

## **UC Davis**

### **Reports for the Agency for Healthcare Research and Quality**

#### **Title**

Refinement of the HCUP Quality Indicators: Appendix 7 Empirical Evaluation Results Tables

#### **Permalink**

<https://escholarship.org/uc/item/8x18b8mz>

#### **Authors**

Davies, Sheryl M.  
Geppert, Jeffrey  
McClellan, Mark  
[et al.](#)

#### **Publication Date**

2001-03-01

# **APPENDIX 7**

## **Empirical Evaluation Results Tables**

This appendix summarizes the empirical results for each indicator in table format. Indicators are in order according to their unique identifier.



<b>Indicator 1: AAA repair volume</b>						
Type: Volume						
Definition: Provider level. Number of AAA Procedures						
Threshold 1: 10/yr, Threshold 2: 32/yr						
Procedure volume:	Number of procedures performed per year					
	# Hosp with >=1 procedures/yr	Mean	Standard deviation	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile
1995	716	14	16	8	35	47
1996	727	14	16	8	36	46
1997	717	14	16	8	34	52
Procedure share:	Share of procedures done at high volume hospitals		Share of hospitals at high volume			
	Threshold 1	Threshold 2	Threshold 1	Threshold 2		
1995	84.19%	43.11%	46.09%	12.57%		
1996	83.87%	42.99%	44.43%	12.24%		
1997	84.70%	41.73%	46.44%	11.58%		
Persistence of high volume:	Share of high volume hospitals remaining high volume					
		Threshold 1			Threshold 2	
1995-1996	86.24%			81.11%		
1996-1997	87.03%			75.86%		

<b>Indicator 2: Carotid endarterectomy volume</b>						
Type: Volume						
Definition: Provider level. Number of Carotid Endarterectomy Procedures Threshold 1: 50/yr, Threshold 2: 101/yr						
Procedure volume:	Number of procedures performed per year					
	# Hosp with >=1 procedures/yr	Mean	Standard deviation	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile
1995	893	52	60	32	127	158
1996	904	52	60	31.5	129	169
1997	884	54	64	32	133	175
Procedure share:	Share of procedures done at high volume hospitals		Share of hospitals at high volume			
	Threshold 1	Threshold 2	Threshold 1	Threshold 2		
1995	76.08%	50.32%	35.05%	16.35%		
1996	77.77%	51.03%	36.61%	16.70%		
1997	78.71%	52.54%	37.33%	17.08%		
Persistence of high volume:	Share of high volume hospitals remaining high volume					
		Threshold 1			Threshold 2	
1995-1996	93.53%			87.50%		
1996-1997	89.72%			87.76%		

<b>Indicator 3: CABG volume</b>						
Type: Volume						
Definition: Provider level. Number of CABG Procedures						
Threshold 1: 100/yr, Threshold 2: 200/yr						
Procedure volume:	Number of procedures performed per year					
	# Hosp with $\geq 1$ procedures/yr	Mean	Standard deviation	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile
1995	304	375	323	280	804	998
1996	307	399	338	293	830	1095
1997	307	401	345	301	892	1074
Procedure share:	Share of procedures done at high volume hospitals		Share of hospitals at high volume			
	Threshold 1	Threshold 2	Threshold 1	Threshold 2		
1995	98.03%	89.50%	86.18%	65.13%		
1996	98.28%	90.65%	87.62%	67.75%		
1997	98.30%	90.71%	87.95%	68.08%		
Persistence of high volume:	Share of high volume hospitals remaining high volume					
		Threshold 1			Threshold 2	
1995-1996	98.85%			96.94%		
1996-1997	98.08%			97.49%		

<b>Indicator 4: Esophageal resection volume</b>						
Type: Volume						
Definition: Provider level. Number of Esophageal Resection Procedures						
Threshold 1: 6/yr, Threshold 2: 7/yr						
Procedure volume:	Number of procedures performed per year					
	# Hosp with $\geq 1$ procedures/yr	Mean	Standard deviation	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile
1995	265	2	3	1	4	7
1996	265	2	3	1	4	6
1997	233	2	3	1	5	8
Procedure share:	Share of procedures done at high volume hospitals		Share of hospitals at high volume			
	Threshold 1	Threshold 2	Threshold 1	Threshold 2		
1995	30.43%	26.26%	6.79%	5.28%		
1996	39.51%	34.26%	8.58%	6.43%		
1997	30.85%	24.47%	5.15%	3.43%		
Persistence of high volume:	Share of high volume hospitals remaining high volume					
		Threshold 1			Threshold 2	
1995-1996	50.00%			57.14%		
1996-1997	58.33%			60.00%		

<b>Indicator 5: Pancreatic resection volume</b>						
Type: Volume						
Definition: Provider level. Number of Pancreatic Resection Procedures Threshold 1: 10/yr, Threshold 2: 11/yr						
Procedure volume:	Number of procedures performed per year					
	# Hosp with >=1 procedures/yr	Mean	Standard deviation	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile
1995	461	3	5	2	5	8
1996	429	3	4	2	5	10
1997	453	3	5	2	6	8
Procedure share:	Share of procedures done at high volume hospitals		Share of hospitals at high volume			
	Threshold 1	Threshold 2	Threshold 1	Threshold 2		
1995	30.22%	27.96%	4.77%	4.12%		
1996	30.25%	27.03%	5.13%	4.19%		
1997	31.58%	31.58%	4.41%	4.41%		
Persistence of high volume:	Share of high volume hospitals remaining high volume					
		Threshold 1			Threshold 2	
1995-1996		72.73%			73.68%	
1996-1997		71.43%			82.35%	



<b>Indicator 6: Pediatric heart surgery volume</b>						
Type: Volume						
Definition: Provider level. Number of Pediatric Heart Surgery Procedures						
Threshold 1: 100/yr, Threshold 2: 100/yr						
Procedure volume:	Number of procedures performed per year					
	# Hosp with $\geq 1$ procedures/yr	Mean	Standard deviation	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile
1995	135	52	86	2	145	244
1996	126	53	90	2.5	149	245
1997	126	52	91	2	143	263
Procedure share:	Share of procedures done at high volume hospitals		Share of hospitals at high volume			
	Threshold 1	Threshold 2	Threshold 1	Threshold 2		
	1995	72.88%		19.26%		
1996		75.52%		20.63%		
1997		74.33%		19.05%		
Persistence of high volume:	Share of high volume hospitals remaining high volume					
	Threshold 1			Threshold 2		
	1995-1996				84.62%	
1996-1997				84.00%		

<b>Indicator 7: PTCA volume</b>						
Type: Volume						
Definition: Provider level. Number of PTCA Procedures						
Threshold 1: 200/yr, Threshold 2: 400/yr						
Procedure volume:	Number of procedures performed per year					
	# Hosp with $\geq 1$ procedures/yr	Mean	Standard deviation	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile	95 <sup>th</sup> percentile
1995	354	379	367	292	803	1066
1996	356	418	400	330	869	1157
1997	354	447	428	338	934	1290
Procedure share:	Share of procedures done at high volume hospitals		Share of hospitals at high volume			
	Threshold 1	Threshold 2	Threshold 1	Threshold 2		
1995	94.41%	72.54%	65.82%	37.29%		
1996	95.70%	77.01%	68.82%	42.13%		
1997	95.38%	79.06%	69.21%	44.63%		
Persistence of high volume:	Share of high volume hospitals remaining high volume					
		Threshold 1			Threshold 2	
1995-1996		97.84%			98.47%	
1996-1997		97.88%			96.53%	

<b>Indicator 8: Cesarean section delivery rate</b>						
Type: Provider level utilization						
<i>Definition: Provider level. Number of cesarean section delivery per 100 deliveries.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.214	0.087	0.045	0.012	0.880	0.922
Demographics	-	-	0.045	0.012	0.882	0.925
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.956	0.054	0.724	0.793	0.026	

<b>Indicator 9: Incidental appendectomy among elderly rate</b>						
Type: Provider level utilization						
<i>Definition: Provider level. Number of incidental appendectomies per 100 patients age 65 years or older undergoing intra-abdominal surgery.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.027	0.035	0.019	0.015	0.554	0.670
Demographics	-	-	0.019	0.018	0.590	0.689
APR-DRG	-	-	0.019	0.014	0.554	0.673
<b>Minimum bias (APR-DRG):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.988	0.050	0.829	0.946	0.003	

<b>Indicator 10: Bi-lateral cardiac catheterization rate</b>						
Type: Provider level utilization						
<i>Definition: Provider level. Number of bilateral cardiac catheterizations per 100 heart catheterizations.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.193	0.200	0.163	0.147	0.944	0.963
Demographics	-	-	0.162	0.140	0.942	0.961
APR-DRG	-	-	0.161	0.144	0.943	0.962
<b>Minimum bias (APR-DRG):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.988	0.061	0.707	0.966	0.002	

<b>Indicator 11: Successful vaginal birth after cesarean section (VBAC) rate</b>						
Type: Provider level utilization						
<i>Definition: Provider level. Number of successful vaginal deliveries per 100 deliveries in women with previous cesarean section.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.336	0.148	0.115	0.055	0.825	0.889
Demographics	-	-	0.117	0.057	0.831	0.895
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.995	0.031	0.931	0.943	0.000	

<b>Indicator 12: Laparoscopic cholecystectomy rate</b>						
Type: Provider level utilization						
<i>Definition: Provider level. Number of laparoscopic cholecystectomies per 100 cholecystectomies (open and laparoscopic) performed.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.662	0.192	0.137	0.083	0.836	0.893
Demographics	-	-	0.133	0.079	0.831	0.891
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.966	0.039	0.938	0.788	0.025	

<b>Indicator 13: Coronary artery bypass graft (CABG) rate</b>						
Type: Area level utilization						
<i>Definition: Area level. Number of CABGs per 100,000 population.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001804	0.005716	0.002508	0.002152	0.973	0.974
Demographics	-	-	0.002486	0.002117	0.973	0.973
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.6548	0.126	0.364	0.955	0.350	

<b>Indicator 14: Hysterectomy rate</b>						
Type: Area level utilization						
<i>Definition: Area level. Number of hysterectomies per 100,000 population.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.004194	0.003233	0.001840	0.000940	0.933	0.935
Demographics	-	-	0.001881	0.000983	0.936	0.937
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9964	0.030	0.818	0.909	0.000	

<b>Indicator 15: Laminectomy and/or spinal fusion rate</b>						
Type: Area level utilization						
<i>Definition: Area level. Number of laminectomies per 100,000 population.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001390	0.003475	0.001328	0.001020	0.967	0.967
Demographics	-	-	0.001320	0.001009	0.967	0.967
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9333	0.063	0.318	0.955	0.074	

<b>Indicator 16: Percutaneous transluminal coronary angioplasty (PTCA) rate</b>						
Type: Area level utilization						
<i>Definition: Area level. Number of PTCAs per 100,000 population.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001908	0.004556	0.002780	0.002163	0.973	0.974
Demographics	-	-	0.002750	0.002120	0.973	0.973
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.6712	0.104	0.364	0.955	0.355	

<b>Indicator 17: Dehydration admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
<i>Definition: Area level. Number of admissions for dehydration per 100,000 population.</i>						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001399	0.001032	0.000484	0.000216	0.900	0.903
Demographics	-	-	0.000446	0.000184	0.885	0.889
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9572	0.092	0.818	0.909	0.046	

<b>Indicator 18: Bacterial pneumonia admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for bacterial pneumonia per 100,000 population.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.003956	0.002085	0.000971	0.000343	0.932	0.933
Demographics	-	-	0.000948	0.000326	0.929	0.931
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9234	0.111	0.682	0.909	0.097	

<b>Indicator 19: Urinary infection admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for urinary infection per 100,000 population.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001451	0.000895	0.000395	0.000134	0.854	0.859
Demographics	-	-	0.000386	0.000128	0.849	0.854
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9143	0.115	0.682	0.909	0.088	



<b>Indicator 20: Perforated appendix admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for perforated appendix per 100 admissions for appendicitis within an area .						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.332740	0.144097	0.032117	0.004604	0.308	0.436
Demographics	-	-	0.027529	0.003387	0.265	0.394
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9687	0.020	0.900	0.850	0.025	

<b>Indicator 21: Angina (without procedure) admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for angina (without procedure) per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001660	0.001357	0.000639	0.000392	0.921	0.923
Demographics	-	-	0.000614	0.000362	0.916	0.919
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9677	0.106	0.636	0.909	0.032	

<b>Indicator 22: Adult asthma admission rate.</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for adult asthma per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001079	0.000817	0.000443	0.000158	0.840	0.846
Demographics	-	-	0.000435	0.000153	0.836	0.842
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9879	0.038	0.864	0.955	0.000	

<b>Indicator 23: Chronic obstructive pulmonary disease (COPD) admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for COPD per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.003240	0.002038	0.001153	0.000646	0.950	0.950
Demographics	-	-	0.000986	0.000472	0.934	0.935
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9333	0.135	0.682	0.864	0.069	

<b>Indicator 24: Congestive heart failure admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for CHF per 100,000 population.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.005210	0.002865	0.001772	0.000708	0.954	0.954
Demographics	-	-	0.001404	0.000444	0.930	0.932
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.8577	0.196	0.545	0.818	0.166	

<b>Indicator 25: Diabetes – short term complications admissions rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for diabetes short term complications (uncontrolled diabetes, DKA, hyperosmolarity, and coma) per 100,000 population.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.000360	0.000246	0.000092	0.000022	0.518	0.543
Demographics	-	-	0.000092	0.000022	0.517	0.543
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9951	0.006	1.000	1.000	0.005	

<b>Indicator 26: Uncontrolled diabetes</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for uncontrolled diabetes per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.000347	0.000281	0.000152	0.000078	0.735	0.751
Demographics	-	-	0.000147	0.000074	0.726	0.742
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9764	0.079	0.773	0.909	0.023	

<b>Indicator 27: Diabetes – long-term complications admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for diabetes long-term complications (neurological, circulatory, eye, kidney, NOS), per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.000808	0.000581	0.000265	0.000077	0.741	0.752
Demographics	-	-	0.000279	0.000085	0.756	0.766
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9264	0.124	0.727	0.909	0.083	

<b>Indicator 28: Hypertension admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for hypertension per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.000371	0.000322	0.000142	0.000066	0.716	0.728
Demographics	-	-	0.000138	0.000060	0.699	0.712
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9631	0.091	0.727	1.000	0.032	

<b>Indicator 29: Lower extremity amputation in diabetics admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for lower extremity amputation and diagnosis code for diabetes per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.000305	0.000427	0.000146	0.000064	0.706	0.722
Demographics	-	-	0.000137	0.000057	0.685	0.702
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9192	0.131	0.591	0.909	0.074	

<b>Indicator 30: Low birth weight rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of infants with a birth weight of under 2500 grams per 100 births within area.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.039108	0.023135	0.011832	0.002720	0.671	0.812
Demographics	-	-	0.011836	0.002722	0.671	0.812
Minimum bias:	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	NA	NA	NA	NA	NA	

<b>Indicator 31: Pediatric asthma admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for asthma in patients age 18 years and younger per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.001541	0.001439	0.001137	0.000514	0.853	0.858
Demographics	-	-	0.001129	0.000506	0.851	0.856
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9938	0.053	1.000	0.955	0.000	

<b>Indicator 32: Pediatric gastroenteritis admission rate</b>						
Type: Avoidable hospitalization/ Ambulatory Care Sensitive Condition (ACSC)						
Definition: Area level. Number of admissions for gastroenteritis in patients age 18 years and younger per 100,000 population.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.000985	0.001012	0.000535	0.000291	0.778	0.788
Demographics	-	-	0.000537	0.000293	0.778	0.788
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.9953	0.055	0.909	1.000	0.000	

<b>Indicator 33: Acute myocardial infarction (AMI) mortality rate</b>						
Type: In-patient mortality						
Definition: Provider level. Number of deaths per 100 patients with diagnosis of AMI.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.244	0.161	0.078	0.043	0.718	0.826
Demographics	-	-	0.061	0.023	0.617	0.756
APR-DRG	-	-	0.034	0.008	0.428	0.590
Minimum bias (APR-DRG):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.747	0.324	0.363	0.673	0.290	

<b>Indicator 34: Congestive heart failure (CHF) mortality rate</b>						
Type: In-patient mortality						
Definition: Provider level. Number of deaths per 100 patients with diagnosis of CHF.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.075	0.095	0.025	0.010	0.598	0.750
Demographics	-	-	0.021	0.007	0.505	0.696
APR-DRG	-	-	0.021	0.007	0.535	0.697
Minimum bias (APR-DRG):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.794	0.137	0.398	0.729	0.235	

<b>Indicator 35: Gastrointestinal (GI) hemorrhage mortality rate</b>						
Type: In-patient mortality						
Definition: Provider level. Number of deaths per 100 patients with diagnosis of GI hemorrhage.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.046	0.057	0.016	0.006	0.323	0.589
Demographics	-	-	0.013	0.003	0.224	0.607
APR-DRG	-	-	0.011	0.003	0.202	0.555
Minimum bias (APR-DRG):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.803	0.105	0.504	0.678	0.229	



<b>Indicator 36: Hip fracture mortality rate</b>						
Type: In-patient mortality						
Definition: Provider level. Number of deaths per 100 patients with diagnosis of hip fracture.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.144	0.160	0.079	0.062	0.544	0.670
Demographics	-	-	0.072	0.048	0.476	0.635
APR-DRG	-	-	0.078	0.060	0.543	0.653
<b>Minimum bias (APR-DRG):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.880	0.225	0.556	0.788	0.151	

<b>Indicator 37: Pneumonia mortality rate</b>						
Type: In-patient mortality						
Definition: Provider level. Number of deaths per 100 patients with diagnosis of pneumonia.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.138	0.102	0.052	0.022	0.744	0.850
Demographics	-	-	0.045	0.015	0.675	0.822
APR-DRG	-	-	0.037	0.012	0.629	0.781
<b>Minimum bias (APR-DRG):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.596	0.219	0.306	0.603	0.408	

<b>Indicator 38: Acute stroke mortality rate</b>						
Type: In-patient mortality						
Definition: Provider level. Number of deaths per 100 patients with diagnosis of stroke (not TIA).						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.213	0.137	0.070	0.029	0.626	0.756
Demographics	-	-	0.067	0.025	0.589	0.738
APR-DRG	-	-	0.053	0.017	0.519	0.707
<b>Minimum bias (APR-DRG):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.803	0.131	0.638	0.629	0.244	

<b>Indicator 39: Abdominal aortic aneurysm repair mortality rate</b>						
Type: Post-procedural mortality						
Definition: Provider level. Number of deaths per 100 patients having undergone AAA repair.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.215	0.268	0.085	0.060	0.423	0.540
Demographics	-	-	0.067	0.035	0.037	0.571
APR-DRG	-	-	NA	NA	NA	NA
<b>Minimum bias (age-sex):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.890	0.234	0.708	0.646	0.141	

<b>Indicator 40: Coronary artery bypass graft (CABG) mortality rate</b>						
Type: Post-procedural mortality						
Definition: Provider level. Number of deaths per 100 patients having undergone CABG.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.051	0.062	0.017	0.007	0.611	0.726
Demographics	-	-	0.016	0.006	0.552	0.727
APR-DRG	-	-	0.014	0.005	0.545	0.698
<b>Minimum bias (APR-DRG):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.743	0.152	0.414	0.655	0.301	

<b>Indicator 41: Craniotomy mortality rate</b>						
Type: Post-procedural mortality						
Definition: Provider level. Number of deaths per 100 patients having undergone craniotomy.						
<b>Precision:</b>	<i>Provider Level</i>		<i>Provider Signal</i>			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.162	0.185	0.084	0.071	0.589	0.719
Demographics	-	-	0.077	0.054	0.527	0.704
APR-DRG	-	-	0.037	0.015	0.289	0.490
<b>Minimum bias (APR-DRG):</b>	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.786	0.338	0.296	0.611	0.274	

<b>Indicator 42: Esophageal resection mortality rate</b>						
Type: Post-procedural mortality						
Definition: Provider level. Number of deaths per 100 patients having undergone esophageal resection for cancer.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.202	0.366	0.043	0.026	0.120	0.353
Demographics	-	-	0.024	0.008	0.089	0.210
APR-DRG	-	-	NA	NA	NA	NA
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.858	0.168	0.667	1.000	0.095	

<b>Indicator 43: Hip replacement mortality rate</b>						
Type: Post-procedural mortality						
Definition: Provider level. Number of deaths per 100 patients having undergone total or partial hip arthroplasty.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.012	0.057	0.013	0.029	0.339	0.346
Demographics	-	-	0.012	0.021	0.202	0.218
APR-DRG	-	-	0.009	0.012	0.200	0.216
Minimum bias:	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
MSX	0.642	0.489	0.278	0.708	0.361	

<b>Indicator 44: Pancreatic resection mortality rate</b>						
Type: Post-procedural mortality						
Definition: Provider level. Number of deaths per 100 patients having undergone pancreatic resection for cancer.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.154	0.313	0.079	0.084	0.315	0.359
Demographics	-	-	0.042	0.032	0.165	0.347
APR-DRG	-	-	NA	NA	NA	NA
Minimum bias (age-sex):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
	MSX	0.540	0.419	0.714	0.286	0.381

<b>Indicator 45: Pediatric heart surgery mortality rate</b>						
Type: Post-procedural mortality						
Definition: Provider level. Number of deaths per 100 patients age 18 and under having undergone heart surgery.						
Precision:	Provider Level		Provider Signal			
	Mean	Std Dev	Std Dev (1)	Share (2)	Univariate Ratio (3)	MSX R <sup>2</sup> (4)
Unadjusted	0.072	0.170	0.022	0.008	0.357	0.496
Demographics	-	-	0.017	0.005	0.263	0.430
APR-DRG	-	-	0.015	0.003	0.222	0.379
Minimum bias (APR-DRG):	Rank Corr. (1)	Absolute Diff (2)	High 10% (3)	Low 10% (4)	Two Decile Diff (5)	
	MSX	0.674	0.128	0.167	0.667	0.351