MLN Connects™

National Provider Call

Addendum to

August 13, 2014 NPC

"How to Interpret Your 2012 Supplemental Quality and Resource Use Report (QRUR)"

Summary of the 2012 Supplemental QRURs

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Addendum Outline

- **Addendum A**: Summary Statistics on the 2012 Reports
- **Addendum B**: Attribution to Medical Group Practice and Identification of Apparent Lead Eligible Professional (EP)
- **Addendum C**: Reliability Testing

Addendum A: Summary Statistics

Addendum A provides summary statistics on:

- Demographics of beneficiaries included in the 2012 Supplemental QRURs
- Average payment-standardized, risk-adjusted costs by episode type
- Breakdown of episode costs by service categories for high-cost episodes (90th cost percentile) and all other episodes
- Percent of episode costs billed by outside medical groups
- Distribution of number of EPs at the episode level

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Beneficiary Demographics *(1 of 2)*

- The 2012 Supplemental QRURs provide episode results for medical groups to evaluate their performance relative to a national benchmark
- The national benchmark includes all beneficiaries nationally with a given episode type, not only beneficiaries attributed to the medical groups receiving a report

Table A.1: Demographics of Beneficiaries With At Least One Episode

Population	# of Beneficiaries	Average Age	% Male	% Female
National Benchmark	8,848,372	74.6	47.4%	52.6%
1,236 Medical Groups	2,361,886	74.5	49.0%	51.0%

Beneficiary Demographics *(2 of 2)*

Table A.2: Demographics of Beneficiaries in the 1,236 Medical Groups

Episode Type	Beneficiary Count	Average Age	% Female
1. Acute coronary syndrome (ACS) (all)	65,191	75.1	46.5%
5. Cellulitis	43,630	70.0	55.2%
6. Chronic atrial fibrillation/flutter	480,074	78.1	50.4%
7. Chronic congestive heart failure (CHF)	314,076	76.8	52.8%
8. Chronic obstructive pulmonary disease (COPD)/asthma	596,167	71.3	60.2%
9. Acute COPD/asthma, inpatient exacerbation	84,737	71.4	60.8%
10. Gastrointestinal (GI) hemorrhage	58,687	76.2	54.4%
11. Ischemic heart disease (IHD) (all)	831,903	75.0	38.1%
14. Kidney/urinary tract infection	69,957	77.6	72.6%
15. Pneumonia (all)	215,858	75.0	53.8%
18. Bilateral cataract removal with lens implant	38,709	74.1	61.7%
19. Coronary artery bypass graft (CABG) (all)	18,931	71.2	29.7%
21. Hip replacement/revision	30,490	71.6	61.0%
22. Knee replacement/revision	50,239	71.3	65.0%
23. Lumbar spine fusion/refusion	17,462	68.3	61.3%
24. Percutaneous coronary intervention (PCI) (all)	41,366	72.3	40.3%
26. Permanent pacemaker system replacement/insertion	21,668	79.9	53.1%

Episodes names are numbered in the same order as in the 2012 Supplemental QRURs, which lists all condition episodes and their subtypes alphabetically and then all procedural episodes and their subtypes alphabetically. This table only includes major episode types.

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Summary of Average Risk-Adjusted Costs for Condition and Procedural Episodes

- For condition episodes, less than half (41%) of the 1,236 medical group practices have an average risk-adjusted episode cost above the national average
- For procedural episodes, about half (49%) of the 1,236 medical group practices have an average risk-adjusted episode cost above the national average

Average Risk-Adjusted Costs For Condition Episodes

Table A.3: Average Risk-Adjusted Costs, Condition Episodes

Episode	National Average Risk-Adjusted Cost	% of 1,236 Medical Groups Above National Average
1. ACS (all)	$19,603	41%
2. ACS without PCI/CABG	$15,849	39%
3. ACS with PCI	$19,815	42%
4. ACS with CABG	$48,736	39%
5. Cellulitis	$10,493	41%
6. Chronic atrial fibrillation/flutter	$1,964	48%
7. Chronic CHF	$5,285	41%
8. COPD/asthma	$2,887	38%
9. Acute COPD/asthma, inpatient exacerbation	$10,543	36%
10. GI hemorrhage	$11,278	41%
11. IHD (all)	$2,681	47%
12. IHD without ACS	$1,931	40%
13. IHD with ACS	$16,842	42%
14. Kidney / urinary tract infection	$11,423	39%
15. Pneumonia (all)	$13,250	45%
16. Pneumonia without IP hospitalization	$818	42%
17. Pneumonia with IP hospitalization	$18,008	34%

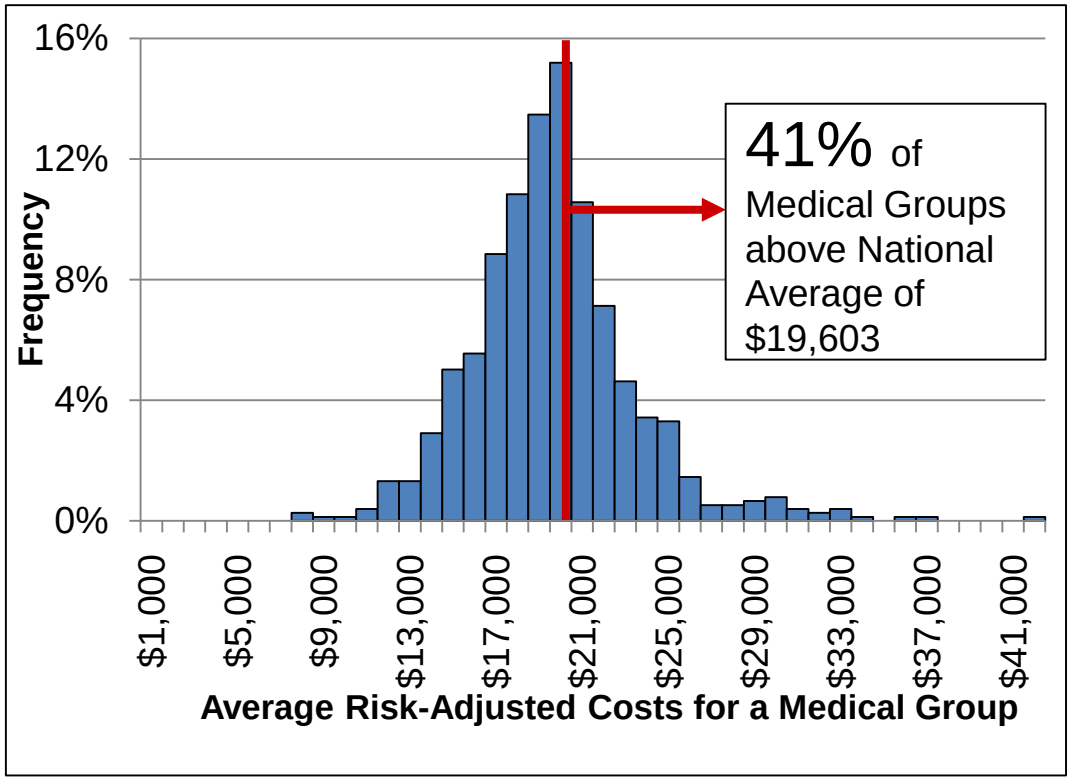
Episode costs presented are payment-standardized unless otherwise noted. For this and the following slides, medical groups were restricted to those that received a report and had at least 10 episodes of the given episode type.

Average Risk-Adjusted Costs For Acute Coronary Syndrome (ACS)

Episode Subtypes:

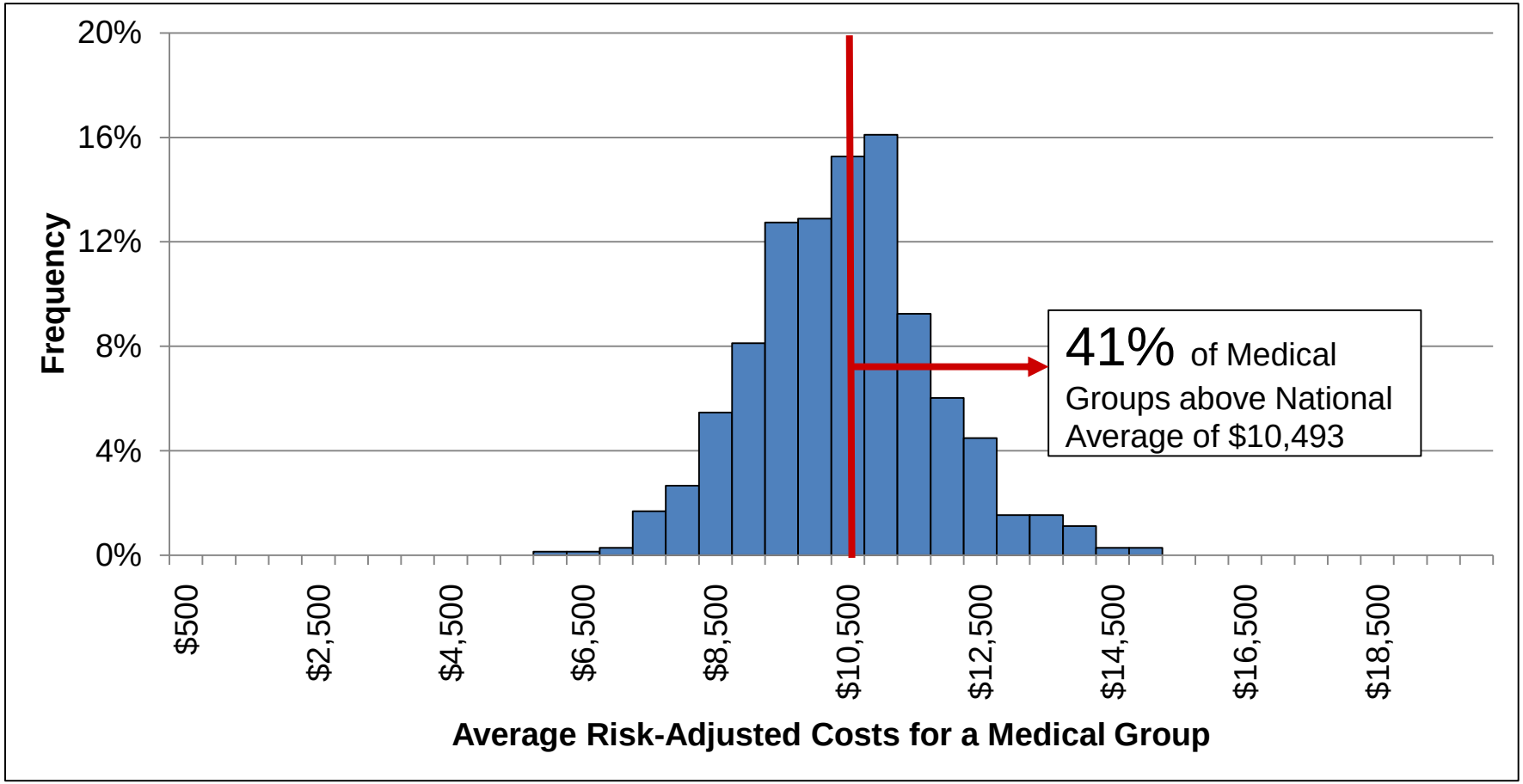
- **ACS without PCI/CABG:** 39% of medical groups were above the national average episode cost of $15,849
- **ACS with PCI**: 42% of medical groups were above the national average episode cost of $19,815
- **ACS with CABG:** 39% of medical groups were above the national average episode cost of $48,736

Figure A.1: Distribution of Average Risk-Adjusted Costs, ACS (all)



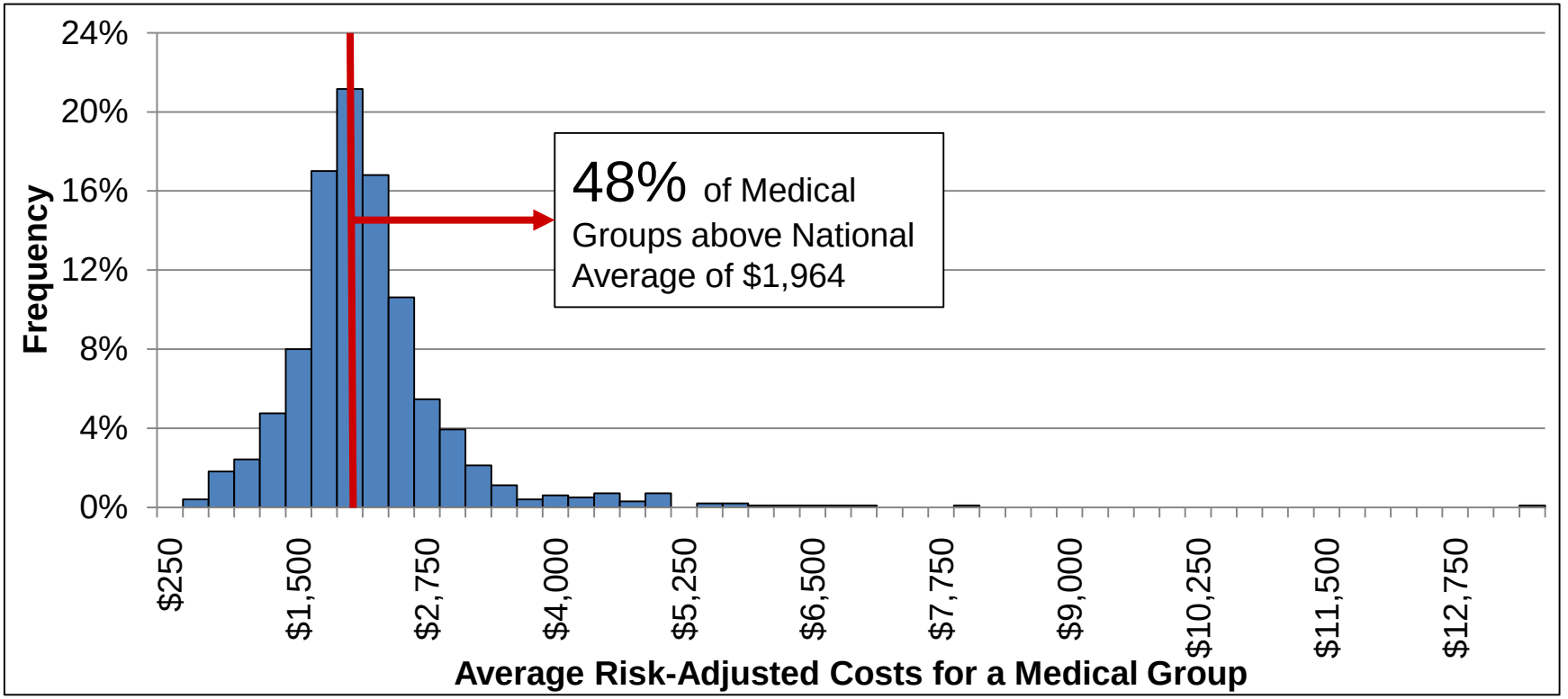
Average Risk-Adjusted Costs For Cellulitis

Figure A.2: Average Risk-Adjusted Costs, Cellulitis



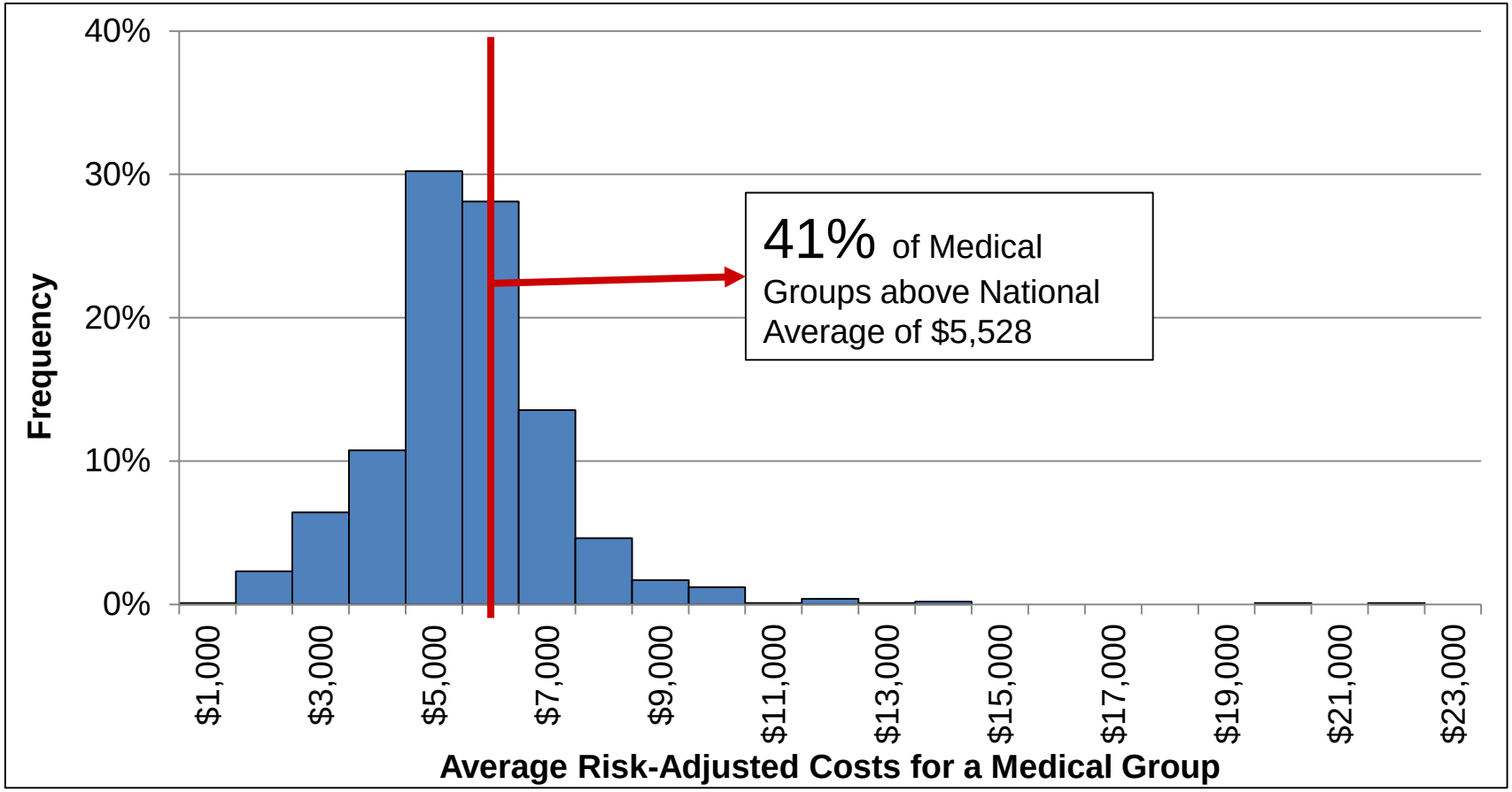
Average Risk-Adjusted Costs For Chronic Atrial Fibrillation/Flutter

Figure A.3: Average Risk-Adjusted Costs, Chronic Atrial Fibrillation/Flutter



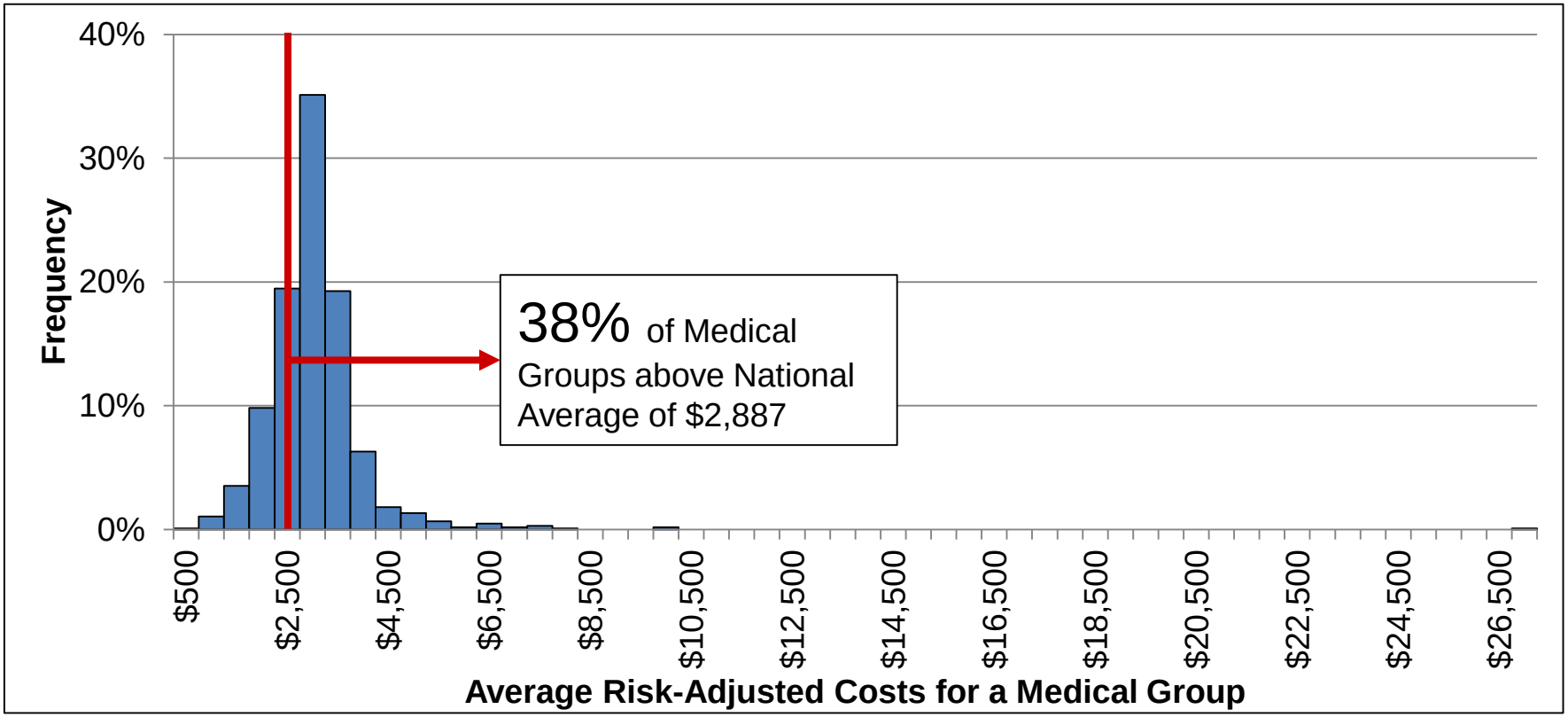
Average Risk-Adjusted Costs For Chronic Congestive Heart Failure (CHF)

Figure A.4: Average Risk-Adjusted Costs, Chronic CHF



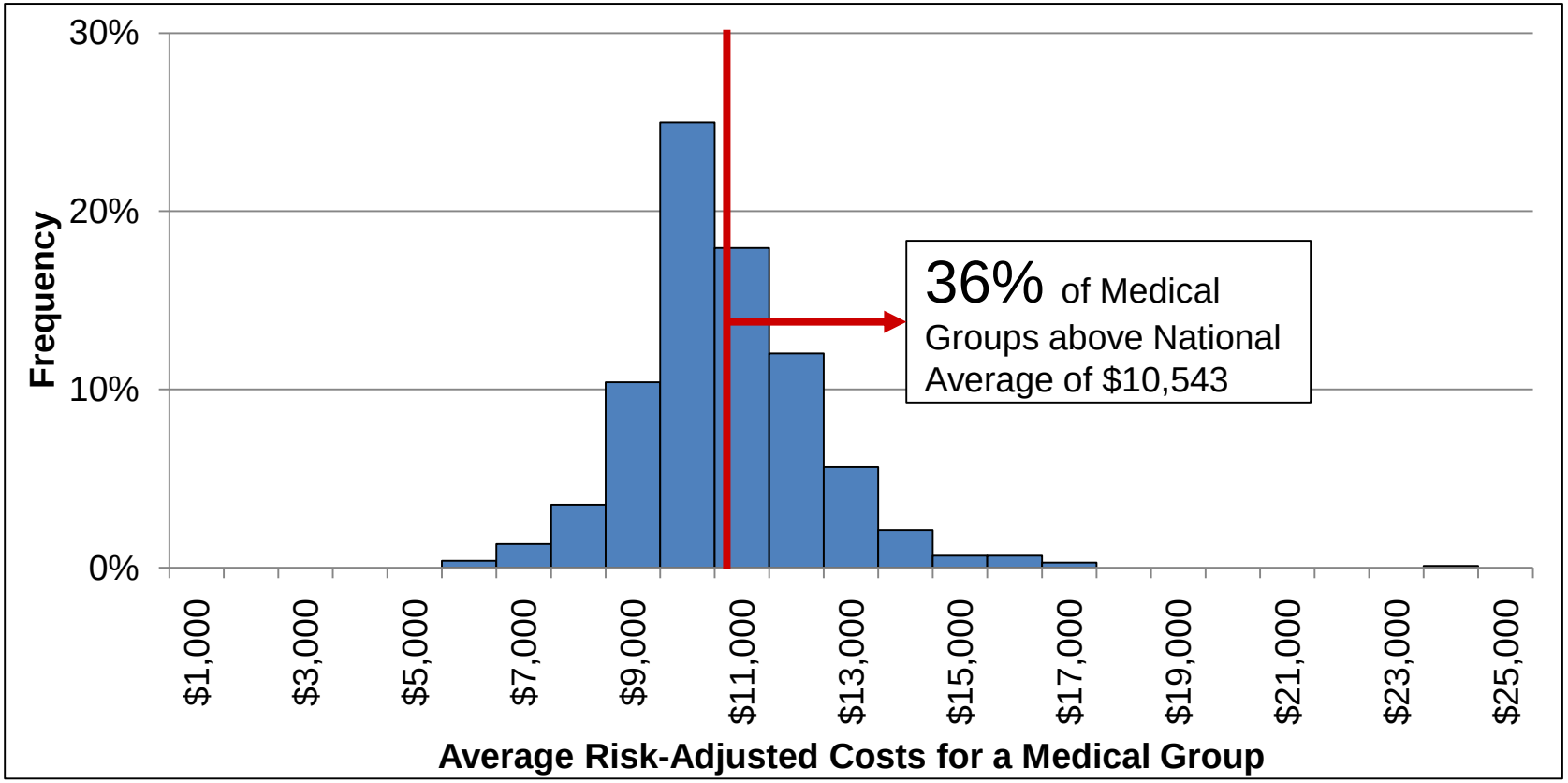
Average Risk-Adjusted Costs For Chronic Obstructive Pulmonary Disease (COPD)/Asthma

Figure A.5: Distribution of Average Risk-Adjusted Costs, COPD/Asthma



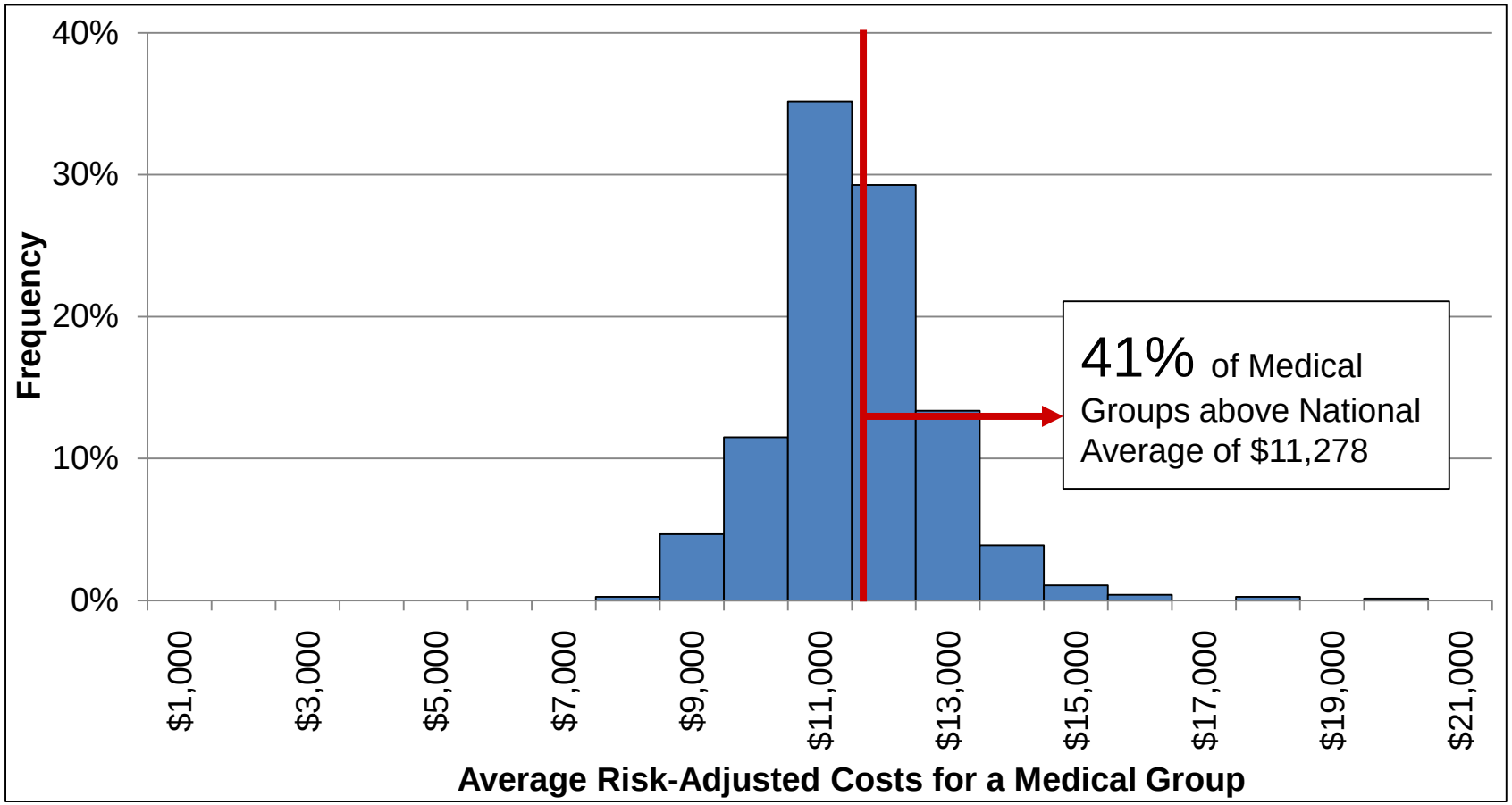
Average Risk-Adjusted Costs For Acute COPD/Asthma, Inpatient Exacerbation

Figure A.6: Average Risk-Adjusted Costs, Acute COPD/Asthma



Average Risk-Adjusted Costs For Gastrointestinal (GI) Hemorrhage

Figure A.7: Average Risk-Adjusted Costs, GI Hemorrhage

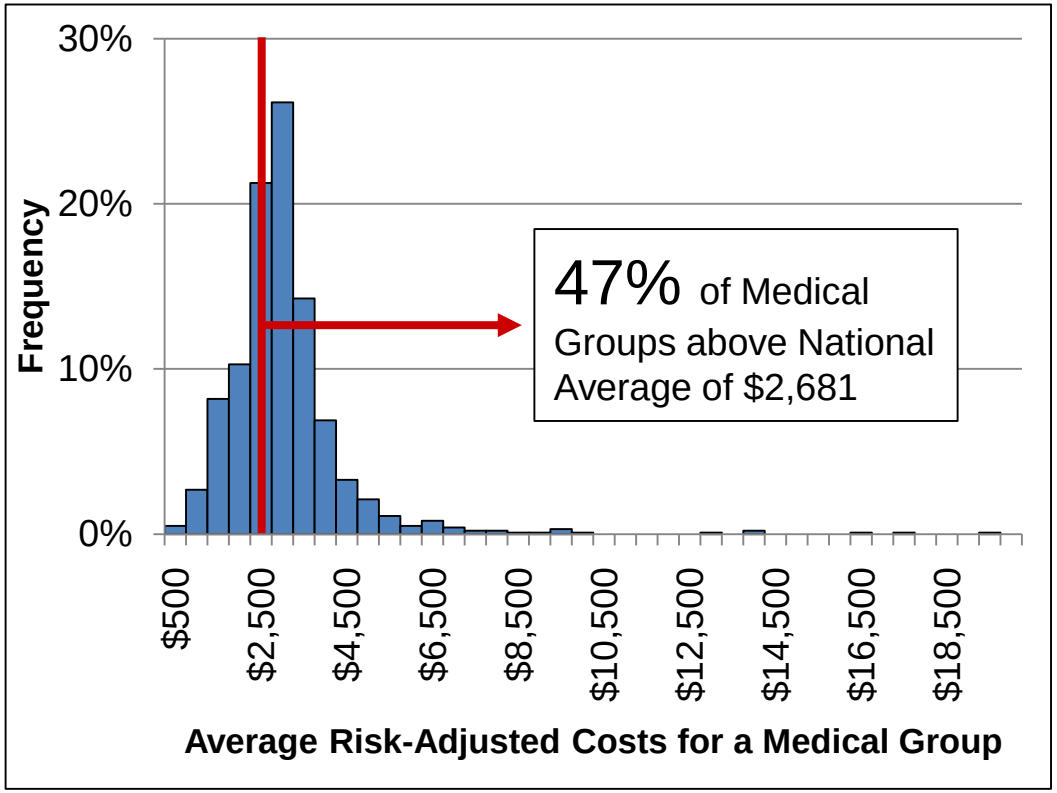


Average Risk-Adjusted Costs For Ischemic Heart Disease (IHD)

Episode Subtypes:

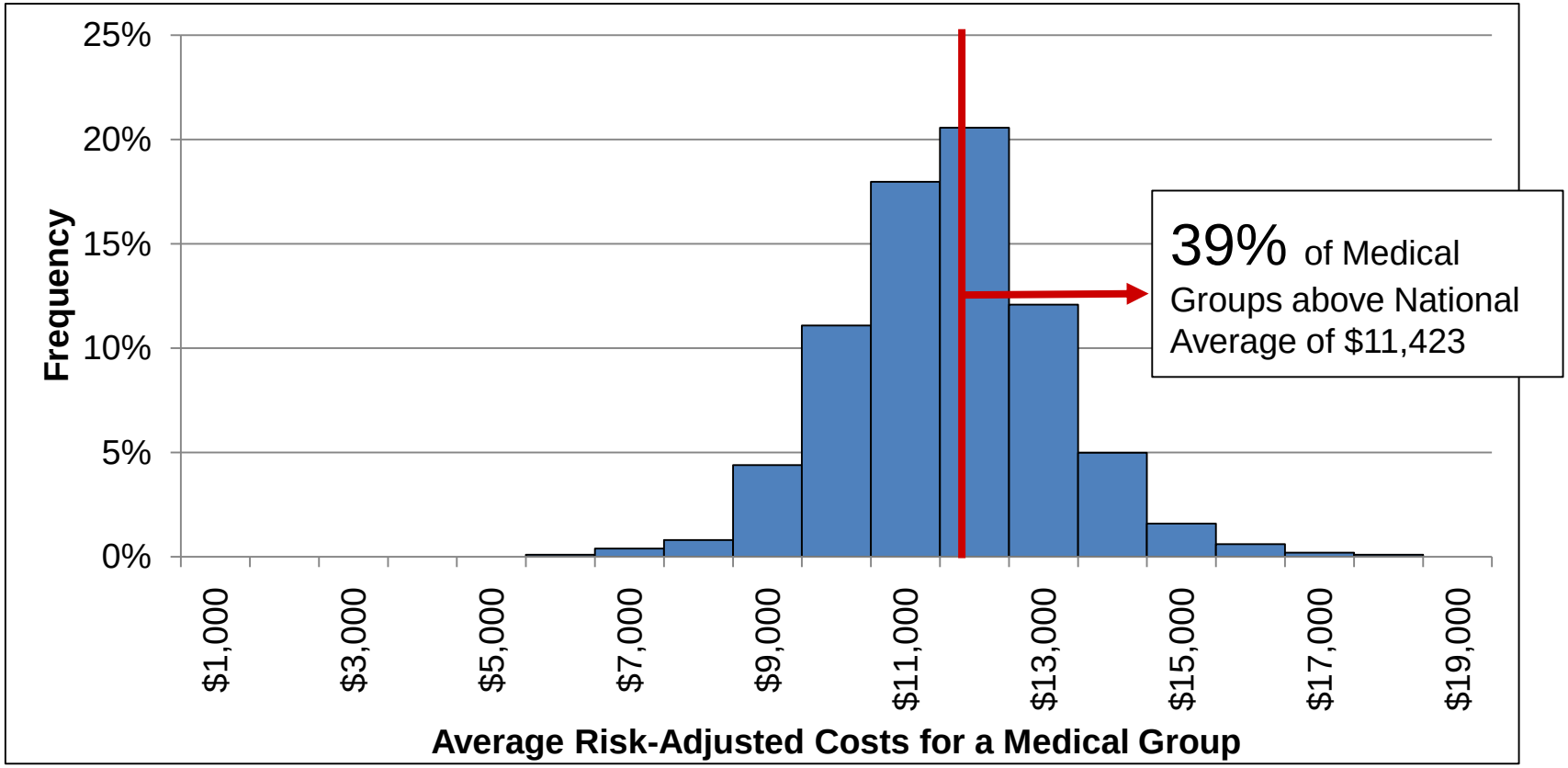
- **IHD without ACS:** 40% of medical groups were above the national average episode cost of $1,931
- **IHD with ACS**: 42% of medical groups were above the national average episode cost of $16,842

Figure A.8: Distribution of Average Risk-Adjusted Costs, IHD



Average Risk-Adjusted Costs For Kidney/Urinary Tract Infection

Figure A.9: Distribution of Average Risk-Adjusted Costs, Kidney/Urinary Tract Infection

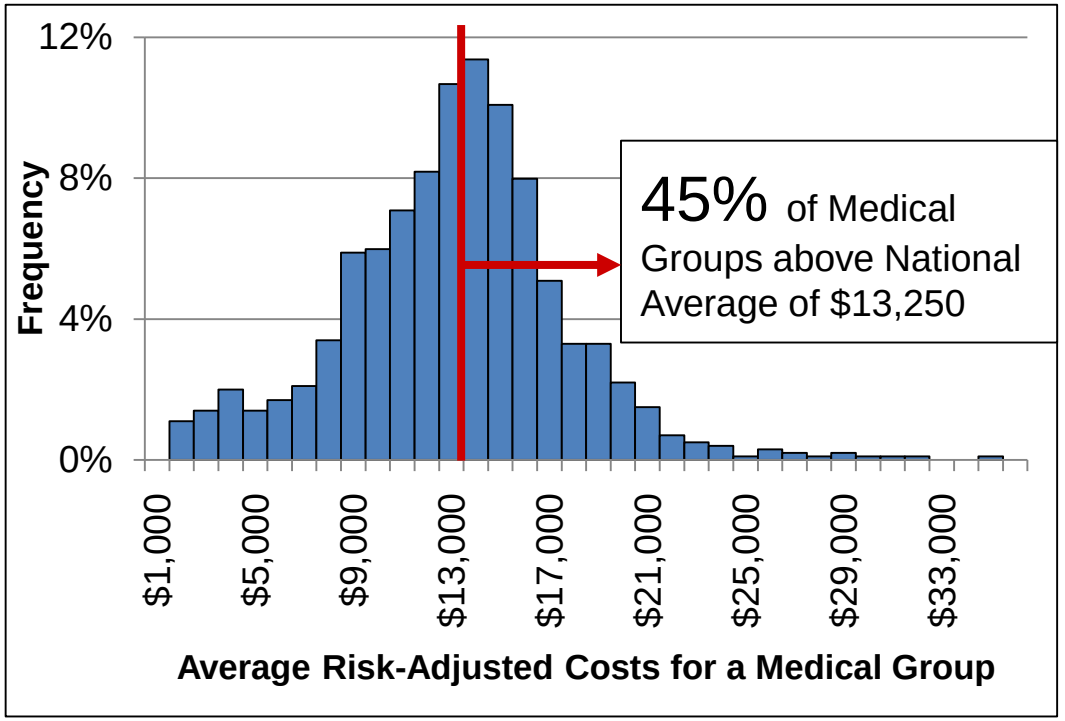


Average Risk-Adjusted Costs For Pneumonia

Episode Subtypes:

- **Pneumonia without inpatient (IP) hospitalization:** 42% of medical groups were above the national average episode cost of $818
- **Pneumonia with IP hospitalization**: 34% of medical groups were above the national average episode cost of $18,008

Figure A.10: Distribution of Average Risk-Adjusted Costs, Pneumonia



Average Risk-Adjusted Costs For Procedural Episodes

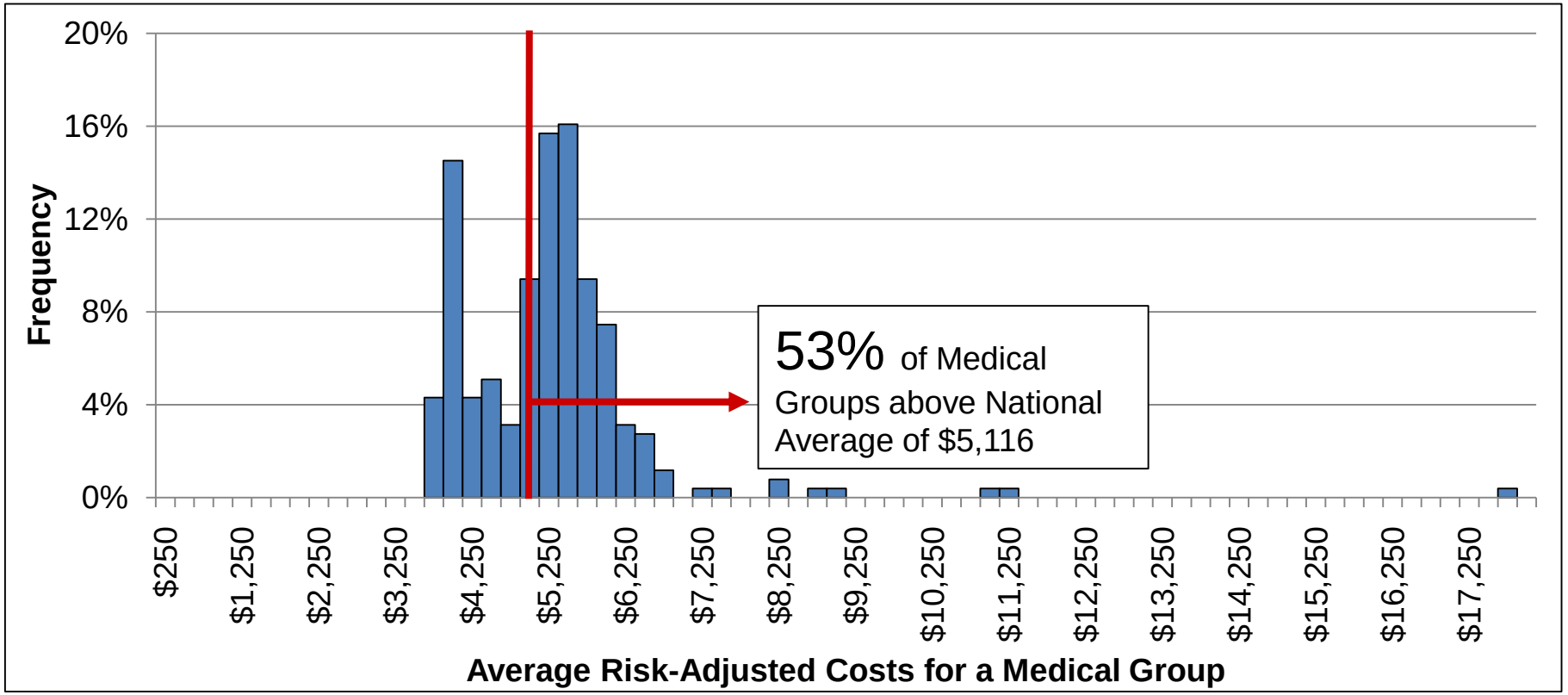
Table A.3: Average Risk-Adjusted Costs, Procedural Episodes

Episode	National Average Risk-Adjusted Cost	% of 1,236 Medical Groups Above National Average
18. Bilateral cataract removal with lens implant	$5,116	53%
19. CABG (all)	$43,468	43%
20. CABG without ACS	$41,975	44%
21. Hip replacement/revision	$22,052	56%
22. Knee replacement/revision	$20,975	54%
23. Lumbar spine fusion/refusion	$39,118	39%
24. PCI (all)	$18,766	48%
25. PCI without ACS	$18,378	52%
26. Permanent pacemaker system replacement/insertion	$20,052	49%

Episode costs presented are payment-standardized unless otherwise noted. For this and the following slides, medical groups were restricted to those that received a report and had at least 10 episodes of the given episode type

Average Risk-Adjusted Costs For Bilateral Cataract Removal with Lens Implant *(1 of 2)*

Figure A.11: Distribution of Average Risk-Adjusted Costs, Bilateral Cataract Removal with Lens Implant



Average Risk-Adjusted Costs For Bilateral Cataract Removal with Lens Implant *(2 of 2)*

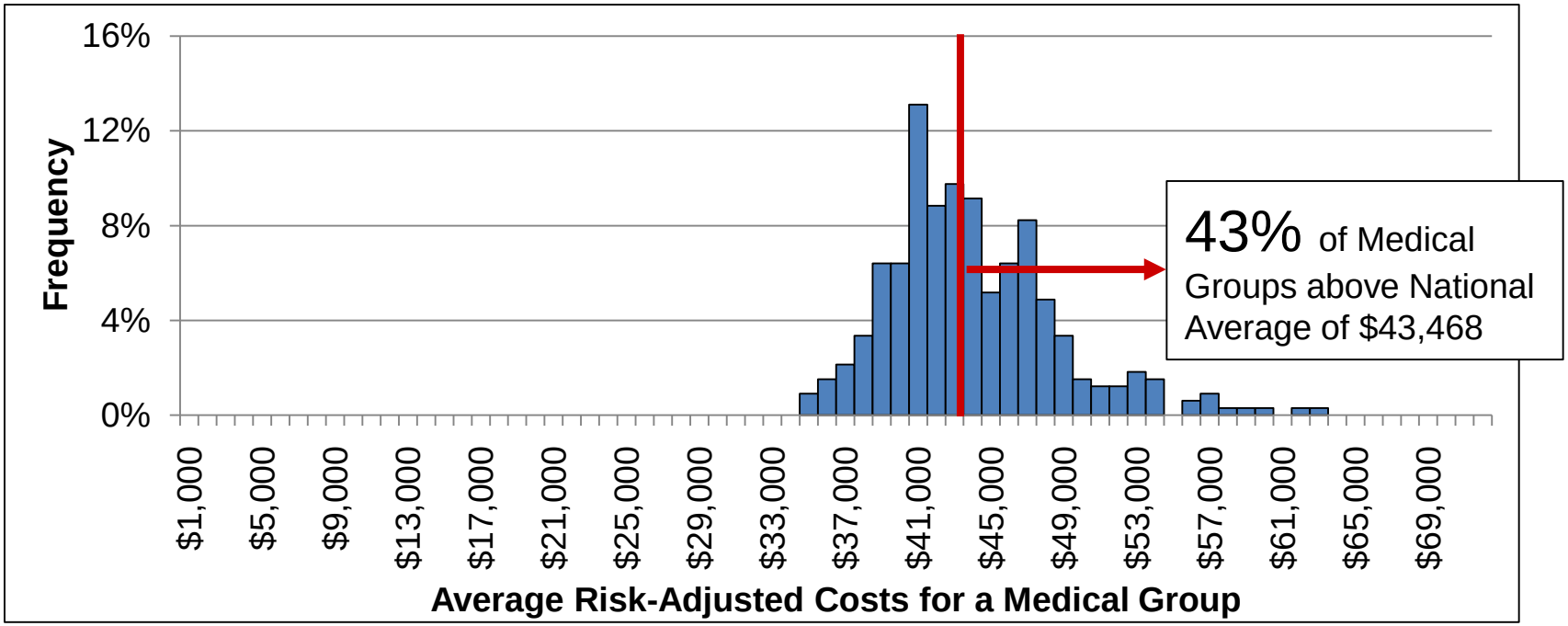
- Note that a few medical group practices have at least one bilateral cataract removal episode with payment-standardized costs that are inaccurately high
  - The unit count on some Part B claims for surgical procedures were incorrectly reported
  - Part B claim payments are standardized based on the unit count field
  - CMS encourages all medical group practices to pay particular attention to how they fill out their Part B claims

Average Risk-Adjusted Costs For Coronary Artery Bypass Graft

Episode Subtypes:

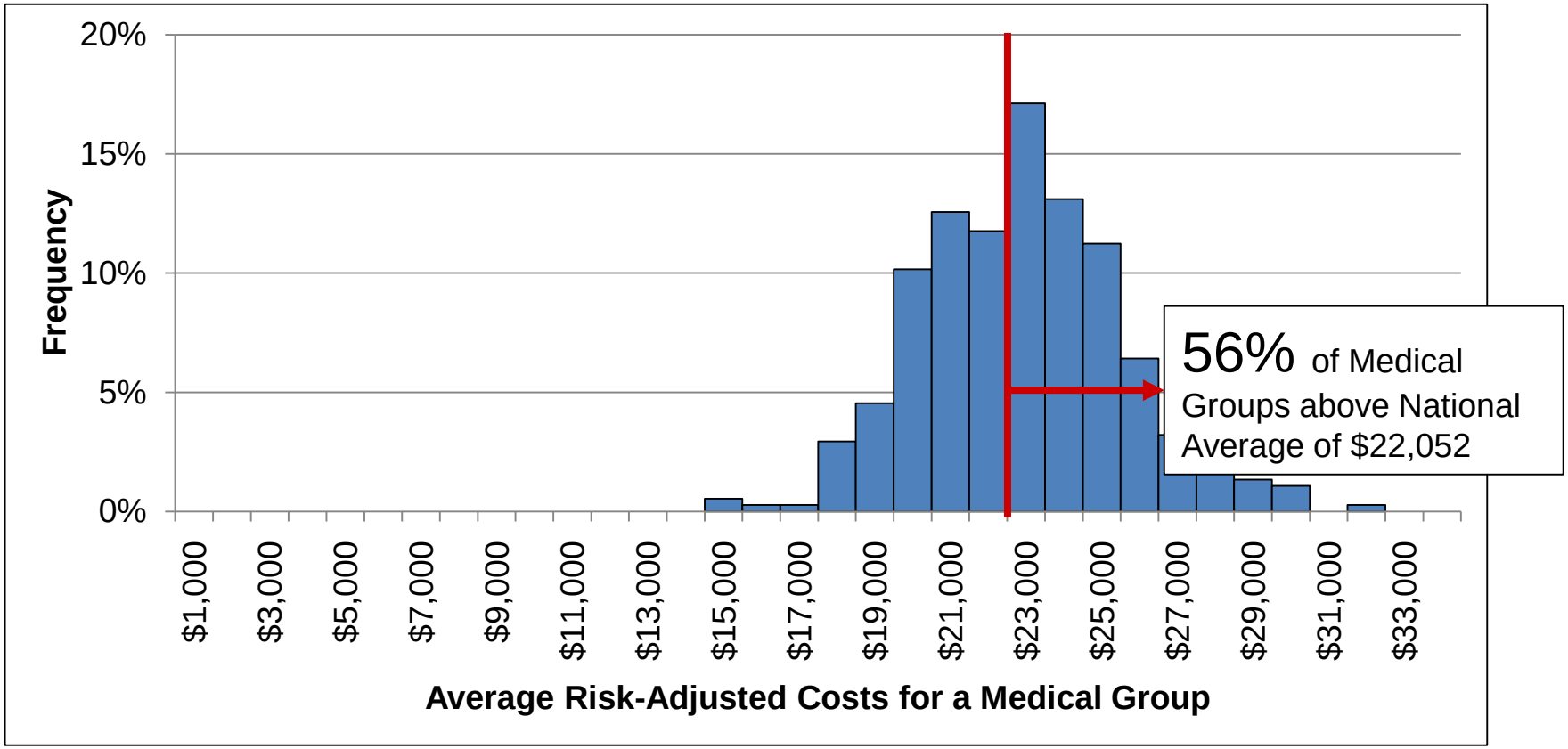
- **CABG without ACS**: 44% of medical groups were above the national average episode cost of $41,975

Figure A.12: Distribution of Average Risk-Adjusted Costs, CABG



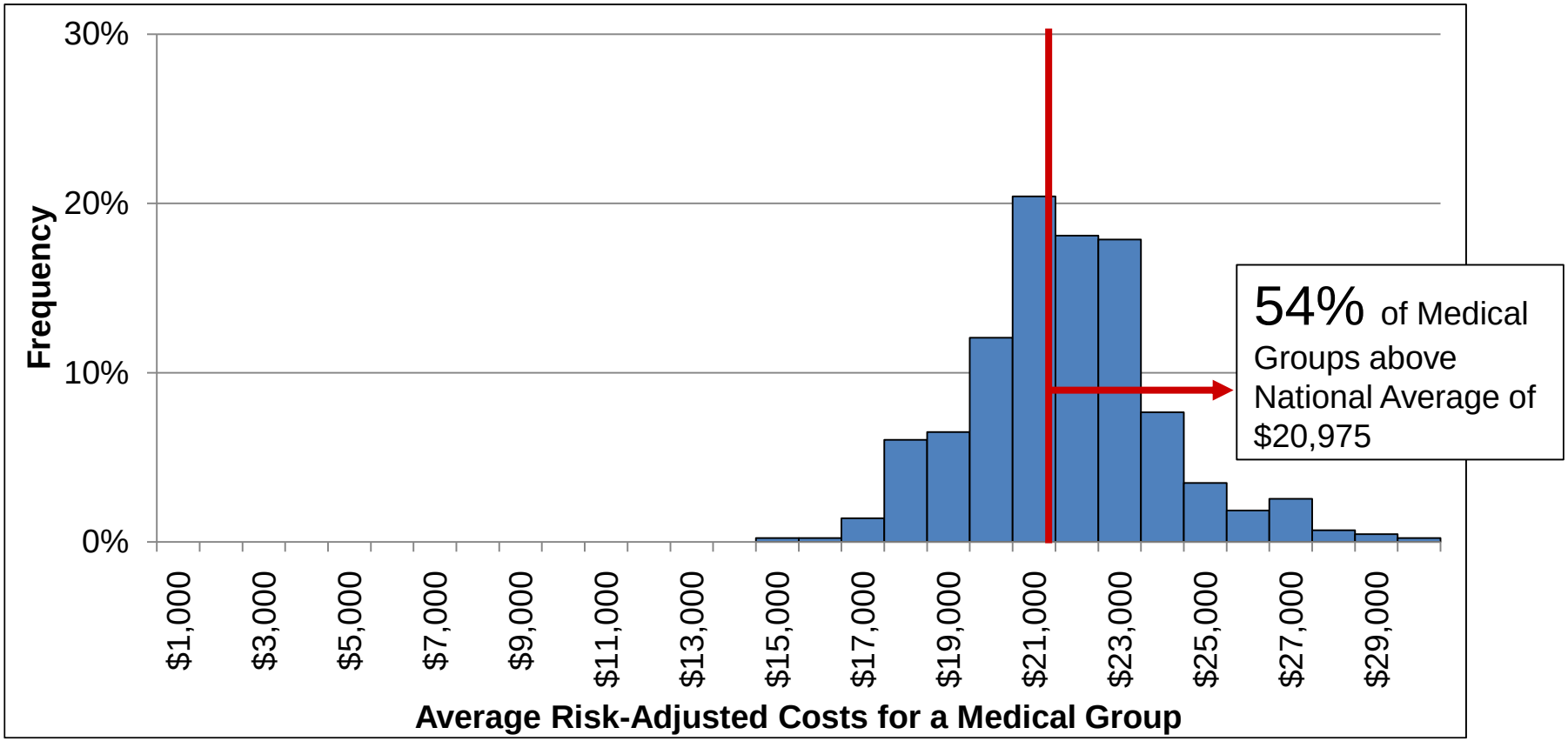
Average Risk-Adjusted Costs For Hip Replacement/Revision

Figure A.13: Distribution of Average Risk-Adjusted Costs, Hip Replacement/Revision



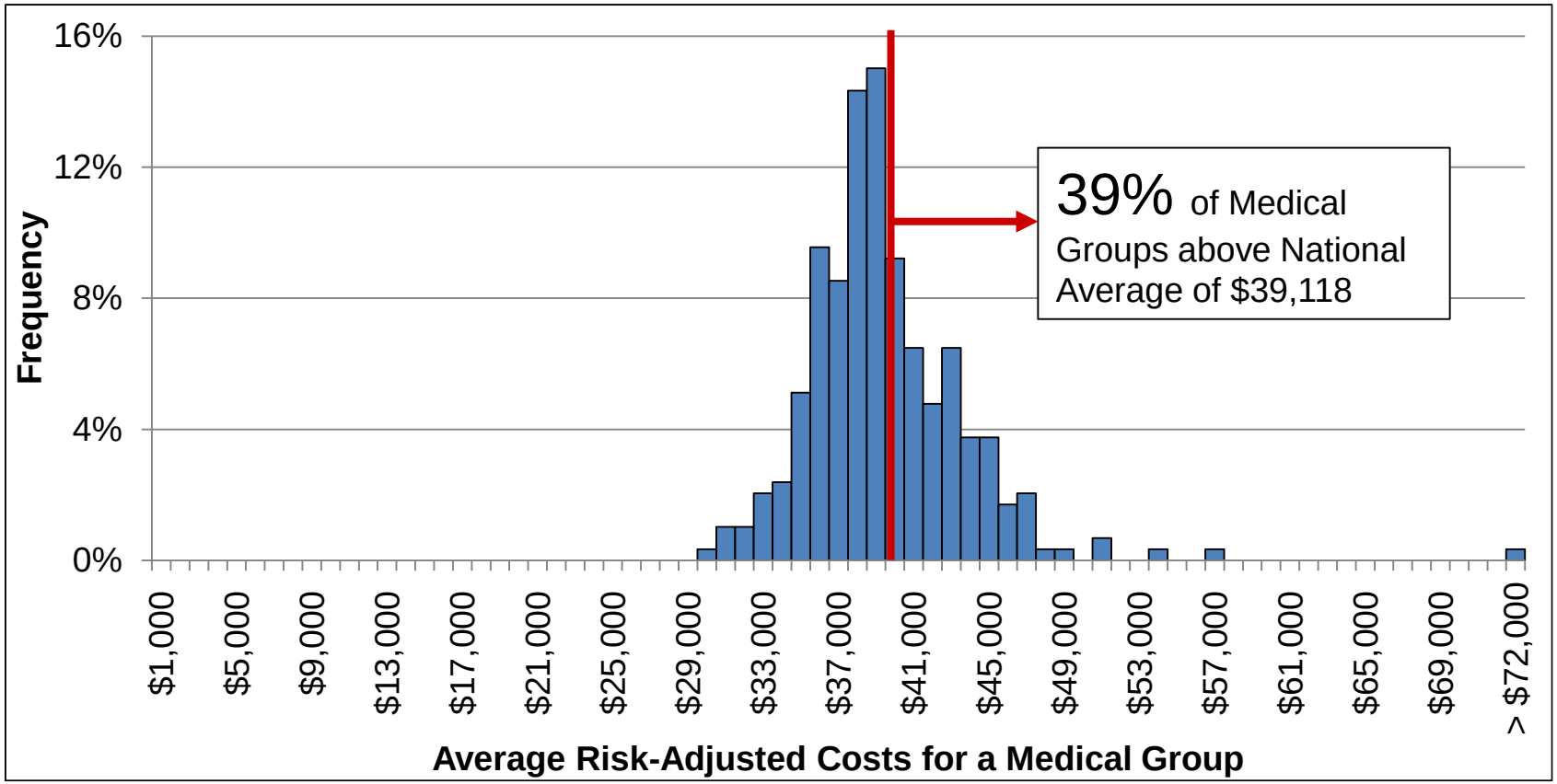
Average Risk-Adjusted Costs For Knee Replacement/Revision

Figure A.14: Distribution of Average Risk-Adjusted Costs, Knee Replacement/Revision



Average Risk-Adjusted Costs For Lumbar Spine Fusion/Refusion

Figure A.15: Distribution of Average Risk-Adjusted Costs, Lumbar Spine Fusion/Refusion

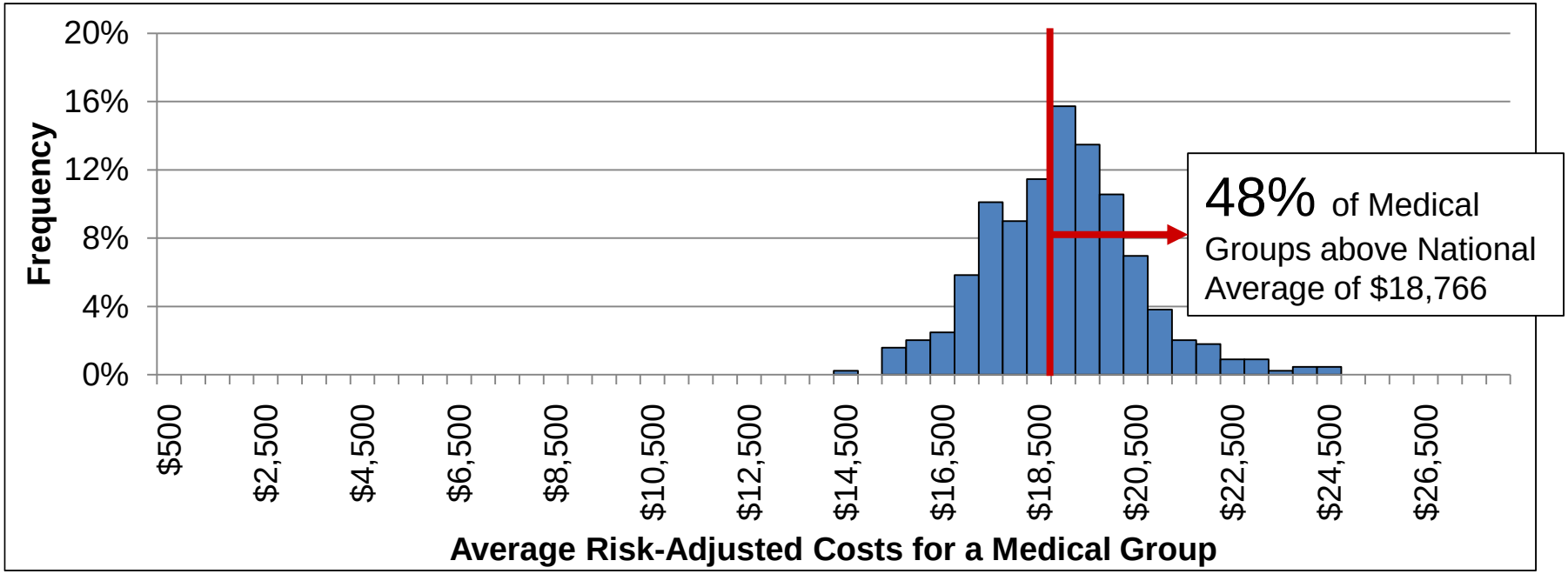


Average Risk-Adjusted Costs For Percutaneous Coronary Intervention (PCI)

Episode Subtypes:

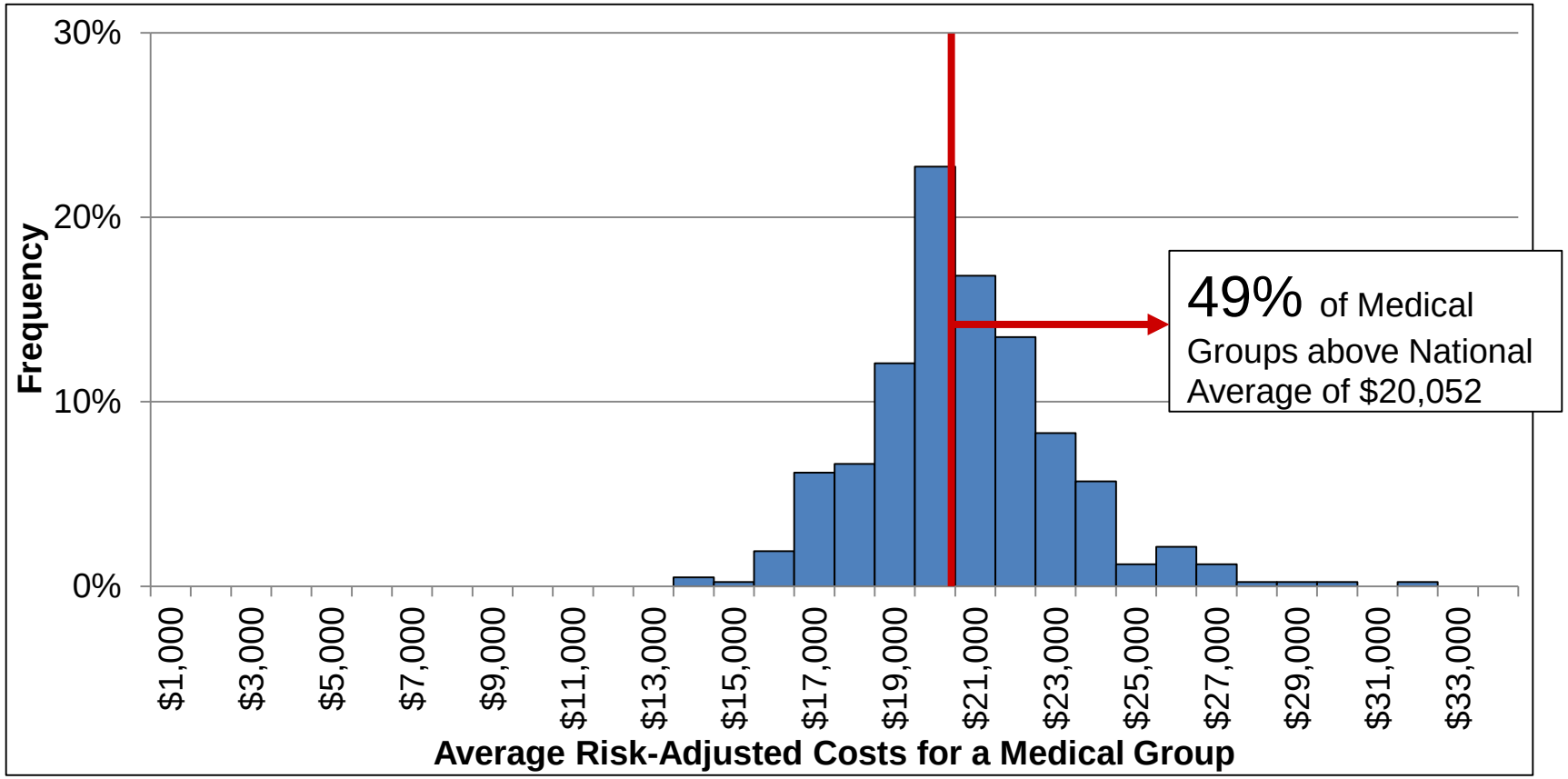
- **PCI without ACS**: 52% of medical groups were above the national average episode cost of $18,378

Figure A.16: Distribution of Average Risk-Adjusted Costs, PCI



Average Risk-Adjusted Costs For Permanent Pacemaker System Replacement/Insertion

Figure A.17: Distribution of Average Risk-Adjusted Costs, Permanent Pacemaker System Replacement/Insertion



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Summary of Service Category Breakdown for Episodes in the National Benchmark

- High-cost acute condition and procedural episodes are driven primarily by post-acute care spending (skilled nursing facility (SNF), rehabilitation/long term care hospital) and readmissions
- High-cost chronic condition episodes have high acute inpatient, SNF, and outpatient major procedures and anesthesia costs

Breakdown of Acute Condition Episode Costs by Highest Cost Service Categories *(1 of 2)*

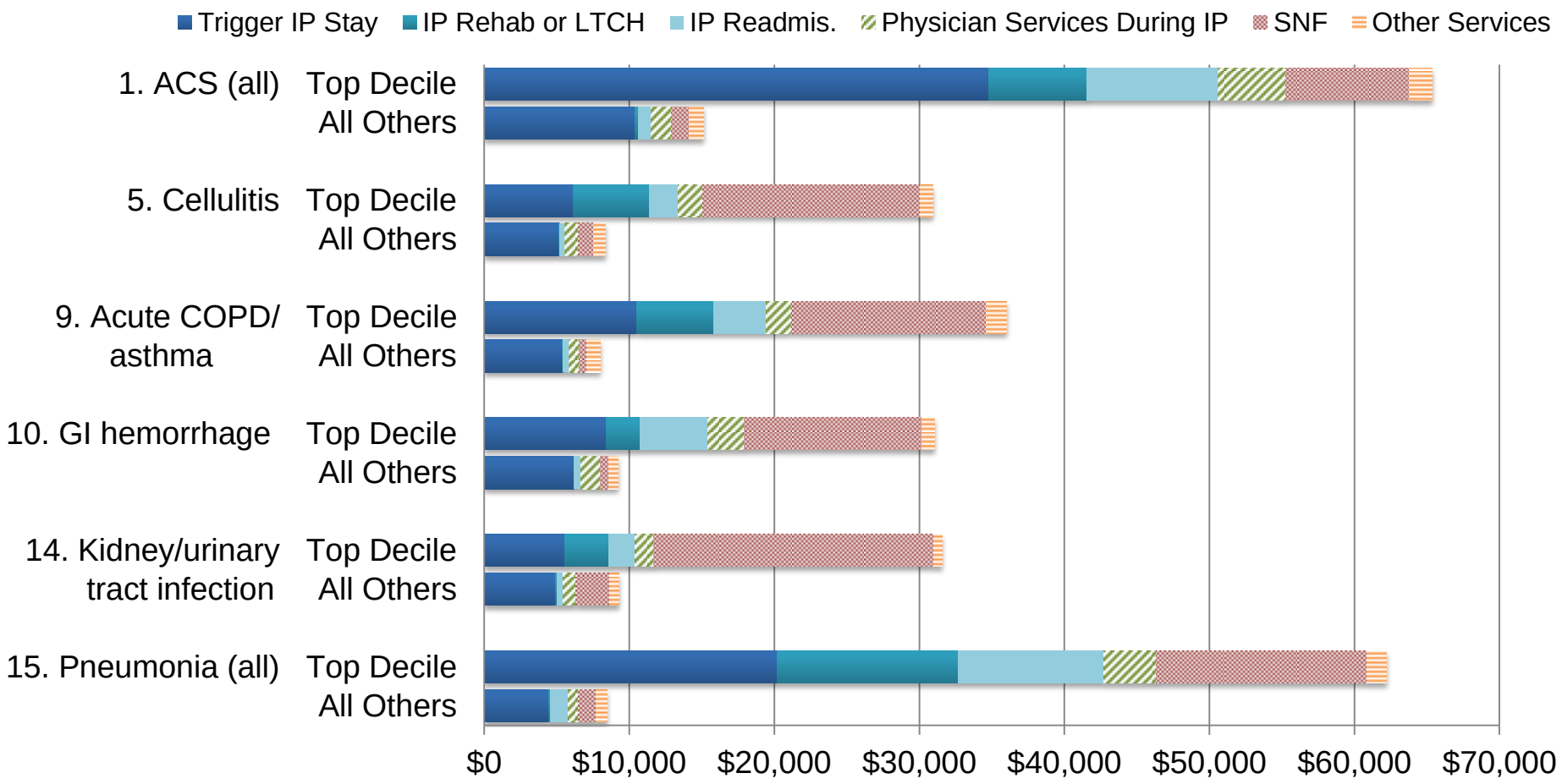
Table A.5: Highest Cost Service Categories, Acute Condition Episodes

Episode		Average Non-Risk-Adjusted Cost	Trigger IP Stay	IP Read-mission	Phys. Services During IP Stay	SNF	IP Rehab or Long Term Care Hospital
1. ACS (all)	Top Decile	$65,377	$34,763	$9,067	$4,627	$8,519	$6,788
	All Others	$15,114	$10,419	$944	$1,407	$1,214	$154
5. Cellulitis	Top Decile	$30,960	$6,112	$1,971	$1,693	$15,032	$5,270
	All Others	$8,366	$5,147	$385	$940	$999	$42
9. Acute COPD/asthma	Top Decile	$36,019	$10,535	$3,624	$1,688	$13,432	$5,310
	All Others	$8,015	$5,396	$446	$682	$522	$24
10. GI hemorrhage	Top Decile	$31,040	$8,395	$4,667	$2,546	$12,249	$2,326
	All Others	$9,222	$6,169	$448	$1,377	$561	$23
14. Kidney/urinary tract infection	Top Decile	$31,576	$5,547	$1,805	$1,264	$19,361	$3,045
	All Others	$9,294	$4,905	$432	$847	$2,345	$104
15. Pneumonia (all)	Top Decile	$62,205	$20,189	$10,050	$3,575	$14,522	$12,508
	All Others	$8,462	$4,429	$1,263	$667	$1,220	$115

For this and the following slides, "Top Decile" episodes refer to episodes with average payment-standardized, risk-adjusted costs in the top decile of the cost distribution

Breakdown of Acute Condition Episode Costs by Highest Cost Service Categories *(2 of 2)*

Figure A.18: Highest Cost Service Categories, Acute Condition Episodes



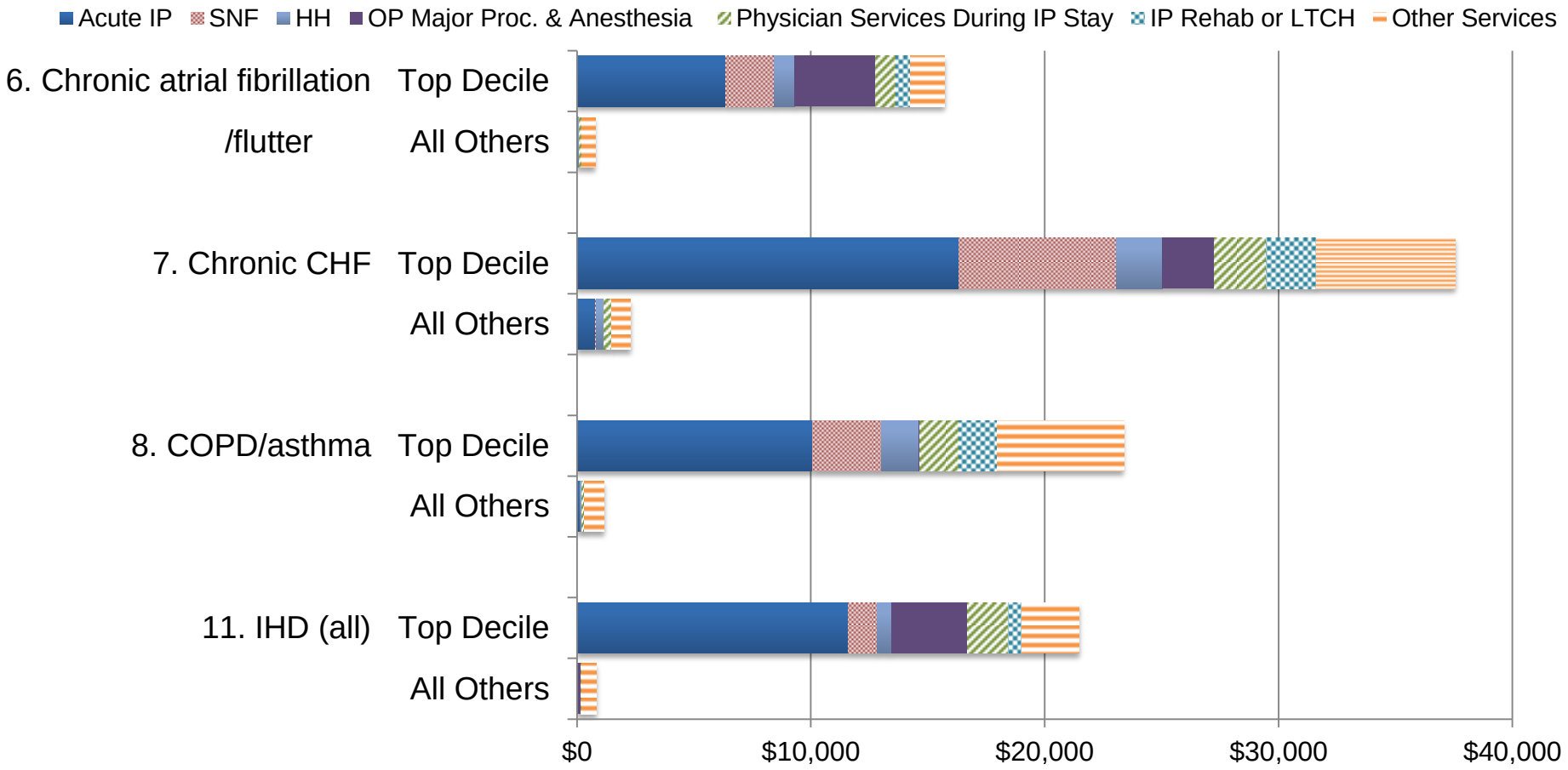
Breakdown of Chronic Condition Episode Costs by Highest Cost Service Categories *(1 of 2)*

Table A.6: Highest Cost Service Categories, Chronic Condition Episodes

Episode		Average Non-Risk-Adjusted Cost	Acute IP	Phys. Services During IP Stay	Home Health (HH)	SNF	IP Rehab or LTCH	Outpatient E&M Services	OP Major Proc. & Anes.	DME
6. Chronic atrial fibrillation/flutter	Top Decile	$15,697	$6,362	$871	$869	$2,061	$608	$563	$3,472	$48
	All Others	$766	$61	$89	$33	$0	$0	$295	$9	$8
7. Chronic CHF	Top Decile	$37,550	$16,330	$2,229	$1,948	$6,747	$2,130	$695	$2,226	$369
	All Others	$2,286	$784	$311	$326	$36	$1	$254	$19	$94
8. COPD/asthma	Top Decile	$23,374	$10,094	$1,674	$1,594	$2,932	$1,636	$654	$26	$1,088
	All Others	$1,163	$146	$115	$59	$1	$0	$252	$2	$268
11. IHD (all)	Top Decile	$21,455	$11,615	$1,748	$601	$1,211	$563	$815	$3,275	$55
	All Others	$832	$27	$57	$14	$0	$0	$232	$113	$4

Breakdown of Chronic Condition Episode Costs by Highest Cost Service Categories *(2 of 2)*

Figure A.19: Highest Cost Service Categories, Chronic Condition Episodes



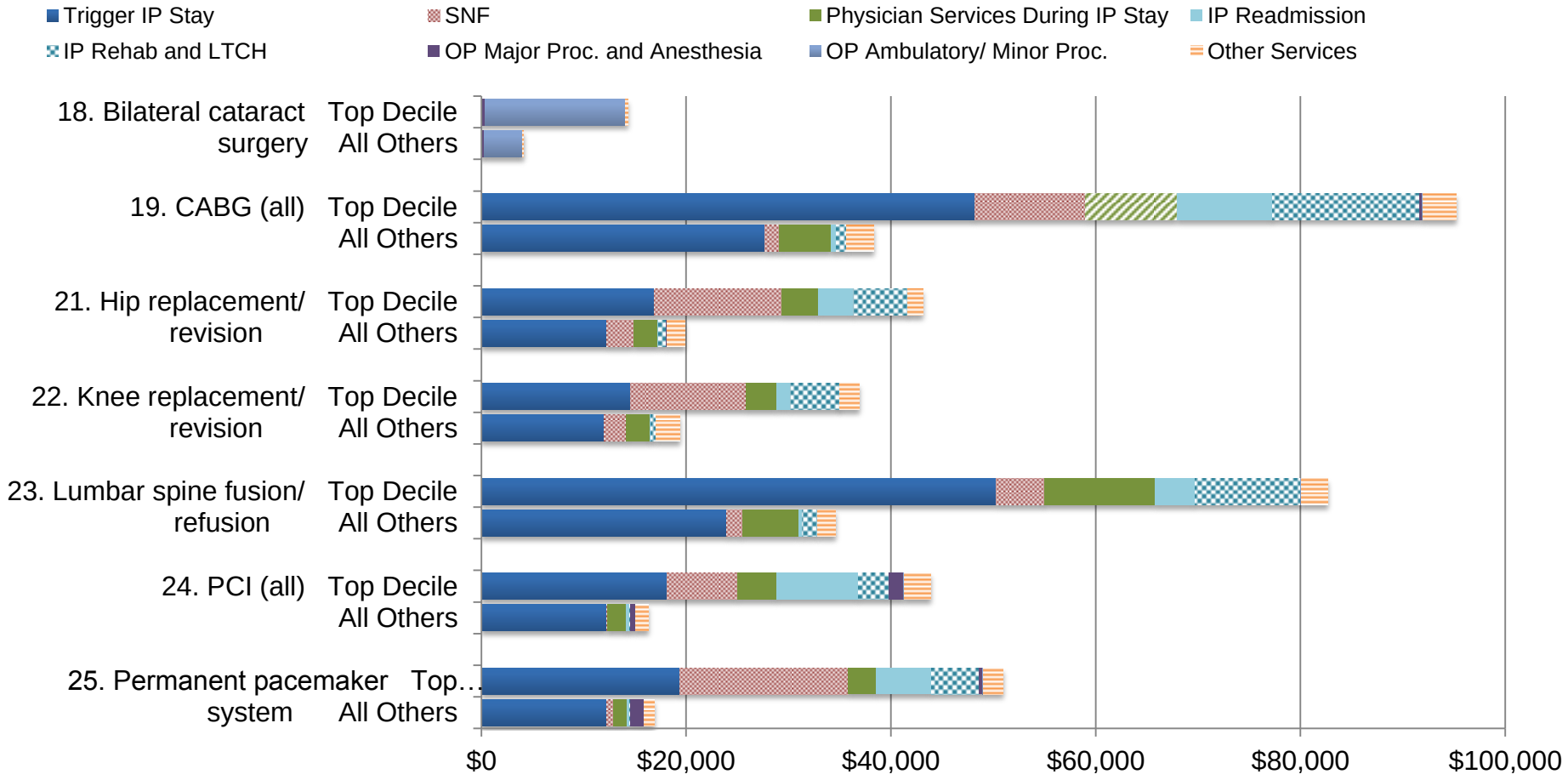
Breakdown of Procedural Episode Costs by Highest Cost Service Categories *(1 of 2)*

Table A.7: Highest Cost Service Categories, Procedural Episodes

Episode		Average Non-Risk-Adjusted Cost	Trigger IP Stay	IP Read-mission	Physician Services During IP Stay	SNF	IP Rehab. Or LTCH	OP Major Proc. & Anesthesia	OP Ambulatory/ Minor Proc.
18. Bilateral cataract removal	Top Decile	$14,315	$0	$35	$3	$4	$2	$271	$13,739
	All Others	$4,115	$0	$0	$1	$0	$0	$236	$3,746
19. CABG (all)	Top Decile	$95,218	$48,208	$9,400	$8,902	$10,801	$14,278	$306	$79
	All Others	$38,338	$27,713	$568	$5,047	$1,358	$934	$40	$27
21. Hip replacement/ revision	Top Decile	$43,136	$16,889	$3,416	$3,568	$12,451	$5,305	$29	$15
	All Others	$19,874	$12,230	$149	$2,315	$2,612	$770	$10	$6
22. Knee replacement/revision	Top Decile	$36,942	$14,598	$1,382	$2,975	$11,216	$4,800	$10	$10
	All Others	$19,354	$11,989	$112	$2,326	$2,127	$462	$8	$6
23. Lumbar spine fusion/refusion	Top Decile	$82,642	$50,276	$3,885	$10,813	$4,715	$10,318	$39	$15
	All Others	$34,590	$23,928	$330	$5,567	$1,517	$1,493	$24	$8
24. PCI (all)	Top Decile	$43,848	$18,122	$8,051	$3,748	$6,921	$2,977	$1,407	$42
	All Others	$16,281	$12,186	$369	$1,832	$119	$8	$524	$9
25. Permanent pacemaker system	Top Decile	$50,980	$19,362	$5,344	$2,777	$16,438	$4,688	$346	$64
	All Others	$16,905	$12,214	$319	$1,235	$705	$58	$1,328	$10

Breakdown of Procedural Episode Costs by Highest Cost Service Categories *(2 of 2)*

Figure A.20: Highest Cost Service Categories, Procedural Episodes



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Acute Condition Episode Costs Billed By Outside Medical Groups

Table A.8: Costs Billed By Outside Medical Groups, Acute Condition Episodes

Episode		% of All Costs	Trigger IP Stay	IP Read-mission	Physician Services During IP Stay	SNF	IP Rehab or Long Term Care Hospital
1. ACS (all)	Inside	89.0%	$13,312	$1,330	$1,312	$1,050	$544
	Outside	11.0%	$0	$253	$386	$796	$164
5. Cellulitis	Inside	84.4%	$5,266	$455	$738	$1,502	$372
	Outside	15.6%	$0	$106	$226	$686	$76
9. Acute COPD/asthma	Inside	85.8%	$6,011	$636	$588	$990	$367
	Outside	14.2%	$0	$140	$155	$594	$64
10. GI hemorrhage	Inside	86.1%	$6,504	$732	$1,044	$1,044	$175
	Outside	13.9%	$0	$147	$413	$524	$32
14. Kidney/urinary tract infection	Inside	80.9%	$5,005	$470	$638	$2,509	$272
	Outside	19.1%	$0	$105	$201	$1,344	$32
15. Pneumonia (all)	Inside	84.6%	$6,709	$1,659	$680	$1,504	$901
	Outside	15.4%	$0	$412	$232	$894	$188

Chronic Condition Episode Costs Billed By Outside Medical Groups

Table A.9: Percent Billed By Outside Medical Groups, Chronic Condition Episodes

Episode		% of All Costs	Acute IP	Physician Services During IP Stay	HH	SNF	IP Rehab or LTCH	Outpatient E&M Services	OP Major Proc. & Anes.	DME
6. Chronic atrial fibrillation/flutter	Inside	76.6%	$579	$108	$57	$142	$35	$275	$305	$5
	Outside	23.4%	$164	$56	$39	$22	$20	$49	$75	$6
7. Chronic CHF	Inside	73.3%	$2,115	$305	$280	$486	$103	$250	$231	$76
	Outside	26.7%	$626	$201	$170	$69	$58	$58	$55	$55
8. COPD/asthma	Inside	70.0%	$858	$152	$120	$196	$87	$238	$4	$222
	Outside	30.0%	$328	$107	$64	$34	$49	$49	$2	$131
11. IHD (all)	Inside	71.8%	$926	$137	$30	$71	$29	$235	$373	$4
	Outside	28.2%	$387	$97	$34	$24	$23	$59	$63	$5

Procedural Episode Costs Billed By Outside Medical Groups *(1 of 2)*

Table A.10: Percent Billed By Outside Medical Groups, Procedural Episodes

Episode		% of All Costs	IP Read-mission	Physician Services During IP Stay	SNF	IP Rehab. Or LTCH	OP Major Proc. & Anesthesia	OP Ambulatory/ Minor Proc.
18. Bilateral cataract surgery	Inside	95.5%	$5	$1	$0	$0	$233	$4,940
	Outside	4.5%	$2	$1	$0	$0	$14	$204
19. CABG (all)	Inside	88.8%	$931	$4,540	$881	$1,004	$27	$17
	Outside	11.2%	$383	$669	$1,453	$980	$29	$14
21. Hip replacement/ revision	Inside	83.6%	$423	$2,274	$1,239	$476	$8	$3
	Outside	16.4%	$72	$137	$2,431	$555	$3	$4
22. Knee replacement/revision	Inside	85.3%	$234	$2,262	$1,077	$360	$5	$4
	Outside	14.7%	$64	$106	$2,119	$387	$0	$3

Procedural Episode Costs Billed By Outside Medical Groups *(2 of 2)*

Table A.10 (cont.): Percent Billed By Outside Medical Groups, Procedural Episodes

Episode		% of All Costs	IP Read-mission	Physician Services During IP Stay	SNF	IP Rehab. Or LTCH	OP Major Proc. & Anesthesia	OP Ambulatory/ Minor Proc.
23. Lumbar spine fusion/refusion	Inside	90.6%	$691	$5,803	$661	$1,323	$21	$4
	Outside	9.4%	$97	$432	$1,487	$1,261	$2	$4
24. PCI (all)	Inside	90.4%	$909	$1,663	$437	$189	$422	$3
	Outside	9.6%	$263	$322	$328	$76	$70	$7
25. Permanent pacemaker system	Inside	87.2%	$598	$1,095	$1,080	$272	$903	$7
	Outside	12.79%	$196	$290	$1,243	$148	$48	$9

Addendum A: Outline

Addendum A provides summary statistics on:

- Demographics of beneficiaries included in the 2012 Supplemental QRURs
- Average payment-standardized, risk-adjusted costs by episode type
- Breakdown of episode costs by service categories for high-cost episodes (90th cost percentile) and all other episodes
- Percent of episode costs billed by outside medical groups
- **Distribution of number of EPs at the episode level**

Episodes with Outside Eligible Professionals *(1 of 2)*

- Most episodes have eligible professionals (EPs) billing from outside the attributed medical group practice:
  - Over 80% of acute condition episodes
  - Around half of chronic condition episodes
  - Over 85% of procedural episodes, other than bilateral cataract removal episodes

Episodes with Outside Eligible Professionals *(2 of 2)*

Table A.11. Episodes with EPs Billing Outside the Attributed Medical Group

Episode	% Episodes with EP Billing Outside the Attributed Medical Group
1. ACS (all)	83.9%
5. Cellulitis	88.2%
6. Chronic atrial fibrillation/flutter	45.9%
7. Chronic CHF	63.6%
8. COPD/asthma	52.3%
9. Acute COPD/asthma, inpatient exacerbation	81.6%
10. GI hemorrhage	90.6%
11. IHD (all)	41.8%
14. Kidney/urinary tract infection	87.0%
15. Pneumonia (all)	81.3%
18. Bilateral cataract removal with lens implant	61.1%
19. CABG (all)	94.7%
21. Hip replacement/revision	85.4%
22. Knee replacement/revision	87.0%
23. Lumbar spine fusion/refusion	86.4%
24. PCI (all)	88.7%
26. Permanent pacemaker system replacement/insertion	89.3%

Distribution of Number of Eligible Professionals for Episodes

- The following slides show the distribution of the number of EPs billing within and outside the medical group for condition and procedural episodes
  - For both episode types, the number of EPs inside and outside the Taxpayer Identification Number (TIN) have approximately the same distribution
  - About half of the chronic condition episodes have no EP billing outside the attributed TIN

Distribution of Number of Eligible Professionals for Condition Episodes

Table A.12: Distribution of Number of EPs Within or Outside the Medical Group Practice

Episode		Percentile				
		10	25	50	75	90
1. ACS (all)	Inside	1	2	3	5	8
	Outside	0	1	3	5	9
5. Cellulitis	Inside	1	2	3	5	7
	Outside	0	2	3	5	8
6. Chronic atrial fibrillation/flutter	Inside	1	1	2	3	5
	Outside	0	0	0	1	3
7. Chronic CHF	Inside	1	1	2	3	6
	Outside	0	0	1	4	8
8. COPD/asthma	Inside	1	1	1	2	4
	Outside	0	0	1	2	4
9. Acute COPD/asthma	Inside	1	1	2	4	5
	Outside	0	1	2	4	6
10. GI hemorrhage	Inside	1	2	3	5	8
	Outside	1	2	4	7	10
11. IHD (all)	Inside	1	1	1	2	4
	Outside	0	0	0	1	3
14. Kidney/urinary tract infection	Inside	1	2	3	4	6
	Outside	0	1	3	5	7
15. Pneumonia (all)	Inside	1	1	2	4	6
	Outside	0	1	3	5	9

Distribution of Number of Eligible Professionals for Procedural Episodes

Table A.13: Distribution of EPs Billing Within or Outside the Medical Group Practice

Episode		Percentile				
		10	25	50	75	90
18. Bilateral cataract surgery	Within	1	1	2	4	5
	Outside	0	0	1	2	4
19. CABG (all)	Within	1	2	6	11	16
	Outside	2	5	9	14	20
21. Hip replacement/ revision	Within	1	2	3	5	7
	Outside	0	1	3	5	7
22. Knee replacement/revision	Within	1	2	3	4	6
	Outside	0	2	3	5	7
23. Lumbar spine fusion/refusion	Within	1	2	3	6	10
	Outside	0	1	3	6	9
24. PCI (all)	Within	2	3	5	7	10
	Outside	0	2	4	6	10
25. Permanent pacemaker system	Within	1	2	4	7	11
	Outside	0	2	4	8	11

Addendum B: Attribution Rules

Addendum B outlines the rules used to attribute episodes to a medical group practice and identify an apparent lead eligible professional (EP) and provides summary statistics on:

- **Attribution to medical group practices:**
  - Percentage of episodes attributed based on each attribution rule
  - Percentage of procedural episodes attributed to multiple groups
- **Identification of apparent lead EP:**
  - Apparent lead EP specialty with at least 5% of episodes and average risk-adjusted costs
  - Percentage of episodes without an apparent lead EP identified

Addendum B: Attribution Rules

Addendum B provides summary statistics on:

- **Attribution to medical group practices:**
  - **Percentage of episodes attributed based on each attribution rule**
  - Percentage of procedural episodes attributed to multiple groups
- **Identification of apparent lead EP:**
  - Apparent lead EP specialty with at least 5% of episodes and average risk-adjusted costs
  - Percentage of episodes without an apparent lead EP identified

Medical Group Attribution Rules

An episode is assigned to a medical group practice that is assumed to be most responsible for the patient's care based on the following restrictions and criteria:

Table B.1: Summary of Medical Group Practice Attribution Methodology

Episode Type	Medical Group Practice Restrictions	Medical Group Practice Attribution Criteria
Acute condition	(1) Minimum 20% of inpatient (IP) hospital management evaluation & management (E&M) visits during trigger event (2) If no IP E&M visits, minimum 20% of all E&M visits during trigger event	(1) Plurality of IP E&M visits during trigger event (2) If no IP E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of physician fee schedule (PFS) costs during trigger event
Chronic condition	(1) Minimum 20% of outpatient E&M visits during episode (2) If no outpatient E&M visits, minimum 20% of all E&M visits during episode	(1) Plurality of outpatient E&M visits during episode (2) If no outpatient E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode during episode
Procedural	(1) Must bill procedure code for the surgery	(1) All medical group practices billing the surgical claim during the trigger event

More information on medical group attribution can be found in the Detailed Methods documentation on this CMS webpage.

Attribution of Condition Episodes Based on Evaluation & Management Visits

Condition episodes are attributed to the medical group practice with the greatest share of inpatient or outpatient E&M visits

- **Inpatient (IP) E&M visits** are identified using CPT-4 codes
- **Outpatient E&M visits** are restricted to Part B and outpatient claims from Method 2 Critical Access Hospitals (CAH), Federally Qualified Health Centers (FQHCs), Rural Health Clinics (RHC), and Electing Teaching Amendment Hospitals (ETA)

The specific codes that define an IP and outpatient E&M visit are listed in Appendix C of the *Detailed Methods* documentation on this CMS webpage.

Summary of Attribution to Medical Group and Identification of Apparent Lead Eligible Professional

- The majority of acute condition episodes were attributed to the medical group practice that saw the beneficiary for a plurality of IP evaluation & management (E&M) visits during the trigger event
- The majority of chronic condition episodes were attributed to the medical group practice that saw the beneficiary for a plurality of outpatient E&M visits during the episode
- Almost all procedural episodes were attributed to one medical group practice
- The apparent lead eligible professional (EP) identification methodology is for informational purposes only and only a few specialties were identified within each episode type

Attribution to Medical Group Practice for Acute Condition Episodes

- Generally attributed based on the plurality of inpatient (IP) evaluation & management (E&M) visits during the trigger event
  - If no IP E&M visits, attributed based on plurality of any E&M visits during trigger event
  - If either E&M is tied, attribution also based on plurality of physician fee schedule (PFS) costs during trigger event

Table B.2: Acute Condition Episodes by Attribution Rules

Episode	Plurality IP E&Ms	IP E&Ms + PFS	Plurality E&Ms	E&Ms + PFS	Unattributed
1. ACS (all)	83.9%	10.1%	2.8%	0.1%	3.1%
5. Cellulitis	84.3%	9.9%	0.0%	0.0%	5.7%
9. Acute COPD/asthma	84.0%	5.1%	4.9%	0.2%	5.7%
10. GI hemorrhage	78.8%	16.0%	0.0%	0.0%	5.2%
14. Kidney/urinary tract infection	86.3%	8.4%	0.0%	0.0%	5.3%
15. Pneumonia					
• Triggered in inpatient setting	88.5%	4.7%	4.6%	0.2%	2.0%
• Triggered in outpatient setting	68.8%*	4.4%*	22.6%	2.1%	2.2%

***Pneumonia triggered in outpatient setting is attributed based on the plurality of **outpatient** E&Ms or **outpatient** E&Ms and PFS costs*

Attribution to Medical Group Practice for Chronic Condition Episodes

- Chronic condition episodes are attributed based on the plurality of outpatient E&Ms during the episode
  - If no outpatient E&M visits, plurality of any E&M visits during episode
  - If tied, plurality of PFS costs during episode during episode

Table B.3: Chronic Condition Episodes by Attribution Rules

Episode	Plurality Outpatient E&Ms	Outpatient E&Ms + PFS	Plurality E&Ms	E&Ms + PFS	Unattributed
6. Chronic atrial fibrillation/flutter	78.7%	6.4%	5.7%	0.4%	8.8%
7. Chronic CHF	71.5%	6.2%	13.5%	1.1%	7.7%
8. COPD/asthma	74.7%	6.0%	7.7%	0.5%	11.1%
11. IHD (all)	80.5%	7.2%	5.1%	0.5%	6.7%

Addendum B: Attribution Rules

Addendum B provides summary statistics on:

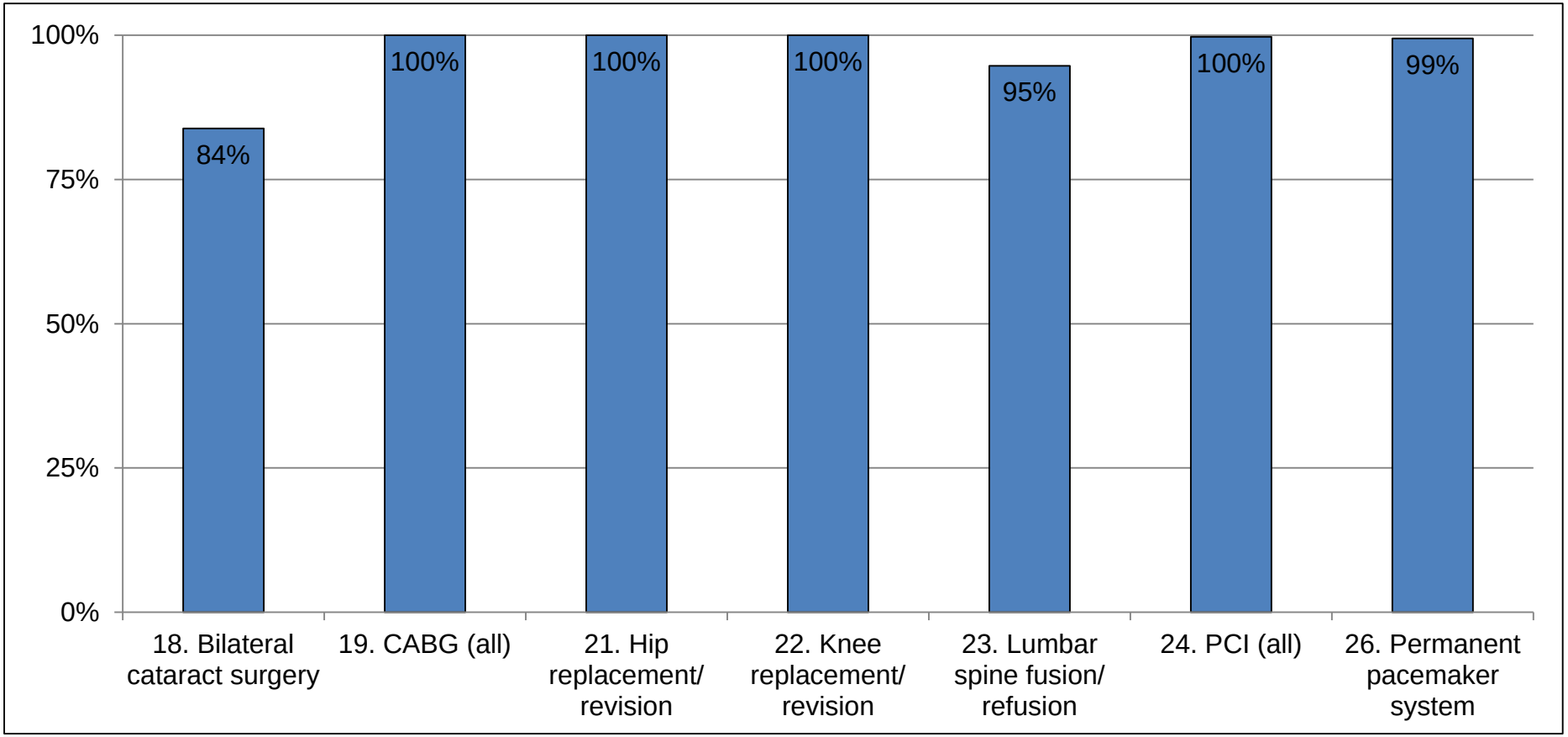
- **Attribution to medical group practices:**
  - Percentage of episodes attributed based on each attribution rule
  - **Percentage of procedural episodes attributed to multiple groups**
- **Identification of apparent lead EP:**
  - Apparent lead EP specialty with at least 5% of episodes and average risk-adjusted costs
  - Percentage of episodes without an apparent lead EP identified

Procedural Episodes Attributed to One Medical Group *(1 of 2)*

- Procedural episodes are attributed to all medical group practices billing the surgical claim during the trigger event
  - If there are multiple medical group practices billing the surgical claim during the trigger event (e.g., co-surgeons from different TINs), all performing physicians (and their medical group practice) are considered equally responsible
- Most procedural episode types (95-100%) were attributed to one medical group practice
  - However, 84% of bilateral cataract removal episodes were attributed to one medical group practice

Procedural Episodes Attributed to One Medical Group *(2 of 2)*

Figure B.1. Percentage of Procedural Episodes Attributed to One Medical Group



Addendum B: Attribution Rules

Addendum B provides summary statistics on:

- **Attribution to medical group practices:**
  - Percentage of episodes attributed based on each attribution rule
  - Percentage of procedural episodes attributed to multiple groups
- **Identification of apparent lead EP:**
  - **Apparent lead EP specialty with at least 5% of episodes and average risk-adjusted costs**
  - Percentage of episodes without an apparent lead EP identified

Identification of Apparent Lead Eligible Professional

- Only clinically appropriate specialties are eligible to be identified as an apparent lead EP
  - For example, while a general practitioner was qualified to be the lead EP for a pneumonia episode, he or she is not considered for identification as a lead EP for a PCI without ACS episode because PCI is a procedure normally performed by a physician specialist

Table B.4: Summary of Identification of Apparent Lead EP

Episode Type	Apparent Lead EP Identification Criteria
Acute condition	(1) Plurality of IP E&M visits during trigger event (2) If attributed based on any E&M visits, plurality of any E&M visits during trigger event (3) If tied, plurality of PFS costs
Chronic condition	(1) Plurality of outpatient E&M visits during episode (2) If attributed based on any E&M visits, plurality of any E&M visits during episode (3) If tied, plurality of PFS costs during episode
Procedural	(1) Billing on physician (PB) claim with trigger surgical CPT-4 code during trigger event (2) If multiple EPs bill to the same TIN, plurality of PFS costs on the trigger Part B claim (3) If tied in PFS costs, choose one EP

More information on EP specialties that are considered clinically appropriate, by episode type, can be found in the Detailed Methods documentation on this CMS webpage.

Apparent Lead Eligible Professional Specialties for Acute Condition Episodes

Table B.5: Apparent Lead EP Specialties of Acute Condition Episodes

Episode	Specialty	% of Episodes Assigned		Average Risk-Adjusted Cost	
		National Benchmark	1,236 Medical Groups	National Benchmark	1,236 Medical Groups
1. ACS (all)	Cardiology	52.5%	51.4%	$19,522	$19,278
	Internal Medicine	24.1%	20.5%	$18,658	$18,412
	Family Practice	5.5%	3.3%	$17,330	$17,169
5. Cellulitis	Internal Medicine	59.9%	69.4%	$10,471	$10,279
	Family Practice	16.5%	12.6%	$10,446	$10,157
	Infectious Disease	7.2%	5.4%	$10,912	$10,526
9. Acute COPD/asthma	Internal Medicine	45.6%	45.4%	$10,332	$10,092
	Pulmonary Disease	15.4%	6.9%	$11,706	$11,417
	Family Practice	15.3%	10.6%	$10,097	$9,797
	Cardiology	5.1%	9.0%	$10,674	$10,736
10. GI hemorrhage	Internal Medicine	57.4%	64.9%	$11,280	$11,085
	Family Practice	12.6%	9.8%	$11,135	$10,889
	Gastroenterology	9.2%	6.1%	$10,936	$10,675
14. Kidney / urinary tract infection	Internal Medicine	62.1%	71.6%	$11,440	$11,267
	Family Practice	18.0%	12.8%	$11,308	$11,176
15. Pneumonia (all)	Internal Medicine	38.5%	36.9%	$13,828	$13,871
	Family Practice	18.7%	13.7%	$9,554	$8,933
	Pulmonary Disease	9.7%	4.9%	$18,415	$17,890

Apparent Lead Eligible Professional Specialties for Chronic Condition Episodes

Table B.6: Apparent Lead EP Specialties of Chronic Condition Episodes

Episode	Specialty	% of Episodes Assigned		Average Risk-Adjusted Cost	
		National Benchmark	1,236 Medical Groups	National Benchmark	1,236 Medical Groups
6. Chronic atrial fibrillation/flutter	Cardiology	49.1%	49.1%	$1,826	$1,836
	Internal Medicine	21.4%	19.9%	$1,938	$1,848
	Family Practice	11.5%	11.2%	$1,820	$1,570
7. Chronic CHF	Cardiology	34.2%	40.1%	$4,541	$4,918
	Internal Medicine	25.0%	19.7%	$5,732	$5,498
	Family Practice	13.7%	10.6%	$5,499	$4,743
8. COPD/asthma	Internal Medicine	26.4%	24.5%	$3,044	$3,051
	Pulmonary Disease	23.2%	18.9%	$2,637	$2,396
	Family Practice	19.0%	20.2%	$2,800	$2,404
11. IHD (all)	Cardiology	65.2%	64.0%	$2,469	$2,349
	Internal Medicine	16.1%	14.5%	$2,697	$2,636
	Family Practice	6.9%	6.7%	$2,587	$2,200

Apparent Lead Eligible Professional Specialties for Procedural Episodes

Table B.7: Apparent Lead EP Specialties of Procedural Episodes

Episode	Specialty	% of Episodes Assigned		Average Risk-Adjusted Cost	
		National Benchmark	1,236 Medical Groups	National Benchmark	1,236 Medical Groups
18. Bilateral cataract removal with lens implant	Ophthalmology	85.8%	5.8%	$5,120	$5,583
19. CABG (all)	Cardiac Surgery	53.9%	48.0%	$43,466	$43,073
	Thoracic Surgery	38.5%	44.9%	$43,379	$43,048
21. Hip replacement/revision	Orthopedic Surgery	99.4%	99.6%	$22,044	$22,003
22. Knee replacement/revision	Orthopedic Surgery	99.3%	99.5%	$20,971	$21,038
23. Lumbar spine fusion/refusion	Orthopedic Surgery	51.2%	47.7%	$39,242	$39,348
	Neurosurgery	42.9%	47.4%	$39,084	$39,131
24. PCI	Cardiology	95.4%	95.7%	$18,779	$18,700
26. Permanent pacemaker system replacement/insertion	Cardiology	62.8%	59.7%	$19,891	$20,113
	Cardiac Electrophysiology	21.4%	30.0%	$20,462	$20,482

Addendum B: Attribution Rules

Addendum B provides summary statistics on:

- **Attribution to medical group practices:**
  - Percentage of episodes attributed based on each attribution rule
  - Percentage of procedural episodes attributed to multiple groups
- **Identification of apparent lead EP:**
  - Apparent lead EP specialty with at least 5% of episodes and average risk-adjusted costs
  - **Percentage of episodes without an apparent lead EP identified**

Episodes Without An Apparent Lead Eligible Professional

Table B.8: Percentage of Episodes Without an Apparent Lead EP Identified

Episode	% Episodes without Lead EP Identified
1. ACS (all)	10.1%
5. Cellulitis	1.7%
6. Chronic atrial fibrillation/flutter	7.2%
7. Chronic CHF	11.9%
8. COPD/asthma	14.2%
9. Acute COPD/asthma, inpatient exacerbation	12.4%
10. GI hemorrhage	1.0%
11. IHD (all)	5.4%
14. Kidney/urinary tract infection	0.8%
15. Pneumonia (all)	17.0%
18. Bilateral cataract removal with lens implant	14.2%
19. CABG (all)	7.6%
21. Hip replacement/revision	0.6%
22. Knee replacement/revision	0.7%
23. Lumbar spine fusion/refusion	6.0%
24. PCI (all)	4.1%
26. Permanent pacemaker system replacement/insertion	15.8%

Addendum C: Reliability Testing

Addendum C reports on the reliability of the 26 episodes included in the 2012 Supplemental QRURs

- Introduction to reliability testing
- Reliability scores for each episode
- Summary of findings

Reliability Testing

- **Reliability** is a measure of precision and therefore evaluates the extent to which the performance of one group can be confidently distinguished from another based on the episode grouping and attribution methodologies.
- Reliability is calculated as the proportion of total variability attributable to between−group variation for episodes with an average of at least 10 episodes attributed per group.

$$reliability = \frac{\sigma^2 between}{\sigma^2 between + \sigma^2 within}$$

- A higher ratio means that relatively more variation in episode costs is due to differences in performance across groups.

Summary of Reliability Testing

- Most episodes have high or moderate reliability, indicating that the episode grouping and attribution methodologies consistently distinguish performance between groups.
  - Chronic condition episodes had high reliability scores (at least 0.84)*
  - Acute condition episodes had moderate reliability scores (around 0.64 to 0.73)*

** Landis, J. R., Koch, G. G. (1977). "The measurement of observer agreement for categorical data". Biometrics 33:159-174.*

Reliability Scores

Table C.1: Reliability Scores

Episode Type	Reliability
1. ACS (all)	0.73
2. ACS without PCI/CABG	0.68
3. ACS with PCI	0.65
4. ACS with CABG	0.64
5. Cellulitis	0.60
6. Chronic atrial fibrillation/flutter	0.86
7. Chronic CHF	0.86
8. COPD/asthma	0.83
9. Acute COPD/asthma, inpatient exacerbation	0.71
10. GI hemorrhage	0.64
11. IHD (all)	0.86
12. IHD without ACS	0.59
13. IHD with ACS	0.87
14. Kidney / urinary tract infection	0.68
15. Pneumonia (all)	0.91
16. Pneumonia without IP hospitalization	0.83
17. Pneumonia with IP hospitalization	0.71
18. Bilateral cataract removal with lens implant	0.98
19. CABG (all)	0.77
20. CABG without ACS	0.75
21. Hip replacement/revision	0.87
22. Knee replacement/revision	0.92
23. Lumbar spine fusion/refusion	0.84
24. PCI (all)	0.65
25. PCI without ACS	0.63
26. Permanent pacemaker system replacement/insertion	0.63