVIDER	1049	1049	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PSI #7 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	1050	1050	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PSI #8 Postoperative Hip Fracture Rate	PROVIDER	971	971	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PSI #9 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	974	974	0	0	0	0	0	0	0.00	0	0	0.01	0	0	0.01	0	0	0.00
PSI #10 Postoperative Physiologic and Metabolic Derangement Rate	PROVIDER	820	820	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PSI #11 Postoperative Respiratory Failure Rate	PROVIDER	816	816	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PSI #12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	PROVIDER	976	976	0	0	0	0	0	0	0.00	0	0.000001	0.02	0	0	0.02	0	0	0.01
PSI #13 Postoperative Sepsis Rate	PROVIDER	770	770	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PSI #14 Postoperative Wound Dehiscence Rate	PROVIDER	902	902	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PSI #15 Accidental Puncture or Laceration Rate	PROVIDER	1049	1049	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

QI	Type	Number of Providers or Counties		Difference between SAS and WinQI															
				Numerator		Denominator		Observed Rate (Ratio [†])			Expected Rate (Variance [†])			Risk Adjusted Rate (Standard Error [†])			Smoothed Rate (Weight [†])		
		N_SAS	N_WinQI	N_NUM	MAX DIFF NUM	N_DEN	MAX DIFF DEN	N_OBS	MAX DIFF OBS	MAX % DIFF OBS	N_EXP	MAX DIFF EXP	MAX % DIFF EXP	N_RAR	MAX DIFF RAR	MAX % DIFF RAR	N_SR	MAX DIFF SR	MAX % DIFF SR
PSI #90 Patient Safety for Selected Indicators	PROVIDER	1050	1051					(0)	(.000035)	(.0066)	(0)	(.000002)	(.0105)	(0)	(.000007)	(.0052)	(0)	(0)	(0)
Pediatric Quality Indicators (PDIs)																			
NQI #1 Neonatal Iatrogenic Pneumothorax Rate	PROVIDER	621	621	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
NQI #2 Neonatal Mortality Rate	PROVIDER	667	667	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
NQI #3 Neonatal Blood Stream Infection Rate	PROVIDER	282	282	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #1 Accidental Puncture or Laceration Rate	PROVIDER	964	964	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #2 Pressure Ulcer Rate	PROVIDER	693	693	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #3 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	8	8	0	0														
PDI #5 Iatrogenic Pneumothorax Rate	PROVIDER	963	963	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate	PROVIDER	64	64	0	0	0	0	0	0	0.00									
PDI #7 RACHS-1 Pediatric Heart Surgery Volume	PROVIDER	88	88	0	0														
PDI #8 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	524	524	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

QI	Type	Number of Providers or Counties		Difference between SAS and WinQI															
				Numerator		Denominator		Observed Rate (Ratio [†])			Expected Rate (Variance [†])			Risk Adjusted Rate (Standard Error [†])			Smoothed Rate (Weight [†])		
		N_SAS	N_WinQI	N_NUM	MAX DIFF NUM	N_DEN	MAX DIFF DEN	N_OBS	MAX DIFF OBS	MAX % DIFF OBS	N_EXP	MAX DIFF EXP	MAX % DIFF EXP	N_RAR	MAX DIFF RAR	MAX % DIFF RAR	N_SR	MAX DIFF SR	MAX % DIFF SR
PDI #9 Postoperative Respiratory Failure Rate	PROVIDER	522	522	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #10 Postoperative Sepsis Rate	PROVIDER	437	437	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #11 Postoperative Wound Dehiscence Rate	PROVIDER	600	600	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	943	943	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #13 Transfusion Reaction Count	PROVIDER	1	1	0	0														
PDI #14 Asthma Admission Rate	AREA	2979	2979	0	0	6	7	10	0.000008	0.18	92	0.000044	2.22	6	0.000007	0.24	0	0	0.00
PDI #15 Diabetes Short-Term Complications Admission Rate	AREA	2978	2717	0	0	1	6	4	0.000004	0.08	78	0.000026	13.33	0	0	0.04	0	0	0.00
PDI #16 Gastroenteritis Admission Rate	AREA	2979	2979	0	0	13	9	11	0.000016	0.33	79	0.00004	3.33	8	0.000024	0.38	0	0	0.00
PDI #17 Perforated Appendix Admission Rate	AREA	1336	1336	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PDI #18 Urinary Tract Infection Admission Rate	AREA	2979	2979	0	0	7	2	6	0.00004	0.77	76	0.00002	3.33	5	0.00004	0.70	0	0	0.00
PDI #19 Pediatric Patient Safety for Selected Indicators	PROVIDER	965	965					(0)	(0)	(0)	(0)	(0)	(.0004)	(0)	(0)	(0)	(0)	(0)	0.00

Appendix Table B.2 Comparison of SAS Version 4.5 to WinQI Version 4.5, Detailed Provider/County Level

QI	Type	Number of Providers or Counties		Difference between SAS and WinQI															
				Numerator		Denominator		Observed Rate (Ratio [†])			Expected Rate (Variance [†])			Risk Adjusted Rate (Standard Error [†])			Smoothed Rate (Weight [†])		
		N_SAS	N_WinQI	N_NUM	MAX DIFF NUM	N_DEN	MAX DIFF DEN	N_OBS	MAX DIFF OBS	MAX % DIFF OBS	N_EXP	MAX DIFF EXP	MAX % DIFF EXP	N_RAR	MAX DIFF RAR	MAX % DIFF RAR	N_SR	MAX DIFF SR	MAX % DIFF SR
PDI #90 Pediatric Quality Overall Composite	AREA	2978	2717	0	0	11	9	21	0.000052	0.72	80	0.000232	13.33	8	0.000069	0.93	0	0	0.00
PDI #91 Pediatric Quality Acute Composite	AREA	2978	2717	0	0	7	2	10	0.000052	0.72	79	0.000076	13.33	6	0.000091	1.19	0	0	0.00
PDI #92 Pediatric Quality Chronic Composite	AREA	2978	2717	0	0	6	6	15	0.000013	0.36	78	0.000155	13.33	4	0.000014	0.37	0	0	0.00

SOURCE: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project. 2010 Nationwide Inpatient Sample (unweighted) and AHRQ Quality Indicator SAS and WinQI Version 4.5 Software.

NOTE: Only observed and adjusted ratios are reported for area-level indicators and composites; Smoothed rates are not calculated for stratified indicators; [†]Ratios, Variance, Standard Errors and Weights are reported for 4 composites IQI 90, IQI 91, PSI 90 and PDI 90; Blank cell = N/A.

Table B.3 AHRQ QI SAS software Version 4.5, Detailed Provider/County Level

QI	Type	SAS Version 4.5						
		Nbr of Provider or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
Prevention Quality Indicators (PQIs)								
PQI #1 Diabetes Short-Term Complications Admission Rate	AREA	3124	0.0-795.0	22.0-7416633.0	0.0000-0.0050	0.0004-0.0008	0.0000-0.0050	0.0000-0.0016
PQI #2 Perforated Appendix Admission Rate	AREA	1940	0.0-559.0	1.0-2033.0	0.0000-1.0000	0.1623-0.5271	0.0000-1.0000	0.2021-0.5185
PQI #3 Diabetes Long-Term Complications Admission Rate	AREA	3124	0.0-2045.0	22.0-7416633.0	0.0000-0.0053	0.0006-0.0024	0.0000-0.0055	0.0000-0.0036
PQI #5 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	AREA	3124	0.0-3342.0	19.0-4176020.0	0.0000-0.0308	0.0030-0.0103	0.0000-0.0295	0.0000-0.0230
PQI #7 Hypertension Admission Rate	AREA	3124	0.0-882.0	22.0-7416633.0	0.0000-0.0164	0.0003-0.0016	0.0000-0.0179	0.0000-0.0112
PQI #8 Heart Failure Admission Rate	AREA	3124	0.0-5038.0	22.0-7416633.0	0.0000-0.0139	0.0011-0.0131	0.0000-0.0112	0.0000-0.0077
PQI #9 Low Birth Weight Rate	AREA	2749	0.0-1527.0	1.0-28576.0	0.0000-1.0000	0.0596-0.0654	0.0000-1.0000	0.0379-0.1448
PQ #10 Dehydration Admission Rate	AREA	3124	0.0-1210.0	22.0-7416633.0	0.0000-0.0141	0.0006-0.0039	0.0000-0.0130	0.0000-0.0071
PQI #11 Bacterial Pneumonia Admission Rate	AREA	3124	0.0-3598.0	22.0-7416633.0	0.0000-0.0292	0.0012-0.0099	0.0000-0.0194	0.0000-0.0124
PQI #12 Urinary Tract Infection Admission Rate	AREA	3124	0.0-2858.0	23.0-7416633.0	0.0000-0.0435	0.0008-0.0076	0.0000-0.0108	0.0000-0.0055
PQI #13 Angina Without Procedure Admission Rate	AREA	3124	0.0-568.0	22.0-7416633.0	0.0000-0.0037	0.0001-0.0004	0.0000-0.0037	0.0000-0.0019
PQI #14 Uncontrolled Diabetes Admission Rate	AREA	3124	0.0-312.0	22.0-7416633.0	0.0000-0.0019	0.0001-0.0003	0.0000-0.0017	0.0000-0.0008
PQI #15 Asthma in Younger Adults Admission Rate	AREA	3124	0.0-271.0	3.0-3240613.0	0.0000-0.0054	0.0004-0.0008	0.0000-0.0056	0.0000-0.0018
PQI #16 Lower-Extremity Amputation among Patients with Diabetes Rate	AREA	3124	0.0-178.0	22.0-7416633.0	0.0000-0.0011	0.0001-0.0003	0.0000-0.0010	0.0000-0.0003
PQI #90 Prevention Quality Overall Composite	AREA	3124	0.0-20737.0	23.0-7416633.0	0.0000-0.0730	0.0069-0.0486	0.0000-0.0661	0.0001-0.0617
PQI #91 Prevention Quality Acute Composite	AREA	3124	0.0-7654.0	23.0-7416633.0	0.0000-0.0435	0.0026-0.0213	0.0000-0.0339	0.0000-0.0277
PQI #92 Prevention Quality Chronic Composite	AREA	3124	0.0-13083.0	22.0-7416633.0	0.0000-0.0362	0.0043-0.0275	0.0000-0.0325	0.0000-0.0299
Inpatient Quality Indicators (IQIs)								
IQI #1 Esophageal Resection Volume	PROVIDER	211	1.0-98.0					
IQI #2 Pancreatic Resection Volume	PROVIDER	278	1.0-267.0					
IQI #2A Stratum A	PROVIDER	206	1.0-181.0					
IQI #2B Stratum B	PROVIDER	239	1.0-142.0					
IQI #4 Abdominal Aortic Aneurysm (AAA) Repair Volume	PROVIDER	377	1.0-153.0					

Table B.3 AHRQ QI SAS software Version 4.5, Detailed Provider/County Level

QI	Type	SAS Version 4.5						
		Nbr of Provider or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
IQI #4A Stratum A	PROVIDER	190	1.0-19.0					
IQI #4B Stratum B	PROVIDER	265	1.0-46.0					
IQI #4C Stratum C	PROVIDER	144	1.0-17.0					
IQI #4D Stratum D	PROVIDER	334	1.0-128.0					
IQI #5 Coronary Artery Bypass Graft (CABG) Volume	PROVIDER	250	1.0-685.0					
IQI #6 Percutaneous Coronary Intervention (PCI) Volume	PROVIDER	353	1.0-1978.0					
IQI #7 Carotid Endarterectomy Volume	PROVIDER	471	1.0-264.0					
IQI #8 Esophageal Resection Mortality Rate	PROVIDER	189	0.0-4.0	1.0-92.0	0.0000-1.0000	0.0230-0.1458	0.0000-0.4748	0.0419-0.0564
IQI #9 Pancreatic Resection Mortality Rate	PROVIDER	273	0.0-12.0	1.0-267.0	0.0000-1.0000	0.0147-0.0716	0.0000-0.4166	0.0091-0.1153
IQI #9A Stratum A	PROVIDER	206	0.0-7.0	1.0-181.0	0.0000-0.6667	0.0175-0.1085	0.0000-0.4879	
IQI #9B Stratum B	PROVIDER	232	0.0-6.0	1.0-142.0	0.0000-1.0000	0.0083-0.0874	0.0000-0.2755	
IQI #11 Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate	PROVIDER	372	0.0-11.0	1.0-152.0	0.0000-1.0000	0.0026-0.4810	0.0000-1.0000	0.0306-0.0535
IQI #11A Stratum A	PROVIDER	185	0.0-6.0	1.0-19.0	0.0000-1.0000	0.2233-0.4835	0.0000-0.8348	
IQI #11B Stratum B	PROVIDER	264	0.0-6.0	1.0-46.0	0.0000-1.0000	0.0114-0.1420	0.0000-0.5208	
IQI #11C Stratum C	PROVIDER	143	0.0-4.0	1.0-16.0	0.0000-1.0000	0.1192-0.3482	0.0000-0.7632	
IQI #11D Stratum D	PROVIDER	334	0.0-3.0	1.0-128.0	0.0000-1.0000	0.0022-0.0770	0.0000-0.2339	
IQI #12 Coronary Artery Bypass Graft (CABG) Mortality Rate	PROVIDER	249	0.0-24.0	1.0-678.0	0.0000-0.2000	0.0060-0.0551	0.0000-0.1783	0.0116-0.0501
IQI #13 Craniotomy Mortality Rate	PROVIDER	329	0.0-62.0	1.0-946.0	0.0000-1.0000	0.0036-0.1620	0.0000-0.2640	0.0277-0.1135
IQI #14 Hip Replacement Mortality Rate	PROVIDER	693	0.0-2.0	1.0-1292.0	0.0000-0.1429	0.0003-0.0102	0.0000-0.0688	0.0006-0.0020
IQI #15 Acute Myocardial Infarction (AMI) Mortality Rate	PROVIDER	897	0.0-66.0	1.0-1424.0	0.0000-1.0000	0.0115-0.2449	0.0000-0.5712	0.0165-0.0929
IQI #16 Heart Failure Mortality Rate	PROVIDER	1016	0.0-70.0	1.0-1767.0	0.0000-1.0000	0.0067-0.1866	0.0000-0.5880	0.0076-0.0780
IQI #17 Acute Stroke Mortality Rate	PROVIDER	955	0.0-138.0	1.0-1103.0	0.0000-1.0000	0.0154-0.3066	0.0000-1.0000	0.0274-0.1658
IQI #17A Stratum A	PROVIDER	383	0.0-39.0	1.0-200.0	0.0000-1.0000	0.0705-0.6141	0.0000-1.0000	
IQI #17B Stratum B	PROVIDER	717	0.0-72.0	1.0-320.0	0.0000-1.0000	0.0866-0.6411	0.0000-1.0000	

Table B.3 AHRQ QI SAS software Version 4.5, Detailed Provider/County Level

QI	Type	SAS Version 4.5						
		Nbr of Provider or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
IQI #17C Stratum C	PROVIDER	941	0.0-63.0	1.0-788.0	0.0000-1.0000	0.0085-0.2504	0.0000-1.0000	
IQI #18 Gastrointestinal Hemorrhage Mortality Rate	PROVIDER	959	0.0-19.0	1.0-752.0	0.0000-1.0000	0.0040-0.0866	0.0000-0.4156	0.0117-0.0374
IQI #19 Hip Fracture Mortality Rate	PROVIDER	772	0.0-19.0	1.0-443.0	0.0000-1.0000	0.0076-0.3888	0.0000-0.7552	0.0149-0.0420
IQI #20 Pneumonia Mortality Rate	PROVIDER	1036	0.0-78.0	1.0-1299.0	0.0000-0.5000	0.0024-0.2408	0.0000-0.7986	0.0065-0.0879
IQI #21 Cesarean Delivery Rate, Uncomplicated	PROVIDER	664	0.0-3459.0	1.0-8550.0	0.0000-1.0000			
IQI #22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated	PROVIDER	651	0.0-200.0	2.0-1616.0	0.0000-0.8750			
IQI #23 Laparoscopic Cholecystectomy Rate	PROVIDER	856	0.0-516.0	1.0-663.0	0.0000-1.0000			
IQI #24 Incidental Appendectomy in the Elderly Rate	PROVIDER	881	0.0-17.0	1.0-1064.0	0.0000-0.2500			
IQI #25 Bilateral Cardiac Catheterization Rate	PROVIDER	462	0.0-135.0	1.0-2620.0	0.0000-1.0000			
IQI #26 Coronary Artery Bypass Graft (CABG) Rate	AREA	3124	0.0-778.0	19.0-4176020.0	0.0000-0.0077	0.0011-0.0025	0.0000-0.0066	0.0000-0.0031
IQI #27 Percutaneous Coronary Intervention (PCI) Rate	AREA	3124	0.0-3159.0	19.0-4176020.0	0.0000-0.0100	0.0032-0.0066	0.0000-0.0095	0.0000-0.0086
IQI #28 Hysterectomy Rate	AREA	3124	0.0-1748.0	16.0-3802062.0	0.0000-0.0100	0.0014-0.0037	0.0000-0.0110	0.0001-0.0065
IQI #29 Laminectomy or Spinal Fusion Rate	AREA	3126	0.0-2423.0	1.0-7416633.0	0.0000-1.0000	0.0014-0.0039	0.0000-0.0143	0.0000-0.0101
IQI #30 Percutaneous Coronary Intervention (PCI) Mortality Rate	PROVIDER	349	0.0-28.0	1.0-1951.0	0.0000-1.0000	0.0022-0.0717	0.0000-0.1202	0.0074-0.0276
IQI #31 Carotid Endarterectomy Mortality Rate	PROVIDER	471	0.0-3.0	1.0-264.0	0.0000-0.3333	0.0005-0.0314	0.0000-1.0000	0.0031-0.0063
IQI #32 Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	PROVIDER	475	0.0-44.0	1.0-651.0	0.0000-1.0000	0.0077-0.2493	0.0000-0.5762	0.0458-0.0879
IQI #33 Primary Cesarean Delivery Rate, Uncomplicated	PROVIDER	664	0.0-1984.0	1.0-6934.0	0.0000-1.0000			
IQI #34 Vaginal Birth After Cesarean (VBAC) Rate, All	PROVIDER	651	0.0-229.0	2.0-1915.0	0.0000-0.8750			
IQI #90 Mortality for Selected Procedures	PROVIDER	1050			(0.6175-1.3187)	(0.0244-0.0412)	(0.1563-0.2031)	(0.0000-931.8740)
IQI #91 Mortality for Selected Conditions	PROVIDER	1050			(0.3584-1.6483)	(0.0034-0.0283)	(0.0579-0.1684)	(0.0000-1084.9207)
Patient Safety Indicators (PSIs)								
PSI #2 Death Rate in Low-Mortality Diagnosis Related Groups (DRGs)	PROVIDER	1001	0.0-8.0	1.0-16870.0	0.0000-1.0000	0.0000-0.0072	0.0000-0.0793	0.0000-0.0108
PSI #3 Pressure Ulcer Rate	PROVIDER	1031	0.0-42.0	0.0-18072.0	0.0000-0.0357	0.0000-0.0023	0.0000-0.0454	0.0000-0.0050

Table B.3 AHRQ QI SAS software Version 4.5, Detailed Provider/County Level

QI	Type	SAS Version 4.5						
		Nbr of Provider or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
PSI #4 Death Rate among Surgical Inpatients with Serious Treatable Complications	PROVIDER	831	0.0-110.0	1.0-916.0	0.0000-1.0000	0.0329-0.2885	0.0000-0.9974	0.0217-0.1853
PSI #4A Stratum A	PROVIDER	626	0.0-17.0	1.0-187.0	0.0000-1.0000	0.0195-0.2062	0.0000-0.6992	
PSI #4B Stratum B	PROVIDER	787	0.0-52.0	1.0-448.0	0.0000-1.0000	0.0164-0.2349	0.0000-0.7729	
PSI #4C Stratum C	PROVIDER	632	0.0-47.0	1.0-172.0	0.0000-1.0000	0.0964-0.4036	0.0000-0.7485	
PSI #4D Stratum D	PROVIDER	581	0.0-47.0	1.0-123.0	0.0000-1.0000	0.0971-0.6765	0.0000-1.0000	
PSI #4E Stratum E	PROVIDER	641	0.0-18.0	1.0-180.0	0.0000-1.0000	0.0067-0.3408	0.0000-1.0000	
PSI #5 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	121	1.0-9.0					
PSI #6 Iatrogenic Pneumothorax Rate	PROVIDER	1049	0.0-35.0	2.0-46042.0	0.0000-0.0133	0.0000-0.0023	0.0000-0.0144	0.0002-0.0017
PSI #7 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	1050	0.0-61.0	3.0-38622.0	0.0000-0.0672	0.0000-0.0105	0.0000-0.0396	0.0000-0.0075
PSI #8 Postoperative Hip Fracture Rate	PROVIDER	971	0.0-2.0	1.0-10151.0	0.0000-0.0051	0.0000-0.0000	0.0000-0.0061	0.0000-0.0000
PSI #9 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	974	0.0-199.0	1.0-13416.0	0.0000-0.2500	0.0007-0.0148	0.0000-0.2095	0.0030-0.0143
PSI #10 Postoperative Physiologic and Metabolic Derangement Rate	PROVIDER	820	0.0-23.0	1.0-9864.0	0.0000-0.0400	0.0001-0.0035	0.0000-0.0229	0.0002-0.0017
PSI #11 Postoperative Respiratory Failure Rate	PROVIDER	816	0.0-208.0	1.0-7954.0	0.0000-1.0000	0.0009-0.1941	0.0000-0.3602	0.0016-0.0212
PSI #12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	PROVIDER	976	0.0-201.0	1.0-14361.0	0.0000-0.2000	0.0014-0.0446	0.0000-0.1584	0.0010-0.0160
PSI #13 Postoperative Sepsis Rate	PROVIDER	770	0.0-48.0	0.0-2330.0	0.0000-1.0000	0.0032-0.0901	0.0000-0.1949	0.0048-0.0299
PSI #14 Postoperative Wound Dehiscence Rate	PROVIDER	902	0.0-7.0	1.0-3731.0	0.0000-0.0833	0.0004-0.0161	0.0000-0.1579	0.0010-0.0038
PSI #15 Accidental Puncture or Laceration Rate	PROVIDER	1049	0.0-206.0	2.0-47954.0	0.0000-0.0178	0.0001-0.0122	0.0000-0.0221	0.0004-0.0091
PSI #16 Transfusion Reaction Count	PROVIDER	18	1.0-2.0					
PSI #17 Birth Trauma Rate – Injury to Neonate	PROVIDER	661	0.0-38.0	1.0-9795.0	0.0000-0.0526			
PSI #18 Obstetric Trauma Rate – Vaginal Delivery With Instrument	PROVIDER	632	0.0-117.0	1.0-552.0	0.0000-1.0000			
PSI #19 Obstetric Trauma Rate – Vaginal Delivery Without Instrument	PROVIDER	665	0.0-174.0	1.0-5094.0	0.0000-0.2632			
PSI #21 Retained Surgical Item or Unretrieved Device Fragment Rate	AREA	3124	0.0-17.0	0.0-7416633.0	0.0000-0.0006			
PSI #22 Iatrogenic Pneumothorax Rate	AREA	3124	0.0-86.0	0.0-7416633.0	0.0000-0.0012			

Table B.3 AHRQ QI SAS software Version 4.5, Detailed Provider/County Level

QI	Type	SAS Version 4.5						
		Nbr of Provider or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
PSI #23 Central Venous Catheter-Related Blood Stream Infection Rate	AREA	3124	0.0-216.0	0.0-7416633.0	0.0000-0.0007			
PSI #24 Postoperative Wound Dehiscence Rate	AREA	3124	0.0-24.0	0.0-7416633.0	0.0000-0.0002			
PSI #25 Accidental Puncture or Laceration Rate	AREA	3124	0.0-382.0	0.0-7416633.0	0.0000-0.0021			
PSI #26 Transfusion Reaction Rate	AREA	3124	0.0-2.0	0.0-7416633.0	0.0000-0.0004			
PSI #27 Perioperative Hemorrhage or Hematoma Rate	AREA	3124	0.0-463.0	0.0-7416633.0	0.0000-0.0016			
PSI #90 Patient Safety for Selected Indicators	PROVIDER	1050			(0.4091-3.3708)	(0.0036-0.0848)	(0.0598-0.2913)	(3.5478-21098.8221)
Pediatric Quality Indicators (PDIs)								
NQI #1 Neonatal Iatrogenic Pneumothorax Rate	PROVIDER	621	0.0-1.0	1.0-704.0	0.0000-0.0169	0.0002-0.0002	0.0000-0.0170	0.0001-0.0007
NQI #2 Neonatal Mortality Rate	PROVIDER	667	0.0-78.0	1.0-10157.0	0.0000-0.1111	0.0005-0.0761	0.0000-0.0931	0.0004-0.0056
NQI #3 Neonatal Blood Stream Infection Rate	PROVIDER	282	0.0-26.0	1.0-419.0	0.0000-0.2105	0.0134-0.0368	0.0000-0.3118	0.0054-0.1088
PDI #1 Accidental Puncture or Laceration Rate	PROVIDER	964	0.0-46.0	1.0-20201.0	0.0000-0.1667	0.0000-0.0104	0.0000-0.0282	0.0002-0.0012
PDI #2 Pressure Ulcer Rate	PROVIDER	693	0.0-2.0	1.0-4466.0	0.0000-0.0357	0.0000-0.0014	0.0000-0.0157	0.0000-0.0009
PDI #3 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	8	1.0-2.0					
PDI #5 Iatrogenic Pneumothorax Rate	PROVIDER	963	0.0-4.0	1.0-18866.0	0.0000-0.0175	0.0001-0.0002	0.0000-0.0184	0.0001-0.0003
PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate	PROVIDER	64	0.0-13.0	1.0-507.0	0.0000-1.0000			
PDI #7 RACHS-1 Pediatric Heart Surgery Volume	PROVIDER	88	1.0-531.0					
PDI #8 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	524	0.0-16.0	1.0-2189.0	0.0000-1.0000	0.0027-0.0119	0.0000-0.0632	0.0026-0.0081
PDI #9 Postoperative Respiratory Failure Rate	PROVIDER	522	0.0-26.0	1.0-1522.0	0.0000-0.1429	0.0033-0.0281	0.0000-0.2581	0.0050-0.0196
PDI #10 Postoperative Sepsis Rate	PROVIDER	437	0.0-31.0	1.0-1651.0	0.0000-1.0000	0.0045-0.0301	0.0000-0.6763	0.0089-0.0300
PDI #11 Postoperative Wound Dehiscence Rate	PROVIDER	600	0.0-2.0	1.0-840.0	0.0000-0.0588	0.0004-0.0011	0.0000-0.1202	0.0008-0.0019
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	943	0.0-41.0	1.0-16269.0	0.0000-0.5000	0.0000-0.0103	0.0000-0.0229	0.0000-0.0162
PDI #13 Transfusion Reaction Count	PROVIDER	1	1.0-1.0					
PDI #14 Asthma Admission Rate	AREA	2979	0.0-802.0	8.8-2155849.8	0.0000-0.0098	0.0009-0.0027	0.0000-0.0096	0.0000-0.0061
PDI #15 Diabetes Short-Term Complications Admission Rate	AREA	2978	0.0-102.0	3.4-1641965.4	0.0000-0.0064	0.0002-0.0003	0.0000-0.0061	0.0000-0.0007

Table B.3 AHRQ QI SAS software Version 4.5, Detailed Provider/County Level

QI	Type	SAS Version 4.5						
		Nbr of Provider or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
PDI #16 Gastroenteritis Admission Rate	AREA	2979	0.0-431.0	11.6-2381544.9	0.0000-0.0218	0.0005-0.0016	0.0000-0.0208	0.0000-0.0095
PDI #17 Perforated Appendix Admission Rate	AREA	1336	0.0-212.0	1.0-638.0	0.0000-1.0000	0.1900-0.5298	0.0000-1.0000	0.2274-0.4215
PDI #18 Urinary Tract Infection Admission Rate	AREA	2979	0.0-199.0	11.6-2381544.9	0.0000-0.0051	0.0003-0.0008	0.0000-0.0057	0.0000-0.0010
PDI #19 Pediatric Patient Safety for Selected Indicators	PROVIDER	965			(0.4974-9.2260)	(0.0104-0.3188)	(0.1018-0.5646)	(0.0000-13491.6406)
PDI #90 Pediatric Quality Overall Composite	AREA	2978	0.0-669.0	3.4-1641965.4	0.0000-0.0170	0.0014-0.0017	0.0000-0.0170	0.0000-0.0086
PDI #91 Pediatric Quality Acute Composite	AREA	2978	0.0-220.0	3.4-1641965.4	0.0000-0.0144	0.0005-0.0006	0.0000-0.0147	0.0000-0.0029
PDI #92 Pediatric Quality Chronic Composite	AREA	2978	0.0-449.0	3.4-1641965.4	0.0000-0.0128	0.0010-0.0012	0.0000-0.0134	0.0000-0.0051

SOURCE: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project. 2010 Nationwide Inpatient Sample (unweighted) and AHRQ Quality Indicator SAS and WinQI Version 4.5 Software.

NOTE: Only observed and adjusted ratios are reported for area-level indicators and composites; Smoothed rates are not calculated for stratified indicators; †Ratios, Variance, Standard Errors and Weights are reported for 4 composites IQI 90, IQI 91, PSI 90 and PDI 90; Blank cell = N/A.

Table B.4 AHRQ WinQI software Version 4.5, Detailed Provider/County Level

QI	Type	WinQI Version 4.5						
		Nbr of Provider / Facilities or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
Prevention Quality Indicators (PQIs)								
PQI #1 Diabetes Short-Term Complications Admission Rate	AREA	3121	0.0-795.0	0.0-7416633.0	0.0000-0.0050	0.0004-0.0008	0.0000-0.0050	0.0000-0.0016
PQI #2 Perforated Appendix Admission Rate	AREA	1940	0.0-559.0	1.0-2033.0	0.0000-1.0000	0.1417-0.5749	0.0000-1.0000	0.2021-0.5185
PQI #3 Diabetes Long-Term Complications Admission Rate	AREA	3121	0.0-2045.0	0.0-7416633.0	0.0000-0.0053	0.0006-0.0024	0.0000-0.0055	0.0000-0.0036
PQI #5 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate	AREA	3113	0.0-3342.0	0.0-4176020.0	0.0000-0.0313	0.0030-0.0103	0.0000-0.0301	0.0000-0.0230
PQI #7 Hypertension Admission Rate	AREA	3121	0.0-882.0	0.0-7416633.0	0.0000-0.0164	0.0003-0.0016	0.0000-0.0179	0.0000-0.0112
PQI #8 Heart Failure Admission Rate	AREA	3121	0.0-5038.0	0.0-7416633.0	0.0000-0.0141	0.0011-0.0131	0.0000-0.0114	0.0000-0.0077
PQI #9 Low Birth Weight Rate	AREA	2749	0.0-1527.0	1.0-28576.0	0.0000-1.0000	0.0596-0.0654	0.0000-1.0000	0.0379-0.1448
PQI #10 Dehydration Admission Rate	AREA	3121	0.0-1210.0	0.0-7416633.0	0.0000-0.0141	0.0006-0.0039	0.0000-0.0130	0.0000-0.0071
PQI #11 Bacterial Pneumonia Admission Rate	AREA	3121	0.0-3598.0	0.0-7416633.0	0.0000-0.0293	0.0012-0.0099	0.0000-0.0195	0.0000-0.0124
PQI #12 Urinary Tract Infection Admission Rate	AREA	3121	0.0-2858.0	0.0-7416633.0	0.0000-0.0455	0.0008-0.0078	0.0000-0.0111	0.0000-0.0055
PQI #13 Angina Without Procedure Admission Rate	AREA	3121	0.0-568.0	0.0-7416633.0	0.0000-0.0037	0.0001-0.0004	0.0000-0.0037	0.0000-0.0019
PQI #14 Uncontrolled Diabetes Admission Rate	AREA	3121	0.0-312.0	0.0-7416633.0	0.0000-0.0019	0.0001-0.0003	0.0000-0.0017	0.0000-0.0008
PQI #15 Asthma in Younger Adults Admission Rate	AREA	3066	0.0-271.0	0.0-3240613.0	0.0000-0.0054	0.0004-0.0008	0.0000-0.0056	0.0000-0.0018
PQI #16 Lower-Extremity Amputation among Patients with Diabetes Rate	AREA	3121	0.0-178.0	0.0-7416633.0	0.0000-0.0011	0.0001-0.0003	0.0000-0.0010	0.0000-0.0003
PQI #90 Prevention Quality Overall Composite	AREA	3121	0.0-20737.0	0.0-7416633.0	0.0000-0.0730	0.0069-0.0490	0.0000-0.0661	0.0001-0.0617
PQI #91 Prevention Quality Acute Composite	AREA	3121	0.0-7654.0	0.0-7416633.0	0.0000-0.0455	0.0026-0.0216	0.0000-0.0339	0.0000-0.0277
PQI #92 Prevention Quality Chronic Composite	AREA	3121	0.0-13083.0	0.0-7416633.0	0.0000-0.0362	0.0043-0.0275	0.0000-0.0325	0.0000-0.0299
Inpatient Quality Indicators (IQIs)								
IQI #1 Esophageal Resection Volume	PROVIDER	211	1.0-98.0					
IQI #2 Pancreatic Resection Volume	PROVIDER	278	1.0-267.0					
IQI #2A Stratum A	PROVIDER	206	1.0-181.0					
IQI #2B Stratum B	PROVIDER	239	1.0-142.0					

Table B.4 AHRQ WinQI software Version 4.5, Detailed Provider/County Level

QI	Type	WinQI Version 4.5						
		Nbr of Provider / Facilities or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
IQI #4 Abdominal Aortic Aneurysm (AAA) Repair Volume	PROVIDER	377	1.0-153.0					
IQI #4A Stratum A	PROVIDER	190	1.0-19.0					
IQI #4B Stratum B	PROVIDER	265	1.0-46.0					
IQI #4C Stratum C	PROVIDER	144	1.0-17.0					
IQI #4D Stratum D	PROVIDER	334	1.0-128.0					
IQI #5 Coronary Artery Bypass Graft (CABG) Volume	PROVIDER	250	1.0-685.0					
IQI #6 Percutaneous Coronary Intervention (PCI) Volume	PROVIDER	353	1.0-1978.0					
IQI #7 Carotid Endarterectomy Volume	PROVIDER	471	1.0-264.0					
IQI #8 Esophageal Resection Mortality Rate	PROVIDER	189	0.0-4.0	1.0-92.0	0.0000-1.0000	0.0230-0.1850	0.0000-1.0000	0.0419-0.0564
IQI #9 Pancreatic Resection Mortality Rate	PROVIDER	273	0.0-12.0	1.0-267.0	0.0000-1.0000	0.0132-0.2733	0.0000-0.9718	0.0091-0.1153
IQI #9A Stratum A	PROVIDER	206	0.0-7.0	1.0-181.0	0.0000-0.6667	0.0166-0.2989	0.0000-0.4879	
IQI #9B Stratum B	PROVIDER	232	0.0-6.0	1.0-142.0	0.0000-1.0000	0.0065-0.2124	0.0000-1.0000	
IQI #11 Abdominal Aortic Aneurysm (AAA) Repair Mortality Rate	PROVIDER	372	0.0-11.0	1.0-152.0	0.0000-1.0000	0.0026-0.6753	0.0000-1.0000	0.0306-0.0535
IQI #11A Stratum A	PROVIDER	185	0.0-6.0	1.0-19.0	0.0000-1.0000	0.1576-0.5844	0.0000-1.0000	
IQI #11B Stratum B	PROVIDER	264	0.0-6.0	1.0-46.0	0.0000-1.0000	0.0114-0.2711	0.0000-1.0000	
IQI #11C Stratum C	PROVIDER	143	0.0-4.0	1.0-16.0	0.0000-1.0000	0.1001-0.5910	0.0000-1.0000	
IQI #11D Stratum D	PROVIDER	334	0.0-3.0	1.0-128.0	0.0000-1.0000	0.0022-0.0770	0.0000-1.0000	
IQI #12 Coronary Artery Bypass Graft (CABG) Mortality Rate	PROVIDER	249	0.0-24.0	1.0-678.0	0.0000-0.2000	0.0060-0.0551	0.0000-0.1783	0.0116-0.0501
IQI #13 Craniotomy Mortality Rate	PROVIDER	329	0.0-62.0	1.0-946.0	0.0000-1.0000	0.0036-0.5065	0.0000-1.0000	0.0277-0.1135
IQI #14 Hip Replacement Mortality Rate	PROVIDER	693	0.0-2.0	1.0-1292.0	0.0000-0.1429	0.0002-0.0421	0.0000-0.0688	0.0006-0.0020
IQI #15 Acute Myocardial Infarction (AMI) Mortality Rate	PROVIDER	897	0.0-66.0	1.0-1424.0	0.0000-1.0000	0.0050-0.3641	0.0000-1.0000	0.0165-0.0929
IQI #16 Heart Failure Mortality Rate	PROVIDER	1016	0.0-70.0	1.0-1767.0	0.0000-1.0000	0.0049-0.3268	0.0000-0.8898	0.0076-0.0780
IQI #17 Acute Stroke Mortality Rate	PROVIDER	955	0.0-138.0	1.0-1103.0	0.0000-1.0000	0.0072-0.4698	0.0000-1.0000	0.0274-0.1658
IQI #17A Stratum A	PROVIDER	383	0.0-39.0	1.0-200.0	0.0000-1.0000	0.0312-0.8468	0.0000-1.0000	

Table B.4 AHRQ WinQI software Version 4.5, Detailed Provider/County Level

QI	Type	WinQI Version 4.5						
		Nbr of Provider / Facilities or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
IQI #17B Stratum B	PROVIDER	717	0.0-72.0	1.0-320.0	0.0000-1.0000	0.0717-0.7044	0.0000-1.0000	
IQI #17C Stratum C	PROVIDER	941	0.0-63.0	1.0-788.0	0.0000-1.0000	0.0048-0.3956	0.0000-1.0000	
IQI #18 Gastrointestinal Hemorrhage Mortality Rate	PROVIDER	959	0.0-19.0	1.0-752.0	0.0000-1.0000	0.0020-0.3220	0.0000-1.0000	0.0117-0.0374
IQI #19 Hip Fracture Mortality Rate	PROVIDER	772	0.0-19.0	1.0-443.0	0.0000-1.0000	0.0076-0.3888	0.0000-0.7552	0.0149-0.0420
IQI #20 Pneumonia Mortality Rate	PROVIDER	1036	0.0-78.0	1.0-1299.0	0.0000-0.5000	0.0024-0.2655	0.0000-0.7986	0.0065-0.0879
IQI #21 Cesarean Delivery Rate, Uncomplicated	PROVIDER	664	0.0-3459.0	1.0-8550.0	0.0000-1.0000			
IQI #22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomplicated	PROVIDER	651	0.0-200.0	2.0-1616.0	0.0000-0.8750			
IQI #23 Laparoscopic Cholecystectomy Rate	PROVIDER	856	0.0-516.0	1.0-663.0	0.0000-1.0000			
IQI #24 Incidental Appendectomy in the Elderly Rate	PROVIDER	881	0.0-17.0	1.0-1064.0	0.0000-0.2500			
IQI #25 Bilateral Cardiac Catheterization Rate	PROVIDER	462	0.0-135.0	1.0-2620.0	0.0000-1.0000			
IQI #26 Coronary Artery Bypass Graft (CABG) Rate	AREA	3113	0.0-778.0	0.0-4176020.0	0.0000-0.0077	0.0011-0.0025	0.0000-0.0066	0.0000-0.0031
IQI #27 Percutaneous Coronary Intervention (PCI) Rate	AREA	3113	0.0-3159.0	0.0-4176020.0	0.0000-0.0100	0.0032-0.0066	0.0000-0.0095	0.0000-0.0087
IQI #28 Hysterectomy Rate	AREA	3121	0.0-1748.0	0.0-3802062.0	0.0000-0.0100	0.0014-0.0037	0.0000-0.0110	0.0001-0.0065
IQI #29 Laminectomy or Spinal Fusion Rate	AREA	3123	0.0-2423.0	0.0-7416633.0	0.0000-0.0140	0.0014-0.0039	0.0000-0.0143	0.0000-0.0101
IQI #30 Percutaneous Coronary Intervention (PCI) Mortality Rate	PROVIDER	349	0.0-28.0	1.0-1951.0	0.0000-1.0000	0.0009-0.0720	0.0000-0.2408	0.0074-0.0276
IQI #31 Carotid Endarterectomy Mortality Rate	PROVIDER	471	0.0-3.0	1.0-264.0	0.0000-0.3333	0.0005-0.0314	0.0000-1.0000	0.0031-0.0063
IQI #32 Acute Myocardial Infarction (AMI) Mortality Rate, Without Transfer Cases	PROVIDER	475	0.0-44.0	1.0-651.0	0.0000-1.0000	0.0038-0.3920	0.0000-1.0000	0.0458-0.0879
IQI #33 Primary Cesarean Delivery Rate, Uncomplicated	PROVIDER	664	0.0-1984.0	1.0-6934.0	0.0000-1.0000			
IQI #34 Vaginal Birth After Cesarean (VBAC) Rate, All	PROVIDER	651	0.0-229.0	2.0-1915.0	0.0000-0.8750			
IQI #90 Mortality for Selected Procedures	PROVIDER	1051			(0.6175-1.3187)	(0.0244-0.0412)	(0.1563-0.2031)	(0.0000-931.8740)
IQI #91 Mortality for Selected Conditions	PROVIDER	1051			(0.3584-1.6483)	(0.0034-0.0283)	(0.0579-0.1684)	(0.0000-1084.9207)
Patient Safety Indicators (PSIs)								
PSI #2 Death Rate in Low-Mortality Diagnosis Related Groups (DRGs)	PROVIDER	1001	0.0-8.0	1.0-16870.0	0.0000-1.0000	0.0000-0.0211	0.0000-0.0793	0.0000-0.0108

Table B.4 AHRQ WinQI software Version 4.5, Detailed Provider/County Level

QI	Type	WinQI Version 4.5						
		Nbr of Provider / Facilities or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
PSI #3 Pressure Ulcer Rate	PROVIDER	1031	0.0-42.0	1.0-18072.0	0.0000-0.0357	0.0000-0.0023	0.0000-0.0454	0.0000-0.0050
PSI #4 Death Rate among Surgical Inpatients with Serious Treatable Complications	PROVIDER	831	0.0-110.0	1.0-916.0	0.0000-1.0000	0.0256-0.3857	0.0000-1.0000	0.0217-0.1853
PSI #4A Stratum A	PROVIDER	626	0.0-17.0	1.0-187.0	0.0000-1.0000	0.0000-0.3232	0.0000-1.0000	
PSI #4B Stratum B	PROVIDER	787	0.0-52.0	1.0-448.0	0.0000-1.0000	0.0118-0.3372	0.0000-1.0000	
PSI #4C Stratum C	PROVIDER	632	0.0-47.0	1.0-172.0	0.0000-1.0000	0.0395-0.5960	0.0000-1.0000	
PSI #4D Stratum D	PROVIDER	581	0.0-47.0	1.0-123.0	0.0000-1.0000	0.0889-0.7390	0.0000-1.0000	
PSI #4E Stratum E	PROVIDER	641	0.0-18.0	1.0-180.0	0.0000-1.0000	0.0028-0.4625	0.0000-1.0000	
PSI #5 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	121	1.0-9.0					
PSI #6 Iatrogenic Pneumothorax Rate	PROVIDER	1049	0.0-35.0	2.0-46042.0	0.0000-0.0133	0.0000-0.0023	0.0000-0.0144	0.0002-0.0017
PSI #7 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	1050	0.0-61.0	3.0-38622.0	0.0000-0.0672	0.0000-0.0105	0.0000-0.0396	0.0000-0.0075
PSI #8 Postoperative Hip Fracture Rate	PROVIDER	971	0.0-2.0	1.0-10151.0	0.0000-0.0051	0.0000-0.0000	0.0000-0.0061	0.0000-0.0000
PSI #9 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	974	0.0-199.0	1.0-13416.0	0.0000-0.2500	0.0007-0.0148	0.0000-0.2095	0.0030-0.0143
PSI #10 Postoperative Physiologic and Metabolic Derangement Rate	PROVIDER	820	0.0-23.0	1.0-9864.0	0.0000-0.0400	0.0000-0.0035	0.0000-0.0229	0.0002-0.0017
PSI #11 Postoperative Respiratory Failure Rate	PROVIDER	816	0.0-208.0	1.0-7954.0	0.0000-1.0000	0.0009-0.1941	0.0000-0.3602	0.0016-0.0212
PSI #12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	PROVIDER	976	0.0-201.0	1.0-14361.0	0.0000-0.2000	0.0013-0.0446	0.0000-0.1584	0.0010-0.0160
PSI #13 Postoperative Sepsis Rate	PROVIDER	770	0.0-48.0	1.0-2330.0	0.0000-1.0000	0.0017-0.0901	0.0000-0.4358	0.0048-0.0299
PSI #14 Postoperative Wound Dehiscence Rate	PROVIDER	902	0.0-7.0	1.0-3731.0	0.0000-0.0833	0.0004-0.0161	0.0000-0.1579	0.0010-0.0038
PSI #15 Accidental Puncture or Laceration Rate	PROVIDER	1049	0.0-206.0	2.0-47954.0	0.0000-0.0178	0.0001-0.0122	0.0000-0.0221	0.0004-0.0091
PSI #16 Transfusion Reaction Count	PROVIDER	18	1.0-2.0					
PSI #17 Birth Trauma Rate – Injury to Neonate	PROVIDER	661	0.0-38.0	1.0-9795.0	0.0000-0.0526			
PSI #18 Obstetric Trauma Rate – Vaginal Delivery With Instrument	PROVIDER	632	0.0-117.0	1.0-552.0	0.0000-1.0000			
PSI #19 Obstetric Trauma Rate – Vaginal Delivery Without Instrument	PROVIDER	665	0.0-174.0	1.0-5094.0	0.0000-0.2632			
PSI #21 Retained Surgical Item or Unretrieved Device Fragment Rate	AREA	3121	0.0-17.0	0.0-7416633.0	0.0000-0.0006			

Table B.4 AHRQ WinQI software Version 4.5, Detailed Provider/County Level

QI	Type	WinQI Version 4.5						
		Nbr of Provider / Facilities or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
PSI #22 Iatrogenic Pneumothorax Rate	AREA	3121	0.0-86.0	0.0-7416633.0	0.0000-0.0012			
PSI #23 Central Venous Catheter-Related Blood Stream Infection Rate	AREA	3121	0.0-216.0	0.0-7416633.0	0.0000-0.0007			
PSI #24 Postoperative Wound Dehiscence Rate	AREA	3121	0.0-24.0	0.0-7416633.0	0.0000-0.0002			
PSI #25 Accidental Puncture or Laceration Rate	AREA	3121	0.0-382.0	0.0-7416633.0	0.0000-0.0021			
PSI #26 Transfusion Reaction Rate	AREA	3121	0.0-2.0	0.0-7416633.0	0.0000-0.0004			
PSI #27 Perioperative Hemorrhage or Hematoma Rate	AREA	3121	0.0-463.0	0.0-7416633.0	0.0000-0.0016			
PSI #90 Patient Safety for Selected Indicators	PROVIDER	1051			(0.4091-3.3708)	(0.0036-0.0849)	(0.0598-0.2913)	(0.0000-21098.8221)
Pediatric Quality Indicators (PDIs)								
NQI #1 Neonatal Iatrogenic Pneumothorax Rate	PROVIDER	621	0.0-1.0	1.0-704.0	0.0000-0.0169	0.0002-0.0002	0.0000-0.0170	0.0001-0.0007
NQI #2 Neonatal Mortality Rate	PROVIDER	667	0.0-78.0	1.0-10157.0	0.0000-0.1111	0.0005-0.0761	0.0000-0.0931	0.0004-0.0056
NQI #3 Neonatal Blood Stream Infection Rate	PROVIDER	282	0.0-26.0	1.0-419.0	0.0000-0.2105	0.0122-0.0566	0.0000-0.3118	0.0054-0.1088
PDI #1 Accidental Puncture or Laceration Rate	PROVIDER	964	0.0-46.0	1.0-20201.0	0.0000-0.1667	0.0000-0.0104	0.0000-0.0282	0.0002-0.0012
PDI #2 Pressure Ulcer Rate	PROVIDER	693	0.0-2.0	1.0-4466.0	0.0000-0.0357	0.0000-0.0039	0.0000-0.0157	0.0000-0.0009
PDI #3 Retained Surgical Item or Unretrieved Device Fragment Count	PROVIDER	8	1.0-2.0					
PDI #5 Iatrogenic Pneumothorax Rate	PROVIDER	963	0.0-4.0	1.0-18866.0	0.0000-0.0175	0.0001-0.0002	0.0000-0.0184	0.0001-0.0003
PDI #6 RACHS-1 Pediatric Heart Surgery Mortality Rate	PROVIDER	64	0.0-13.0	1.0-507.0	0.0000-1.0000			
PDI #7 RACHS-1 Pediatric Heart Surgery Volume	PROVIDER	88	1.0-531.0					
PDI #8 Perioperative Hemorrhage or Hematoma Rate	PROVIDER	524	0.0-16.0	1.0-2189.0	0.0000-1.0000	0.0027-0.0222	0.0000-1.0000	0.0026-0.0081
PDI #9 Postoperative Respiratory Failure Rate	PROVIDER	522	0.0-26.0	1.0-1522.0	0.0000-0.1429	0.0033-0.0401	0.0000-0.2581	0.0050-0.0196
PDI #10 Postoperative Sepsis Rate	PROVIDER	437	0.0-31.0	1.0-1651.0	0.0000-1.0000	0.0040-0.0955	0.0000-1.0000	0.0089-0.0300
PDI #11 Postoperative Wound Dehiscence Rate	PROVIDER	600	0.0-2.0	1.0-840.0	0.0000-0.0588	0.0004-0.0011	0.0000-0.1202	0.0008-0.0019
PDI #12 Central Venous Catheter-Related Blood Stream Infection Rate	PROVIDER	943	0.0-41.0	1.0-16269.0	0.0000-0.5000	0.0000-0.0195	0.0000-0.1889	0.0000-0.0162
PDI #13 Transfusion Reaction Count	PROVIDER	1	1.0-1.0					
PDI #14 Asthma Admission Rate	AREA	2979	0.0-802.0	0.0-2155850.0	0.0000-0.0098	0.0009-0.0027	0.0000-0.0096	0.0000-0.0061

Table B.4 AHRQ WinQI software Version 4.5, Detailed Provider/County Level

QI	Type	WinQI Version 4.5						
		Nbr of Provider / Facilities or Counties	Range Num	Range Den	Range ObsRate (Ratio [†])	Range ExpRate (Variance [†])	Range RiskAdjRate (Standard Error [†])	Range SmoothRate (Weight [†])
PDI #15 Diabetes Short-Term Complications Admission Rate	AREA	2717	0.0-102.0	0.0-1641965.0	0.0000-0.0064	0.0002-0.0003	0.0000-0.0061	0.0000-0.0007
PDI #16 Gastroenteritis Admission Rate	AREA	2979	0.0-431.0	0.0-2381545.0	0.0000-0.0218	0.0005-0.0016	0.0000-0.0208	0.0000-0.0095
PDI #17 Perforated Appendix Admission Rate	AREA	1336	0.0-212.0	1.0-638.0	0.0000-1.0000	0.1777-0.6509	0.0000-1.0000	0.2274-0.4215
PDI #18 Urinary Tract Infection Admission Rate	AREA	2979	0.0-199.0	0.0-2381545.0	0.0000-0.0052	0.0003-0.0008	0.0000-0.0057	0.0000-0.0010
PDI #19 Pediatric Patient Safety for Selected Indicators	PROVIDER	965			(0.4974-9.2260)	(0.0104-0.3188)	(0.1018-0.5646)	(0.0000-13491.6406)
PDI #90 Pediatric Quality Overall Composite	AREA	2717	0.0-669.0	0.0-1641965.0	0.0000-0.0170	0.0015-0.0020	0.0000-0.0170	0.0000-0.0086
PDI #91 Pediatric Quality Acute Composite	AREA	2717	0.0-220.0	0.0-1641965.0	0.0000-0.0144	0.0005-0.0006	0.0000-0.0147	0.0000-0.0029
PDI #92 Pediatric Quality Chronic Composite	AREA	2717	0.0-449.0	0.0-1641965.0	0.0000-0.0128	0.0010-0.0013	0.0000-0.0134	0.0000-0.0051

SOURCE: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project. 2010 Nationwide Inpatient Sample (unweighted) and AHRQ Quality Indicator SAS and WinQI Version 4.5 Software.

NOTE: Only observed and adjusted ratios are reported for area-level indicators and composites; Smoothed rates are not calculated for stratified indicators; [†]Ratios, Variance, Standard Errors and Weights are reported for 4 composites IQI 90, IQI 91, PSI 90 and PDI 90; Blank cell = N/A.