

Statistical Brief #8

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New York State All-Payer Emergency Room Visits, 2013

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Introduction

There is ample national research to support the increasing role of emergency rooms (ER) as a source of non-emergent healthcare, however this trend in New York State (NYS) is less well documented. Whereas the number of ER visits has increased over time, hospital based emergency department facilities have been in decline¹. This Statistical Brief will seek to provide a more comprehensive picture of how the ER serves the NYS population as a source of emergent and non-emergent care and contribute a snapshot into patterns of emergency department usage by NYS residents in 2013.

Many ER visits are potentially preventable and utilization patterns can point to healthcare needs of a population.

In 2013, 17 percent of all NYS ER visits resulted in an inpatient admission. This analysis only includes the 83 percent of visits that did not result in an inpatient admission ('treat and release').

Methods

The unit of analysis for this brief was an emergency room visit, defined as any outpatient discharge record with a revenue code indicating emergency room care (UB-92 Revenue of 0450, 0451, 0452, 0456, 0459) from an Article 28 (acute care) New York State hospital between January 1, 2013 and December 31, 2013 as reported to the Statewide Planning and Research Cooperative System (SPARCS).

Potentially Preventable Emergency Room Visit (PPV) Methodology
PPVs are ER visits for ambulatory care sensitive conditions that may have been avoided with adequate patient monitoring and follow-up. Although eliminating every ER visit for ambulatory sensitive conditions may not be feasible, efforts in promoting prevention and management of diseases and conditions through primary and preventive care services may help to avoid a fraction of these visits. It is important to note that PPVs are a population based quality measure and do not

Highlights

- Children under 5 years accounted for the lowest proportion of ER visits, but had the highest ER visit rate.
- More females than males went to the ER in 2013.
- White non-Hispanics accounted for nearly 40 percent of all ER visits.
- The highest proportion of visits for any day of the week are made on Monday.
- Together, Medicaid and Medicare accounted for approximately 53 percent of all visits.
- The top 3 most common reasons for an ER visit included superficial injuries, upper respiratory infections and sprains and strains.
- The most commonly performed tests were blood test and X-rays.
- The majority of ER visits were for clinical conditions that could have been treated or prevented through access to high quality primary care settings.
- For the individuals who went to the ER more than 25 times in 2013, the primary reason was for an alcohol related disorder.

¹ Institute of Medicine (2006), IOM Report: The Future of Emergency Care in the United States Health System. Academic Emergency Medicine, 13: 1081–1085. doi: 10.1197/j.aem.2006.07.011

reflect the care provided at a specific facility. High rates of PPVs can help to identify the regions and clinical conditions where resources should be targeted to improve patient quality and reduce costs. PPV identification was completed through the use of the PPV algorithm component of 3M™ Population Focused Preventables (PFP) Classification System (Version 1.2, April 2014) software through the assignment of Enhanced Ambulatory Patient Groupings (EAPGs). Because EAPGs are classified primarily by procedural codes, visits with no procedures documented were excluded from eligibility. Also, ER visits by individuals who were born in the analysis year (2013) are ineligible for PPV assignment and were not considered for a PPV.

Crude ER visit rates were calculated using NYS 2013 Claritas population estimates stratified by county, age, sex, race and ethnicity. The medical reason for a visit was determined by primary diagnosis and categorized using Agency for Healthcare Research and Quality (AHRQ) ICD-9 Clinical Classification Software (CCS) groupings. Procedures were identified through classification of reported CPT/HCPCS codes by EAPG. All data manipulation and analysis outside of PPV identification was performed using SAS 9.3 statistical software.

Data Source

SPARCS is a comprehensive all-payer hospital discharge data reporting system established in 1979 as a result of cooperation between the health care industry and government. SPARCS currently collects patient level detail on patient characteristics, diagnoses, treatments, services, and charges for every hospital discharge, ambulatory surgery patient, and emergency department admission in New York State. Those ER visits resulting in an inpatient admission to the same facility were excluded. More information on SPARCS may be found on the DOH public website at: <http://www.health.ny.gov/statistics/sparcs/>.

Findings

ER Visit Characteristics

A total of 6,417,300 visits to NYS certified emergency rooms were reported in 2013 for a statewide rate of 328.07 per 1,000 population. A summary of some select characteristics of these visits is presented in [Table 1](#). Young children (aged 0-5 years) accounted for the lowest proportion of ER visits (10.96%), but had the highest ER visit rate for any age (502.03 visits per 1,000 persons). The older population (aged 65+ years) accounted for a similarly low proportion of all ER visits (11.79%), but had a much lower visit rate (268.49 visits per 1,000 persons). Persons aged 19-34 years had the second highest visit rate (417.73 visits per 1,000 persons) and also accounted for the largest proportion of total ER visits (28.49%). More women visited the ER than men in 2013 and visited the ER at a slightly higher rate. White non-Hispanics accounted for nearly 40% of ER visits, by far the largest proportion of total visits. Black non-Hispanics had the highest rate of ER visits among known races and ethnicities with approximately 566 visits per 1,000 persons. Those with a reported race of 'Other' had a much higher rate than any other Race/Ethnicity (1,631.84 visits per 1,000 persons) but this result is likely due to a reporting error in which race and ethnicities are not recorded and submitted as 'Other', inflating the ER visit count. Slightly fewer total ER visits were made by residents of New York City (NYC) compared to the rest of the state, however, NYC residents went to the ER at a higher rate than the Rest of State (369.85 and 297.11 visits per 1,000 persons respectively). Distribution of ER visits by quarter in 2013 indicates minimal seasonal trends, with a slightly higher visit rate occurring in the spring and summer months. Of all ER visits in 2013, up to 72% may have been impacted by poor quality or care or limitations in access to care according to 3M Potentially Preventable Emergency Room Visit (PPV) logic. This proportion does not necessarily indicate those visits that should not have been treated in the ER, only that they could have been the result of a deficiency in ambulatory care. Approximately 3% of visits were not eligible for PPV assignment based on either the patient being born in 2013 or having no procedure codes reported with the visit.

Distribution of Visits by Day of the Week

How visits were distributed throughout the week is presented in [Figure 1](#). The highest proportion of visits for any day of the week were made on Monday (15.56%). The number of visits then gradually declined as the week progressed to a low of 13.48% on Saturday. For all days of the week, many more visits were made to the ER during the day (7am-6pm) than at night. Slightly more visits were made in the early morning hours of the weekend compared to weekdays.

Regional ER Visit Rate

ER visit rates per 1,000 population by NYS region are presented in [Figure 2](#). Denominator populations were derived from 2013 Claritas small-area population data. The statewide ER Visit rate in 2013 was 328.07 visits per 1,000 NYS residents. Two regions had visit rates higher than the statewide rate, New York City and Utica-Adirondack, with ER visit rates of 369.85 and 357.58 per 1,000 population respectively. The regions with the lowest ER visit rates were Long Island and Northern Metro. Long Island had the lowest rate in 2013 with 255.16 visits per 1,000 population, followed closely by Northern Metro with a rate of 260.46 visits per 1,000 population.

ER Visits by Payer

The distribution of ER visits in 2013 by the primary payer associated with the visit is presented in [Table 2](#). Medicaid was most frequently indicated as the primary payer, with nearly 2.5 million (38.35%) visits paid. Together, Medicaid and Medicare accounted for approximately 53% of all NYS ER visits in 2013. The proportion of Medicare paid and Self-Pay visits were nearly identical at approximately 14%, with Self-Pay accounting for few thousand fewer visits. Private Insurance and Other sources comprised the remaining 32% of ER visits.

Medical Reasons for an ER Visit

The twenty-five most common medical reasons for an ER visit in 2013 classified by AHRQ CCS categories of the primary diagnosis are presented in [Table 3](#) along with the proportion of potentially preventable visits for each category. The most common reasons for a visit include 'Superficial injury; contusion' (4.86%), 'Other upper respiratory infections' (4.75%), and 'Sprains and strains' (4.46%). Many of the top twenty-five condition categories have a high proportion of PPVs and over 86% of visits within each of these top three primary diagnosis categories were determined to be potentially preventable. Diagnosis categories in the top twenty-five that have a low proportion of PPVs include 'Open wounds of the head; neck; and trunk' and 'Other complications of pregnancy'. Less than 1% of visits in each of these categories were determined to be potentially preventable.

Procedures Performed During an ER Visit

The twenty-five most common procedures performed during an ER Visit, classified by 3M EAPG, are presented in [Table 4](#). The most commonly performed procedures included 'Level I Hematology Tests' (33.62% of visits), 'Plain Film' (31.43%), and 'Organ or Disease Oriented Panels' (31.27%). Well represented on this list are various diagnostic tests and a number of common radiologic procedures.

Frequent ER Utilizers

[Table 5](#) and [Figure 3](#) indicate the distribution of ER visits by the frequency with which each patient visited the ER in 2013. Over 2.8 million of those visiting a NYS ER in 2013 only went once, accounting for just under 45% of all visits. Just under 2% of individuals who visited the ER in 2013 did so more than five times and are considered 'Super Utilizers' of the ER. These individuals accounted for just under 12% of total NYS ER visits in 2013. There were 2,438 individuals who visited the ER more than twenty-five times in 2013.

[Figure 4](#) illustrates the timing of ER visits by utilization level of the patient. Across all utilization levels, fewer visits occurred during regular business hours (Weekdays 7am-5pm) than off-hours. A higher proportion of visits were made during off-hours for those individuals who visited the ER more than 10 times in 2013.

Medical Reasons for an ER Visit by Frequent Utilizers

The top three reasons for an ER visit by utilization frequency is found in [Table 6](#). The top reasons among those who visited the ER fewer than three times were the same and included 'Superficial injury; contusion', 'Sprains and strains' and 'Other upper respiratory infections'. 'Abdominal pain' replaced 'Sprains and strains' among the most common conditions for those in the three to five visit range. For those individuals who used the ER six to ten times in 2013, 'Asthma' was one of the top three primary diagnoses. For those who visited the ER more than eleven times in 2013 the most common reasons for the visits was 'Alcohol-related disorders'. This condition was by far the most common reason for a visit among those who visited the ER more than twenty-five times in 2013, accounting for more than 18% of visits among those individuals.

Conclusions

There were over 6.4 million visits to NYS emergency departments by NYS residents in 2013 at a rate of 328.07 ER visits per 1,000 population. The most common conditions seen in the ER included 'Superficial injury; contusion', 'Other upper respiratory infections', and 'Sprains and strains' while the most commonly performed procedures were blood tests and X-Rays. Individuals who visited the ER more than five times in 2013 represented 1.92% of patients but 11.75% of all visits. The high number of ER visits coupled with nearly 72% of these visits being classified by 3M grouper logic as potentially preventable indicates that the ER is a usual source of care for the population, often for clinical conditions that could have been treated or prevented through access to high quality primary care settings.

New York State has ramped up its efforts to engage patients in primary care models and reduce dependencies on emergency departments as a usual source of care. Some of these efforts include the recently enacted Delivery System Reform Incentive Payment (DSRIP) Program and the Statewide Innovation Plan (SHIP).

DSRIP's purpose is to restructure the health care delivery system by reinvesting in the Medicaid program, with the primary goal of reducing avoidable hospital use by 25% over 5 years. (http://www.health.ny.gov/health_care/medicaid/redesign/dsrp/).

The State Health Innovation Plan (<http://www.governor.ny.gov/news/governor-cuomo-announces-100-million-health-innovation-grant-awarded-new-york-state>) is a recently awarded \$99.9 million Center for Medicare and Medicaid Services grant initiative to identify and stimulate the spread of innovations in health care delivery and finance that result in optimal health outcomes for all New Yorkers. One of the goals of the State Health Innovation Plan is to integrate care and services by improving access to primary care.

The high percentage of visits identified as potentially preventable, coupled with these large scale initiatives being implemented across the state, have promise to result in improved population health.

Tables and Figures

Table 1: Characteristics of Emergency Room Visits, New York State 2013

Category		ER Visits (N)	ER Visits (%)	Visit Rate per 1,000 Population
New York State Total		6,417,300	100.00	328.07
Age (In Years)	0 - 5	703,484	10.96	502.03
	6 - 18	820,628	12.79	260.03
	19 - 34	1,828,077	28.49	417.73
	35 - 49	1,266,049	19.73	321.58
	50 - 64	1,042,585	16.25	269.20
	65+	756,477	11.79	268.49
Gender	Female	3,498,882	54.52	346.82
	Male	2,918,418	45.48	308.10
Race/Ethnicity	Hispanic	1,370,890	21.36	383.45
	White, Non-Hispanic	2,559,666	39.89	228.11
	Black, Non-Hispanic	1,583,255	24.67	566.78
	Asian, Non-Hispanic	152,918	2.38	101.22
	Other	750,571	11.70	1,631.84
Patient Residence	New York City	3,078,949	47.98	369.85
	Rest of State	3,338,351	52.02	297.11
Quarter of Visit	Jan-Mar	1,585,277	24.70	81.04
	Apr-Jun	1,639,349	25.55	83.81
	Jul-Sep	1,632,516	25.44	83.46
	Oct-Dec	1,560,158	24.31	79.76
Potential Preventability Status	At risk, potentially preventable	4,613,237	71.89	-
	At risk, not potentially preventable	1,536,442	23.94	-
	Excluded	75,547	1.18	-
	Unknown	192,074	2.99	-

Figure 1: Distribution of Emergency Room Visits by Day of Week and Time of Day, New York State 2013

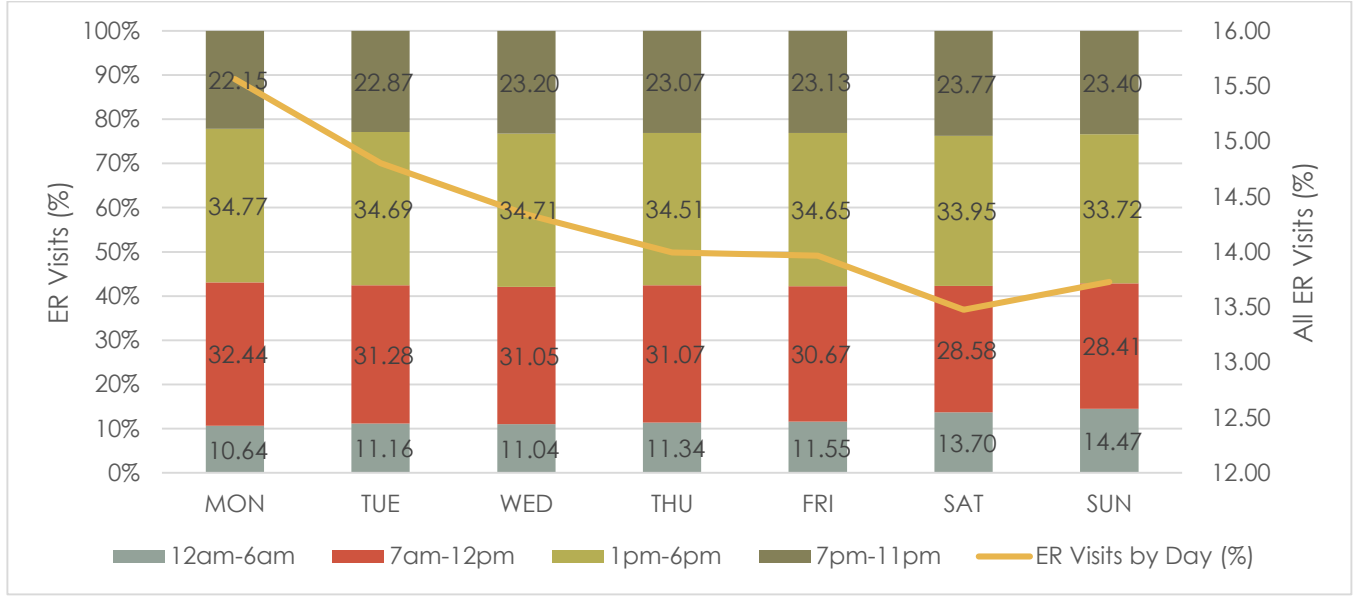


Figure 2: Emergency Room Visit Rate per 1,000 Population* by Region, New York State 2013

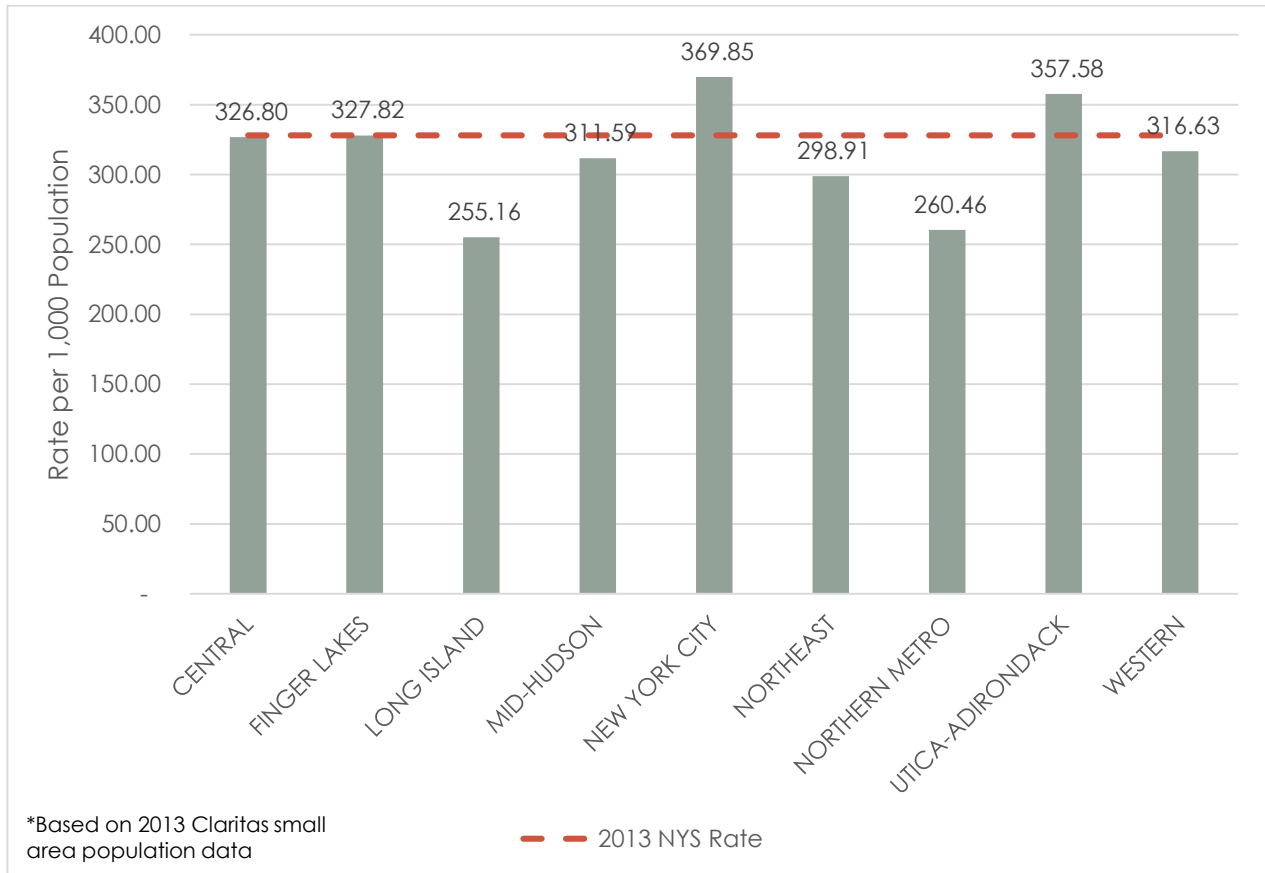


Table 2: Distribution of Emergency Room Visits by Primary Payer, New York State 2013

Primary Payer	ER Visits (N)	ER Visits (%)
Medicaid	2,460,823	38.35
Medicare	941,393	14.67
Private/Other	2,079,202	32.40
Self-Pay	935,882	14.58

Table 3: Top 25 Most Common Reasons for an Emergency Room Visit, New York State, 2013

Rank	Primary Diagnosis CCS Category	ER Visits for Condition (N)	ER Visits for Condition (%)	PPV Visits (%)
1	Superficial injury; contusion	311,977	4.86	89.83
2	Other upper respiratory infections	305,015	4.75	86.76
3	Sprains and strains	286,179	4.46	95.98
4	Abdominal pain	271,570	4.23	96.15
5	Other injuries and conditions due to external causes	217,064	3.38	10.79
6	Spondylosis; intervertebral disc disorders; other back problems	216,555	3.37	96.19
7	Nonspecific chest pain	211,963	3.30	92.79
8	Open wounds of extremities	164,142	2.56	1.29
9	Asthma	146,221	2.28	25.32
10	Other connective tissue disease	137,285	2.14	94.81
11	Headache; including migraine	135,450	2.11	94.73
12	Open wounds of head; neck; and trunk	135,171	2.11	0.97
13	Skin and subcutaneous tissue infections	133,733	2.08	67.64
14	Viral infection	131,648	2.05	88.74
15	Other non-traumatic joint disorders	127,267	1.98	95.47
16	Urinary tract infections	127,051	1.98	91.84
17	Other complications of pregnancy	119,207	1.86	0.29
18	Other lower respiratory disease	115,630	1.80	76.95
19	Alcohol-related disorders	114,061	1.78	90.63
20	Disorders of teeth and jaw	99,181	1.55	90.15
21	Allergic reactions	94,919	1.48	63.80
22	Other gastrointestinal disorders	93,597	1.46	91.43
23	Otitis media and related conditions	84,825	1.32	91.95
24	Fracture of upper limb	84,507	1.32	37.53
25	Noninfectious gastroenteritis	78,020	1.22	94.57

Table 4: Top 25 Most Common Procedures* Performed for an Emergency Room Visit, New York State 2013

Rank	EAPG Description	ER Visits w/ Procedure (N)	ER Visits w/ Procedure (%)
1	Level I Hematology tests	2,157,199	33.62
2	Plain film	2,017,181	31.43
3	Organ or disease oriented panels	2,006,692	31.27
4	Level I Chemistry tests	1,447,797	22.56
5	Venipuncture	1,302,743	20.30
6	Minor pharmacotherapy	1,277,510	19.91
7	Cardiogram	1,004,675	15.66
8	Urinalysis	973,956	15.18
9	Level I Clotting tests	798,360	12.44
10	Level I Microbiology tests	770,910	12.01
11	Level II Chemistry tests	757,049	11.80
12	Blood and urine dipstick tests	678,208	10.57
13	Pharmacotherapy except by extended infusion	604,523	9.42
14	Level I Immunology tests	591,381	9.22
15	Basic chemistry tests	522,274	8.14
16	CAT scan - brain	425,150	6.63
17	Minor chemotherapy drugs	401,190	6.25
18	CAT scan - abdomen	336,883	5.25

Rank	EAPG Description	ER Visits w/ Procedure (N)	ER Visits w/ Procedure (%)
19	Level I Endocrinology tests	329,548	5.14
20	Level II Microbiology tests	328,615	5.12
21	Blood and tissue typing	260,305	4.06
22	Respiratory therapy	248,026	3.86
23	Diagnostic ultrasound except obstetrical and vascular of lower extremities	222,463	3.47
24	Level I Skin repair	207,689	3.24
25	Vaccine administration	190,996	2.98

*One visit may be represented in multiple procedure categories.

Table 5: Distribution of Visits by Individual Frequency of Emergency Room Use, New York State 2013

ER Visits per Patient in 2013	Patients (N)	Patients (%)	ER Visits (N)	ER Visits (%)
1	2,876,327	71.04	2,876,327	44.82
2	699,201	17.27	1,398,402	21.79
3-5	395,266	9.76	1,388,348	21.63
6-10	61,948	1.53	441,233	6.88
11-25	13,549	0.33	198,488	3.09
26+	2,438	0.06	114,502	1.78

Figure 3: Distribution of Emergency Room Visits by Patient Type, New York State 2013

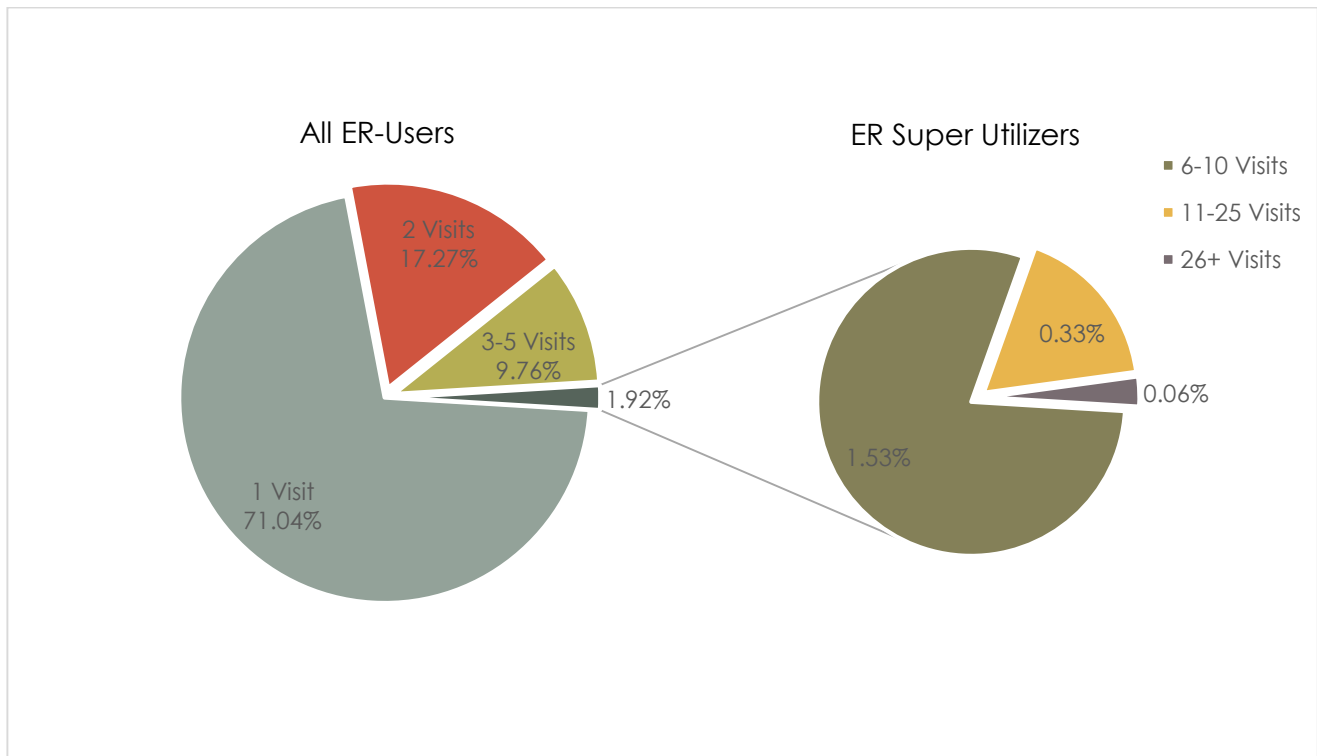


Figure 4: Regular and Off-Hours* Visits by Utilization Frequency, New York State 2013

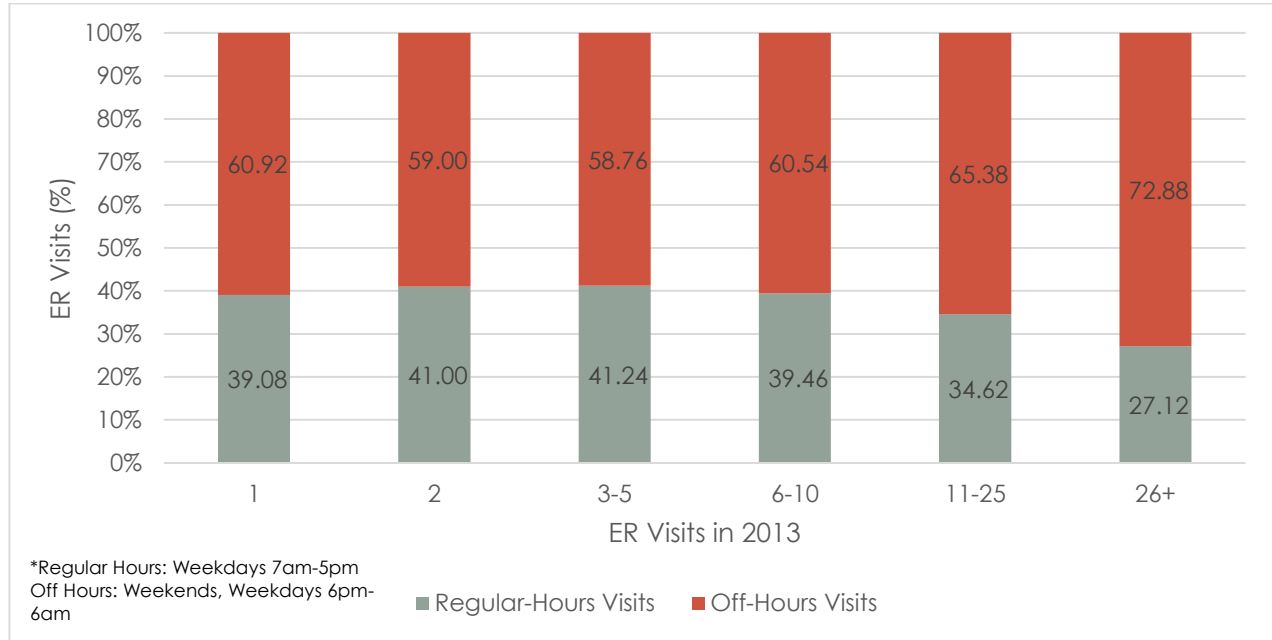


Table 6: Most Common Medical Reasons for an Emergency Room Visit by Utilization Frequency, New York State 2013

Utilization Frequency (Visits)	Primary Diagnosis CCS Categories	ER Visits (N)	ER Visits (%)
1	Superficial injury; contusion	170,248	5.92
	Sprains and strains	160,254	5.57
	Other upper respiratory infections	129,938	4.52
2	Other upper respiratory infections	74,279	5.31
	Superficial injury; contusion	65,069	4.65
	Sprains and strains	58,676	4.20
3-5	Other upper respiratory infections	76,319	5.50
	Abdominal pain	57,743	4.16
	Superficial injury; contusion	54,336	3.91
6-10	Abdominal pain	21,883	4.96
	Other upper respiratory infections	18,635	4.22
	Asthma	17,432	3.95
11-25	Alcohol-related disorders	13,260	6.68
	Abdominal pain	13,066	6.58
	Spondylosis; intervertebral disc disorders; other back problems	9,973	5.02
26+	Alcohol-related disorders	20,635	18.02
	Abdominal pain	8,339	7.28
	Sickle cell anemia	5,862	5.12

Definitions

- **SPARCS-** The Statewide Planning and Research Cooperative System (SPARCS) is a comprehensive data reporting system established in 1979 as a result 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 hospital discharge, ambulatory surgery patient, and emergency room admission in New York State.

- **Unit of analysis-** The unit of analysis for this report is the emergency room visit, not the patient. Therefore, if a single person visited the emergency room on three separate occasions during the time frame of analysis they would be counted as three distinct emergency room visits.
- **Emergency Room Visit-** Emergency room visits were identified as institutional outpatient discharges with at least one of the following Revenue Codes: 0450, 0451, 0452, 0456, 0459
- **Primary Payer-** Primary Payer is based upon the first Payer Typology Code indicated on the SPARCS emergency room admission 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.
- **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:

Region	Counties
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

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