AHRQ Quality Indicators™

PREVENTION QUALITY INDICATORS™ (PQI) v2019 ICD-10-CM/PCS Parameter Estimates

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Executive Summary

This document provides statistical parameters associated with Version 2019 of Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QI) Prevention Quality Indicators (PQI). The parameter estimates derived for the AHRQ QI are based on analysis of the 2016 Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID).[1]

HCUP is a family of healthcare databases and related software tools and products developed through a Federal-State-Industry partnership.[2] HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. The SID contain all-payer, encounter-level information on inpatient discharges, including clinical and resource information typically found on a billing record, such as patient demographics, up to 30 *International Classification of Diseases, Tenth Revision, Clinical Modification/Procedural Classification System (ICD-10-CM/PCS)* diagnoses and procedures, length of stay (LOS), expected payer, admission and discharge dates and discharge disposition. In 2016, the HCUP databases represent more than 97 percent of all annual discharges in the U.S.[3]

The analytic dataset used to generate the risk adjustment regression models in this document consists of the same hospital discharge records that comprise the reference population for Version 2019 of the AHRQ QI software. This reference population file was limited to

[1] Healthcare Cost and Utilization Project (HCUP) 2016 State Inpatient Databases (SID). Agency for Healthcare Research and Quality, Rockville, MD

[2] The AHRQ QI program would like to acknowledge the HCUP Partner organizations that participated in the HCUP SID: Alaska State Hospital and Nursing Home Association, Arizona Department of Health Services, Arkansas Department of Health, California Office of Statewide Health Planning and Development, Colorado Hospital Association, Connecticut Hospital Association, Delaware Division of Public Health, District of Columbia Hospital Association, Florida Agency for Health Care Administration, Georgia Hospital Association, Hawaii Health Information Corporation, Illinois Department of Public Health, Indiana Hospital Association, Iowa Hospital Association, Kansas Hospital Association, Kentucky Cabinet for Health and Family Services, Louisiana Department of Health and Hospitals, Maine Health Data Organization, Maryland Health Services Cost Review Commission, Massachusetts Division of Health Care Finance and Policy, Michigan Health & Hospital Association, Minnesota Hospital Association (provides data for Minnesota and North Dakota), Missouri Hospital Industry Data Institute, Montana MHA - An Association of Montana Health Care Providers, Nebraska Hospital Association, Nevada Department of Health and Human Services, New Jersey Department of Health, New Mexico Department of Health, New York State Department of Health, North Carolina Department of Health and Human Services, North Dakota (data provided by the Minnesota Hospital Association), Ohio Hospital Association, Oklahoma State Department of Health, Oregon Association of Hospitals and Health Systems, Oregon Office of Health Analytics, Pennsylvania Health Care Cost Containment Council, Rhode Island Department of Health, South Carolina Revenue and Fiscal Affairs Office, South Dakota Association of Healthcare Organizations, Tennessee Hospital Association, Texas Department of State Health Services, Utah Department of Health, Vermont Association of Hospitals and Health Systems, Virginia Health Information, Washington State Department of Health, West Virginia Health Care Authority, Wisconsin Department of Health Services, Wyoming Hospital Association.

[3] The states included in the analysis are Alaska, Arkansas, Arizona, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Iowa, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, North Carolina, Nebraska, New Jersey, New Mexico, Nevada, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Vermont, Washington, Wisconsin, West Virginia, and Wyoming.

community hospitals and excludes rehabilitation and long-term acute care (LTAC) hospitals. Information on the type of hospital was obtained by the American Hospital Association (AHA) Annual Survey of Hospitals. AHA defines community hospitals as "all non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions." Included among community hospitals are specialty hospitals such as obstetrics-gynecology, ear-nose-throat, orthopedic, and pediatric institutions. Also included are public hospitals and academic medical centers.

The 2016 HCUP SID includes information on all inpatient discharges from hospital in participating States. Discharges from all 48 participating States are used to develop risk-adjustment models for the area-level PDIs. This document is devoted to listing covariates and coefficients for risk adjustment logistic regression models. The regression coefficients are used by the prediction module to calculate risk-adjusted rates that account for differences in patient populations across areas. Covariates that are considered as potential risk adjusters include gender and age and the interaction of gender and age. Descriptions of the population age categories are provided in the Table A.1. Every covariate in every model is a binary indicator variable, coded using 0 or 1. The AHRQ QI software user does not need to manipulate or adjust these coefficients; rather this document is intended to make it transparent to the user how the risk adjusted QI rates are calculated.

Additional information on the risk adjustment process and composite indicators may be found in *Quality Indicator Empirical Methods*, available on the AHRQ QI™ website. (http://www.qualityindicators.ahrq.gov/modules/Default.aspx)

Table 1. Risk Adjustment Coefficients for PQI 01 Diabetes Short-Term Complications Admission Rate

Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-8.525273755	0.0475699	32118.32614	0
SEX	Female	1	-0.196609429	0.0611574	10.33499265	<.0001
AGE	Age 18-24	1	1.506053524	0.0483087	971.9208042	<.0001
AGE	Age 25-29	1	1.29325896	0.0488025	702.2415086	<.0001
AGE	Age 30-34	1	1.128249607	0.0491064	527.878712	<.0001
AGE	Age 35-39	1	1.069483747	0.049291	470.7753965	<.0001
AGE	Age 40-44	1	0.882186813	0.0497643	314.2571124	<.0001
AGE	Age 45-49	1	0.804950658	0.0498048	261.2134573	<.0001
AGE	Age 50-54	1	0.660246159	0.0500611	173.9444202	<.0001
AGE	Age 55-59	1	0.429961697	0.0506991	71.92168332	0
AGE	Age 60-64	1	0.29619761	0.0516339	32.90733982	<.0001
AGE	Age 65-69	1	0.119735498	0.0531699	5.071248391	0.0243259
AGE	Age 70-74	1	0.092654747	0.0557337	2.763755226	0.096421663
AGE	Age 75-79	1	0.171728859	0.0583388	8.665071591	0.00324367
AGE	Age 80-84	1	0.107211697	0.064096158	2.797823678	0.094392352
AGE	Age 85+	0	0			
AGE	Female,Age 18-24	1	0.399356967	0.0622255	41.18943837	0
AGE	Female,Age 25-29	1	0.303758002	0.063004374	23.24417057	<.0001
AGE	Female,Age 30-34	1	0.130367896	0.063638635	4.196619567	0.0405046

AGE	Female,Age 35-39	1	0.0301773	0.064058861	0.221923426	0.637578256
AGE	Female,Age 40-44	1	0.069536915	0.064752423	1.153237568	0.282872437
AGE	Female,Age 45-49	1	0.0251922	0.064895126	0.150697605	0.697869592
AGE	Female,Age 50-54	1	0.0241775	0.065288319	0.137136141	0.711144839
AGE	Female,Age 55-59	1	0.07634269	0.06614901	1.331950906	0.248458446
AGE	Female,Age 60-64	1	0.084906547	0.067499722	1.582261945	0.208435179
AGE	Female,Age 65-69	1	0.151916545	0.069507961	4.776843901	0.0288449
AGE	Female,Age 70-74	1	0.155041747	0.07306087	4.50326632	0.0338302
AGE	Female,Age 75-79	1	0.0219499	0.077267658	0.080699544	0.77635164
AGE	Female,Age 80-84	1	0.0509775	0.084392229	0.364882179	0.545807222
AGE	Female,Age 85+	0	0			

c-statistic=0.613

Table 2. Risk Adjustment Coefficients for PQI 03 Diabetes Long-Term Complications Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-6.496471668	0.0172724	141465.8747	0
SEX	Female	1	-0.700444487	0.0249043	791.0431286	<.0001
AGE	Age 18-24	1	-3.714892396	0.0449393	6833.461663	0
AGE	Age 25-29	1	-2.302454354	0.0294436	6115.056822	0
AGE	Age 30-34	1	-1.714760348	0.0251681	4642.005215	0
AGE	Age 35-39	1	-1.120689251	0.0222307	2541.357885	0
AGE	Age 40-44	1	-0.691582548	0.0208307	1102.246096	<.0001
AGE	Age 45-49	1	-0.314107353	0.0196488	255.5561061	<.0001
AGE	Age 50-54	1	-0.019201	0.0190149	1.019710406	<.0001
AGE	Age 55-59	1	0.114227189	0.0188131	36.86515148	<.0001
AGE	Age 60-64	1	0.214330602	0.0188694	129.0180001	<.0001
AGE	Age 65-69	1	0.163501359	0.0192239	72.33669494	0
AGE	Age 70-74	1	0.211695221	0.0199276	112.8529723	<.0001
AGE	Age 75-79	1	0.244653877	0.0209339	136.5849313	<.0001
AGE	Age 80-84	1	0.171797196	0.0229463	56.05399379	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	1.40249971	0.0569207	607.1072888	4.7635E-134
AGE	Female,Age 25-29	1	1.100406832	0.0397937	764.6787092	2.5808E-168

AGE	Female,Age 30-34	1	0.808440972	0.0355058	518.4384667	<.0001
AGE	Female,Age 35-39	1	0.483576173	0.0325426	220.8130216	<.0001
AGE	Female,Age 40-44	1	0.34669151	0.0307587	127.0432988	<.0001
AGE	Female,Age 45-49	1	0.169642654	0.0292276	33.68858025	<.0001
AGE	Female,Age 50-54	1	-0.021365	0.0284424	0.564245122	0.452554857
AGE	Female,Age 55-59	1	-0.034721	0.0280234	1.535168613	0.215338383
AGE	Female,Age 60-64	1	-0.067592638	0.0281363	5.771173912	0.0162911
AGE	Female,Age 65-69	1	0.0220116	0.0285766	0.593310311	0.44114189
AGE	Female,Age 70-74	1	0.00640446	0.0298049	0.0461732	0.829861222
AGE	Female,Age 75-79	1	0.0088886	0.0313655	0.080308451	0.776879842
AGE	Female,Age 80-84	1	0.0384879	0.0341508	1.27012975	0.25974234
AGE	Female,Age 85+	0	0			

c-statistic=0.591

Table 3. Risk Adjustment Coefficients for PQI 05 Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-4.612525619	0.00679037	461414.5924	0
SEX	Female	1	-0.154077311	0.0086533	317.041465	<.0001
AGE	Age 40-44	1	-2.897726838	0.0152696	36013.04927	0
AGE	Age 45-49	1	-2.356669273	0.0122023	37300.4353	0
AGE	Age 50-54	1	-1.664640787	0.0097961	28875.80585	0
AGE	Age 55-59	1	-1.220126504	0.0088476	19017.7306	0
AGE	Age 60-64	1	-0.926300194	0.0085832	11646.86332	0
AGE	Age 65-69	1	-0.716274198	0.0085066	7089.982136	0
AGE	Age 70-74	1	-0.378898317	0.0085718	1953.913234	0
AGE	Age 75-79	1	-0.154827278	0.0088448	306.4229789	<.0001
AGE	Age 80-84	1	-0.053464	0.0094984	31.68306668	<.0001
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 40-44	1	0.925489278	0.0186357	2466.32346	0
AGE	Female,Age 45-49	1	0.860681885	0.0150842	3255.685419	0
AGE	Female,Age 50-54	1	0.703555406	0.0123534	3243.551919	0
AGE	Female,Age 55-59	1	0.541506962	0.0113031	2295.162968	0
AGE	Female,Age 60-64	1	0.38105897	0.0110723	1184.435105	<.0001
AGE	Female,Age 65-69	1	0.338503962	0.0109852	949.544229	<.0001

AGE	Female,Age 70-74	1	0.308218882	0.0110642	776.0285988	<.0001
AGE	Female,Age 75-79	1	0.23595724	0.0114358	425.727404	<.0001
AGE	Female,Age 80-84	1	0.1941333	0.0122276	252.0683159	<.0001
AGE	Female,Age 85+	0	0	.	.	.

c-statistic=0.538

Table 4. Risk Adjustment Coefficients for PQI 07 Hypertension Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square Pr > Chi-Square
INTERCEPT	Intercept	1	-6.659374803	0.0187339	126360.7813	0
SEX	Female	1	0.664174026	0.0211679	984.484486	<.0001
AGE	Age 18-24	1	-4.053115997	0.0564965	5146.768576	0
AGE	Age 25-29	1	-2.822029358	0.0384175	5395.917682	0
AGE	Age 30-34	1	-2.055557983	0.0300894	4666.940625	0
AGE	Age 35-39	1	-1.521684382	0.0263638	3331.443316	0
AGE	Age 40-44	1	-1.154477417	0.0245823	2205.598754	0
AGE	Age 45-49	1	-0.939754067	0.0233189	1624.10318	0
AGE	Age 50-54	1	-0.825870727	0.0227461	1318.288213	<.0001
AGE	Age 55-59	1	-0.787305951	0.0226229	1211.125527	<.0001
AGE	Age 60-64	1	-0.774382419	0.0230886	1124.908109	<.0001
AGE	Age 65-69	1	-0.789599846	0.0238299	1097.920733	<.0001
AGE	Age 70-74	1	-0.666910902	0.025103	705.8062065	<.0001
AGE	Age 75-79	1	-0.427699136	0.0259378	271.9006833	<.0001
AGE	Age 80-84	1	-0.22631023	0.0273907	68.26580973	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	-0.551591036	0.077219289	51.02497556	0
AGE	Female,Age 25-29	1	-0.695606643	0.0526786	174.3647775	<.0001

AGE	Female,Age 30-34	1	-0.832466209	0.0408456	415.3766448	<.0001
AGE	Female,Age 35-39	1	-0.883386987	0.0349283	639.6575094	<.0001
AGE	Female,Age 40-44	1	-0.845503566	0.0316344	714.3525192	<.0001
AGE	Female,Age 45-49	1	-0.841494261	0.0294418	816.9070124	<.0001
AGE	Female,Age 50-54	1	-0.795616118	0.0282456	793.4241416	<.0001
AGE	Female,Age 55-59	1	-0.814028181	0.0280284	843.4931544	<.0001
AGE	Female,Age 60-64	1	-0.688739197	0.0283042	592.1190664	<.0001
AGE	Female,Age 65-69	1	-0.447395278	0.0286536	243.7943782	<.0001
AGE	Female,Age 70-74	1	-0.242791328	0.0297418	66.63970068	0
AGE	Female,Age 75-79	1	-0.138608949	0.0303761	20.82177468	<.0001
AGE	Female,Age 80-84	1	0.00180421	0.0315485	0.0032705	0.954395201
AGE	Female,Age 85+	0	0			

c-statistic=0.593

Table 5. Risk Adjustment Coefficients for PQI 08 Heart Failure Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-3.247532929	0.00352988	846422.0845	0
SEX	Female	1	-0.201463458	0.0045303	1977.603204	0
AGE	Age 18-24	1	-6.583197585	0.0344792	36455.10033	0
AGE	Age 25-29	1	-5.419476212	0.0226009	57499.23715	0
AGE	Age 30-34	1	-4.675675166	0.0162402	82890.68209	0
AGE	Age 35-39	1	-4.072083036	0.0125686	104969.3254	0
AGE	Age 40-44	1	-3.510512217	0.0100365	122343.4389	0
AGE	Age 45-49	1	-3.075081316	0.0081483	142421.3611	0
AGE	Age 50-54	1	-2.645904738	0.0068181	150599.0034	0
AGE	Age 55-59	1	-2.309285254	0.00607628	144437.2675	0
AGE	Age 60-64	1	-2.005111553	0.00576334	121040.0257	0
AGE	Age 65-69	1	-1.743473035	0.00559111	97237.80668	0
AGE	Age 70-74	1	-1.328307567	0.00553591	57573.13684	0
AGE	Age 75-79	1	-0.936110218	0.00553338	28620.25666	0
AGE	Age 80-84	1	-0.517112206	0.00555531	8664.677462	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	0.070488985	0.0510821	1.904170399	0.167612261
AGE	Female,Age 25-29	1	-0.028596	0.0341805	0.699931482	0.402806718
AGE	Female,Age 30-34	1	-0.253378802	0.0259551	95.30039803	0

AGE	Female,Age 35-39	1	-0.294893737	0.0201152	214.9228634	<.0001
AGE	Female,Age 40-44	1	-0.382981667	0.0162706	554.0531841	<.0001
AGE	Female,Age 45-49	1	-0.334276335	0.0128367	678.1120103	<.0001
AGE	Female,Age 50-54	1	-0.33715115	0.0105234	1026.455055	<.0001
AGE	Female,Age 55-59	1	-0.311727338	0.0091385	1163.579319	<.0001
AGE	Female,Age 60-64	1	-0.244507326	0.0084177	843.7161164	<.0001
AGE	Female,Age 65-69	1	-0.112476978	0.0078885	203.2979137	<.0001
AGE	Female,Age 70-74	1	-0.074688551	0.00769256	94.26842327	0
AGE	Female,Age 75-79	1	-0.02887	0.00754385	14.64596864	0.000129712
AGE	Female,Age 80-84	1	-0.00015848	0.00741582	0.000456709	0.9829499
AGE	Female,Age 85+	0	0			

c-statistic=0.634

Table 6. Risk Adjustment Coefficients for PQI 11 Bacterial Pneumonia Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-3.951286045	0.00492367	644019.0959	0
SEX	Female	1	-0.262026165	0.00640265	1674.827418	0
AGE	Age 18-24	1	-4.550342918	0.0183231	61672.4699	0
AGE	Age 25-29	1	-4.241947235	0.018292	53778.2704	0
AGE	Age 30-34	1	-3.95646246	0.0164826	57618.90903	0
AGE	Age 35-39	1	-3.671374246	0.0148724	60938.71731	0
AGE	Age 40-44	1	-3.423753895	0.013699	62463.33892	0
AGE	Age 45-49	1	-3.154940396	0.0119204	70048.27234	0
AGE	Age 50-54	1	-2.750324033	0.0100179	75372.63205	0
AGE	Age 55-59	1	-2.436645731	0.0089531	74068.61127	0
AGE	Age 60-64	1	-2.142660146	0.0084911	63676.28333	0
AGE	Age 65-69	1	-1.840437742	0.0081119	51475.31317	0
AGE	Age 70-74	1	-1.370497501	0.0078852	30208.32552	0
AGE	Age 75-79	1	-0.934882456	0.00776838	14482.82702	0
AGE	Age 80-84	1	-0.526337971	0.00780516	4547.422639	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	0.397633891	0.0252785	247.4361463	<.0001
AGE	Female,Age 25-29	1	0.407247326	0.0250857	263.5501608	<.0001
AGE	Female,Age 30-34	1	0.451170642	0.0222785	410.1184049	<.0001

AGE	Female,Age 35-39	1	0.458262326	0.0199903	525.5183082	<.0001
AGE	Female,Age 40-44	1	0.474241783	0.0182959	671.8782913	<.0001
AGE	Female,Age 45-49	1	0.463687708	0.0159196	848.3708902	<.0001
AGE	Female,Age 50-54	1	0.414036405	0.0134271	950.8482698	<.0001
AGE	Female,Age 55-59	1	0.352436516	0.0120514	855.2403419	<.0001
AGE	Female,Age 60-64	1	0.254991838	0.0115318	488.9430781	<.0001
AGE	Female,Age 65-69	1	0.227114924	0.0109996	426.3210291	<.0001
AGE	Female,Age 70-74	1	0.172015325	0.010701	258.3937975	<.0001
AGE	Female,Age 75-79	1	0.097650029	0.0105434	85.78004822	0
AGE	Female,Age 80-84	1	0.0595236	0.0104816	32.24958096	0.000000014
AGE	Female,Age 85+	0	0			

c-statistic=0.585

Table 7. Risk Adjustment Coefficients for PQI 12 Urinary Tract Infection Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-4.567282957	0.0066415	472915.0961	0
SEX	Female	1	0.574127302	0.00759259	5717.897931	0
AGE	Age 18-24	1	-5.198369327	0.0338579	23572.94666	0
AGE	Age 25-29	1	-4.759138081	0.0317423	22479.21498	0
AGE	Age 30-34	1	-4.556220386	0.0296349	23637.57826	0
AGE	Age 35-39	1	-4.343856112	0.0275315	24893.86511	0
AGE	Age 40-44	1	-4.072137256	0.0249449	26649.08695	0
AGE	Age 45-49	1	-3.829366214	0.0217238	31073.02479	0
AGE	Age 50-54	1	-3.434909145	0.017974	36520.81094	0
AGE	Age 55-59	1	-3.088644541	0.0155673	39364.91131	0
AGE	Age 60-64	1	-2.675841197	0.0139521	36782.55161	0
AGE	Age 65-69	1	-2.224090259	0.0125143	31585.73239	0
AGE	Age 70-74	1	-1.651183518	0.0116863	19963.46115	0
AGE	Age 75-79	1	-1.111337734	0.0110998	10024.4385	0
AGE	Age 80-84	1	-0.57677925	0.0107123	2899.02441	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	1.747232334	0.0356926	2396.320241	0
AGE	Female,Age 25-29	1	1.360503058	0.0341379	1588.277864	0
AGE	Female,Age 30-34	1	1.166411538	0.0322559	1307.628785	<.0001

AGE	Female,Age 35-39	1	1.018097854	0.0302776	1130.671711	<.0001
AGE	Female,Age 40-44	1	0.777422771	0.0279901	771.4485805	<.0001
AGE	Female,Age 45-49	1	0.628604693	0.024733	645.9535901	<.0001
AGE	Female,Age 50-54	1	0.374657489	0.0210011	318.2630661	<.0001
AGE	Female,Age 55-59	1	0.184203668	0.0185417	98.69553657	0
AGE	Female,Age 60-64	1	0.085766931	0.01672	26.31284518	<.0001
AGE	Female,Age 65-69	1	0.0467775	0.0149754	9.756981108	0.00178643
AGE	Female,Age 70-74	1	0.0332057	0.0139094	5.69913291	0.0169733
AGE	Female,Age 75-79	1	0.0268496	0.0131046	4.197836596	0.0404756
AGE	Female,Age 80-84	1	0.0171398	0.0125182	1.874677667	0.170940301
AGE	Female,Age 85+	0	0			

c-statistic=0.618

Table 8. Risk Adjustment Coefficients for PQI 14 Uncontrolled Diabetes Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-6.575902293	0.0179701	133909.3599	0
SEX	Female	1	-0.202481927	0.0231278	76.6486459	0
AGE	Age 18-24	1	-2.809507558	0.0328111	7331.952389	0
AGE	Age 25-29	1	-2.322164404	0.0308343	5671.74845	0
AGE	Age 30-34	1	-2.018520081	0.028538	5002.883103	0
AGE	Age 35-39	1	-1.752432567	0.0268623	4255.936235	0
AGE	Age 40-44	1	-1.487871587	0.0254583	3415.648519	0
AGE	Age 45-49	1	-1.271160637	0.0238733	2835.153286	0
AGE	Age 50-54	1	-1.045134362	0.0226612	2127.055982	0
AGE	Age 55-59	1	-0.943827621	0.0222697	1796.213635	0
AGE	Age 60-64	1	-0.8157706	0.0223059	1337.513883	<.0001
AGE	Age 65-69	1	-0.702929958	0.0224929	976.6342637	<.0001
AGE	Age 70-74	1	-0.463459874	0.0230776	403.3140565	<.0001
AGE	Age 75-79	1	-0.198333398	0.0236311	70.4404363	0
AGE	Age 80-84	1	-0.0035456	0.0248415	0.020372	0.886503049
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	0.279760133	0.0449817	38.68111784	0
AGE	Female,Age 25-29	1	0.174488541	0.0427933	16.6258066	0.000045527
AGE	Female,Age 30-34	1	-0.026236	0.0406625	0.416297782	0.518790184

AGE	Female,Age 35-39	1	-0.133798409	0.0386103	12.00868941	0.000529531
AGE	Female,Age 40-44	1	-0.080329203	0.035852	5.020192752	0.0250534
AGE	Female,Age 45-49	1	-0.012886	0.0329024	0.153373733	0.695331923
AGE	Female,Age 50-54	1	-0.026867	0.0309357	0.754262113	0.385130166
AGE	Female,Age 55-59	1	0.0088755	0.0301073	0.086903638	0.768151074
AGE	Female,Age 60-64	1	0.0425699	0.0299522	2.019983505	0.155240828
AGE	Female,Age 65-69	1	0.124837022	0.0299093	17.42099116	0.00002995
AGE	Female,Age 70-74	1	0.159096667	0.0305351	27.14713417	0.000000189
AGE	Female,Age 75-79	1	0.13169508	0.0311957	17.82175499	0.000024259
AGE	Female,Age 80-84	1	0.07113359	0.0327177	4.726990506	0.0296928
AGE	Female,Age 85+	0	0			

c-statistic=0.558

Table 09. Risk Adjustment Coefficients for PQI 15 Asthma in Younger Adults Admission Rate

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-8.376100328	0.0204489	167781.8607	0
SEX	Female	1	0.884461937	0.0243046	1324.289552	<.0001
AGE	Age 18-24	1	-0.315646024	0.028193	125.3479889	<.0001
AGE	Age 25-29	1	-0.071215634	0.0286049	6.198249961	0.0127877
AGE	Age 30-34	1	-0.107253213	0.0292916	13.40705333	0.00025068
AGE	Age 35-39	0	0	.	.	.
AGE	Female,Age 18-24	1	-0.258306742	0.0343453	56.56345124	0
AGE	Female,Age 25-29	1	-0.29810439	0.0349479	72.76045577	0
AGE	Female,Age 30-34	1	-0.116386529	0.035182	10.94372002	0.000939214
AGE	Female,Age 35-39	0	0			

c-statistic=0.553

Table 10. Risk Adjustment Coefficients for PQI 16 Lower-Extremity Amputation Among Patients With Diabetes

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-7.367647056	0.0266775	76272.65084	0
SEX	Female	1	-0.870564177	0.0402824	467.0574044	<.0001
AGE	Age 18-24	1	-6.117424644	0.214857684	810.6539011	<.0001
AGE	Age 25-29	1	-3.969444739	0.088915786	1992.974666	0
AGE	Age 30-34	1	-2.819307903	0.0559217	2541.700018	0
AGE	Age 35-39	1	-1.953294784	0.0422735	2135.002896	0
AGE	Age 40-44	1	-1.255714925	0.0357857	1231.296971	<.0001
AGE	Age 45-49	1	-0.730499658	0.0320803	518.5187289	<.0001
AGE	Age 50-54	1	-0.261043016	0.0300625	75.40033294	0
AGE	Age 55-59	1	-0.0030214	0.0293388	0.0106051	0.917977839
AGE	Age 60-64	1	0.189936825	0.0292013	42.30703525	0
AGE	Age 65-69	1	0.209851499	0.0295611	50.39433906	0
AGE	Age 70-74	1	0.281285676	0.030519	84.94830405	0
AGE	Age 75-79	1	0.336582066	0.0318747	111.5035259	<.0001
AGE	Age 80-84	1	0.25431331	0.0348259	53.32522874	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	0.317911654	0.360940217	0.775786729	0.378432813
AGE	Female,Age 25-29	1	0.190426603	0.153372017	1.541569038	0.214384408
AGE	Female,Age 30-34	1	0.327684671	0.090872029	13.00324659	0.000310951

AGE	Female,Age 35-39	1	0.238563297	0.068690155	12.06197049	0.000514609
AGE	Female,Age 40-44	1	0.0344397	0.059037	0.340305607	0.559652873
AGE	Female,Age 45-49	1	-0.038245	0.0520867	0.539130135	0.46279345
AGE	Female,Age 50-54	1	-0.179319598	0.04842	13.71533323	0.000212711
AGE	Female,Age 55-59	1	-0.196314827	0.0467031	17.66914111	0.000026286
AGE	Female,Age 60-64	1	-0.221982199	0.0463511	22.93596929	0.000001675
AGE	Female,Age 65-69	1	-0.135172728	0.0466962	8.379457516	0.00379486
AGE	Female,Age 70-74	1	-0.140776987	0.0485814	8.396982594	0.00375844
AGE	Female,Age 75-79	1	-0.143461852	0.0509828	7.918184326	0.00489404
AGE	Female,Age 80-84	1	-0.09216202	0.0553852	2.768957017	0.096108766
AGE	Female,Age 85+	0	0			

c-statistic=0.652

Table 11. Risk Adjustment Coefficients for PQI 90 - Overall Composite

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-2.427115334	0.00245354	978578.6119	0
SEX	Female	1	-0.062086	0.00306953	409.1191013	<.0001
AGE	Age 18-24	1	-4.060654652	0.0069069	345641.2205	0
AGE	Age 25-29	1	-3.865964816	0.00725109	284255.9802	0
AGE	Age 30-34	1	-3.64519617	0.00675642	291077.5944	0
AGE	Age 35-39	1	-3.327907436	0.00605053	302521.5207	0
AGE	Age 40-44	1	-2.957553917	0.00534112	306620.3127	0
AGE	Age 45-49	1	-2.621016888	0.00460852	323457.2983	0
AGE	Age 50-54	1	-2.233100054	0.00400831	310379.7412	0
AGE	Age 55-59	1	-1.950706543	0.00369792	278271.1761	0
AGE	Age 60-64	1	-1.700994876	0.0035928	224151.0674	0
AGE	Age 65-69	1	-1.492593367	0.00355362	176417.5638	0
AGE	Age 70-74	1	-1.124331931	0.00357613	98846.49967	0
AGE	Age 75-79	1	-0.777410946	0.00363119	45835.72721	0
AGE	Age 80-84	1	-0.437992786	0.00374266	13695.37015	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	0.545906061	0.0088445	3809.67519	0
AGE	Female,Age 25-29	1	0.442037781	0.0094343	2195.316515	0
AGE	Female,Age 30-34	1	0.299744287	0.0089893	1111.859144	<.0001

AGE	Female,Age 35-39	1	0.174010227	0.0082064	449.6179815	<.0001
AGE	Female,Age 40-44	1	0.124230955	0.00726579	292.3437607	<.0001
AGE	Female,Age 45-49	1	0.085947569	0.00626342	188.2975524	<.0001
AGE	Female,Age 50-54	1	0.0399005	0.00542093	54.17637218	0
AGE	Female,Age 55-59	1	-0.0042293	0.00497999	0.721243781	0.395736229
AGE	Female,Age 60-64	1	-0.048003	0.00483003	98.77266401	0
AGE	Female,Age 65-69	1	0.0056342	0.0047184	1.425855373	0.232442037
AGE	Female,Age 70-74	1	0.0240166	0.00471291	25.9684671	0.000000347
AGE	Female,Age 75-79	1	0.021341	0.00474941	20.19063296	0.00000701
AGE	Female,Age 80-84	1	0.0326565	0.00482825	45.74678145	0
AGE	Female,Age 85+	0	0			

c-statistic=0.537

Table 12. PQI 91 - Prevention Quality Acute Composite

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-3.505967126	0.00398256	774982.6697	0
SEX	Female	1	0.118485946	0.00484488	598.0914656	<.0001
AGE	Age 18-24	1	-4.746813065	0.016086	87078.13489	0
AGE	Age 25-29	1	-4.40798539	0.0158314	77525.00355	0
AGE	Age 30-34	1	-4.141956113	0.0143777	82991.07276	0
AGE	Age 35-39	1	-3.872994668	0.0130482	88104.04559	0
AGE	Age 40-44	1	-3.620052278	0.0119709	91448.04708	0
AGE	Age 45-49	1	-3.356838016	0.0104064	104053.968	0
AGE	Age 50-54	1	-2.954232699	0.0087001	115303.6552	0
AGE	Age 55-59	1	-2.633276141	0.00771406	116526.9414	0
AGE	Age 60-64	1	-2.311613706	0.0072259	102340.373	0
AGE	Age 65-69	1	-1.970756173	0.00680141	83959.04862	0
AGE	Age 70-74	1	-1.470866752	0.0065449	50505.68765	0
AGE	Age 75-79	1	-1.002033841	0.00638495	24629.13855	0
AGE	Age 80-84	1	-0.549463542	0.0063397	7511.744285	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	1.025256114	0.0186543	3020.68762	0
AGE	Female,Age 25-29	1	0.822022842	0.0187953	1912.790215	0
AGE	Female,Age 30-34	1	0.68633486	0.0173512	1564.639721	0

AGE	Female,Age 35-39	1	0.583025597	0.0159504	1336.079103	<.0001
AGE	Female,Age 40-44	1	0.478013437	0.0148389	1037.718698	<.0001
AGE	Female,Age 45-49	1	0.399514071	0.0130395	938.7355102	<.0001
AGE	Female,Age 50-54	1	0.265833634	0.0110775	575.8845531	<.0001
AGE	Female,Age 55-59	1	0.162002776	0.0099169	266.8684926	<.0001
AGE	Female,Age 60-64	1	0.080642261	0.0093349	74.62854736	0
AGE	Female,Age 65-69	1	0.069987531	0.0087408	64.11239956	0
AGE	Female,Age 70-74	1	0.0490185	0.0083709	34.29056721	0.000000005
AGE	Female,Age 75-79	1	0.0249989	0.0081086	9.504978084	0.00204915
AGE	Female,Age 80-84	1	0.0255735	0.0079402	10.37328932	0.00127852
AGE	Female,Age 85+	0	0			

c-statistic=0.569

Table 13. PQI 92 - Prevention Quality Chronic Composite

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-2.90330557	0.00301744	925783.1365	0
SEX	Female	1	-0.176919893	0.00385172	2109.809224	0
AGE	Age 18-24	1	-3.772769928	0.00770723	239620.3058	0
AGE	Age 25-29	1	-3.61081614	0.0081938	194196.2578	0
AGE	Age 30-34	1	-3.4016931	0.00768563	195898.7361	0
AGE	Age 35-39	1	-3.072517793	0.00687052	199990.7536	0
AGE	Age 40-44	1	-2.675689584	0.00603293	196704.543	0
AGE	Age 45-49	1	-2.324706144	0.00522345	198071.0235	0
AGE	Age 50-54	1	-1.940721274	0.00459793	178156.3286	0
AGE	Age 55-59	1	-1.667348302	0.00428339	151522.8162	0
AGE	Age 60-64	1	-1.434839629	0.00418954	117293.6058	0
AGE	Age 65-69	1	-1.261465155	0.00418057	91050.04341	0
AGE	Age 70-74	1	-0.937000144	0.00424438	48736.08734	0
AGE	Age 75-79	1	-0.640316454	0.00435188	21648.85353	0
AGE	Age 80-84	1	-0.359411165	0.00453606	6278.052295	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	0.445165972	0.01028	1875.245437	0
AGE	Female,Age 25-29	1	0.350860947	0.0111083	997.6424039	<.0001
AGE	Female,Age 30-34	1	0.191339655	0.0107141	318.9310434	<.0001

AGE	Female,Age 35-39	1	0.067911381	0.0097644	48.37218422	0
AGE	Female,Age 40-44	1	0.075085612	0.0084789	78.42181673	0
AGE	Female,Age 45-49	1	0.066543831	0.00727455	83.67643086	0
AGE	Female,Age 50-54	1	0.0486409	0.00632959	59.05420137	0
AGE	Female,Age 55-59	1	0.019303	0.00585498	10.86921501	0.00097776
AGE	Female,Age 60-64	1	-0.020097	0.00571487	12.36621088	0.000437174
AGE	Female,Age 65-69	1	0.0417089	0.00563354	54.8144279	0
AGE	Female,Age 70-74	1	0.061392	0.00568219	116.7326805	<.0001
AGE	Female,Age 75-79	1	0.0543565	0.00579053	88.11847474	0
AGE	Female,Age 80-84	1	0.0555725	0.00596236	86.87267353	0
AGE	Female,Age 85+	0	0			

c-statistic=0.549

Table 14. Risk Adjustment Coefficients for PQI 93 - PQI Diabetes Composite

Parameter	Label	DF	Estimate	Standard Error	Wald Chi-Square	Pr > Chi-Square
INTERCEPT	Intercept	1	-5.660962481	0.0113966	246732.8368	0
SEX	Female	1	-0.451218435	0.0154596	851.8827078	<.0001
AGE	Age 18-24	1	-1.230727618	0.0138655	7878.67227	0
AGE	Age 25-29	1	-1.228586327	0.0146383	7044.19556	0
AGE	Age 30-34	1	-1.158726219	0.0146067	6292.974313	0
AGE	Age 35-39	1	-0.937128491	0.0141669	4375.709241	0
AGE	Age 40-44	1	-0.743617019	0.013854	2881.050073	0
AGE	Age 45-49	1	-0.500916922	0.0132604	1426.974404	0
AGE	Age 50-54	1	-0.277640851	0.0128636	465.8425122	<.0001
AGE	Age 55-59	1	-0.180575797	0.0127413	200.8602381	<.0001
AGE	Age 60-64	1	-0.085978952	0.0127973	45.1383555	0
AGE	Age 65-69	1	-0.099822448	0.0130455	58.5510974	0
AGE	Age 70-74	1	-0.008088	0.0135431	0.356668554	0.550362282
AGE	Age 75-79	1	0.097965343	0.0141563	47.8897265	0
AGE	Age 80-84	1	0.11213487	0.0153417	53.42386473	0
AGE	Age 85+	0	0	.	.	.
AGE	Female,Age 18-24	1	0.667312095	0.0188234	1256.786154	<.0001
AGE	Female,Age 25-29	1	0.586777807	0.0199931	861.3621665	<.0001
AGE	Female,Age 30-34	1	0.399569501	0.0202899	387.8135146	<.0001

AGE	Female,Age 35-39	1	0.226026172	0.0199588	128.2477795	<.0001
AGE	Female,Age 40-44	1	0.158589932	0.0195687	65.67915794	0
AGE	Female,Age 45-49	1	0.0499786	0.0187679	7.091470467	0.00774517
AGE	Female,Age 50-54	1	-0.086399845	0.0182567	22.39648564	0.000002218
AGE	Female,Age 55-59	1	-0.106927455	0.0180266	35.18438323	<.0001
AGE	Female,Age 60-64	1	-0.126522522	0.0181117	48.79988624	0
AGE	Female,Age 65-69	1	-0.038412	0.0183821	4.366500684	0.0366522
AGE	Female,Age 70-74	1	-0.013161	0.019116	0.47397332	0.491164912
AGE	Female,Age 75-79	1	-0.0073502	0.0199689	0.13548482	0.712811625
AGE	Female,Age 80-84	1	0.018877	0.0214744	0.772720146	0.379376867
AGE	Female,Age 85+	0	0			

c-statistic=0.52

Table A.1. Population Age Categories

1	low - 4
2	5 - 9
3	10 - 14
4	15 - 17
5	18 - 24
6	25 - 29
7	30 - 34
8	35 - 39
9	40 - 44
10	45 - 49
11	50 - 54
12	55 - 59
13	60 - 64
14	65 - 69
15	70 - 74
16	75 - 79
17	80 - 84
18	85 - high