



Agency for Healthcare Research and Quality

Advancing Excellence in Health Care

www.ahrq.gov

Preventable Hospitalization Costs: A County-Level Mapping Tool

State Healthcare Quality Improvement Workshop:
Tools You Can Use to Make a Difference
December 6-7, 2007

MaryBeth Farquhar, RN, MSN, CAGS



AHRQ Quality Indicators (QIs)

- Use existing hospital discharge data, based on readily available data elements
- Incorporate severity adjustment methods (APR-DRGs, comorbidity groupings and hierarchical modeling)
- Five modules: Inpatient, Patient Safety, Prevention, Pediatric, and Neonatal



Preventable Hospitalization Costs: A County-Level Mapping Tool

The PHC tool is a new QI software application designed to help organizations to:

- better understand geographical patterns of potentially preventable hospital admission rates for selected health problems.
- allocate resources more effectively by calculating potential cost savings if admission rates are reduced.



Main Functions of the PHC Tool

- Creation of maps that show the rates of hospital admission for selected health problems on a county-by-county basis.
- Calculation of potential cost savings that may occur if the number of hospital admissions for selected health problems in each county is reduced.
- Ability to place additional information about local populations onto maps to indicate the number of persons who are at greatest risk for those health problems in each county.



It processes all Prevention QIs...

- PQI 1 Diabetes Short-term Complications Admission Rate
- PQI 2 Perforated Appendix Admission Rate
- PQI 3 Diabetes Long-term Complications Admission Rate
- PQI 5 Chronic Obstructive Pulmonary Disease Admission Rate
- PQI 7 Hypertension Admission Rate
- PQI 8 Congestive Heart Failure Admission Rate
- PQI 9 Low Birth Weight Rate
- PQI 10 Dehydration Admission Rate
- PQI 11 Bacterial Pneumonia Admission Rate
- PQI 12 Urinary Tract Infection Admission Rate
- PQI 13 Angina without Procedure Admission Rate
- PQI 14 Uncontrolled Diabetes Admission Rate
- PQI 15 Adult Asthma Admission Rate
- PQI 16 Lower-extremity Amputation Rate among Diabetic Patients

There is no longer a PQI 4 and PQI 6.



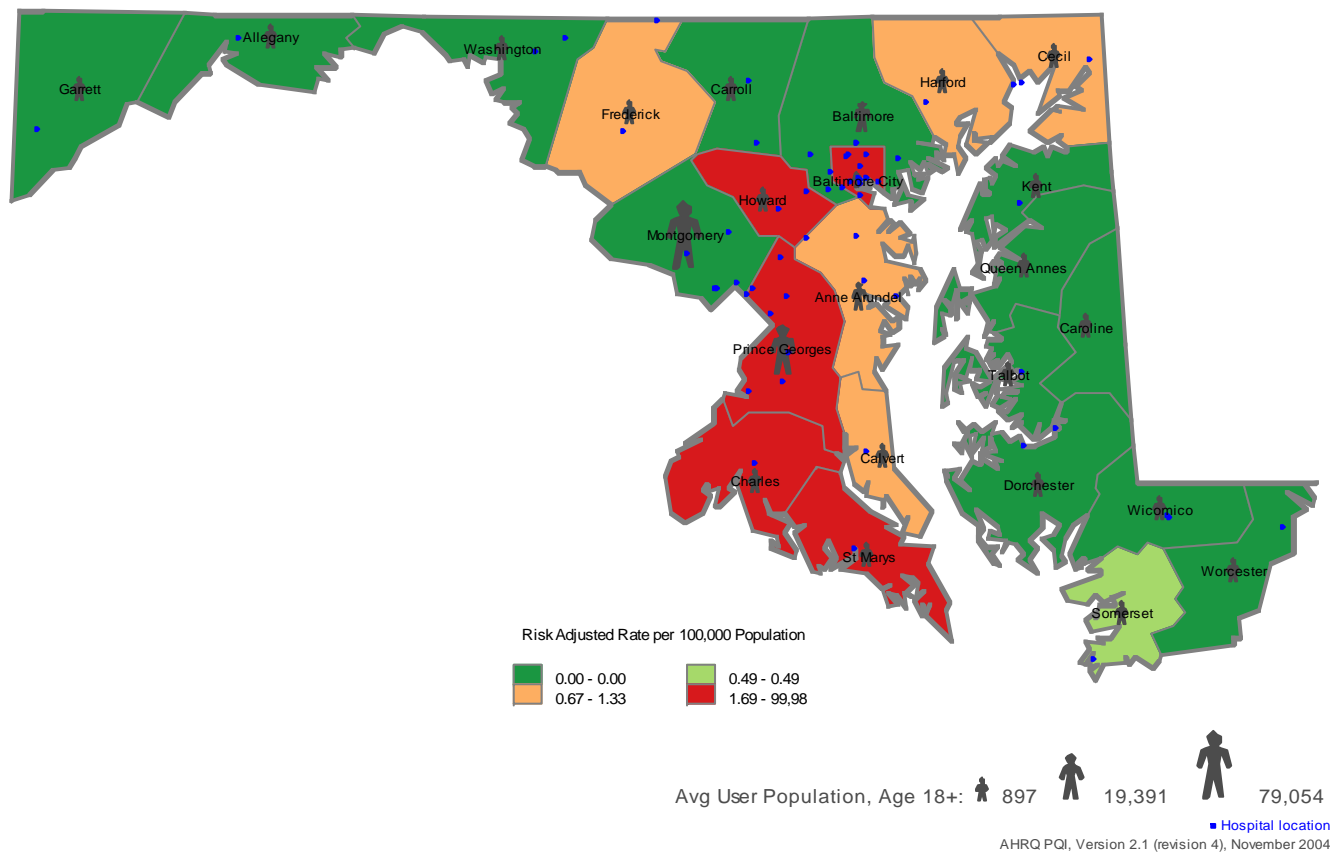
and all *area-level* Pediatric QIs

PDI 14 Asthma Admission Rate
PDI 15 Diabetes Short-term Complications Admission Rate
PDI 16 Gastroenteritis Admission Rate
PDI 17 Perforated Appendix Admission Rate
PDI 18 Urinary Tract Infection Admission Rate

Applying the QIs

- To calculate area rates it was necessary to have access to the state and county data.
- The software produces observed and risk-adjusted rates for all PQIs and PDIs.
- Output converted to rates
 - Rates expressed either per 100 population and per 10,000 population

Uncontrolled Diabetes Admission Rate (PQI 14)



Data Source: Healthcare Cost and Utilization Project
& Maryland Health Services Cost and Review Commission

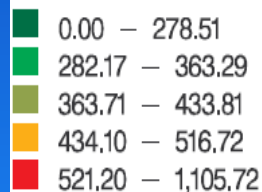
Map Interpretation - Example

Name of Indicator and Data Year in Map Title

AHRQ Prevention Quality Indicators
Congestive Heart Failure Admission Rate (PQI 8), 2002

State of Michigan

Risk Adjusted Rate
per 100,000 Population

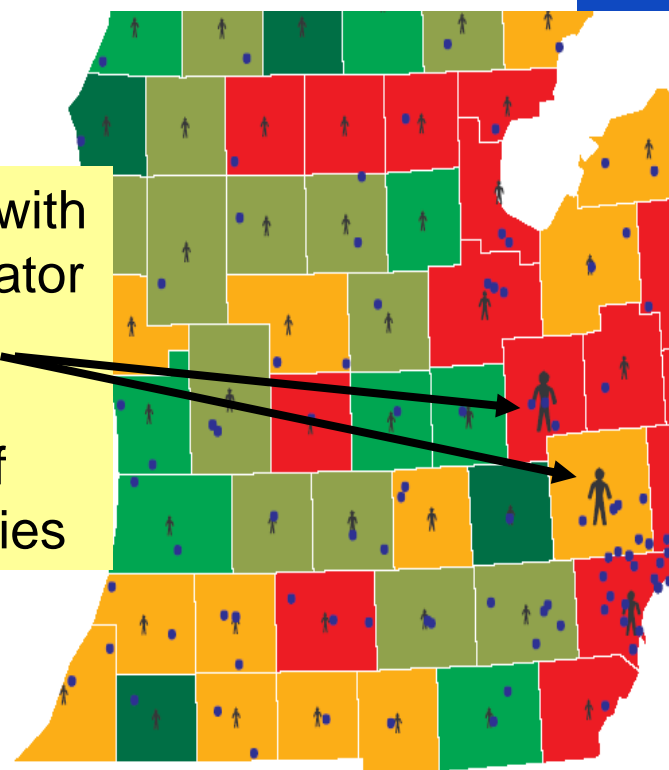


• Hospital Location



Avg number GM—covered beneficiaries,
ages 25 and older

Counties with high indicator rates and higher number of beneficiaries



Data quintiles. Green is the lowest 20% or the lowest rates. Red is the highest 20% or the highest rates.

Symbol indicating number of covered beneficiaries, number below is average in the group.

Data Interpretation

All AHRQ PQIs by County - State of Michigan

Region Name	PQIs Related to Diabetes											
	Diabetes Uncontrolled			Diabetes Short Term Complication			Diabetes Long Term Complication			Lower Extremity Amputation		
	RA Rate	LCI	UCI	RA Rate	LCI	UCI	RA Rate	LCI	UCI	RA Rate	LCI	UCI
Michigan	8.48			28.16			54.97			18.49		
Alcona	36.14	3.76	68.52	57.02	-385.15	499.18	83.39	14.57	152.20	50.86	10.74	90.97
Alger	0.00	-35.30	35.30	0.49	-481.50	482.47	0.00	-75.01	75.01	2.77	-40.96	46.50
Allegan	18.38	7.24	29.52	73.44	-78.71	225.59	68.87	45.19	92.55	32.98	19.17	46.78
Alpena	0.00	-20.24	20.24	0.53	-275.86	276.93	0.00	-43.02	43.02	0.00	-25.08	25.08
Antrim	19.14	-4.07	42.35	136.75	-180.19	453.69	317.60	268.28	366.93	95.46	66.70	124.21
Arenac	4.75	-22.24	31.84	39.17	-330.73	409.06	45.77	-11.79	103.34	20.11	-13.44	53.67
Baraga	28.10	-10.07	66.27	0.23	-521.00	521.45	13.84	-87.27	94.96	0.00	-47.29	47.29
Barry	6.51	-8.64	21.66	72.95	-133.90	279.80	120.38	88.18	152.57	31.32	12.55	50.09
Bay	32.40	21.54	43.26	6.74	-61.55	235.02	119.10					
Benzie	0.00	-27.52	27.52	32.70	-343.13	408.53	6.95					
Berrien	9.11	0.09	18.14	29.49	-93.74	152.71	44.30					
Branch	31.72	14.94	48.50	59.35	-169.84	288.54	141.46					
Calhoun	16.81	7.02	26.60	72.77	-60.91	206.45	105.86					
Cass								-20.96	46.75	4.58	-15.15	24.32

County RA rate is significantly lower than state rate

County RA rate is significantly higher than state rate

Cost Data Interpretation

Microsoft Excel - pq_cost_2002.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

QI Name

Chronic Obstructive Pulmonary Disease (PQI 5)

Cost Savings Given Reduction of Cases by

County	Name	Mean Cost	Total Cases	Total Cost	10%	20%	30%	40%	50%
26001	Alcona	6,373.43	13	82,854.59	8,285.46	16,570.92	24,856.38	33,141.84	41,427.29
26003	Alger	4,200.81	9	37,807.29	3,780.73	7,561.46	11,342.19	15,122.92	18,903.64
26005	Allegan	4,729.93	111	525,822.23	52,502.22	105,004.45	157,506.67	210,008.89	262,511.11
26007	Alpena	5,252.40	76	399,182.40	39,918.24	79,836.48	119,754.72	159,672.96	199,591.20
26009	Antrim	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26011	Arenac	5,002.26	7	35,015.82	3,501.58	7,003.16	10,504.75	14,006.33	17,507.91
26013	Baraga	3,646.28	21	76,571.88	7,657.19	15,314.38	22,971.56	30,628.75	38,285.94
26015	Barry	5,179.23	93	481,668.39	48,166.84	96,333.68	144,500.52	192,667.36	240,834.19
26017	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
26019	Ber	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26021	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26023	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26025	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26027	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26029	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26031	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26033	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26035	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26037	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26039	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26041	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26043	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26045	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26047	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26049	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26051	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26053	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26055	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26057	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26059	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26061	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26063	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26065	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26067	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26069	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26071	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26073	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26075	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26077	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26079	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26081	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26083	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26085	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26087	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26089	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26091	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26093	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26095	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26097	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26099	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26101	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26103	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26105	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26107	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26109	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26111	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26113	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26115	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26117	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26119	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26121	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26123	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26125	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26127	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26129	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26131	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26133	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26135	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26137	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26139	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26141	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26143	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26145	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26147	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26149	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26151	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26153	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26155	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26157	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26159	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26161	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26163	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26165	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26167	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26169	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26171	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26173	Bosc	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26175	Bosc	5,117.96	24	12					



Where to Download

Download the PHC mapping tool (SAS and Windows versions) and all technical documentation at:

<http://www.qualityindicators.ahrq.gov/mappingtool.htm>



Technical Support

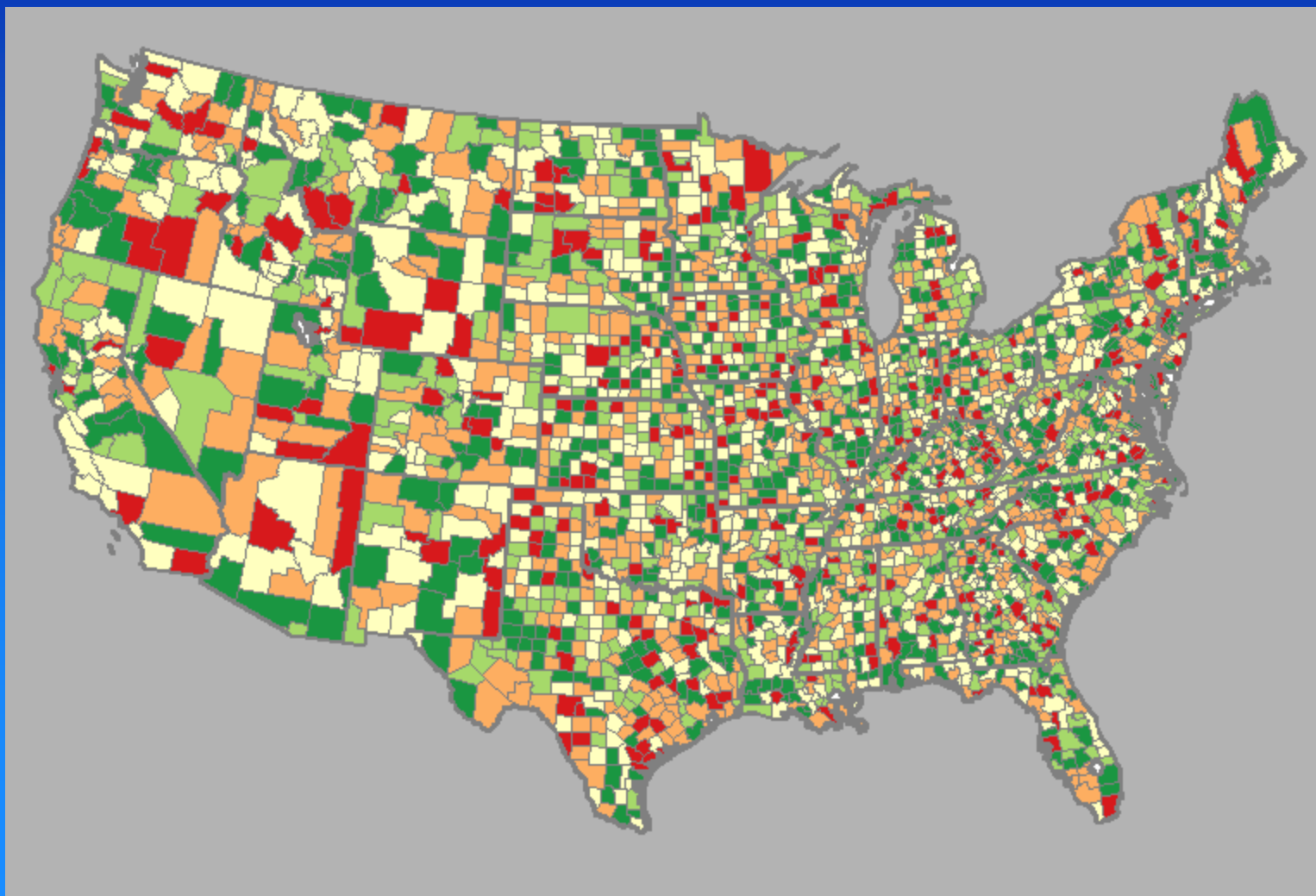
If you have technical questions of any kind while using the PHC tool, contact the QI team at:

Support@qualityindicators.ahrq.gov

or

1-888-512-6090

Questions?





Contact Information

MaryBeth Farquhar, RN, MSN, CAGS
Senior Advisor, Quality Indicators Initiative

MaryBeth.Farquhar@ahrq.hhs.gov

301-427-1317