Data supplement

Data sources

This analysis is based on claims and encounter data for the 2012 calendar year submitted to the Washington Health Alliance by participating self-insured employers, union trusts and health plans. The analysis is limited to commercially insured people. In addition to claims and encounter data, the analysis relies on corresponding eligibility and enrollment files to ascertain member age, gender and approximate residential zone. Data submissions without consistently populated diagnosis codes, procedure codes and claim line service description codes were excluded from the analysis.

Selection of procedures

The CCS grouper identifies approximately 250 distinct treatments, all generally referred to as *procedures*. Rather than examine each procedure for variations in geographic use rates, the Alliance's Health Economics Committee (HEC) recommended assembling a panel of regional medical officers to pre-specify procedures of interest. Their reasoning was that medical experts at provider organizations and health plans already have a good sense of procedures prone to overuse, and their collective insights would help to focus both project scope and relevance.

The Alliance's all-physician Quality Improvement Committee (QIC) proposed nearly all the procedures to be considered for the analysis. Although studying use rate variation can apply to questions of underuse as well as overuse, the QIC emphasized overuse in their suggestions, with special considerations for avoidable cost and risk, as well as interventions felt to be in need of improved clinical use standards. A joint subcommittee of both the HEC and the QIC finalized the group of eleven procedures ultimately featured in the report. Most were among the procedures in the CCS grouper output; a few required adopting other specifications, such as definitions from the Health Care Authority's Health Technology Assessment efforts. See: http://www.hca.wa.gov/hta/Pages/index.aspx.

Data analysis

Unless otherwise stated, the population use rates in the analysis are fractions calculated separately for each combination of age cohort, gender and residential zone (Health Service Area or HSA). The numerator is the number of unique people (commercially insured members) receiving *at least one* of the targeted services during the year, and the denominator is the total of all unique people (members).

To determine if the procedural use rate for a particular age-gender-HSA cohort is significantly higher or lower than expected, we compare it to an adjusted rate for the same age-gender cohort region-wide. The adjustment to the regional rate removes the influence of the compared sub-region (the age-gender-HSA cohort) from the all-inclusive regional rate.

When making rate comparisons between the sub-region and the adjusted region, we estimate 90% confidence intervals about each observed rate. Overlapping confidence ranges result in a 'similar' rating; non-overlapping ranges result in 'higher' and 'lower' ratings, as appropriate.

Any rate with a numerator less than 30 is not displayed in results and exhibits. Of course, all rates in this analysis are observational and not normative.

Note: As the analysis plan for this project was being developed, the HEC was interested in bringing additional clinical parameters, particularly diagnosis code requirements, to bear on each procedural use rate measure, as appropriate. The QIC considered this idea and strongly recommended that the analysis remain at a higher level (i.e., only adjusted for age and gender), and not feature any diagnostic criteria for denominator inclusion.

Measure specifications

Below are brief descriptions for each of the twelve measures in this report. Each measure is a fraction. The denominator comes from eligibility data supplied to the Alliance by commercial insurance carriers. For most measures, the numerator comes from definitions of specific tests and procedures developed by the Agency for Healthcare Research and Quality (AHRQ). AHRQ has made these definitions publicly available in grouping software called Clinical Classification System (CCS). For two measures, the numerator definition comes from work published by the state Health Care Authority's Health Technology Assessment initiative.

CT Scan: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one CT scan, as defined by AHRQ CCS groups #177-180.

Extremity MRI: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one MRI, as defined by AHRQ CCS group #198, limited to include only MRIs performed on extremities.

Chest X-Ray: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one chest x-ray, as defined by AHRQ CCS group #183.

Sleep Testing: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one sleep test, as defined in HCA's Health Technology Assessment for Sleep Apnea diagnosis.

Upper GI Endoscopy: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one upper GI endoscopy procedure, as defined in HCA's Health Technology Assessment for GERD treatment.

Arthrocentesis: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one arthrocentesis procedure, as defined by AHRQ CCS group #155.

Spine Injection: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one spine injection, as defined by AHRQ CCS group #5.

Cesarean Section: The percentage of deliveries to mothers with commercial insurance and of a specified age band occurring via Cesarean section, defined by AHRQ CCS group #134 (note: additional logic exists to handle the possibility of one mother having two C-sections within the calendar year).

Hysterectomy: The percentage of women with commercial insurance in 2012 and of a specified age band who received at a hysterectomy procedure, as defined by AHRQ CCS group #124.

Laminectomy: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one laminectomy procedure, as defined by AHRQ CCS group #3.

Spine Fusion: The percentage of people with commercial insurance in 2012, of a specified gender and age band, who received at least one spine fusion procedure, as defined by AHRQ CCS group #158.

Results

Results for each of the procedures appear in table format on the following twelve pages.

- Color-shaded cells indicate local rates are statistically different from regional rates.
- Unshaded cells containing rates represent results statistically similar to the region.
- Unshaded blank cells indicate no data.
- Gray shaded cells point out where numerator minimums were not met.

Because each cell's calculation and result is independent of every other cell, patterns that span multiple age and/or gender cohorts within an HSA are particularly noteworthy. These could point to residential areas with substantially higher illness burdens, and/or communities serviced by organizations with variant practice cultures.

This claims-based analysis cannot distinguish which of these factors could be at work. Therefore, a practical use for these results is to identify specific procedures and communities for further, focused inquiry by providers, purchasers and other interested parties.

Annual Percentage of People Receiving CT SCANS

KEY:
Lower rate:	5%
Similar rate:	5%
Higher rate:	5%
Too few cases:	

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	M	Ages 5-14 F	M	Ages 15-24 F	M	Ages 25-34 F	M	Ages 35-44 F	M	Ages 45-54 F	M	Ages 55-64 F	M
EVERETT	Anacortes									4.4%	4.3%			5.6%	6.2%
	Arlington					2.2%	2.9%	3.0%		4.8%	2.8%	5.4%	4.8%	8.5%	6.5%
	Coupeville					2.7%	2.9%			3.9%		4.3%	4.3%	6.9%	5.8%
	Everett			1.1%	1.4%	2.7%	2.6%	3.1%	2.2%	4.5%	3.3%	5.8%	4.4%	7.4%	6.7%
	Monroe							2.8%	3.0%	4.5%	3.1%	5.6%	4.8%	8.1%	7.0%
	Mount Vernon				1.3%	3.2%	2.3%	3.0%	2.0%	3.8%	2.5%	5.8%	4.1%	6.7%	5.7%
OLYMPIA	Centralia					2.2%	2.5%	3.5%		3.4%	3.3%	5.1%	2.8%	6.0%	5.8%
	Morton														
	Olympia			0.8%	0.9%	2.3%	2.5%	2.5%	2.0%	3.6%	2.9%	5.2%	4.2%	6.8%	5.9%
	Shelton									3.6%		4.1%	5.0%	7.4%	7.1%
	South Bend														
SEATTLE	Aberdeen						3.3%	4.4%		4.3%	3.4%	4.7%	4.2%	5.7%	5.1%
	Auburn					2.2%	2.5%	2.3%	2.0%	3.7%	2.9%	6.2%	4.5%	7.3%	6.6%
	Bellevue			0.7%	1.2%	2.0%	2.1%	2.3%	1.7%	2.9%	2.3%	4.2%	3.4%	6.3%	5.4%
	Bellingham				1.3%	2.6%	2.4%	2.3%	1.5%	3.2%	2.2%	4.5%	3.9%	5.7%	4.9%
	Bremerton				0.7%	1.9%	1.9%	2.8%	1.7%	3.9%	2.9%	5.0%	3.7%	6.6%	6.9%
	Edmonds			0.8%	0.8%	2.0%	2.5%	2.4%	2.1%	3.5%	2.7%	4.6%	4.1%	6.2%	6.2%
	Enumclaw					3.7%	2.7%			4.0%		6.0%	5.0%	7.6%	8.5%
	Federal Way					2.2%	2.2%	2.3%	1.9%	3.3%	2.3%	5.7%	4.4%	6.7%	6.8%
	Forks														
	Kirkland				1.0%	2.5%	2.8%	2.4%	2.4%	3.9%	2.9%	4.6%	3.6%	6.9%	6.1%
	Port Angeles									3.8%		4.5%	3.8%	6.6%	6.2%
	Port Townsend											4.1%		5.8%	4.4%
	Renton			0.7%	1.1%	2.1%	2.4%	2.4%	1.8%	3.9%	2.8%	4.8%	4.1%	7.6%	6.5%
	Seattle	0.7%	0.6%	0.6%	0.8%	1.9%	2.0%	1.9%	1.7%	2.8%	2.3%	4.5%	3.8%	6.0%	5.6%
TACOMA	Puyallup			1.0%	1.0%	2.8%	2.3%	3.1%	2.0%	4.7%	3.5%	6.2%	4.8%	8.5%	6.8%
	Tacoma			0.4%	0.8%	2.6%	2.5%	3.1%	2.4%	4.6%	3.0%	6.2%	4.4%	7.8%	7.2%
THE REGION		0.6%	0.7%	0.7%	1.0%	2.3%	2.3%	2.4%	1.9%	3.6%	2.7%	5.1%	4.1%	6.8%	6.2%
Highest Statistically Significant Rate		Everett	Everett	Enumclaw	Aberdeen	Aberdeen	Tacoma	Arlington	Puyallup	Puyallup	Puyallup	Puyallup	Enumclaw		
Lowest Statistically Significant Rate		Tacoma	Bremerton	Seattle	Bremerton	Seattle	Bellingham	Seattle	Bellingham	Bellevue	Centralia	Anacortes	Port Townse		
Highest/Lowest Rate		2.34	1.88	2.01	1.73	2.34	1.64	1.71	1.60	1.50	1.75	1.53	1.92		

Different Regions, Different Health Care: A Report on Procedure Rate Variation in Puget Sound. Data Supplement.

WASHINGTON HEALTH ALLIANCE — Leading health system improvement

Annual Percentage of People Receiving EXTREMITY MRI

KEY:

Lower rate:	5%
Similar rate:	5%
Higher rate:	5%
Too few cases:	

Year: 2012 Minimum patients 30 Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes											3.2%	3.1%	2.4%	2.4%
	Arlington				2.2%			2.6%	2.7%			4.2%	3.3%	4.3%	3.8%
	Coupeville											3.7%	2.6%	3.1%	2.3%
	Everett			0.7%	0.4%	1.4%	1.8%	1.5%	1.7%	2.4%	2.2%	3.6%	3.3%	4.1%	3.8%
	Monroe									3.0%	3.5%	4.4%	3.8%	5.0%	4.5%
	Mount Vernon					1.5%	1.9%	1.3%	1.3%	2.5%	1.9%	3.4%	2.7%	3.4%	3.2%
OLYMPIA	Centralia					2.7%	2.7%			2.6%		3.1%	3.1%	4.0%	3.2%
	Morton														
	Olympia			0.6%		1.5%	1.7%	1.2%	1.3%	1.9%	2.3%	3.2%	2.7%	3.4%	3.2%
	Shelton											2.9%		3.2%	3.1%
	South Bend														
SEATTLE	Aberdeen											2.7%	3.0%	3.0%	2.6%
	Auburn					1.4%	1.7%	1.5%	1.2%	1.8%	2.0%	3.1%	3.1%	4.1%	3.8%
	Bellevue			0.6%	0.4%	1.9%	2.0%	1.1%	1.3%	2.0%	2.1%	3.1%	3.0%	3.8%	3.3%
	Bellingham					1.2%	1.7%	1.0%	1.0%	2.0%	2.2%	2.7%	2.4%	2.6%	3.0%
	Bremerton					1.7%	1.8%	1.1%	1.3%	2.2%	2.1%	2.8%	2.9%	3.3%	3.4%
	Edmonds					1.3%	1.4%	1.2%	1.5%	2.1%	2.0%	3.4%	2.6%	3.3%	3.5%
	Enumclaw				2.2%							4.0%	3.0%	5.1%	4.5%
	Federal Way					1.3%	1.7%		1.5%	2.2%	2.1%	2.9%	2.6%	3.8%	2.8%
	Forks														
	Kirkland					1.8%	1.9%	1.3%	1.7%	2.2%	2.5%	3.3%	3.0%	3.8%	3.6%
	Port Angeles											3.5%	2.8%	3.2%	2.8%
	Port Townsend													3.8%	3.5%
	Renton			0.5%		1.3%	1.5%	1.0%	1.2%	1.9%	1.7%	3.3%	2.8%	3.4%	3.3%
	Seattle			0.4%	0.3%	1.3%	1.5%	1.2%	1.4%	1.7%	1.8%	2.8%	2.5%	3.3%	3.0%
TACOMA	Puyallup			0.6%		1.8%	1.7%	1.3%	1.2%	2.4%	2.2%	3.5%	3.5%	4.2%	3.9%
	Tacoma			0.4%	0.4%	1.4%	1.5%	1.1%	1.3%	2.1%	2.0%	3.1%	2.8%	3.3%	2.9%
THE REGION		0.0%		0.5%	0.4%	1.5%	1.7%	1.2%	1.4%	2.0%	2.0%	3.2%	2.8%	3.5%	3.3%
Highest Statistically Significant Rate				Everett		Centralia	Centralia		Kirkland	Monroe	Monroe	Monroe	Monroe	Enumclaw	Enumclaw
Lowest Statistically Significant Rate				Seattle		Bellingham	Tacoma		Bellingham	Seattle	Renton	Bellingham	Bellingham	Anacortes	Coupeville
Highest/Lowest Rate				2.03		2.31	1.86		1.68	1.75	2.07	1.63	1.55	2.09	1.92

Annual Percentage of People Receiving CHEST X-RAY

KEY:
Lower rate: 5%
Similar rate: 5%
Higher rate: 5%
Too few cases:

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes									4.5%		5.2%	5.4%	6.6%	7.5%
	Arlington			2.8%	3.7%	3.4%	3.8%	5.2%	5.1%	7.5%	5.7%	9.0%	7.8%	14.7%	11.5%
	Coupeville					2.9%	2.6%	4.0%		6.1%	4.1%	8.2%	6.6%	9.9%	9.4%
	Everett	6.4%	7.7%	3.7%	4.2%	4.3%	4.1%	5.0%	4.6%	6.6%	6.2%	8.8%	8.1%	11.4%	11.4%
	Monroe					3.6%	4.0%	3.0%	4.0%	5.4%	3.7%	8.6%	7.6%	10.5%	10.6%
	Mount Vernon	4.9%	8.3%	2.6%	3.3%	3.4%	3.4%	3.5%	3.1%	6.3%	4.9%	7.9%	7.8%	10.0%	9.7%
OLYMPIA	Centralia					2.8%	3.0%	3.3%	4.1%	5.8%	6.5%	8.8%	5.7%	10.8%	10.6%
	Morton														
	Olympia	5.3%	7.3%	2.6%	3.0%	3.4%	3.6%	4.3%	3.4%	6.2%	5.5%	9.5%	7.9%	11.5%	10.8%
	Shelton					4.3%	4.3%	3.8%	4.0%	7.9%	4.7%	8.7%	8.8%	12.1%	12.2%
	South Bend													10.8%	14.0%
SEATTLE	Aberdeen					4.3%	5.1%	5.6%	4.4%	6.2%	5.6%	8.5%	7.7%	12.1%	11.0%
	Auburn	6.6%	8.0%	2.6%	2.4%	3.6%	3.2%	4.2%	3.1%	6.3%	4.7%	9.2%	8.4%	11.1%	11.4%
	Bellevue	3.8%	5.1%	2.2%	2.5%	3.0%	2.9%	3.4%	2.8%	4.5%	4.1%	6.3%	5.7%	8.0%	8.2%
	Bellingham	4.0%	5.4%	2.4%	2.2%	2.9%	3.1%	2.9%	2.7%	4.1%	3.4%	5.7%	4.9%	7.4%	6.9%
	Bremerton	5.8%	8.3%	2.9%	3.5%	3.9%	4.0%	4.7%	3.6%	6.6%	5.9%	9.1%	7.5%	12.6%	12.1%
	Edmonds	5.0%	6.3%	2.9%	2.9%	3.7%	3.4%	3.5%	4.3%	5.9%	5.8%	8.0%	7.3%	10.1%	10.6%
	Enumclaw					3.9%	4.4%	4.1%		5.7%	4.4%	7.8%	8.1%	11.8%	11.8%
	Federal Way	5.7%	7.8%	3.6%	3.0%	3.2%	3.6%	4.2%	4.0%	5.8%	5.0%	9.2%	7.2%	10.1%	11.0%
	Forks											14.3%			
	Kirkland	3.8%	4.6%	2.0%	2.2%	3.1%	3.4%	3.5%	3.3%	4.5%	4.2%	5.9%	5.8%	9.2%	8.4%
	Port Angeles					3.7%	2.8%	2.6%		5.3%	4.7%	6.3%	7.5%	9.6%	9.3%
	Port Townsend							5.8%		5.8%		6.2%	6.8%	7.9%	7.8%
	Renton	5.1%	6.3%	2.4%	3.1%	3.3%	3.1%	4.2%	3.5%	5.6%	4.7%	7.5%	7.2%	10.2%	10.2%
	Seattle	4.3%	4.9%	2.4%	2.4%	2.9%	2.6%	2.8%	2.8%	4.5%	4.3%	6.3%	6.3%	8.8%	8.8%
TACOMA	Puyallup	4.9%	4.9%	1.9%	2.1%	3.3%	2.9%	3.8%	3.0%	6.0%	5.5%	8.3%	7.6%	11.0%	11.3%
	Tacoma	5.4%	6.2%	2.5%	2.6%	4.1%	3.5%	4.7%	3.9%	6.9%	5.7%	10.1%	7.8%	12.4%	11.5%
THE REGION		4.8%	6.0%	2.5%	2.8%	3.4%	3.3%	3.7%	3.4%	5.5%	4.9%	7.8%	7.0%	10.2%	10.0%
Highest Statistically Significant Rate		Auburn	Mount Vernc	Everett	Everett	Everett	Aberdeen	Aberdeen	Arlington	Shelton	Centralia	Tacoma	Shelton	Arlington	South Bend
Lowest Statistically Significant Rate		Kirkland	Kirkland	Puyallup	Puyallup	Seattle	Seattle	Port Angele	Bellingham	Bellingham	Bellingham	Anacortes	Bellingham	Anacortes	Bellingham
Highest/Lowest Rate		1.76	1.81	1.98	2.00	1.47	1.92	2.11	1.87	1.93	1.88	1.94	1.78	2.22	2.02

Different Regions, Different Health Care: A Report on Procedure Rate Variation in Puget Sound. Data Supplement.

WASHINGTON HEALTH ALLIANCE
Leading health system improvement

Annual Percentage of People Receiving SLEEP TESTING

Year: 2012   Minimum patients 30   Confidence level: 90%

KEY:
Lower rate:	5%
Similar rate:	5%
Higher rate:	5%
Too few cases:	

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	M	Ages 5-14 F	M	Ages 15-24 F	M	Ages 25-34 F	M	Ages 35-44 F	M	Ages 45-54 F	M	Ages 55-64 F	M
EVERETT	Anacortes														
	Arlington											2.2%	2.1%	2.0%	2.4%
	Coupeville													1.2%	1.7%
	Everett			0.3%	0.5%	0.5%	0.4%	0.7%	1.0%	1.1%	1.5%	1.4%	1.8%	1.5%	1.9%
	Monroe														
	Mount Vernon									1.0%	1.2%	1.2%	1.5%	1.7%	1.7%
OLYMPIA	Centralia														
	Morton														
	Olympia				0.5%		0.4%	0.4%	0.9%	0.9%	1.3%	1.2%	1.5%	1.5%	1.8%
	Shelton														
	South Bend														
SEATTLE	Aberdeen												2.3%		2.0%
	Auburn							1.0%	1.2%	1.3%	1.3%			1.8%	1.9%
	Bellevue					0.4%	0.3%	0.4%	0.7%	0.6%	1.2%	1.0%	1.4%	1.3%	1.7%
	Bellingham									0.6%	1.0%	0.7%	1.0%	1.2%	1.3%
	Bremerton									1.1%	1.5%	1.3%	1.9%	1.2%	1.8%
	Edmonds							0.5%	0.7%	0.8%	1.2%	1.4%	1.8%	1.6%	1.9%
	Enumclaw												2.5%	2.4%	3.3%
	Federal Way											1.3%	1.9%	1.5%	2.0%
	Forks														
	Kirkland							0.5%	0.7%	0.7%	0.9%	1.2%	1.6%	1.4%	1.7%
	Port Angeles														2.0%
	Port Townsend														
	Renton				0.6%		0.4%	0.5%	0.8%	0.7%	1.3%	1.1%	1.6%	1.2%	1.7%
	Seattle	0.4%	0.3%	0.4%	0.4%	0.3%	0.3%	0.4%	0.5%	0.7%	1.0%	1.1%	1.4%	1.3%	1.6%
TACOMA	Puyallup					0.5%		0.5%	0.7%	1.0%	1.5%	1.6%	2.2%	1.7%	2.0%
	Tacoma				0.4%	0.4%	0.4%	0.5%	0.7%	1.0%	1.2%	1.3%	1.4%	1.6%	1.9%
THE REGION		0.3%	0.4%	0.3%	0.4%	0.4%	0.3%	0.5%	0.7%	0.8%	1.2%	1.2%	1.6%	1.4%	1.8%
Highest Statistically Significant Rate						Everett		Everett	Everett	Everett	Everett	Arlington	Enumclaw	Enumclaw	Enumclaw
Lowest Statistically Significant Rate						Seattle		Seattle	Seattle	Bellevue	Kirkland	Bellingham	Bellingham	Bellingham	Bellingham
Highest/Lowest Rate						2.01		1.92	1.91	1.80	1.71	3.34	2.50	2.04	2.43

Annual Percentage of People Receiving UPPER GI ENDOSCOPY

KEY:
Lower rate:	5% (green)
Similar rate:	5%
Higher rate:	5% (orange)
Too few cases:	(gray)

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes													1.7% (green)	1.9%
	Arlington											2.7% (orange)	1.9%	3.5% (orange)	2.5%
	Coupeville											2.4%	2.3% (orange)	2.3%	1.7% (green)
	Everett					0.6%	0.4%	1.0% (orange)	0.8% (orange)	1.6% (orange)	1.1% (orange)	2.1%	1.6%	2.8%	2.2%
	Monroe														
	Mount Vernon							1.0%		1.6%		2.2%	1.5%	2.7%	2.2%
OLYMPIA	Centralia													2.6%	
	Morton														
	Olympia					0.7%		0.8%	0.6%	1.2%	0.7%	1.8%	1.2% (green)	2.3% (green)	1.9% (green)
	Shelton														2.4%
	South Bend														
SEATTLE	Aberdeen													2.3%	2.0%
	Auburn									1.6%		2.5% (orange)	1.5%	2.7%	1.9%
	Bellevue					0.5%	0.3%	0.8%	0.6%	1.1%	0.9%	1.8%	1.3%	2.3% (green)	2.2%
	Bellingham							0.7%		1.0% (green)	0.8%	1.6% (green)	1.3%	2.5%	2.2%
	Bremerton					0.6%		0.8%		1.5%	0.8%	2.0%	1.4%	2.8%	2.3%
	Edmonds							0.8%	0.6%	1.4%	0.7%	1.9%	1.8% (orange)	2.9%	2.5%
	Enumclaw											4.0% (orange)	2.5% (orange)	3.9% (orange)	3.3% (orange)
	Federal Way											2.8% (orange)	1.7%	2.8%	2.3%
	Forks														
	Kirkland							0.7%		1.2%	0.6% (green)	2.0%	1.3%	2.3%	2.2%
	Port Angeles													1.9% (green)	1.8%
	Port Townsend														
	Renton					0.5%	0.3%	0.8%	0.5%	1.3%	0.9%	2.0%	1.4%	2.9%	2.7% (orange)
	Seattle				0.2%	0.5% (green)	0.3%	0.7% (green)	0.5%	0.9% (green)	0.9%	1.8% (green)	1.3%	2.6%	2.3%
TACOMA	Puyallup					0.9% (orange)	0.4%	1.0% (orange)	0.7% (orange)	1.9% (orange)	0.9%	2.7% (orange)	1.7% (orange)	3.4% (orange)	2.6% (orange)
	Tacoma			0.4% (orange)	0.3% (orange)	0.8% (orange)	0.5% (orange)	1.0%	0.6%	1.5% (orange)	1.0%	2.2%	1.4%	3.1% (orange)	2.6%
THE REGION		0.1%	0.2%	0.2%	0.2%	0.6%	0.3%	0.8%	0.5%	1.3%	0.9%	2.0%	1.4%	2.7%	2.3%
Highest Statistically Significant Rate						Puyallup		Puyallup		Puyallup	Everett	Enumclaw	Enumclaw	Enumclaw	Enumclaw
Lowest Statistically Significant Rate						Seattle		Seattle		Seattle	Kirkland	Bellingham	Olympia	Anacortes	Coupeville
Highest/Lowest Rate						1.96		1.56		2.07	1.78	2.48	2.18	2.34	1.97

Different Regions, Different Health Care: A Report on Procedure Rate Variation in Puget Sound. Data Supplement.

WASHINGTON HEALTH ALLIANCE — Leading health system improvement

Annual Percentage of People Receiving ARTHROCENTESIS

KEY:	
Lower rate:	5%
Similar rate:	5%
Higher rate:	5%
Too few cases:	

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes											2.9%	3.1%	4.3%	3.6%
	Arlington											4.1%	3.1%	6.3%	3.9%
	Coupeville											4.1%	2.9%	5.2%	3.8%
	Everett					0.4%		0.8%	0.7%	1.8%	1.5%	4.0%	3.0%	6.0%	4.7%
	Monroe											3.0%	2.1%	5.6%	4.5%
	Mount Vernon									2.0%	1.8%	3.9%	3.1%	5.1%	4.4%
OLYMPIA	Centralia											4.4%	3.1%	5.7%	4.3%
	Morton														
	Olympia					0.4%	0.4%	0.6%	0.8%	2.0%	1.8%	4.6%	3.3%	6.7%	5.2%
	Shelton											4.3%		7.0%	5.2%
	South Bend														
SEATTLE	Aberdeen											5.0%	4.8%	5.5%	5.7%
	Auburn									1.5%	1.6%	3.9%	2.8%	6.2%	4.4%
	Bellevue						0.4%	0.6%		0.9%	1.0%	2.7%	2.3%	5.0%	3.6%
	Bellingham									1.2%	1.0%	2.8%	2.1%	4.0%	3.6%
	Bremerton							0.8%	0.8%	2.1%	1.2%	4.4%	3.1%	5.9%	5.2%
	Edmonds							0.5%	0.7%	1.6%	1.1%	3.6%	2.5%	5.6%	4.1%
	Enumclaw											3.2%	3.0%	6.4%	4.7%
	Federal Way									1.8%		4.0%	2.8%	6.7%	4.6%
	Forks														
	Kirkland							0.6%		1.5%	1.2%	2.9%	2.4%	5.0%	3.6%
	Port Angeles											3.6%	2.7%	6.2%	4.1%
	Port Townsend													5.6%	4.1%
	Renton							0.5%	0.4%	1.5%	1.2%	3.6%	2.3%	5.5%	3.9%
	Seattle					0.2%	0.2%	0.5%	0.5%	1.1%	1.0%	2.8%	1.9%	4.6%	3.4%
TACOMA	Puyallup					0.4%		0.8%	0.5%	2.1%	1.4%	4.3%	3.0%	6.0%	4.8%
	Tacoma							0.6%	0.7%	2.0%	1.5%	4.1%	3.1%	6.4%	4.7%
THE REGION		0.0%	0.0%	0.1%	0.0%	0.3%	0.3%	0.6%	0.5%	1.5%	1.3%	3.6%	2.6%	5.5%	4.2%
Highest Statistically Significant Rate						Puyallup		Puyallup	Olympia	Puyallup	Mount Vernc	Aberdeen	Aberdeen	Shelton	Aberdeen
Lowest Statistically Significant Rate						Seattle		Seattle	Seattle	Bellevue	Seattle	Bellevue	Seattle	Bellingham	Seattle
Highest/Lowest Rate						1.95		1.84	1.65	2.32	1.86	1.85	2.60	1.73	1.68

Annual Percentage of People Receiving SPINE INJECTION

Year: 2012   Minimum patients 30   Confidence level: 90%

KEY:
Lower rate:	5%
Similar rate:	5%
Higher rate:	5%
Too few cases:	

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes														
	Arlington														
	Coupeville													1.5%	
	Everett							0.4%		0.7%	0.6%	1.1%	0.9%	1.4%	1.4%
	Monroe														
	Mount Vernon							1.0%				1.1%	0.9%	1.3%	1.5%
OLYMPIA	Centralia													1.9%	
	Morton														
	Olympia					0.7%		3.0%		1.2%	0.7%	1.5%	1.2%	1.6%	1.8%
	Shelton														
	South Bend														
SEATTLE	Aberdeen														
	Auburn											1.8%		1.6%	1.1%
	Bellevue									0.5%		0.8%	0.8%	1.3%	1.4%
	Bellingham									0.9%		1.0%	0.9%	1.3%	1.2%
	Bremerton									0.9%	1.0%	1.2%	1.1%	1.9%	1.8%
	Edmonds									0.8%		1.3%	0.9%	1.3%	1.9%
	Enumclaw														
	Federal Way											1.4%	1.4%	1.6%	
	Forks														
	Kirkland									0.5%	0.7%	0.9%	0.9%	1.6%	1.4%
	Port Angeles													1.5%	
	Port Townsend														
	Renton									0.6%	0.5%	1.1%	0.9%	1.5%	1.4%
	Seattle				0.4%		0.1%	0.2%	0.2%	0.4%	0.5%	0.8%	0.7%	1.2%	1.2%
TACOMA	Puyallup							0.4%		1.0%	0.7%	1.5%	1.4%	1.6%	1.8%
	Tacoma							0.4%	0.3%	0.6%	0.5%	1.1%	1.0%	1.4%	1.5%
THE REGION		0.1%	0.4%	0.0%	0.0%	0.2%	0.1%	0.4%	0.2%	0.7%	0.6%	1.1%	0.9%	1.4%	1.4%
Highest Statistically Significant Rate								Olympia	Everett	Olympia	Bremerton	Auburn	Federal Wa	Bremerton	Edmonds
Lowest Statistically Significant Rate								Seattle	Seattle	Seattle	Seattle	Seattle	Seattle	Seattle	Seattle
Highest/Lowest Rate								16.63	2.15	3.39	2.09	2.26	1.93	1.57	1.58

Different Regions, Different Health Care: A Report on Procedure Rate Variation in Puget Sound. Data Supplement.

WASHINGTON HEALTH ALLIANCE
Leading health system improvement

Annual Percentage of Births Delivered via CESAREAN SECTION

KEY:
- Lower rate: 5% (green)
- Similar rate: 5%
- Higher rate: 5% (orange)
- Too few cases: (gray)

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes														
	Arlington														
	Coupeville														
	Everett					19.8%		25.5%		43.3%					
	Monroe							34.6%							
	Mount Vernon							25.9%							
OLYMPIA	Centralia							32.0%							
	Morton														
	Olympia					21.1%		21.2%		32.1%					
	Shelton														
	South Bend														
SEATTLE	Aberdeen														
	Auburn							25.9%							
	Bellevue							27.5%		33.0%					
	Bellingham							26.2%		31.8%					
	Bremerton							27.3%							
	Edmonds							29.1%		26.9%					
	Enumclaw														
	Federal Way							22.5%							
	Forks														
	Kirkland							30.7%		44.9%					
	Port Angeles														
	Port Townsend														
	Renton							28.7%		37.8%					
	Seattle					21.3%		22.4%		31.0%					
TACOMA	Puyallup							27.6%		32.1%					
	Tacoma					22.8%		25.4%		35.9%					
THE REGION						19.6%		25.6%		33.7%		42.1%			
Highest Statistically Significant Rate								Monroe		Kirkland					
Lowest Statistically Significant Rate								Olympia		Edmonds					
Highest/Lowest Rate								1.63		1.67					

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Different Regions, Different Health Care: A Report on Procedure Rate Variation in Puget Sound. Data Supplement.

WHA — WASHINGTON HEALTH ALLIANCE — Leading health system improvement

Annual Percentage of Women Receiving HYSTERECTOMY

KEY:
Lower rate:	5% (green)
Similar rate:	5%
Higher rate:	5% (orange)
Too few cases:	(gray)

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	M	Ages 5-14 F	M	Ages 15-24 F	M	Ages 25-34 F	M	Ages 35-44 F	M	Ages 45-54 F	M	Ages 55-64 F	M
EVERETT	Anacortes														
	Arlington														
	Coupeville														
	Everett			(gray)		(gray)				0.8%		0.9%		0.4%	
	Monroe														
	Mount Vernon									1.1%		0.7%			
OLYMPIA	Centralia														
	Morton														
	Olympia									0.8%		0.9%		0.3%	
	Shelton														
	South Bend														
SEATTLE	Aberdeen														
	Auburn											0.7%			
	Bellevue									0.4%		0.6%			
	Bellingham									0.7%		0.8%			
	Bremerton									0.9%		0.8%		0.5%	
	Edmonds											0.8%			
	Enumclaw					(gray)									
	Federal Way											1.1%			
	Forks														
	Kirkland									0.7%		0.6%			
	Port Angeles														
	Port Townsend														
	Renton									0.7%		0.8%		0.3%	
	Seattle									0.4%		0.6%		0.3%	
TACOMA	Puyallup									1.2%		1.1%		0.3%	
	Tacoma									1.1%		1.0%		0.5%	
THE REGION				0.0%		0.0%		0.1%		0.7%		0.8%		0.4%	
Highest Statistically Significant Rate										Puyallup		Puyallup			
Lowest Statistically Significant Rate										Seattle		Seattle			
Highest/Lowest Rate										2.93		1.91			

Different Regions, Different Health Care: A Report on Procedure Rate Variation in Puget Sound. Data Supplement.

WHA WASHINGTON HEALTH ALLIANCE
Leading health system improvement

Annual Percentage of People Receiving LAMINECTOMY

KEY:

Lower rate:	5% (green)
Similar rate:	5%
Higher rate:	5% (orange)
Too few cases:	(gray)

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes														
	Arlington														
	Coupeville														
	Everett											0.3%			0.3%
	Monroe														
	Mount Vernon														
OLYMPIA	Centralia														
	Morton														
	Olympia														
	Shelton														
	South Bend														
SEATTLE	Aberdeen														
	Auburn														
	Bellevue														
	Bellingham														
	Bremerton														
	Edmonds														
	Enumclaw														
	Federal Way														
	Forks														
	Kirkland														
	Port Angeles														
	Port Townsend														
	Renton													0.3%	0.5%
	Seattle									0.1%	0.1%	0.1%	0.1%	0.2%	0.2%
TACOMA	Puyallup														0.5%
	Tacoma												0.2%	0.2%	0.3%
THE REGION				0.0%		0.0%		0.0%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.3%
Highest Statistically Significant Rate												Everett		Renton	
Lowest Statistically Significant Rate												Seattle		Seattle	
Highest/Lowest Rate												2.56		2.17	

WASHINGTON HEALTH ALLIANCE
Leading health system improvement

Annual Percentage of People Receiving SPINAL FUSION

KEY:
Lower rate:	5%
Similar rate:	5%
Higher rate:	5%
Too few cases:	

Year: 2012   Minimum patients 30   Confidence level: 90%

PATIENT'S HOSPITAL REFERRAL AREA	Patient's Health Service Area	Ages 1-4 F	Ages 1-4 M	Ages 5-14 F	Ages 5-14 M	Ages 15-24 F	Ages 15-24 M	Ages 25-34 F	Ages 25-34 M	Ages 35-44 F	Ages 35-44 M	Ages 45-54 F	Ages 45-54 M	Ages 55-64 F	Ages 55-64 M
EVERETT	Anacortes														
	Arlington														
	Coupeville														
	Everett											0.2%			
	Monroe														
	Mount Vernon														
OLYMPIA	Centralia														
	Morton														
	Olympia											0.3%		0.4%	0.4%
	Shelton														
	South Bend														
SEATTLE	Aberdeen														
	Auburn														
	Bellevue														
	Bellingham														
	Bremerton														
	Edmonds														
	Enumclaw														
	Federal Way														
	Forks														
	Kirkland														
	Port Angeles														
	Port Townsend														
	Renton											0.2%		0.3%	
	Seattle											0.1%	0.1%	0.2%	0.2%
TACOMA	Puyallup														
	Tacoma													0.2%	
THE REGION		0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.1%	0.2%	0.2%

Highest Statistically Significant Rate	Olympia
Lowest Statistically Significant Rate	Seattle
Highest/Lowest Rate	2.92