



Agency for Healthcare Research and Quality

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Preventable Hospitalization Costs: A County-Level Mapping Tool

State Healthcare Quality Improvement Workshop:
Tools You Can Use to Make a Difference
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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.



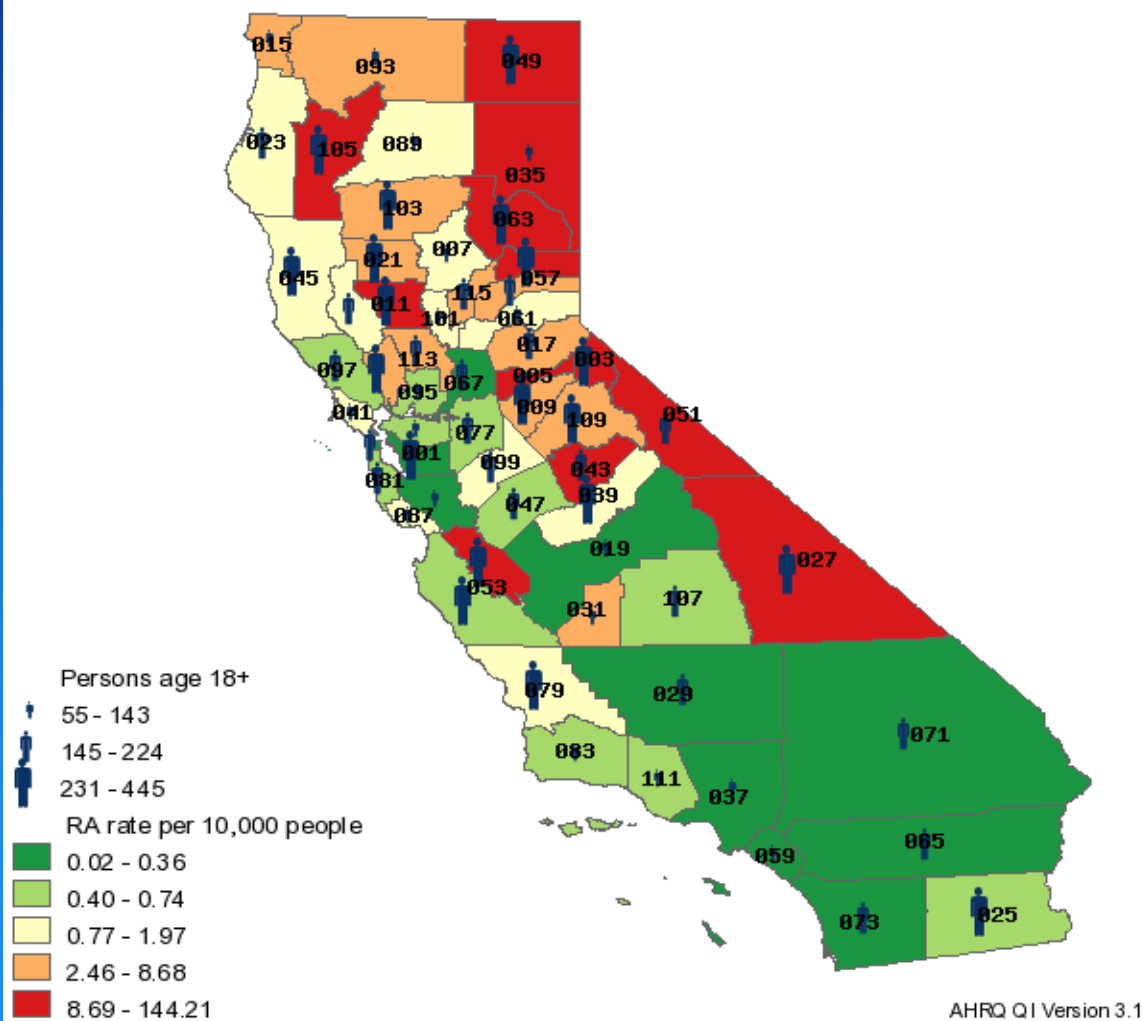
and all *area-level* Pediatric QIs

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 (2001, PQI14)



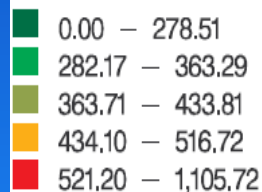
Map Interpretation - Example

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

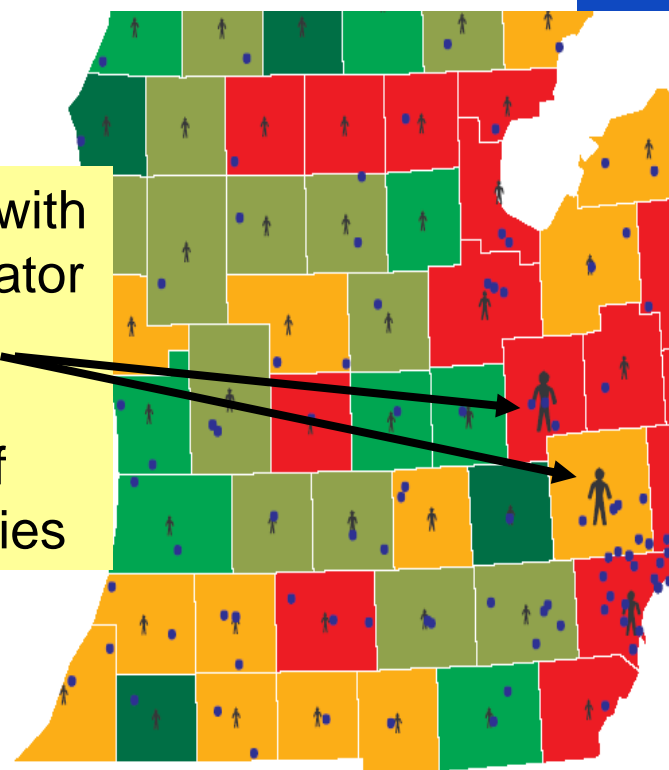


• Hospital Location



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

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QI Name

Potential cost savings if number of admissions were reduced by specified percentage

					Cost Savings Given Reduction of Cases by					
County	Name	Mean Cost	Total Cases	Total Cost	10%	20%	30%	40%	50%	
1	Chronic Obstructive Pulmonary Disease (PQI 5)									
2										
3										
4	26001	Alcona	6,373.43	13	82,854.59	8,285.46	16,570.92	24,856.38	33,141.84	41,427.29
5	26003	Alger	4,200.81	9	37,807.29	3,780.73	7,561.46	11,342.19	15,122.92	18,903.64
6	26005	Allegan	4,729.93	111	525,822.23	52,502.22	105,004.45	157,506.67	210,008.89	262,511.11
7	26007	Alpena	5,252.40	76	399,182.40	39,918.24	79,836.48	119,754.72	159,672.96	199,591.20
8	26009	Antrim	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
9	26011	Arenac	5,002.26	7	35,015.82	3,501.58	7,003.16	10,504.75	14,006.33	17,507.91
10	26013	Baraga	3,646.28	21	76,571.88	7,657.19	15,314.38	22,971.56	30,628.75	38,285.94
11	26015	Barry	5,179.23	93	481,668.39	48,166.84	96,333.68	144,500.52	192,667.36	240,834.19
12	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
13	26019	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
14	26021	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
15	26023	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
16	26025	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
17	26027	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
18	26029	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
19	26031	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
20	26033	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
21	26035	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
22	26037	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
23	26039	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
24	26041	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
25	26043	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
26	26045	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
27	26047	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
28	26049	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
29	26051	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
30	26053	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
31	26055	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
32	26057	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
33	26059	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
34	26061	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
35	26063	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
36	26065	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
37	26067	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
38	26069	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
39	26071	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
40	26073	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
41	26075	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
42	26077	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
43	26079	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
44	26081	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
45	26083	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
46	26085	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
47	26087	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
48	26089	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
49	26091	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
50	26093	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
51	26095	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
52	26097	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
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56	26105	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
57	26107	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
58	26109	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
59	26111	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
60	26113	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
61	26115	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
62	26117	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
63	26119	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
64	26121	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
65	26123	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
66	26125	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
67	26127	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
68	26129	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
69	26131	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
70	26133	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
71	26135	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
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74	26141	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
75	26143	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
76	26145	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
77	26147	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
78	26149	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
79	26151	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
80	26153	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
81	26155	Ben	5,727.56	305	1,746,905.80	174,6				



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

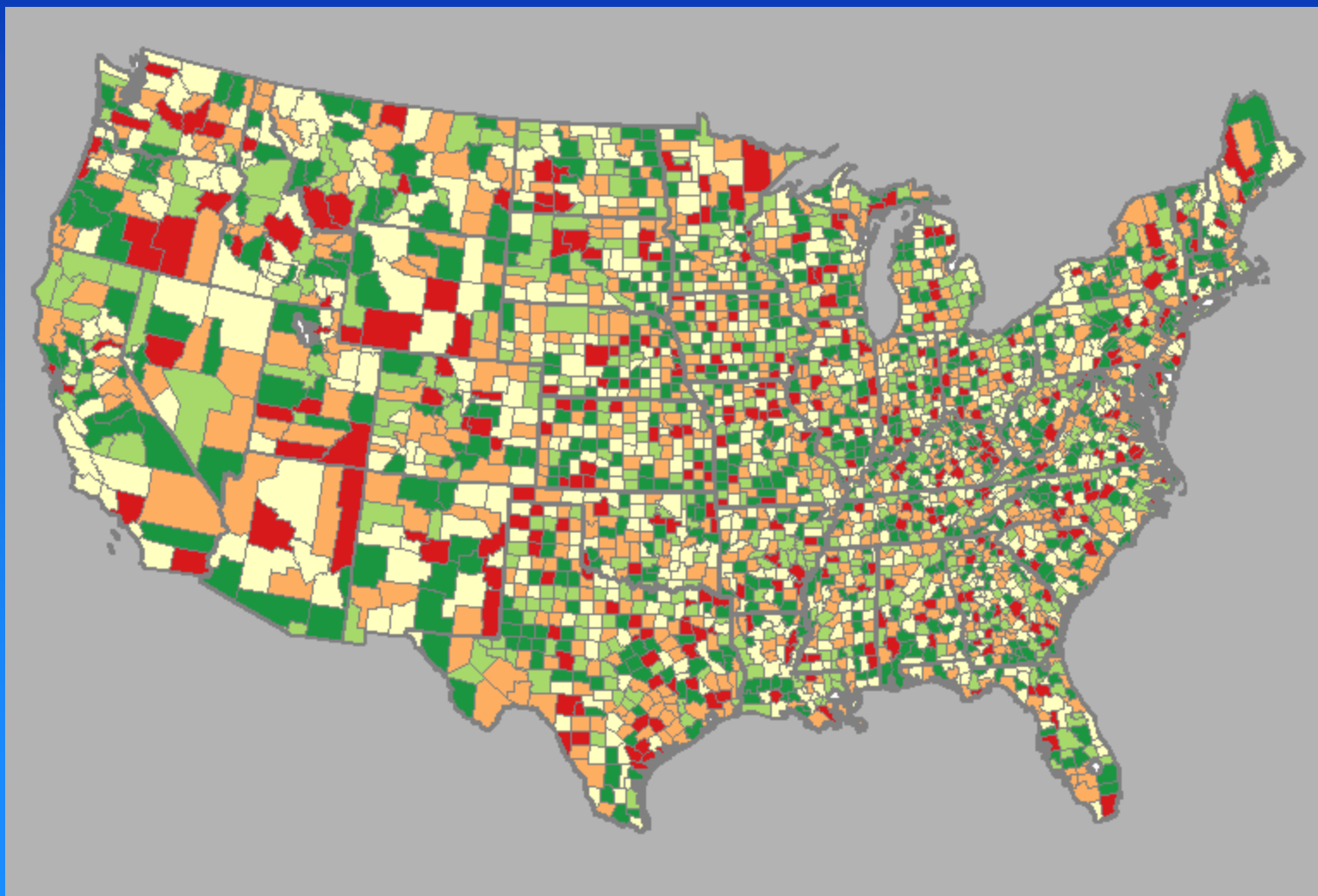
If you have technical questions of any kind while using the PHC tool, contact the QI team at:

Support@qualityindicators.ahrq.gov

or

1-888-512-6090

Questions?





Contact Information

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