Statistical Brief #18

Office of Quality and Patient Safety
Bureau of Health Informatics

June 2018

Profile of Charges for Potentially "Shoppable" Radiological and Echocardiography Procedures in New York State, 2016

Stephen Goins, MS, Tatiana Ledneva, MS, Mary Beth Conroy, MPH

Highlights

- Visits with one unique shoppable procedure in 2016 accounted for 0.77% of ambulatory surgery visits and 10.32% of outpatient services visits.
- Less common and more expensive procedures were more likely to show higher variation in charges and be performed in an ambulatory surgery setting.
- Those age 65 and older had the highest shoppable procedures population rate (203.65 procedures per 1,000); while those aged 1-17 had the lowest rate (16.63 procedures per 1,000).
- Shoppable procedures that were primarily Self-Pay had lower charges, with the largest proportion of procedures (47.65%) in the lowest quartile of charges relative to all other payers.
- 53.85% of procedures performed in the Northern Metro region were in highest quartile of charges; compared to only 0.11% in the Western region.
- Large rural hospitals charge less than other facilities, with both the largest proportion of procedures (43.86%) in the lowest quartile and the smallest proportion (3.14%) of procedures in the highest quartile of charges relative to other facilities.

Introduction

Over the past several years there has been a significant effort in New York State (NYS) and nationwide to improve transparency in both the price and quality of healthcare, empowering consumers to make educated decisions about where they receive care.[1,2] When comparing providers in terms of cost and quality, consumers can shop for the health services based on the aspects of care that are important to them such as potential cost and proximity to the service site. In general, the following conditions are needed for a service to be considered shoppable: presence of multiple providers in the market, possibility for a service to be researched in advance, and availability of sufficient information on services price and quality for research.[3] Though not all services can be shopped for (it would not be expected to delay treatment of a health emergency simply to compare available providers), there is a large number of services across a variety of health care settings for which patients could use available information to select a provider if these conditions are met. While availability of multiple providers is a condition that is met in many NYS health markets, provider specific metrics on prices and quality for a given service may not be readily available to consumers, though resolutions to these barriers continue to be developed.[4,5,6]

For some health care consumers, the cost of a service could determine the place they receive care. Even for the adequately insured, price is an important influence as insurance companies move away from fixed amount copay to coinsurance based on a percentage of service cost.[7] Variation in current charges for potentially shoppable services can help explain how price transparency could impact consumers' healthcare choices and the magnitude of cost savings available. A wide variation in charges for shoppable procedures may indicate that pricing information would have a large impact on consumer's choice, fostering competition and potentially driving statewide prices down; while low variation may indicate that quality will

be a more important factor and there may not be significant savings available to be realized.

This Statistical Brief focuses on a subset of potentially shoppable procedures in NYS outpatient institutional settings. The purpose of this brief is to examine the frequency and charge characteristics of these select procedures, attempt to quantify how charges vary across NYS, and examine factors unrelated to treatment (i.e. location) that can impact service charge variation. While these selected procedures may not always be feasibly shoppable, quantifying variation in charges and profiling characteristics influencing this variation may help predict how price transparency across the spectrum of healthcare services may impact patients' choices in where they receive services.

Data Source

Statewide Planning and Research Cooperative System (SPARCS) is a comprehensive all-payer hospital discharge data reporting system established in 1979 because of cooperation between the health care industry and government. SPARCS currently collects claim level detail on patient characteristics, diagnoses, treatments, services, and charges for every hospital discharge, ambulatory surgery visit, emergency department visit, and visits to hospital-based outpatient clinics in New York State. More information on SPARCS may be found on the NYS DOH public website at: http://www.health.ny.gov/statistics/sparcs/.

Methods

Though there is a large and diverse number of potentially shoppable procedures, this work describes a subset of radiology and echocardiography procedures both for simplicity and the perceived likelihood of these procedures being scheduled in advance - allowing time for consumers to research their options. An initial code list was compiled through an online search for references to imaging procedures that have exhibited high variation in charges. This initial list was expanded to include all related CPT/HCPCS codes included in radiology and echocardiography specific 3M™ Version 3.8 Enhanced Ambulatory Patient Groupings (EAPGs). There were 25 EAPGs included, comprising a total of 347 individual CPT/HCPCS codes (Table 1a). Of the full list of potentially shoppable CPT/HCPCS codes, only 310 (89.34%) procedures were identified in the data. Descriptions of individual CPT/HCPCS codes, when provided, are abbreviated. Full descriptions of all CPT/HCPCS codes individually listed in this brief can be found on the website of the American Medical Association[8].

The primary unit of analysis for this report was the CPT/HCPCS code reported to SPARCS on visits for ambulatory surgery and outpatient services between January 1, 2016 and December 31, 2016. Outpatient emergency department (ED) visits were excluded from the analysis due to the presumed urgent nature of the visit. Additionally, when noted and appropriate, analysis was conducted at the visit level; i.e. when examining primary diagnosis and demographic characteristics of the patients.

A series of exclusion criteria was applied to visits with a potentially shoppable procedure to determine eligibility for this analysis by removing visits with circumstances that may confound comparisons between procedures. These criteria include: (1) evidence of an ED visit as indicated by revenue code, (2) visits with any non-shoppable significant procedure as determined by 3M™ Version 3.8 EAPGs, and (3) any visits with more than one unique shoppable procedure reported on the visit. The impact of these exclusions on the number of visits eligible for this analysis is presented in Table 1b. Following exclusions, 82.11% of all visits with a shoppable procedure remained eligible for the analysis cohort in 2016.

In order to mitigate the impact of extreme outliers in charges for a procedure, while maintaining differences between facilities, charges for the procedures of interest were limited to an upper and lower

bound based on the original charge distribution within each facility. These bounds resulted in 13,490 (0.72%) procedure charges being trimmed at the low end and 30,494 (1.63%) procedure charges being trimmed at the high end. These trimmed charges were used throughout all procedure level analyses in this brief.

To facilitate comparison of charges for procedures across all payers and regions, each procedure was classified by quantile of charge relative to all individual statewide charges for the same procedure. For example, a 'Computerized axial tomography (CT) scan of the head without dye' (CPT/HCPCS code 70450) for which $500.00 was charged is in the 11th percentile of all charges for that procedure statewide; that is, the charge for that procedure was lower than 89% of all charges for that same procedure across the state. Meanwhile, a 'Mammogram screening' (CPT/HCPCS code 77057) for which $500.00 was charged is in the 87th percentile of charges, this charge was lower than only 13% of all charges for 'Mammogram screening'. Assigning these percentiles allows these two charges to be compared to see that while both the' CT scan of the head without dye' and 'Mammography screening' had the same charge ($500.00), the mammogram is considered more expensive because the charge is so much higher relative to other charges for the same procedure across the state. By this process, procedures with different baseline charges could be combined based on relative charge percentile. If multiple percentiles had the same charges value, the lowest percentile was used to represent the charge, potentially resulting in a skew in charge percentile distribution to lower percentiles.

All analysis of charge statistics presented are made at the procedure level, meaning that the specific charge for each procedure performed at a visit is considered separately. The lone exception to this rule is Table 2, where visit-level charges (for all services and procedures at a visit combined) are compared between ambulatory surgery and outpatient services. To mitigate the impact of charge outliers on calculating the range of charges within a procedure, the highest and lowest 10% of charges within a procedure are eliminated from this calculation; charge range is presented as the difference between the 10th and 90th percentile charge values.

Each procedure on the administrative claims reported to SPARCS is paired with a revenue code as an item to represent the service provided. Procedures and revenue codes are not independent of each other and therefore charges related to this item are related to both codes. However, validity of this analysis depends on the assumption that the charges reported are more closely associated with the procedure compared to the revenue code. To confirm that each individual charge was representative of the specific procedure performed, rather than the associated revenue code reported, a series of one-way analysis of variance (ANOVA) tests were performed to compare the mean charges of each different procedure reported under the same revenue code. After restricting to cases where there were at least five charges for at least two unique procedures codes within each revenue code to ensure a stable mean, there were a total of 32 unique revenue codes reported with the shoppable procedures identified in the data. Only one of the ANOVA tests performed within these revenue codes did not find significant (α=0.05) differences between the mean charges of at least two of the unique procedures reported with each revenue code. A more detailed presentation of the results can be found in the Appendix. In this specific case, there were only two unique procedures reported within the revenue code, both were CT scans of the head. These results provided evidence to support the assumption that procedure level charges were primarily driven by the procedure performed, and not the corresponding revenue code.

Where population rates are provided, population denominators were determined using proprietary Claritas small area population files. Primary diagnoses were categorized through use of the Healthcare Cost and Utilization Project (HCUP) Clinical Classification Software (CCS) for ICD-10-CM diagnoses.

Findings

Table 2 describes ambulatory surgery and institutional outpatient services visits distribution for NYS Article 28 facilities and visit-level charges for all eligible visits in CY2016 that had a shoppable procedure reported. There was a total of 1,862,300 visits identified as eligible with a procedure of interest, accounting for 0.77% of all ambulatory surgery visits and 10.32% of all outpatient services visits reported to SPARCS in CY2016. Visits for outpatient services accounted for 1,843,898 (99.01%) of all visits of interest (1,862,300). Ambulatory surgery accounted for only 0.09% of total visits of interest (18,402 out of 1,862,300), but represented 4.71% of total charges for these visits. The mean visit charge for an ambulatory surgery visit with a shoppable procedure was nearly five times as high as the visit charge for outpatient services ($9,205 vs $1,859). Variation in charges for all shoppable service visits was high, with a standard deviation in charges of $11,302 for ambulatory surgery and $2,014 for outpatient services.

Table 3 describes procedure-level charges and counts for both shoppable procedures of interest and all other procedures for those visits that have a shoppable procedure. For both ambulatory surgery and outpatient visits, shoppable procedures accounted for a minority of all procedures recorded on a visit (14.04% and 44.18% respectively). However, the mean charge for a shoppable procedure on these visits was much higher than for all other procedures: $2,048 vs $767 for ambulatory surgery and $1,545 vs $208 for outpatient services. As a result, while the proportion of total shoppable procedures is relatively small, they account for a large proportion of all visit charges. This difference is most stark among outpatient services, where shoppable procedures account for 44.18% of all procedures and 85.49% of charges. Overall, shoppable procedures represent 43.24% of all procedures, while accounting for 83.47% of all charges.

Table 4 shows the Top 25 most common primary diagnoses by CCS category for visits with shoppable procedures for both ambulatory surgery and outpatient visits. The most common CCS category, representing 27.96% of all visits, is 'Factors Influencing Health Care'. This category along with the other ambiguous CCS diagnosis categories 'Symptoms; Signs; and Ill-Defined Conditions' and 'Residual Codes; Unclassified; All E-Codes' combined to account for 34.68%, while male and female genitourinary diseases and conditions represented 9.99%, and cancer and neoplasms-related conditions were reported on 3.57% of visits and among top 25 CCS categories. All Top 25 diagnoses categories combined accounted for 80.85% of all visits.

Table 5 displays the distribution of patient demographic characteristics among all identified shoppable visits, as well as the visit rate per 1,000 NYS residents where applicable. Most visits with a shoppable procedure (71.28%) were made by females, who also had a much higher population visit rate than males (129.99 vs 55.47 visits per 1,000 population). While children less than one year old had a relatively high visit rate (79.06 visits per 1,000 population), children age 1-17 years old had the lowest visit rate at 16.63 visits per 1,000 population among all age groups. Shoppable visit rates then increased steadily with age, reaching a high of 203.65 visits per 1,000 population for those 65 and older. Non-Hispanics accounted for 79.05% of all visits and population visit rates were slightly higher compared to Hispanics (91.56 vs 79.55 visits per 1,000 population respectively). With regards to race, Asian/Pacific Islander had the lowest rate of shoppable procedure visits with 29.07 per 1,000 population. New York City had a much lower visit rate compared to the rest of the state (60.94 vs 114.24 visits per 1,000 population, respectively).

Figure 1 illustrates the distribution of shoppable procedures charge percentiles between ambulatory surgery and outpatient services. As outpatient services represent the majority of shoppable procedures (98.99%), this visit type is driving the overall charge percentile distribution, and the charge percentile distribution among outpatient services closely resembles the distribution overall. Ambulatory surgery was shown to have a larger proportion (36.17%) of low-charge percentile procedures relative to outpatient services (27.06%).

Figure 2 illustrates the overall distribution of shoppable procedures along with the distribution of their charge percentiles by age group. The 45-64 age group had the largest proportion of shoppable procedures (43.29%) while also having the largest proportion of those procedures in the bottom quartile of charges (27.71%). The 18-44 age group was the only other age group that had a larger proportion of procedures in

the bottom charge quartile than the statewide distribution of charges (27.58%). The 1-17 age group had both the highest proportion of procedures in the top charge quartile (28.82%) and the lowest proportion of procedures in the bottom charge quartile (20.68%).

Figure 3 illustrates the overall distribution of shoppable procedures along with the distribution of their charge percentiles by primary payer. Private/Other was the primary payer for the largest proportion of shoppable procedures (43.87%) and also had the largest proportion of those procedures in the top quartile of charges (24.65%). Visits where Medicare was the primary payer (34.18% of procedures) had slightly lower proportion of the procedures in the lowest quartile of charges (26.59%) relative to the statewide distribution and had the second largest proportion of the procedures in the highest charge quartile (22.77%) compared to the statewide proportion. The charge quartile distributions for procedures with either Medicaid or Self-Pay primary payers are skewed to the lower end. Self-Pay procedures represented the fewest total procedures (3.56%) and had the greatest proportion of low charge procedures, with 47.65% of procedures performed in the lowest charge quartile and only 10.33% of procedures in the highest charge quartile.

Figure 4 displays the overall distribution of shoppable procedures along with the distribution of their charge percentiles by facility type. Most of the procedures (96.08%) were performed in hospital-based facilities and are the driving force behind the charge quartiles and their statewide distribution. Hospital extension clinics and diagnostic and treatment centers (DTC) represent the remaining proportion of shoppable procedures (3.74% and 0.17% respectively), but have very different charge distributions. Of all shoppable procedures performed in hospital extension clinics, 28.57% were in the highest charge quartile. Conversely, only 5.11% of procedures performed at a DTC were in the highest charge quartile, while 91.16% were in the lowest charge quartile.

Figure 5 illustrates the overall distribution of shoppable procedures along with the distribution of their charge percentiles by facility region. The Northern Metro region had the largest proportion of procedures that were in the highest quartile of charge (53.85%), as well as the second smallest proportion of procedures in the lowest charge quartile (8.06%) after Long Island (6.28%). The Western region of NYS had by far both the smallest proportion of procedures in the highest charge quartile (0.11%) and the largest proportion of procedures in the lowest charge quartile (73.08%). The Northern Metro, Long Island, Mid-Hudson, Northeast, and New York City regions all had a larger proportion of procedures charged in the highest quartile than a statewide average of 23.04%, while the Western, Finger Lakes, Central, and Mid-Hudson regions all had a larger proportion of procedures in the lowest charge quartile compared to statewide (27.15%). New York City represented the largest proportion of procedures (29.39%), with more than two times as many procedures performed as the next highest volume region (Long Island, 13.94%).

Figure 6 shows the overall distribution of shoppable procedures along with the distribution of their charge percentiles by facility bedsize among hospitals only (96.08% of all procedures). Procedures performed at hospital extension clinics and DTCs are excluded. Large urban (teaching) hospitals accounted for the largest proportion of shoppable procedures performed (38.12%) and charged more, with the largest proportion of procedures in the highest charge quartile (33.70%) compared to the high-charge proportion of 22.85% for all NYS Hospitals combined. Large urban (non-teaching) hospitals had the second-largest proportion of procedures in the highest charge quartile (25.03%), while large rural hospitals had the smallest proportion of procedures in the highest charge quartile (3.14%) and the largest proportion of procedures in the lowest charge quartile (43.86%). Medium sized hospitals generally tended to charge less; medium sized hospitals across all settings had both a larger proportion of lower charges and a smaller proportion of higher charges relative to all NYS hospitals combined. Hospitals in rural counties also tended to charge less; rural hospitals of all sizes accounted for the three smallest proportions of procedures in the highest charge quartile.

Table 6 through Table 9 show the Top 25 shoppable procedures ranked by total volume, total charges, mean charge, and charge range (calculated as the difference between the 10th and 90th percentile) respectively. Combined, the top 25 highest volume procedures accounted for 76.43% (1,427,904)

of all shoppable procedures performed in CY2016. 'Screening mammography, digital' ranked the highest in the total number of shoppable procedures (N=355,496) accounting for 19.03% of all shoppable procedures performed in CY2016 (Table 6) and was the third highest ranked for total charges ($170,096,436), while ranking 225th in terms of mean charges ($478). The shoppable procedure second ranked by volume was 'Transthoracic echocardiogram (TTE) w/doppler complete' with less than half of the first ranked mammography procedure volume (121,401), ranking 1st in total charges ($253,461,010), and 115th in the order of mean charges ($2,088). A majority of the top 25 shoppable procedures with the highest volume also ranked in the top 25 by total charges (20 out of 25). However, these high volume shoppable procedures ranked significantly lower in terms of mean charges and charge range, with the exception of one procedure: 'MRI brain stem without and with dye', that ranked 19th ($4,773) among the top 25 procedures based on mean charge. Among, the top 25 procedures based on volume, only 0.25% were performed in an ambulatory surgery setting.

Table 7 shows distribution of the shoppable procedures based on the Top 25 total charges. The top procedure by total charges, 'Transthoracic echocardiogram (TTE) w/doppler complete' ($253,461,010), had substantially higher total charges than the second highest total charge procedure: 'MRI brain stem without and with dye' ($190,268,278). Of the top 25 highest total charge procedures, only four ranked in the top 25 based on their mean charge compared to 19 ranked in the top 25 based on volume; indicating that most procedures with a high total charge got their ranking through volume rather than by being expensive procedures. Of the top 25 procedures based on volume, 3.11% of the top 25 procedures based on total charge were performed in an ambulatory surgery setting.

Table 8 presents distribution for the top 25 highest ranked shoppable procedures based on mean charge. Twelve of the top 25 procedures were performed more than 50% of the time in an ambulatory surgery setting, however, this proportion drops to 2.85% when combining all top 25 mean charge procedures. Procedures that had the highest mean charge include 'Positron Emission Tomography (PET) Imaging, whole body' ($9,191) and 'Catheter placement, carotid artery, w/angiography' ($8,406). Despite having the highest mean charge, most of these procedures rank lower among total charges due to a smaller volume of procedures. Only two procedures ('PET imaging w/CT Skull-Thigh' and 'MRI brain stem w/o & w/dye') contributed more than one percent to the total volume of the shoppable procedures (1.06% and 2.13%, respectively). Combined, the top 25 mean charge procedures accounted only for 5.12% of all shoppable procedures, while accounting for 21.15% of the total charges. Overall, the mean charge for the top 25 procedures was $5,293, while mean charge for all other shoppable procedures was $1,351.

Table 9 shows shoppable procedures ranking based on charge range. The procedures with the highest charge range were 'Catheter placement, carotid artery, w/angiography' ($15,456), 'Catheter placement thoracic aorta, w/angiography' ($13,693), and 'Catheter placement carotid/ innominate artery, w/angiography' ($12,696). Many of the procedures with the highest charge range involved vascular radiology and ranked highly based on mean charge, but very low based on total procedure volume. Top 25 charge range procedures accounted for under two percent of all shoppable procedures, had a mean charge of $4,861 and range of $6,991. Among the top 25 highest charge range, charge range was approximately double the charge mean and 23 of 25 procedures ranked lower than 111th in volume. In stark contrast to top ranked procedures by other metrics, 21 of the top 25 procedures based on charge range were performed more than 50% of the time in an ambulatory surgery setting and 16.19% of the time for the top 25 combined. Although these top 25 account for only 1.41% of all procedures, this highlights the relatively large charge variation in ambulatory surgery visits compared to outpatient services.

Conclusions

While the selected shoppable diagnostic radiology and echocardiography procedures studied in this statistical brief represented a small proportion of all procedures performed in outpatient settings, on average, they were more expensive than non-shoppable procedures performed during the same visit. Females accounted for the majority of shoppable procedure visits and had a much higher population rate than males, likely due to the presence of female-specific procedures in the shoppable procedures definition (i.e. mammography). Procedures performed during the visits that were self-pay tended to have lower charges relative to visits reimbursed by other payers. Charges for procedures with the payer being a private insurance were generally higher, indicating that self-paying individuals were charged less than insurance companies for the same procedure. Though some differences in charges were seen among patient characteristics, variations between hospital characteristics were much more notable. With regards to facility type, most charges for procedures performed at DTCs were lower relative to hospitals and hospital extension clinics; however, DTCs represented a very small proportion of overall shoppable procedures. There was a large variation in the magnitude of charges geographically, with the Western region of NYS having a much larger proportion of low charge shoppable procedures relative to the rest of the state, while the Northern Metro region had the largest proportion of high charge shoppable procedures. Rural hospitals generally had lower charges regardless of size, while large urban non-teaching hospitals tended to charge the most. Shoppable procedures with the widest range of charges represented a very small proportion of all shoppable procedures, but were far more likely to be performed in an ambulatory surgery setting compared to most other procedures. Most of these procedures were related to vascular catheterization and to MRI imaging.

The limitation to this analysis is the use of charges as a surrogate to actual cost. Under the assumption that each specific procedure drives the facility charge, the charges analyzed here should be highly correlated with post-adjudicated costs for each procedure. However, they do not represent what was ultimately paid for each procedure. In addition, while this brief is a comprehensive representation of the selected shoppable procedures performed in ambulatory settings in NYS, these procedures may also be performed by providers that do not report to SPARCS (not Article 28 facilities), and thus would not be captured here.

The strength of this analysis is the inclusion of only those visits in which charges for the procedures of interest could be isolated from the impact of other services provided during the visit. Removing visits with more than one unique shoppable procedure or with a significant other procedure(s) ensures that the charges reported for the shoppable procedure of interest on the visit is not influenced by these confounding factors.

This brief shows that there is a wide variation in charges for identical procedures across NYS that is primarily related to facility characteristics. As access to cost and quality information becomes more widely available, consumers should be able to use these resources to make an educated decision in selecting providers of non-emergency outpatient care.

Tables and Figures

Table 1a. CPT/HCPCS Codes Included in Shoppable Imaging Definition Identified by EAPG, 2016

EAPG Category	EAPG	EAPG Description	Unique Codes Identified by Review, (N)	Total Unique CPT/HCPCS Codes, (N)	Codes Identified, (%)
Cardiovascular Procedures	81	Echocardiography	23	30	76.67
Radiologic Procedures	280	Vascular Radiology Except Venography of Extremity	32	38	84.21
	281	MRA - Head and/or Neck	8	8	100.00
	282	MRA - Chest	4	4	100.00
	283	MRA - Other Sites	16	18	88.89
	284	Myelography	3	3	100.00
	285	Miscellaneous Radiological Procedures with Contrast	32	34	94.12
	286	Mammography	6	7	85.71
	287	Digestive Radiology	17	20	85.00
	288	Diagnostic Ultrasound Except Obstetrical and Vascular of Lower Extremities	44	48	91.67
	289	Vascular Diagnostic Ultrasound of Lower Extremities	5	6	83.33
	290	PET Scans	10	14	71.43
	291	Bone Densitometry	3	5	60.00
	292	MRI- Abdomen	5	5	100.00
	293	MRI- Joints	7	7	100.00
	294	MRI - Back	10	10	100.00
	295	MRI - Chest	3	3	100.00
	296	MRI - Other	28	29	96.55
	297	MRI - Brain	4	6	66.67
	298	CAT Scan Back	9	9	100.00
	299	CAT Scan - Brain	4	4	100.00
	300	CAT at Scan - Abdomen	10	10	100.00
	301	CAT Scan - Other	20	22	90.91
	302	Angiography, Other	6	6	100.00
	303	Angiography, Cerebral	1	1	100.00
Total			**310**	**347**	**89.34**

Table 1b. Exclusion Criteria used in Determining Eligible Visits for Evaluation of Shoppable Procedures, 2016

Exclusion Steps	Visits w/ Shoppable Procedure (N)	Visits w/ Shoppable Procedure (%)
Total: All Visits with a Potentially Shoppable Procedure (310 CPT/CPCS)	**2,267,919**	**100.00**
Exclusion Criteria (1): Emergency Department Revenue Code	17,463	0.77
Exclusion Criteria (2): Significant Non-Shoppable Procedure	91,067	4.02
Exclusion Criteria (3): Multiple Shoppable Procedures on one visit	297,089	13.10
Analysis Cohort: Eligible Visits	**1,862,300**	**82.11**

Table 2. Total Visits, Charge Statistics for Visits with a Shoppable Procedure Performed, 2016

Visit Type	Total Visits, (N)	Total Visits, (%)	Visits with Shoppable Procedures						
			Visits, (N)	Visits, % of Total by Visit Type	Total Charge	Total Charge, (%)	Mean Charge	Median Charge	Charge Standard Deviation
Ambulatory Surgery	2,396,093	11.82	18,402	0.77	$169,398,866	4.71	$9,205	$5,910	$11,302
Outpatient Services	17,870,131	88.18	1,843,898	10.32	$3,427,478,156	95.29	$1,859	$1,250	$2,014
Total	**20,266,224**	**100.00**	**1,862,300**	**9.19**	**$3,596,877,022**	**100.00**	**$1,931**	**$1,969**	**$12,735**

Table 3. Procedure Level Counts and Charges for Visits with a Shoppable Procedure Performed, 2016

		Total Procedures, (N)	Procedures, (%)	Procedures per Visit	Total Procedures Charges	Total Procedures Charges, (%)	Mean Charge
Ambulatory Surgery (N=18,402)	Shoppable Procedures	18,840	14.04	1.02	$38,581,644	30.35	$2,048
	Other Procedures	115,353	85.96	6.27	$88,520,628	69.65	$767
	All Procedures	**134,193**	**100.00**	**7.29**	**$127,102,272**	**100.00**	**$947**
Outpatient Services (N=1,843,898)	Shoppable Procedures	1,849,309	44.18	1.00	$2,856,902,096	85.49	$1,545
	Other Procedures	2,336,670	55.82	1.27	$485,048,236	14.51	$208
	All Procedures	**4,185,979**	**100.00**	**2.27**	**$3,341,950,332**	**100.00**	**$798**
All Visits (N=1,862,300)	Shoppable Procedures	1,868,149	43.24	1.00	$2,895,483,740	83.47	$1,550
	Other Procedures	2,452,023	56.76	1.32	$573,568,864	16.53	$234
	All Procedures	**4,320,172**	**100.00**	**2.32**	**$3,469,052,604**	**100.00**	**$803**

Table 4. Top 25 Most Common Primary Diagnosis CCS Categories for Shoppable Procedure Visits, 2016

Primary Diagnosis CCS	Visits, (N)	Visits, (%)
FACTORS INFLUENCING HEALTH CARE	520,749	27.96
DISEASES OF URINARY SYSTEM	95,505	5.13
SYMPTOMS; SIGNS; AND ILL-DEFINED CONDITIONS	93,985	5.05
DISEASES OF THE HEART	91,376	4.91
DISEASES OF FEMALE GENITAL ORGANS	90,558	4.86
SPONDYLOSIS; INTERVERTEBRAL DISC DISORDERS; OTHER BACK PROBLEMS	74,602	4.01
NON-TRAUMATIC JOINT DISORDERS	57,126	3.07
OTHER CONNECTIVE TISSUE DISEASE	50,307	2.70
OTHER LOWER RESPIRATORY DISEASE	47,670	2.56
THYROID DISORDERS	43,774	2.35
RESIDUAL CODES; UNCLASSIFIED; ALL E CODES	31,202	1.68
DISEASES OF ARTERIES; ARTERIOLES; & CAPILLARIES	30,110	1.62
OTHER GASTROINTESTINAL DISORDERS	29,352	1.58
CANCER OF BREAST	29,232	1.57
LIVER DISEASE	28,252	1.52
HYPERTENSION	23,351	1.25
CEREBROVASCULAR DISEASE	22,648	1.22
BENIGN NEOPLASMS	21,718	1.17
HEADACHE; INCLUDING MIGRAINE	21,226	1.14
DISEASES OF VEINS & LYMPHATICS	20,733	1.11
OTHER NERVOUS SYSTEM DISORDERS	17,847	0.96
OTHER SKIN DISORDERS	17,752	0.95
EAR CONDITIONS	15,722	0.84
CANCER OF BRONCHUS; LUNG	15,518	0.83
OTHER BONE DISEASE & MUSCULOSKELETAL DEFORMITIES	15,378	0.83
All Other Diagnoses	356,607	19.15
Total	**1,862,300**	**100.00**

Table 5. Shoppable Procedure Visits, Patient Demographics, 2016

Category		Visits, (N)	Visits, (%)	Rate Per 1,000 Population
Sex	Male	534,732	28.71	55.47
	Female	1,327,519	71.28	129.99
	Unknown	49	0.00	
Age	<1	18,058	0.97	79.06
	1-17	66,681	3.58	16.63
	18-44	351,827	18.89	48.41
	45-64	806,546	43.31	152.00
	65+	619,188	33.25	203.65
Ethnicity	Hispanic	300,179	16.12	79.55
	Non-Hispanic	1,472,189	79.05	91.56
	Unknown	89,932	4.83	
Race	White	1,187,735	63.78	93.70
	Black	236,090	12.68	74.68
	Asian/Pacific Islander	47,991	2.58	29.07
	Other	377,451	20.27	159.58
	Unknown	13,033	0.70	
Residence	New York City	523,325	28.10	60.94
	Rest of State	1,286,890	69.10	114.24
	Out of State	43,067	2.31	
	Other*	9,018	0.48	
Total		**1,862,300**	**100.00**	**91.18**

*- Other: Homeless and Unknown residents.

Figure 1. Shoppable Procedure Charges Percentile Distribution by Service Type, 2016

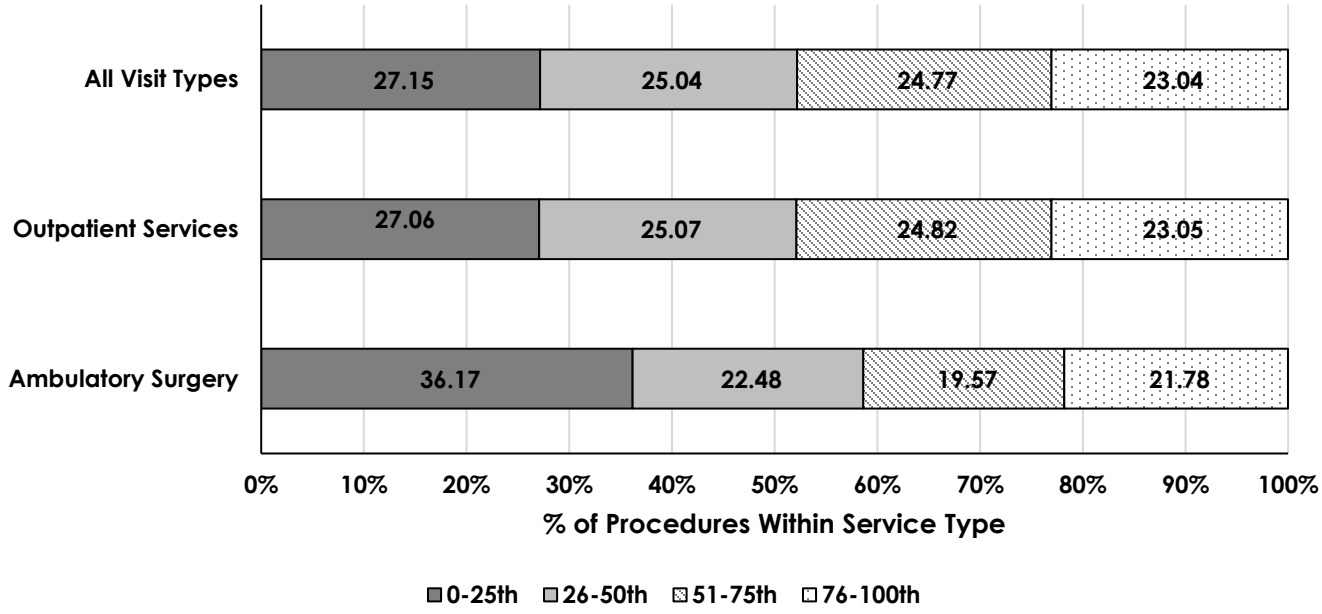


Figure 2. Shoppable Procedure Charges Percentile Distribution by Patient Age, 2016

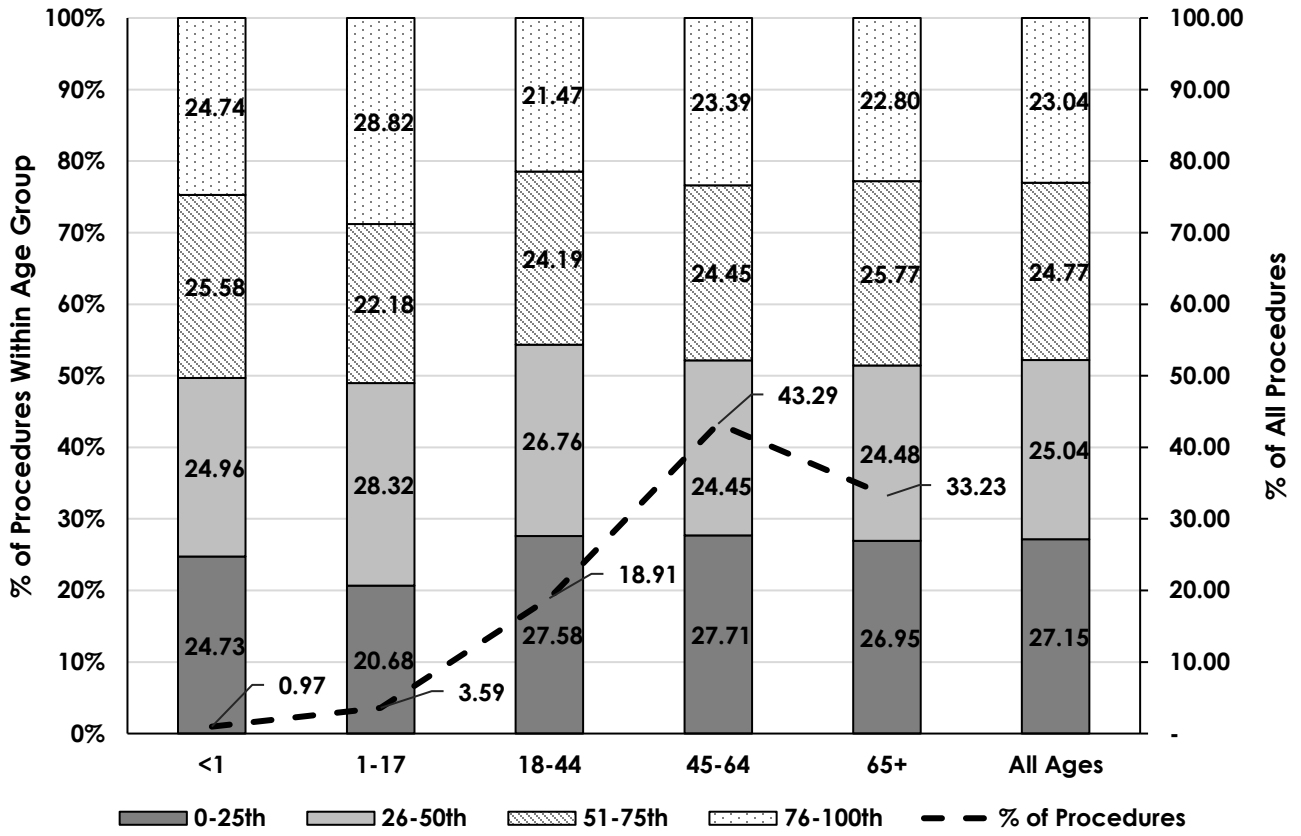


Figure 3. Shoppable Procedure Charge Percentile Distribution by Primary Payer, 2016

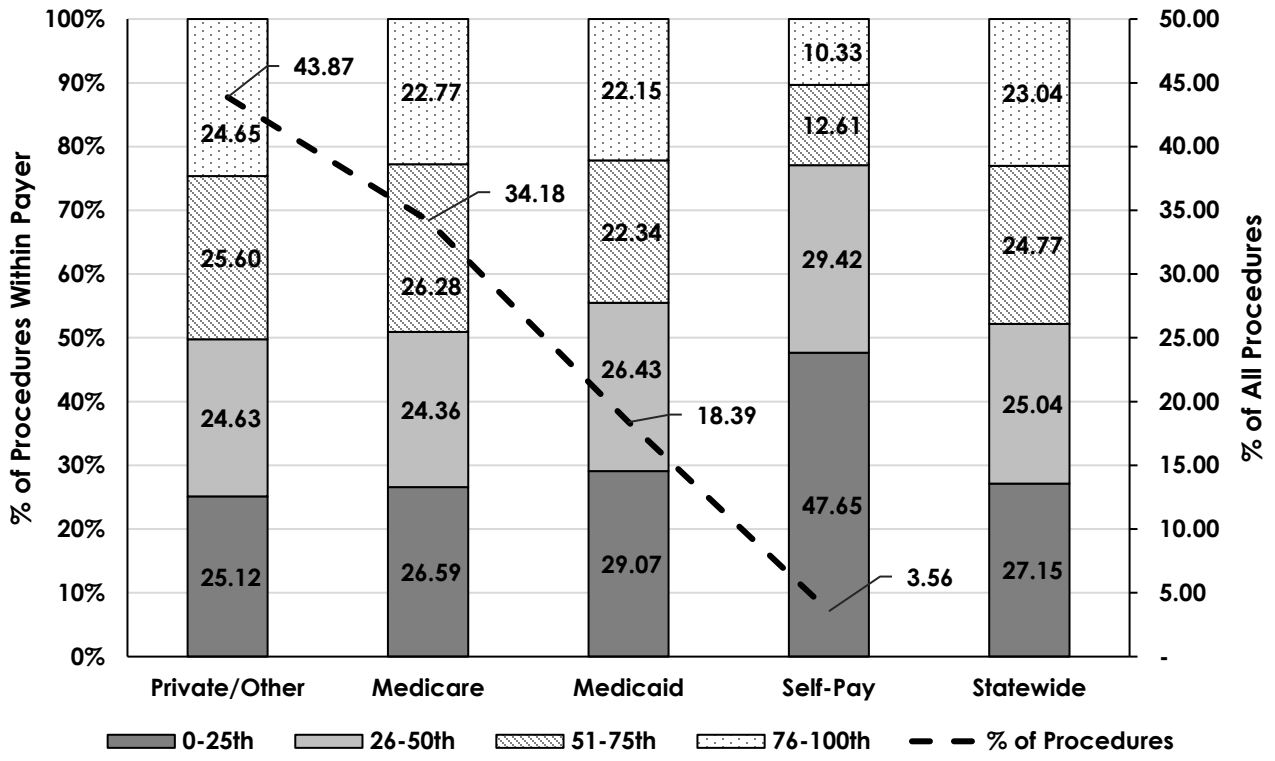


Figure 4. Shoppable Procedure Charge Percentile Distribution by Facility Type, 2016

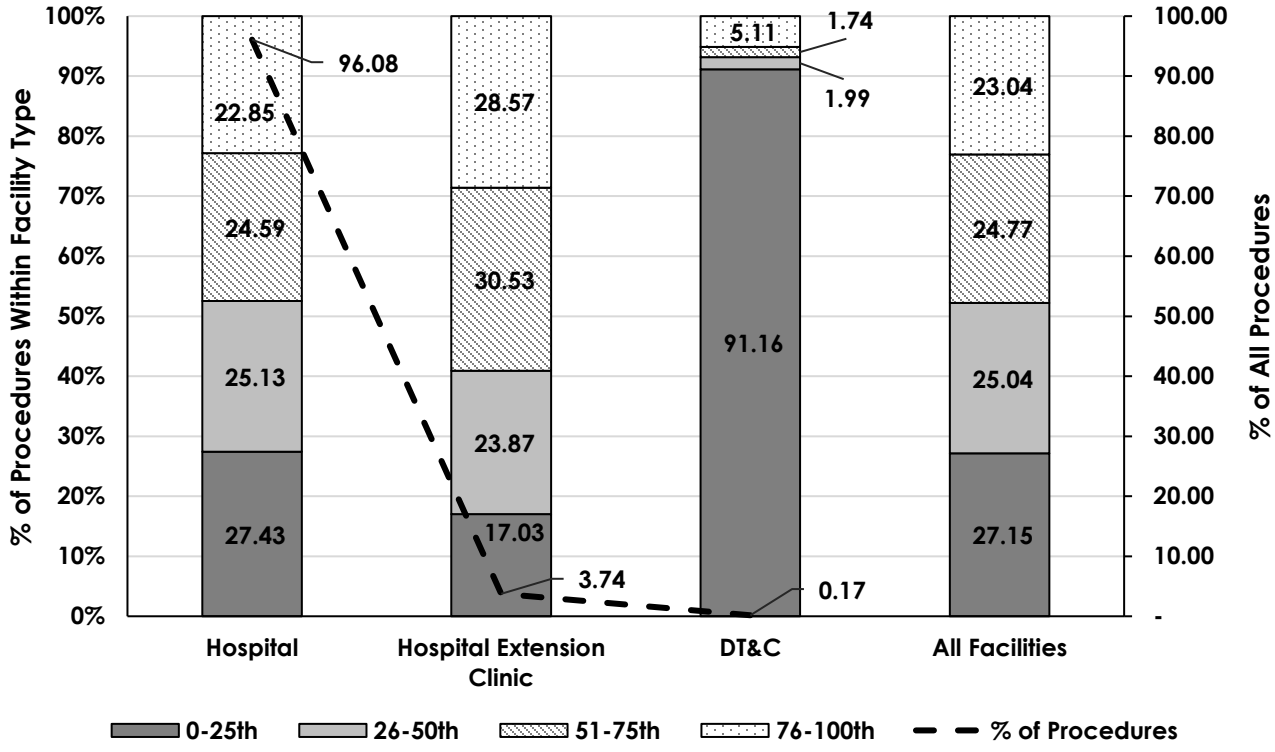


Figure 5. Shoppable Procedure Charge Percentile Distribution by Facility Region, 2016

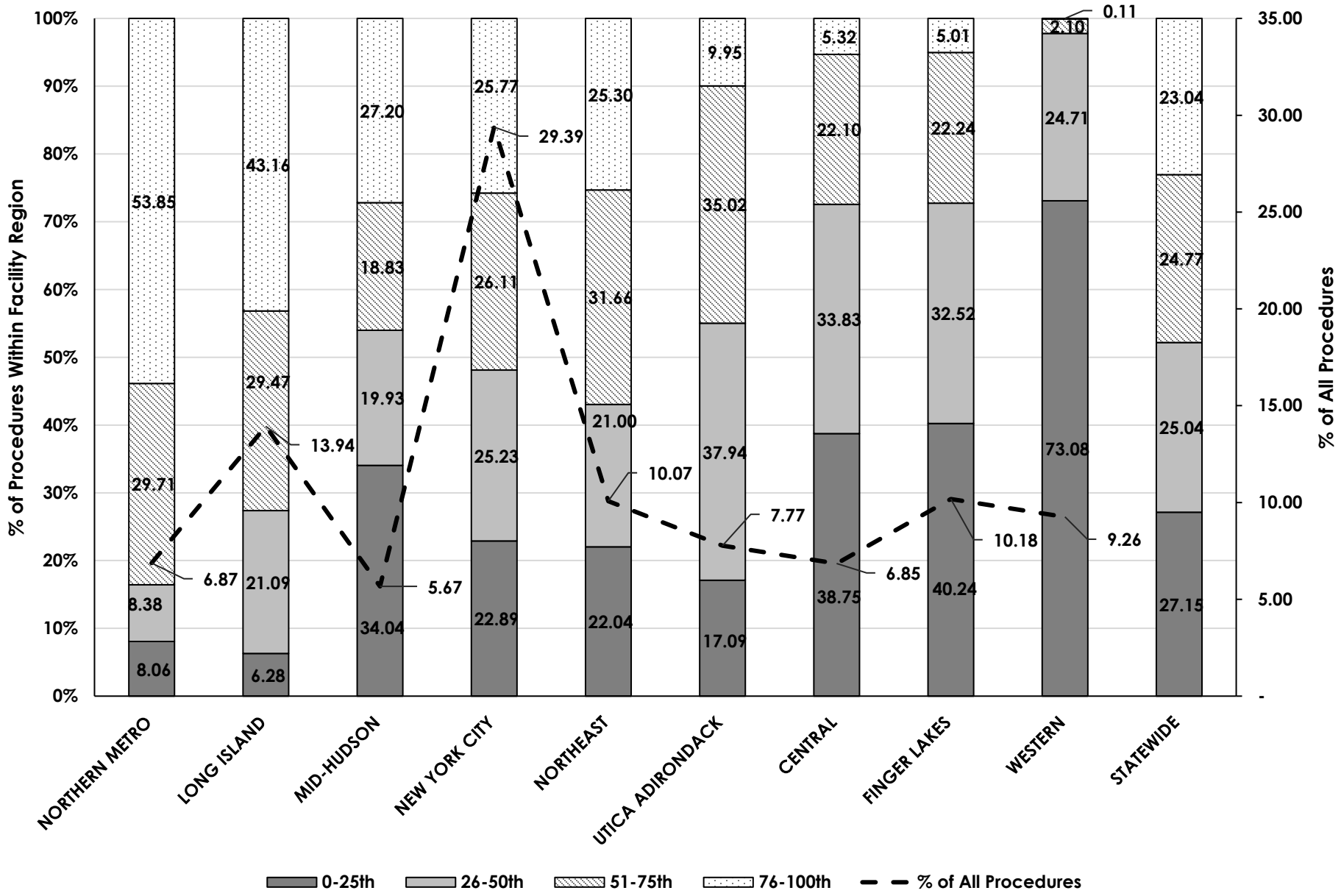
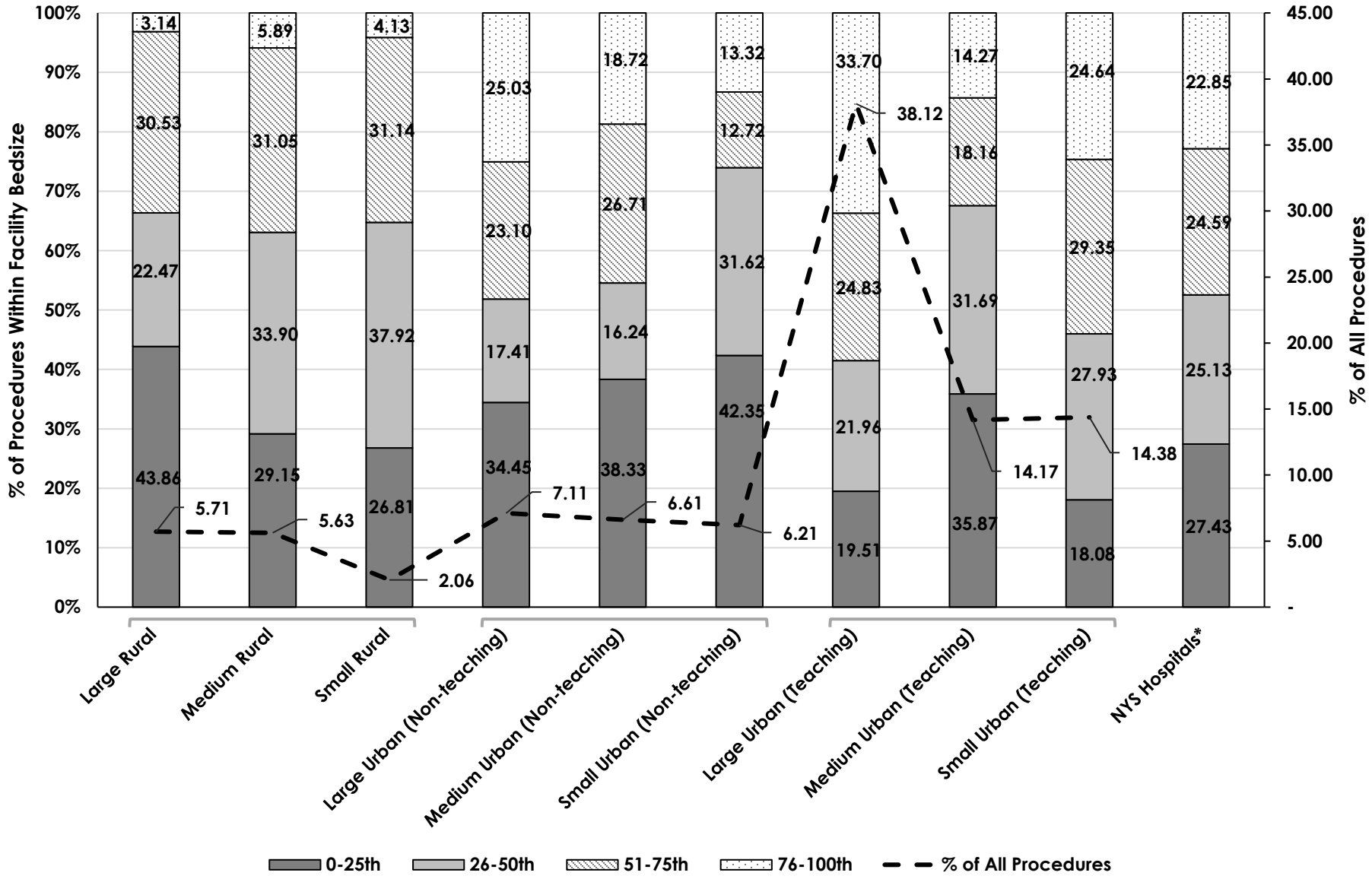


Figure 6. Shoppable Procedure Charge Percentile Distribution by Facility* Bedsize, 2016



*Includes hospitals only, hospital extension clinics and DTCs are excluded.

Table 6. Shoppable Procedures Distribution, Charge Statistics and Ranks: Top 25 Ranked by Volume, 2016

									Rank Among Shoppable Procedures (n=310)				
CPT/ HCPCS Code	CPT/HCPCS Code Description	Total Procs, (N)	Total Procs, (%)	Ambulatory Surgery (%)***	Charge, All Procedures	Charge, Mean	Charge, SD*	Charge, Range**	Procs, Total	Charge, Total	Charge, Mean	Charge, SD	Charge, Range
G0202	SCR MAMMO BI INCL CAD	355,496	19.03	0.02	$170,096,436	$478	$253	$647	***1***	***3***	225	223	218
93306	TTE W/DOPPLER COMPLETE	121,401	6.50	0.04	$253,461,010	$2,088	$1,002	$2,632	***2***	***1***	115	120	110
77057	MAMMOGRAM SCREENING	67,076	3.59	0.00	$26,225,536	$391	$296	$451	***3***	29	234	217	224
71250	CT THORAX W/O DYE	63,917	3.42	0.06	$110,213,553	$1,724	$784	$1,908	***4***	***8***	135	147	144
76536	US EXAM OF HEAD AND NECK	61,901	3.31	0.02	$50,864,887	$822	$566	$1,623	***5***	***16***	188	169	151
76700	US EXAM ABDOM COMPLETE	61,110	3.27	0.17	$60,393,354	$988	$601	$1,289	***6***	***14***	176	163	171
G0206	DX MAMMO INCL CAD UNI	56,441	3.02	4.57	$25,643,596	$454	$216	$504	***7***	30	229	228	221
77080	DXA BONE DENSITY AXIAL	53,058	2.84	0.01	$31,393,874	$592	$280	$748	***8***	***23***	220	221	208
73721	MRI JNT OF LWR EXTRE W/O DYE	48,476	2.59	0.07	$139,260,498	$2,873	$1,126	$3,090	***9***	***5***	77	109	92
74177	CT ABD & PELV W/CONTRAST	47,173	2.53	0.13	$146,196,875	$3,099	$1,741	$3,927	***10***	***4***	62	55	60
G0204	DX MAMMO INCL CAD BI	46,891	2.51	0.42	$28,800,726	$614	$301	$717	***11***	26	218	216	209
76705	ECHO EXAM OF ABDOMEN	45,630	2.44	0.09	$31,118,970	$682	$325	$843	***12***	***24***	209	212	196
76770	US EXAM ABDO BACK WALL COMP	45,041	2.41	0.03	$44,517,528	$988	$650	$1,295	***13***	***17***	175	162	170
72148	MRI LUMBAR SPINE W/O DYE	42,520	2.28	0.04	$131,579,860	$3,095	$1,384	$4,051	***14***	***7***	64	84	58
70553	MRI BRAIN STEM W/O & W/DYE	39,865	2.13	0.07	$190,268,278	$4,773	$1,999	$4,842	***15***	***2***	***19***	43	41
93971	EXTREMITY STUDY	37,977	2.03	0.07	$31,433,617	$828	$494	$1,381	***16***	***22***	187	183	163
74176	CT ABD & PELVIS W/O CONTRAST	29,641	1.59	0.36	$73,469,412	$2,479	$1,460	$3,453	***17***	***12***	97	76	81
70551	MRI BRAIN STEM W/O DYE	28,866	1.55	0.09	$98,352,036	$3,407	$1,474	$3,833	***18***	***9***	54	74	66
76775	US EXAM ABDO BACK WALL LIM	26,322	1.41	0.03	$21,285,351	$809	$542	$1,141	***19***	31	189	176	177
93970	EXTREMITY STUDY	25,844	1.38	0.06	$36,716,005	$1,421	$800	$2,153	***20***	***20***	156	144	136
70450	CT HEAD/BRAIN W/O DYE	25,839	1.38	0.12	$36,570,524	$1,415	$676	$1,581	***21***	***21***	157	160	154
74178	CT ABD & PELV 1/> REGNS	25,304	1.35	0.06	$87,162,318	$3,445	$2,084	$4,608	***22***	***10***	52	39	45
73221	MRI JOINT UPR EXTREM W/O DYE	25,159	1.35	0.16	$66,221,837	$2,632	$1,039	$2,510	***23***	***13***	91	117	119
76830	TRANSVAGINAL US NON-OB	24,615	1.32	0.41	$17,640,482	$717	$531	$1,427	***24***	36	205	177	161
93880	EXTRACRANIAL BILAT STUDY	22,341	1.20	0.01	$27,310,487	$1,222	$822	$2,065	***25***	27	164	140	139
	Top 25 Procedures Total	**1,427,904**	**76.43**	**0.25**	**$1,936,197,050**	**$1,356**	**$1,399**	**$3,125**					
	Remaining Procedures Total	**440,245**	**23.57**	**3.46**	**$965,464,893**	**$2,193**	**$2,219**	**$4,559**					

**SD – Standard Deviation; **To mitigate the influence of outliers, Charge Range was calculated as the difference between the 10th and 90th percentile charge values. ***Represents the percentage of each procedure that was performed in an ambulatory surgery setting (vs. outpatient services).*

Table 7. Shoppable Procedures Distribution, Charge Statistics and Ranks: Top 25 Ranked by Total Charges, 2016

									Rank Among Shoppable Procedures (n=310)				
CPT/ HCPCS Code	CPT/HCPCS Code Description	Total Procs, (N)	Total Procs, (%)	Ambulatory Surgery (%)***	Charge, All Procedures	Charge, Mean	Charge, SD*	Charge, Range**	Procs, Total	Charge, Total	Charge, Mean	Charge, SD	Charge, Range
93306	TTE W/DOPPLER COMPLETE	121,401	6.50	0.04	$253,461,010	$2,088	$1,002	$2,632	***2***	***1***	115	120	110
70553	MRI BRAIN STEM W/O & W/DYE	39,865	2.13	0.07	$190,268,278	$4,773	$1,999	$4,842	***15***	***2***	***19***	43	41
G0202	SCR MAMMO BI INCL CAD	355,496	19.03	0.02	$170,096,436	$478	$253	$647	***1***	***3***	225	223	218
74177	CT ABD & PELV W/CONTRAST	47,173	2.53	0.13	$146,196,875	$3,099	$1,741	$3,927	***10***	***4***	62	55	60
73721	MRI JNT OF LWR EXTRE W/O DYE	48,476	2.59	0.07	$139,260,498	$2,873	$1,126	$3,090	***9***	***5***	77	109	92
78815	PET IMAGE W/CT SKULL-THIGH	19,785	1.06	0.02	$134,851,242	$6,816	$2,737	$5,596	28	***6***	***7***	30	33
72148	MRI LUMBAR SPINE W/O DYE	42,520	2.28	0.04	$131,579,860	$3,095	$1,384	$4,051	***14***	***7***	64	84	58
71250	CT THORAX W/O DYE	63,917	3.42	0.06	$110,213,553	$1,724	$784	$1,908	***4***	***8***	135	147	144
70551	MRI BRAIN STEM W/O DYE	28,866	1.55	0.09	$98,352,036	$3,407	$1,474	$3,833	***18***	***9***	54	74	66
74178	CT ABD & PELV 1/> REGNS	25,304	1.35	0.06	$87,162,318	$3,445	$2,084	$4,608	***22***	***10***	52	39	45
74183	MRI ABDOMEN W/O & W/DYE	17,545	0.94	0.02	$84,472,337	$4,815	$2,284	$6,280	30	***11***	***18***	33	***24***
74176	CT ABD & PELVIS W/O CONTRAST	29,641	1.59	0.36	$73,469,412	$2,479	$1,460	$3,453	***17***	***12***	97	76	81
73221	MRI JOINT UPR EXTREM W/O DYE	25,159	1.35	0.16	$66,221,837	$2,632	$1,039	$2,510	***23***	***13***	91	117	119
76700	US EXAM ABDOM COMPLETE	61,110	3.27	0.17	$60,393,354	$988	$601	$1,289	***6***	***14***	176	163	171
72141	MRI NECK SPINE W/O DYE	18,561	0.99	0.02	$56,870,482	$3,064	$1,399	$3,475	29	***15***	66	82	79
76536	US EXAM OF HEAD AND NECK	61,901	3.31	0.02	$50,864,887	$822	$566	$1,623	***5***	***16***	188	169	151
76770	US EXAM ABDO BACK WALL COMP	45,041	2.41	0.03	$44,517,528	$988	$650	$1,295	***13***	***17***	175	162	170
71260	CT THORAX W/DYE	21,235	1.14	0.03	$39,884,186	$1,878	$998	$2,230	26	***18***	127	121	134
72197	MRI PELVIS W/O & W/DYE	8,782	0.47	0.03	$39,527,195	$4,501	$1,479	$3,444	36	***19***	***23***	72	83
93970	EXTREMITY STUDY	25,844	1.38	0.06	$36,716,005	$1,421	$800	$2,153	***20***	***20***	156	144	136
70450	CT HEAD/BRAIN W/O DYE	25,839	1.38	0.12	$36,570,524	$1,415	$676	$1,581	***21***	***21***	157	160	154
93971	EXTREMITY STUDY	37,977	2.03	0.07	$31,433,617	$828	$494	$1,381	***16***	***22***	187	183	163
77080	DXA BONE DENSITY AXIAL	53,058	2.84	0.01	$31,393,874	$592	$280	$748	***8***	***23***	220	221	208
76705	ECHO EXAM OF ABDOMEN	45,630	2.44	0.09	$31,118,970	$682	$325	$843	***12***	***24***	209	212	196
70486	CT MAXILLOFACIAL W/O DYE	16,519	0.88	0.05	$30,685,997	$1,858	$1,045	$3,285	31	***25***	128	114	88
	Top 25 Procedures Total	**1,286,645**	**68.87**	**0.06**	**$2,175,582,311**	**$1,691**	**$1,705**	**$3,674**					
	Remaining Procedures Total	**581,504**	**31.13**	**3.11**	**$726,079,633**	**$1,249**	**$1,540**	**$2,795**					

**SD – Standard Deviation; **To mitigate the influence of outliers, Charge Range was calculated as the difference between the 10th and 90th percentile charge values.*

****Represents the percentage of each procedure that was performed in an ambulatory surgery setting (vs. outpatient services).*

Table 8. Shoppable Procedures Distribution, Charge Statistics and Ranks: Top 25 Ranked by Mean Charge, 2016

									Rank Among Shoppable Procedures (n=242)				
CPT/ HCPCS Code	CPT/HCPCS Code Description	Total Procs, (N)	Total Procs, (%)	Ambulatory Surgery (%)***	Charge, All Procedures	Charge, Mean	Charge, SD*	Charge, Range**	Procs, Total	Charge, Total	Charge, Mean	Charge, SD	Charge, Range
78813	PET IMAGE FULL BODY	61	0.00	0.00	$560,627	$9,191	$2,092	$4,145	216	160	***1***	37	57
36224	PLACE CATH CAROTD ART	718	0.04	73.40	$6,035,828	$8,406	$4,976	$15,456	123	61	***2***	***11***	***1***
36221	PLACE CATH THORACIC AORTA	87	0.00	74.71	$709,821	$8,159	$5,832	$13,693	206	145	***3***	***6***	***2***
78812	PET IMAGE SKULL-THIGH	192	0.01	0.00	$1,489,997	$7,760	$4,404	$9,420	177	117	***4***	***17***	***12***
78816	PET IMAGE W/CT FULL BODY	2,022	0.11	0.00	$15,327,693	$7,580	$2,954	$5,763	85	38	***5***	26	31
36226	PLACE CATH VERTEBRAL ART	154	0.01	56.49	$1,122,816	$7,291	$5,127	$11,551	185	124	***6***	***8***	***6***
78815	PET IMAGE W/CT SKULL-THIGH	19,785	1.06	0.02	$134,851,242	$6,816	$2,737	$5,596	28	***6***	***7***	30	33
36252	INS CATH REN ART 1ST BILAT	104	0.01	71.15	$659,878	$6,345	$6,542	$12,375	198	151	***8***	***2***	***4***
36225	PLACE CATH SUBCLAVIAN ART	35	0.00	60.00	$217,755	$6,222	$4,524	$11,562	234	197	***9***	***16***	***5***
36223	PLACE CATH CAROTID/INOM ART	414	0.02	78.74	$2,466,938	$5,959	$6,097	$12,696	141	91	***10***	***3***	***3***
36222	PLACE CATH CAROTID/INOM ART	57	0.00	75.44	$337,460	$5,920	$3,282	$4,406	219	178	***11***	***24***	51
36251	INS CATH REN ART 1ST UNILAT	123	0.01	74.80	$711,087	$5,781	$5,090	$11,269	191	144	***12***	***9***	***7***
78608	BRAIN IMAGING (PET)	393	0.02	0.00	$2,151,647	$5,475	$2,913	$7,867	142	102	***13***	27	***19***
78814	PET IMAGE W/CT LMTD	151	0.01	0.00	$792,791	$5,250	$3,194	$3,555	186	139	***14***	***25***	76
70546	MR ANGIOGRAPH HEAD W/O&W/DYE	501	0.03	0.00	$2,616,961	$5,223	$1,843	$5,055	138	88	***15***	49	39
36247	INS CATH ABD/L-EXT ART 3RD	1,186	0.06	72.51	$5,865,083	$4,945	$5,864	$8,806	106	62	***16***	***5***	***16***
61070	BRAIN CANAL SHUNT PROCEDURE	67	0.00	19.40	$325,182	$4,853	$2,065	$4,814	214	182	***17***	40	42
74183	MRI ABDOMEN W/O & W/DYE	17,545	0.94	0.02	$84,472,337	$4,815	$2,284	$6,280	30	***11***	***18***	33	***24***
70553	MRI BRAIN STEM W/O & W/DYE	39,865	2.13	0.07	$190,268,278	$4,773	$1,999	$4,842	***15***	***2***	***19***	43	41
36140	ESTABLISH ACCESS TO ARTERY	234	0.01	80.77	$1,103,421	$4,715	$6,893	$8,609	171	127	***20***	***1***	***17***
75561	CARDIAC MRI FOR MORPH W/DYE	2,146	0.11	0.09	$10,085,989	$4,700	$2,207	$6,183	82	47	***21***	34	***25***
36245	INS CATH ABD/L-EXT ART 1ST	516	0.03	69.57	$2,357,800	$4,569	$5,471	$10,450	137	95	***22***	***7***	***9***
72197	MRI PELVIS W/O & W/DYE	8,782	0.47	0.03	$39,527,195	$4,501	$1,479	$3,444	36	***19***	***23***	72	83
71552	MRI CHEST W/O & W/DYE	543	0.03	0.18	$2,420,013	$4,457	$1,530	$3,892	135	94	***24***	70	62
36217	PLACE CATHETER IN ARTERY	39	0.00	74.36	$168,493	$4,320	$4,998	$8,887	231	213	***25***	***10***	***15***
	Top 25 Procedures Total	**95,720**	**5.12**	**2.85**	**$506,646,330**	**$5,293**	**$2,635**	**$5,474**					
	Remaining Procedures Total	**1,772,429**	**94.88**	**0.91**	**$2,395,015,614**	**$1,351**	**$1,328**	**$2,989**					

**SD – Standard Deviation; **To mitigate the influence of outliers, Charge Range was calculated as the difference between the 10th and 90th percentile charge values. ***Represents the percentage of each procedure that was performed in an ambulatory surgery setting (vs. outpatient services). Procedures with counts under 30 were excluded.*

Table 9. Shoppable Procedures Distribution, Charge Statistics and Ranks: Top 25 Ranked by Charge Range, 2016**

									Rank Among Shoppable Procedures (n=242)				
CPT/ HCPCS Code	CPT/HCPCS Code Description	Total Procs, (N)	Total Procs (%)	Ambulatory Surgery (%)***	Charge, All Procedures	Charge, Mean	Charge, SD*	Charge, Range**	Procs, Total	Charge Total	Charge, Mean	Charge, SD	Charge, Range
36224	PLACE CATH CAROTD ART	718	0.04	73.40	$6,035,828	$8,406	$4,976	$15,456	123	61	***2***	***11***	***1***
36221	PLACE CATH THORACIC AORTA	87	0.00	74.71	$709,821	$8,159	$5,832	$13,693	206	145	***3***	***6***	***2***
36223	PLACE CATH CAROTID/INOM ART	414	0.02	78.74	$2,466,938	$5,959	$6,097	$12,696	141	91	***10***	***3***	***3***
36252	INS CATH REN ART 1ST BILAT	104	0.01	71.15	$659,878	$6,345	$6,542	$12,375	198	151	***8***	***2***	***4***
36225	PLACE CATH SUBCLAVIAN ART	35	0.00	60.00	$217,755	$6,222	$4,524	$11,562	234	197	***9***	***16***	***5***
36226	PLACE CATH VERTEBRAL ART	154	0.01	56.49	$1,122,816	$7,291	$5,127	$11,551	185	124	***6***	***8***	***6***
36251	INS CATH REN ART 1ST UNILAT	123	0.01	74.80	$711,087	$5,781	$5,090	$11,269	191	144	***12***	***9***	***7***
36216	PLACE CATHETER IN ARTERY	40	0.00	75.00	$169,107	$4,228	$4,234	$10,750	228	212	26	***18***	***8***
36245	INS CATH ABD/L-EXT ART 1ST	516	0.03	69.57	$2,357,800	$4,569	$5,471	$10,450	137	95	***22***	***7***	***9***
36011	PLACE CATHETER IN VEIN	103	0.01	69.90	$426,763	$4,143	$4,701	$9,872	199	168	29	***13***	***10***
36481	INSERTION OF CATHETER VEIN	53	0.00	86.79	$210,498	$3,972	$4,830	$9,860	224	198	33	***12***	***11***
78812	PET IMAGE SKULL-THIGH	192	0.01	0.00	$1,489,997	$7,760	$4,404	$9,420	177	117	***4***	***17***	***12***
62284	INJECTION FOR MYELOGRAM	73	0.00	63.01	$260,271	$3,565	$3,473	$8,953	211	193	48	***22***	***13***
36120	ESTABLISH ACCESS TO ARTERY	46	0.00	82.61	$193,293	$4,202	$3,731	$8,912	227	205	27	***20***	***14***
36217	PLACE CATHETER IN ARTERY	39	0.00	74.36	$168,493	$4,320	$4,998	$8,887	231	213	***25***	***10***	***15***
36247	INS CATH ABD/L-EXT ART 3RD	1,186	0.06	72.51	$5,865,083	$4,945	$5,864	$8,806	106	62	***16***	***5***	***16***
36140	ESTABLISH ACCESS TO ARTERY	234	0.01	80.77	$1,103,421	$4,715	$6,893	$8,609	171	127	***20***	***1***	***17***
36005	INJECTION EXT VENOGRAPHY	325	0.02	72.00	$759,167	$2,336	$3,735	$8,107	155	142	106	***19***	***18***
78608	BRAIN IMAGING (PET)	393	0.02	0.00	$2,151,647	$5,475	$2,913	$7,867	142	102	***13***	27	***19***
36215	PLACE CATHETER IN ARTERY	93	0.00	68.82	$361,758	$3,890	$4,688	$7,843	204	176	37	***14***	***20***
36246	INS CATH ABD/L-EXT ART 2ND	942	0.05	61.25	$3,944,233	$4,187	$5,880	$7,367	112	75	28	***4***	***21***
62290	INJECT FOR SPINE DISK X-RAY	241	0.01	92.53	$626,298	$2,599	$3,365	$7,250	169	154	94	***23***	***22***
36200	PLACE CATHETER IN AORTA	581	0.03	52.67	$1,685,890	$2,902	$4,688	$6,893	132	112	74	***15***	***23***
74183	MRI ABDOMEN W/O & W/DYE	17,545	0.94	0.02	$84,472,337	$4,815	$2,284	$6,280	30	***11***	***18***	33	***24***
75561	CARDIAC MRI FOR MORPH W/DYE	2,146	0.11	0.09	$10,085,989	$4,700	$2,207	$6,183	82	47	***21***	34	***25***
	Top 25 Procedures Total	**26,383**	**1.41**	**16.19**	**$128,256,167**	**$4,861**	**$3,404**	**$6,991**					
	Remaining Procedures Total	**1,841,766**	**98.59**	**0.79**	**$2,773,405,776**	**$1,506**	**$1,581**	**$3,323**					

**SD – Standard Deviation; **To mitigate the influence of outliers, Charge Range was calculated as the difference between the 10th and 90th percentile charge values. ***Represents the percentage of each procedure that was performed in an ambulatory surgery setting (vs. outpatient services). Procedures with counts under 30 were excluded.*

Definitions

Ambulatory Surgery Visits
Ambulatory Surgery visits were defined as outpatient records submitted to SPARCS with at least one of the following revenue center codes:

Revenue Code	Description
0360	Operating Room Services
0362	Operating Room Services
0369	Operating Room Services
0481	Cardiology
0490	Ambulatory Surgery
0499	Ambulatory Surgery
0750	Gastro-Intestinal Services
0790	Lithotripsy

Revenue center codes specify a specific accommodation, ancillary service, or billing calculation. Revenue center codes are consistent with the National Uniform Billing Committee (NUBC) UB-04 codes and UB-92 codes. In April 1993, a national ad hoc task force released a new Universal Data Set (UDS) Specification that included reporting codes for use with the Uniform Bill (UB-92) paper form and a new electronic format. SPARCS adopted these national formats for billing and claims processing to simplify data reporting. For detailed reporting requirements please refer to:
http://www.health.ny.gov/statistics/sparcs/sysdoc/outpatientoutputdd.pdf

Emergency Department Visits
Emergency Department visits were defined as outpatient records submitted to SPARCS with at least one of the following revenue center codes:

Revenue Code	Description
0450	General Classification of ER
0451	EMTALA Emergency Medical Screening
0452	ER Beyond EMTALA
0456	Urgent Care ER/Urgent
0459	Other Emergency Room

HCPCS Procedures
The Healthcare Common Procedure Coding System (HCPCS) is a standardized coding system for procedures and services provided in a healthcare setting. The codes are used for claims processing by health insurance programs. The HCPCS is divided into 27 New York State Department of Health – Office of Quality and Patient Safety two systems, referred to as level I and level II of the HCPCS. Level I of the HCPCS is comprised of CPT (Current Procedural Terminology), a numeric coding system maintained by the American Medical Association (AMA). Level II of the HCPCS is a standardized coding system that is used primarily to identify products, supplies, and services not included in the CPT codes.

CPT Procedures
The Current Procedural Terminology (CPT) is a uniform coding system consisting of descriptive terms and identifying codes that are used primarily to identify medical services and procedures provided by health care professionals. These health care professionals use the CPT to identify services and procedures for which they bill to health insurance programs. CPT is also referred to as HCPCS (Healthcare Common Procedure Coding System) Level I.

3M™ Enhanced Ambulatory Patient Groupings (EAPGs)

The EAPG classification system forms clinically meaningful set of patient groups across all outpatient settings using outpatient procedures and diagnoses and are designed to explain the amount and type of resources used in an ambulatory visit. These resources include pharmaceuticals, supplies, ancillary tests, equipment, type of room, treatment time, etc. Patients in each EAPG have similar clinical characteristics, resource use, and costs. Similar resource use means that the resources used are similar for all patients within the same EAPG.

Primary Payer
Primary Payer is based upon the three Source of Payment Code**s** indicated on the SPARCS outpatient record. A visit may also have been paid in part by another payer, but Primary Payer indicates that payer which is principally responsible for the cost of the visit.

Population
Where population rates are provided, the denominator population base was identified through the use of proprietary Claritas files. Claritas data and have been purchased from Claritas for use by employees of the State Department of Health. Data from these files cannot be released to any third party without the prior written consent of Claritas, therefore these publicly released rates do not contain denominator counts.

Region
Region is defined by the patient's county of residence as indicated on the SPARCS record. Regions were defined based upon Medicaid rating regions which break down as follows:

- **Northern Metro**- Putnam, Rockland, Westchester
- **Northeast**- Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Warren, Washington
- **Utica-Adirondack**- Clinton, Essex, Franklin, Hamilton, Herkimer, Jefferson, Lewis, Oneida, Oswego, St. Lawrence
- **Central**- Cayuga, Chenango, Columbia, Cortland, Delaware, Greene, Madison, Onondaga, Otsego, Schoharie, Tomkins
- **Finger Lakes**- Allegany, Broome, Cattaraugus, Chautauqua, Chemung, Livingston, Ontario, Schuyler, Seneca, Steuben, Tioga, Wayne, Yates
- **Western**- Erie, Genesee, Monroe, Niagara, Orleans, Wyoming
- **Long Island**- Nassau, Suffolk
- **Mid-Hudson**- Dutchess, Orange, Sullivan, Ulster
- **New York City**- Bronx, Kings, New York, Queens, Richmond
- **Other**- All others, including out of state

Healthcare Cost and Utilization Project (HCUP) Bedsize Classification
Bedsize categories are based on hospital beds, and are specific to the hospital's location and teaching status. "Urban" or "Rural" classification of facilities was based on facilities' regional population and the CDC's 2013 NCHS Urban-Rural Classification Scheme for Counties. Bedsize assesses the number of short-term acute beds in a hospital. Hospital information was obtained from the AHA Annual Survey of Hospitals.

Beginning in 1998, the hospital's bedsize categories are defined using region of the U.S., the urban-rural designation of the hospital, in addition to the teaching status. Rural hospitals were not split according to teaching status, because rural teaching hospitals were rare. A hospital is a teaching hospital if it has an AMA-approved residency program, is a member of the Council of Teaching Hospitals (COTH) or has a ratio of full-time equivalent interns and residents to beds of .25 or higher. The classification of a hospital location as urban or rural has changed over time. Prior to 2004 data, the urban/rural designation was based on Metropolitan Statistical Areas (MSA). Beginning with the 2004 data, this designation was determined by the Core Based Statistical Area (CBSA). This change in 2004 contributed to a slight decline in the number of hospitals that were classified as rural and a corresponding increase in the number of hospitals that were classified as urban.

The following bedsize classifications were used in this analysis:

NORTHEAST REGION			
Location and Teaching Status	**Hospital Bedsize**		
	Small	**Medium**	**Large**
Rural	1-49	50-99	100+
Urban, nonteaching	1-124	125-199	200+
Urban, teaching	1-249	250-424	425+

SPARCS

The Statewide Planning and Research Cooperative System (SPARCS) is a comprehensive data reporting system established in 1979 because of cooperation between the health care industry and government. Initially created to collect information on discharges from hospitals, SPARCS currently collects patient level detail on patient characteristics, diagnoses and treatments, services, and charges for every Article 28 (acute care) hospital discharge, ambulatory surgery, emergency room visits, and visits to hospital-based outpatient clinics in New York State. More information on SPARCS may be found at the following direct link: http://www.health.ny.gov/statistics/sparcs/.

Unit of Analysis

The unit of analysis is either the CPT/HCPCS code or the visit, not a person or patient. This means that if a person has multiple outpatient visits and/or has multiple procedures performed during the analysis period, each incident will be counted as a separate event. Therefore, a person can have more than one event in the data sets.

Appendix

One-Way ANOVA Results of Unique CPT/HCPCS Mean Charges* Within Revenue Codes by Visit Type, 2016

Revenue Code	Revenue Code Description	Outpatient Services		Ambulatory Surgery	
		Degrees of Freedom	p-value	Degrees of Freedom	p-value
0320	RADIOLOGY - DIAGNOSTIC, GENERAL CLASSIFICATION	47	<0.0001	10	<0.0001
0321	RADIOLOGY - DIAGNOSTIC, ANGIOCARDIOGRAPHY	4	<0.0001	-	-
0322	RADIOLOGY - DIAGNOSTIC, ARTHROGRAPHY	1	<0.0001	-	-
0323	RADIOLOGY - DIAGNOSTIC, ARTERIOGRAPHY	1	<0.0001	-	-
0329	RADIOLOGY - DIAGNOSTIC, OTHER RADIOLOGY - DIAGNOSTIC	18	<0.0001	1	<0.0001
0350	CT SCAN, GENERAL CLASSIFICATION	56	<0.0001	13	<0.0001
0351	CT SCAN, HEAD SCAN	23	<0.0001	1	0.0130
0352	CT SCAN, BODY SCAN	51	<0.0001	15	<0.0001
0359	CT SCAN, OTHER CT SCAN	39	<0.0001	-	-
0361	OPERATING ROOM SERVICES, MINOR SURGERY	37	<0.0001	10	<0.0001
0400	OTHER IMAGING SERVICES, GENERAL CLASSIFICATION	5	<0.0001	-	-
0401	OTHER IMAGING SERVICES, DIAGNOSTIC MAMMOGRAPHY	4	<0.0001	3	<0.0001
0402	OTHER IMAGING SERVICES, ULTRASOUND	38	<0.0001	10	<0.0001
0403	OTHER IMAGING SERVICES, SCREENING MAMMOGRAPHY	2	<0.0001	-	-
0404	OTHER IMAGING SERVICES, POSITRON EMISSION TOMOGRAPHY	7	<0.0001	-	-
0409	OTHER IMAGING SERVICES, OTHER IMAGING SERVICE	12	<0.0001	-	-
0480	CARDIOLOGY, GENERAL CLASSIFICATION	14	<0.0001	2	<0.0001
0483	CARDIOLOGY, ECHOCARDIOLOGY	13	<0.0001	-	-
0500	OUTPATIENT SERVICES, GENERAL CLASSIFICATION	2	<0.0001	-	-
0510	CLINIC, GENERAL CLASSIFICATION	13	<0.0001	-	-
0514	CLINIC, OB-GYN CLINIC	1	<0.0001	-	-
0520	FREE-STANDING CLINIC, GENERAL CLASSIFICATION	1	<0.0001	-	-
0610	MAGNETIC RESONANCE TECHNOLOGY (MRT), GENERAL CLASSIFICATION	73	<0.0001	6	<0.0001
0611	MAGNETIC RESONANCE TECHNOLOGY (MRT), MRI - BRAIN (INCLUDING BRAINSTEM)	8	<0.0001	2	<0.0001
0612	MAGNETIC RESONANCE TECHNOLOGY (MRT), MRI - SPINAL CORD (INCLUDING SPINE)	17	<0.0001	-	-
0614	MAGNETIC RESONANCE TECHNOLOGY (MRT), MRI - OTHER	36	<0.0001	-	-
0615	MAGNETIC RESONANCE TECHNOLOGY (MRT), MRA - HEAD AND NECK	5	<0.0001	-	-
0616	MAGNETIC RESONANCE TECHNOLOGY (MRT), MRA - LOWER EXTREMITIES	4	<0.0001	-	-
0618	MAGNETIC RESONANCE TECHNOLOGY (MRT), MRA - OTHER	14	<0.0001	-	-
0619	MAGNETIC RESONANCE TECHNOLOGY (MRT), OTHER MRT	22	<0.0001	-	-
0636	PHARMACY-EXTENSION OF 25X, DRUGS REQUIRING DETAILED CODING (A)	13	<0.0001	-	-
0761	TREATMENT/OBSERVATION ROOM, TREATMENT ROOM	19	<0.0001	-	-
0762	TREATMENT/OBSERVATION ROOM, OBSERVATION ROOM	1	<0.0001	-	-
0769	TREATMENT/OBSERVATION ROOM, OTHER TREATMENT/OBSERVATION ROOM	3	<0.0001	-	-
0920	OTHER DIAGNOSTIC SERVICES, GENERAL CLASSIFICATION	19	<0.0001	-	-
0921	OTHER DIAGNOSTIC SERVICES, PERIPHERAL VASCULAR LAB	19	<0.0001	2	0.0046
0950	OTHER THERAPEUTIC SERVICES (EXTENSION OF 094X), RESERVED	1	<0.0001	-	-
0960	PROFESSIONAL FEES (ALSO SEE 097X AND 098X), GENERAL CLASSIFICATION	1	<0.0001	-	-

*At least five occurrences of all procedures within each revenue code

References

1. Medicare Provider Utilization and Payment Data. Centers for Medicare and Medicaid Services. https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/index.html
2. NY Healthcare Transparency Law Enacted. Health Leaders Media, April 2015. http://www.healthleadersmedia.com/health-plans/ny-healthcare-transparency-law-enacted
3. White, Chapin, and Megan Eguchi. Reference pricing: a small piece of the health care price and quality puzzle. National Institute of Healthcare Reform. Research Brief No. 18, 2014.
4. Health Data NY https://health.data.ny.gov/
5. NYS Hospital Profiles https://profiles.health.ny.gov/hospital/
6. NYS Physician Profile http://www.nydoctorprofile.com/dispatch?action=goto_about
7. Employer Health Benefits: 2015 Annual Survey. Henry J. Kaiser Family Foundation, Sept. 2016. http://kff.org/report-section/ehbs-2016-summary-of-findings/
8. American Medical Association https://www.ama-assn.org/practice-management/find-coding-resources

Acknowledgements

Authors would like to thank Amutha Sampath-Kumar, PhD for the analytical contribution to this Statistical Brief.

Contact Information

We welcome questions, comments and feedback on this Statistical Brief.

Please contact us at:

Division of Information and Statistics
Office of Quality and Patient Safety
New York State Department of Health
Corning Tower, Room 1911
Albany, New York 12237

Phone: (518) 474-3189
Fax: (518) 486-3518

Email: BHI@health.ny.gov