Emergency Department Performance Measures

Initial Report

2018

EMERGENCY DEPARTMENT BENCHMARKING ALLIANCE

Built by emergency department leaders for emergency department leaders.

Emergency Department Performance Measures
2018 Data Guide from the
Emergency Department Benchmarking Alliance (EDBA)

This is the 25th anniversary of the EDBA, founded in 1994 and dedicated to quality medical care, patient satisfaction, medical education, and community service.

The Emergency Department Benchmarking Alliance (EDBA) is a membership organization composed of high-performance American Emergency Departments (ED's) that share a commitment to quality.

Since 2004 the Alliance has surveyed its members to collect ED performance data. Every year, the Data Survey includes a growing number of contributors. They represent a broad base of hospital-based ED's, with a separate data report for hospital-affiliated freestanding ED's of EDBA members. The final report on the 2017 database contained performance measures for over 1,840 ED's and 74 million patient visits, plus 236 freestanding ED's that saw about 3.6 million patients. Many groups interested in hospital and emergency department performance now preferentially use the EDBA Data Survey to assess their ED operations. The 2017 data report was released to The Joint Commission, the AHA, the Centers for Medicare and Medicaid Services, and the CDC.

This is a preliminary report on the 2018 EDBA Performance Measures survey. When all data input for 2018 is complete, the survey will include the results from over 1,700 EDs that served over 75 million patients in 2018, plus 200 additional freestanding ED's that served over 3 million.

The EDBA has worked with the CDC to incorporate the results of the Emergency Department Survey of the National Hospital Ambulatory Medical Care Survey. The summary tables from 2016 were published in April 2019, and the analysis of that 2016 data is printed at the back of this report.

The Volume Estimations for ED Visits are not in Agreement, but the trends are similar

There are various national organizations that provide estimates of ED visits in the United States. They use different survey techniques and different definitions of what constitutes an "Emergency Department."

There is a departure in 2016 ED visit volume estimations between the CDC, AHA, and EMNet. **Table 1** summarizes the volumes estimated by each organization from 2001 to 2016.

Emergency Departments and Emergency Visits 2001-2017

	CDC	NEDI-USA	AHA	AHA	NEDI-USA
	NHAMCS estimated visits	Total Emergency	Total Emergency	Hospitals Reporting ED visits	ED Count
Year	**Visits (M)**	**Visits (M)**	**Visits (M)**		
2001	107.5	101.1	105.6	4,621	4,884
2002	110.2	107.5	110	4,620	4,892
2003	113.9	113.9	111.1	4,570	4,900
2004	110.2	114.7	112.6	4,595	4,907
2005	115.3	115.5	114.8	4,611	4,914
2006	119.2	117.9	118.4	4,587	4,930
2007	116.8	120.3	120.8	4,565	4,946
2008	123.8	123.6	123	4,613	4,959
2009	136.1	126.9	127.3	4,594	4,972
2010	129.8	131	127.2	4,564	4,997
2011	136.3	135	129.4	4,461	5,021
2012	130.9	137.5	133.2	4,460	5,066
2013	130.4	140.5	133.6	4,440	5,128
2014	141.4	146.1	136.3	4,408	5,205
2015	136.9	151.7	141.5	4,353	5,281
2016	145.6	156	142.6	4,349	5,381
2017		158.7	144.8		5,417

SOURCE of AHA data: Health Forum, AHA Annual Survey 0f Hospitals 1990-2016

Table 1. Emergency Department visit estimates, 2001 to 2017, for 3 organizations.

- The **CDC** estimated that 145.6 million visits took place in 2016, after 136.9 million visits in 2015. Table 1 reports the CDC estimated ED visits in the United States since 2001. *The 10-year volume change is 24.7%, and over the last 20 years has increased 61.2%*.
- The **AHA** estimated 2016 visits at 142.6 million in 4,840 ED's. This followed 141.5 million visits in 2017. Table 2 shows the estimates of visits since 2001, and the number of EDs.
- **EMNet** reported that 155.9 million visits occurred in 2016, in a larger number of EDs (n=5,381). This followed 151.6 million ED visits in 2015 in 5,273 EDs. EMNet results include all known Freestanding EDs.

The National Emergency Department Inventory (NEDI)-USA database is maintained by the Emergency Medicine Network (EMNet) at Massachusetts General Hospital in Boston, MA. NEDI-USA contains data on all U.S. EDs open since 2001. According to NEDI-USA, there were 5,381 U.S. EDs and 155,946,509 total U.S. ED visits during the year 2016. All state-specific and national summary NEDI-USA data for the year 2016 can be found here: http://www.emnet-usa.org/research/studies/nedi/nedi2016/

Based off of NEDI-USA data, the current locations of all U.S. EDs can be found in the free smart phone app *EMNet findERnow*, which is available for both iPhone and Android phones. One can also use *findERnow* to find specific information about all U.S. EDs, such as total annual ED visit volume, and if the ED has a verified trauma or burn center.

EDBA Counsel on United States Emergency Department Volumes

The sources each agree that through 2016 there have been steady increases in ED volumes. Because it is the most comprehensive, we believe the EMNet data reflects the true volumes of patients seen in all sites in the US referred to as Emergency Departments. The CDC uses census data and sampling to estimate ED volumes only in full-service, hospital-based ED's. It likely provides the best trending data. The AHA does annual comprehensive data gathering from its members, and it has accurate data for all members, with a very stable number of ED's.

The EDBA does not do volume estimates, but looking at a substantial number of the nation's ED's through the performance survey, we believe that ED volumes will be stable or decrease slightly in 2017 and 2018. The trend of ED's seeing older, sicker patients, combined with continued growth in retail clinics, tele-health, and other sources of care for non-emergent problems, will yield a net increase in severity/complexity for full service ED's.

Executive Highlights of the 2018 EDBA Performance Measures Data Guide

EDBA Members Report that Acuity Increased Slightly

Patient acuity mix is measured by physician level of service and by the percentage of patients that were admitted to the hospital from the ED have been slightly higher.

There was a smaller percentage of children as compared to older patients seen in the EDs, based on historical data. The volume growth in American EDs is based on increasing numbers of senior patients visiting the ED. This verifies the NHAMCS numbers, which show an increasing mix of Medicare patients.

EDs are Changing Structure as they Grow in Volume and Complexity

Bed utilization in EDs was about 1,500 visits per patient care space. This rate in ED's serving adult patient populations is lower, at about 1,244 visits per ED care space.

Computerized physician order entry (CPOE) is now ubiquitous technology, and the data survey question has been removed from future data surveys. About 75% of EDs over 40K volume reported a Fast Track, and about 30% had a CDU or Observation Unit

There is Better Patient Intake Processing in EDs

The "Door to Doctor" time is about 20 minutes, which has decreased every year since 2008, when the intake time was about 41 minutes

There is a Very Stable Patient Processing Time overall in EDs, with Boarding Time being a Key Contributor to the Overall Processing in the ED

The overall length of stay for all ED patients was stable at about 3 hours. This time interval is relatively stable over the last 15 years of EDBA reporting. ED process times remains tightly correlated with volume of patients seen in the ED cohorts that have been established.

About 18% of patients arrive by EMS, and about 36% of those persons were admitted. The percentage of patients who leave the ED prior to the completion of treatment is stable at 2.2%, but the cohort ranges are from 1.0% to 5%. That metric tracks ED volume and boarding time (higher LBTC with higher census) and adult-only ED's (higher acuity).

The cohort system used in the EDBA survey process has data comparators for adult and pediatric EDs, and for EDs that see patients in 20,000 volume bands. Processing times remains highly correlated with ED volume. Higher volume EDs have higher acuity, higher use of diagnostic testing, and longer patient processing times. The trends related to these cohorts remain intact for 2018.

Patients who Require Transfer and Inpatient Boarding are a Significant Challenge to ED Operations

The inpatient units are the site of disposition of ED patients in about 20% of ED visits, and about 2.2% of patients are transferred to another hospital, typically for admission. The ED is the predominant front door for hospital admissions, with about 67% of hospital inpatients being processed through the ED.

There was a stable volume of patient transfers: 2.2% of all patients, or about 3 million a year. According to the 2011 CDC report, about one third of patient transfers from EDs were for mental health treatment, which would reflect about 1,000,000 patient transfers per year.

ED boarding of inpatients remained a burden on ED performance, and accounted for about 45% of the time the admitted patient spent in the ED. The "Boarding Time" interval is an important contributor to overall patient processing, and has increased remained stubbornly high, with an average across all EDs of about 2 hours. This is the time from "decision to admit" until "patient physically leaves the ED". This time interval has been part of the hospital's required data submission to CMS since 2013 and posted on the "Hospital Compare" website.

It was hoped that public posting of boarding would motivate hospital administrators to improve this metric. espite the work of many ED and hospital leaders to reduce this time interval, the initial data for 2018 have the interval at 133 minutes. This time interval is very cohort dependent, ranging from 70 minutes in the smallest volume ED's, to 165 minutes in ED's that see over 60K patients. Boarding time also directly correlates with LBTC rates.

Diagnostic Testing is Evolving in the ED

There was increased use of MRI scans and ultrasounds. EKGs are performed about 25 times per 100 patients seen. MRI scans were performed about 1 time per 100 patients seen in the ED, CT scans in about 21 procedures per 100 patients. Ultrasound usage is about 5 procedures per 100 patients seen.

Production of Fractal Tables will take place in the Final Data Report for 2018

The EDBA is reporting fractals for important data elements that would benefit from fractal production. The numbers shown are for the data at the 50%ile level, the 75th%ile, and the 90th%ile.

Ongoing work: The EDBA Performance Measures Summits

The EDBA has been working to unify the definitions used across the industry. This is critical to the development of reasonable standards and performance measures for the industry. The sets of definitions published after the summits conducted in 2006, 2010, and 2014 are in the reference list (1, 2, 3, 4). The EDBA Summits have provided a talented group of Federal, regional, and emergency leaders the opportunity to develop and influence the future of ED data collection and reporting.

In February 2018 the EDBA conducted its fourth Summit to develop ED Performance Measures and Definitions. The 2018 Summit proceedings will be published in the upcoming months and will contain updates of the key definitions and metrics for ED performance, value, and operations.

The EDBA Report on Performance Measures for 2018

This preliminary 2018 data guide contains the results of a data survey report conducted annually by the EDBA. This survey is the only one that measures ED performance in key areas that relate to staffing, design, flow, and value to the health system. The trend analysis of the data included performance measures collected and reported since 2004.

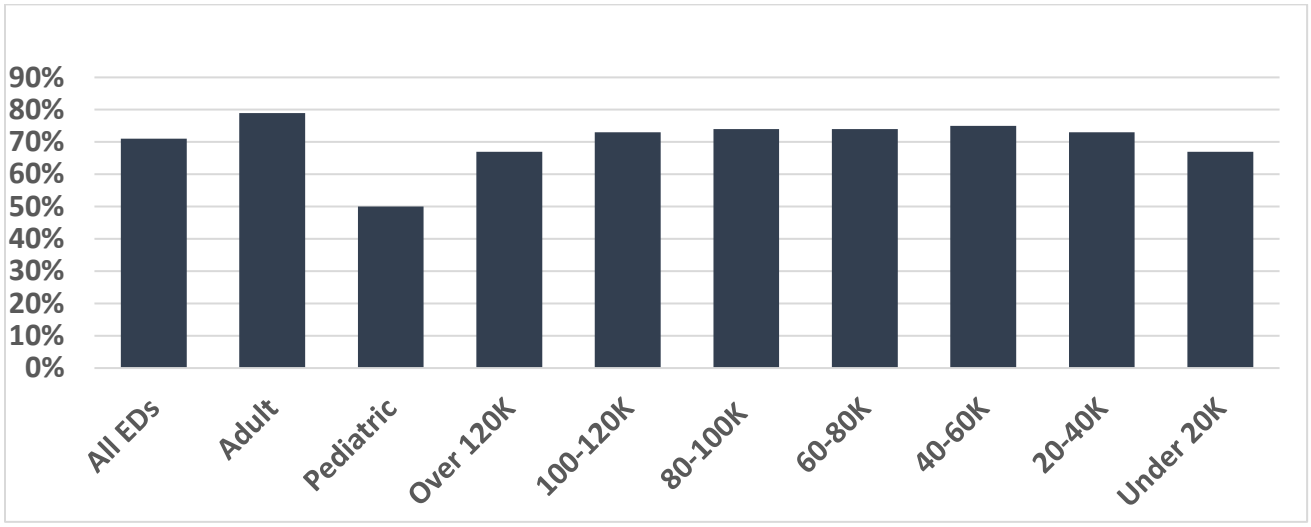
The data set collected for 2018 included 23 operating statistics, collected at each site and entered a spreadsheet maintained by the Alliance. The 2018 report asked for additional descriptive statistics regarding the type of hospital, ED service units, and staffing.

For 2018, there are 9 categories of full-service EDs based on volume seen or service population, and two additional groups for specialty and freestanding ED's.

- "Super center" EDs, serving over 120,000 patients per year (over 328 PPD)
- Extra high volume EDs, serving over 100-120,000 patients per year (275 to 328 PPD)
- Very high volume EDs, serving over 80,000 patients per year (221 to 274 PPD)
- High volume ED's serving 60-80,000 patients (165 to 220 PPD)
- Average volume ED's serving 40-60,000 patients (110 to 164 PPD),
- Moderate volume ED's serving 20-40,000 patients (55 to 110 PPD).
- Low volume ED's serving under 20,000 patients per year (under 55 PPD).
- Pediatric EDs are those serving patients that are predominantly serving patient populations under the age of 18, and those community EDs that see over 50% patients under the age of 18.
- Adult EDs are those that see 5% or less patients under age 18 and define themselves as EDs that serve adult populations. These are EDs that serve communities that have another hospital that serves as a regional pediatric emergency center.
- Freestanding EDs. This group of facilities serves unscheduled needs of a community, and transfer persons that need inpatient services to a full-service hospital.
- Specialty EDs. This group of facilities is designed with services for a select group of patients and lack the inpatient services of a full-service hospital.

Percentage of Patients Coded as High Acuity using Common Procedural Terminology (CPT) codes

The percent of patients seen that are coded ***using physician CPT codes*** that define higher acuity illnesses or injuries. These are codes 99284, 99285, and 99291. The EDBA utilizes physician CPT coding as an objective measure of patient use of higher-level services, despite some concerns about the consistency in the use of these codes (6).

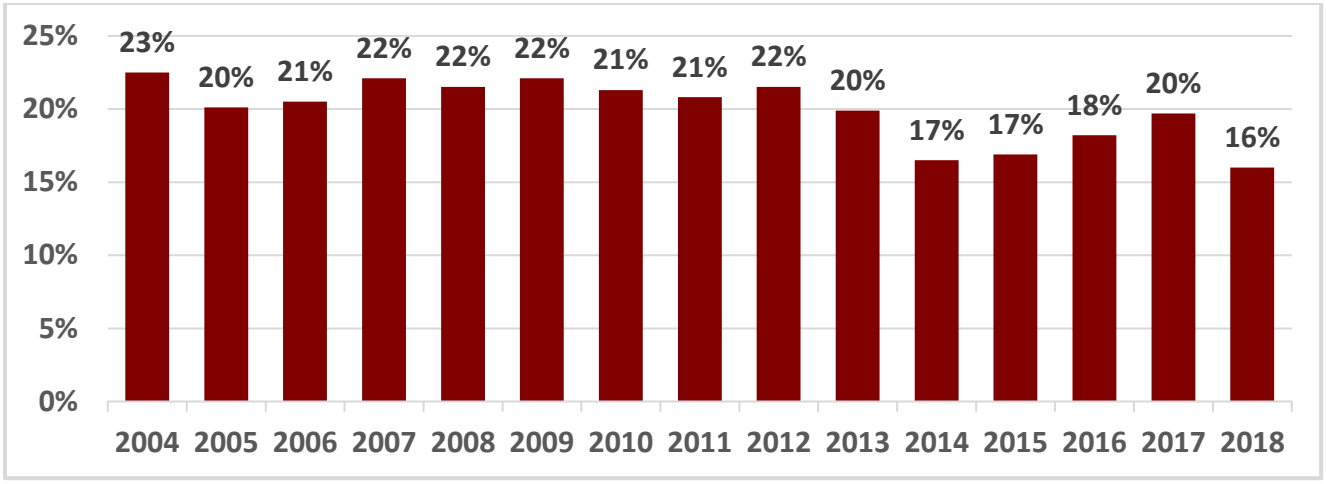


Graph 1. Percent of ED patients with CPT codes indicating high acuity, by cohort. The average is 71%.

Percentage of Patients Coded as Pediatric

The percent of patients seen in the ED that are under age 18.

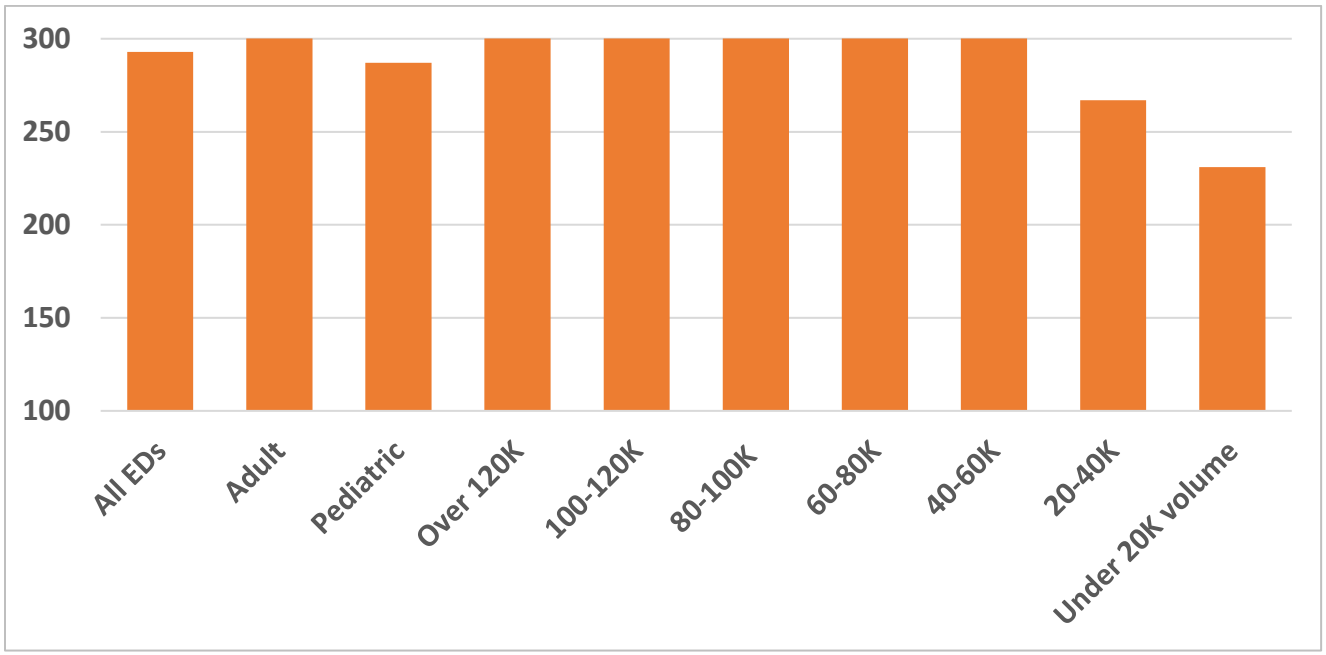
Graph 2 shows the general percentage decrease in ED visits by patients under age 18, in ED's that are not designated as Children's Hospitals.



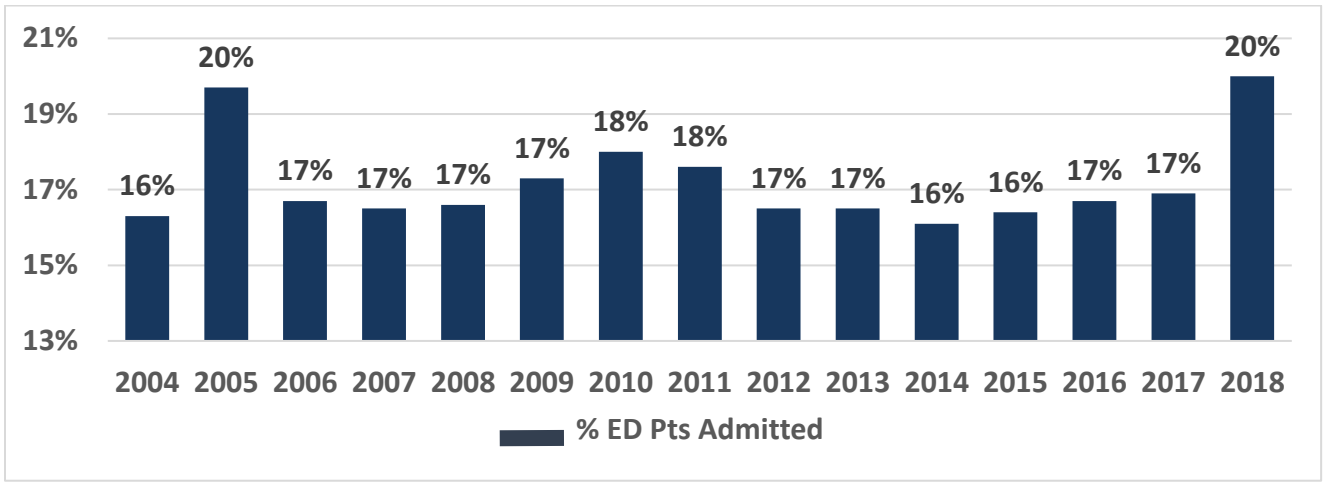
Graph 2. Percent of ED patients under age 18, over the past 15 years. The average is declining and is now about 16%.

Percentage of Patients that are Admitted from the ED to the Hospital

The percent of patients seen that are seen in the ED and then placed in any inpatient area of the hospital, ***either as "full admission" or "observation status".***



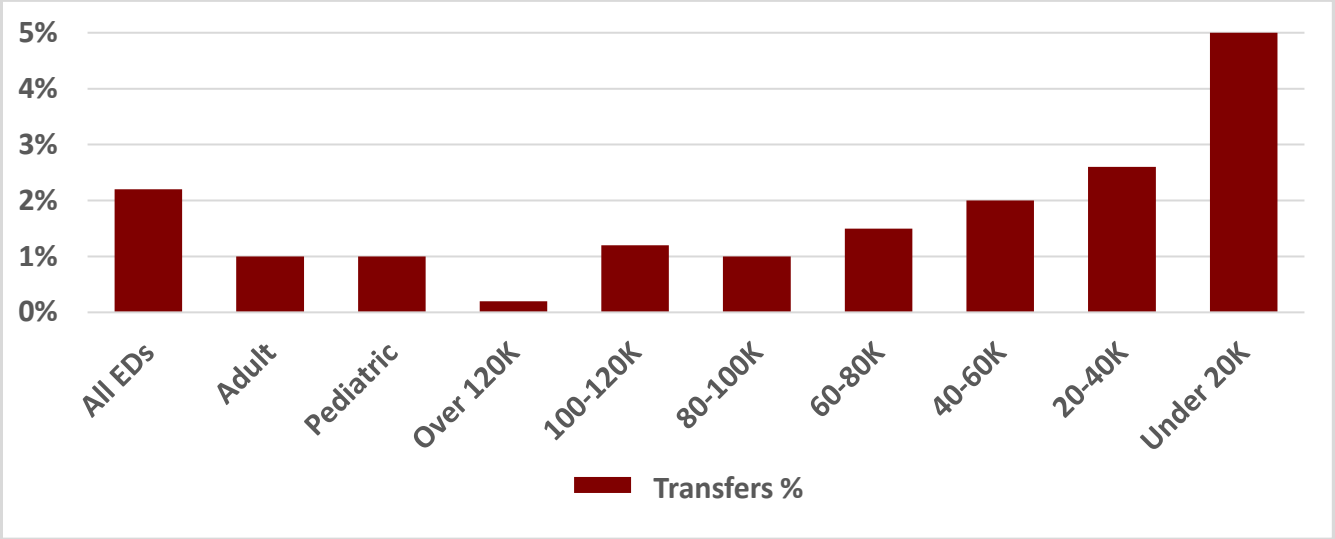
Graph 3. ED Admission rate by cohort, and Median Length of Stay for Admitted Patients. Higher volume and adult-serving ED's tend to have higher admission rates. The preliminary average is higher than prior years at 20%.



Graph 4. Percent of ED patients admitted, over the past 15 years. The average is increasing over the last 5 years, and the preliminary number for 2018 is about 20%.

Percentage of Patients that are Transferred out of the ED to another Hospital

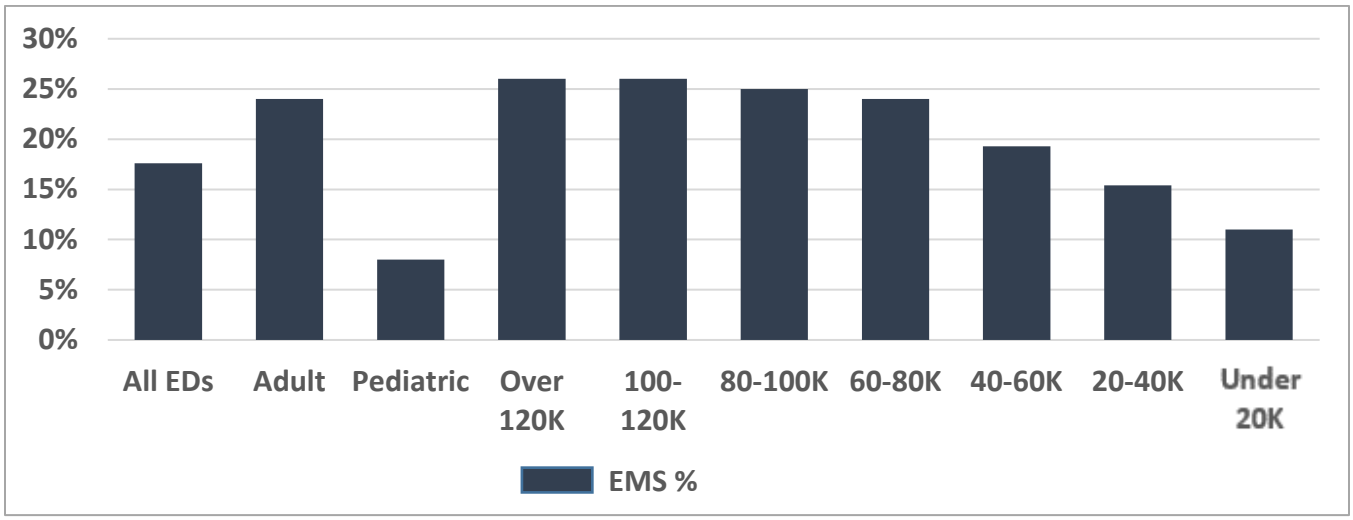
The percent of patients seen that are seen in the ED and then transferred from the ED to another ED or hospital. The data shows the ongoing transfer rate is higher in small volume ED's.



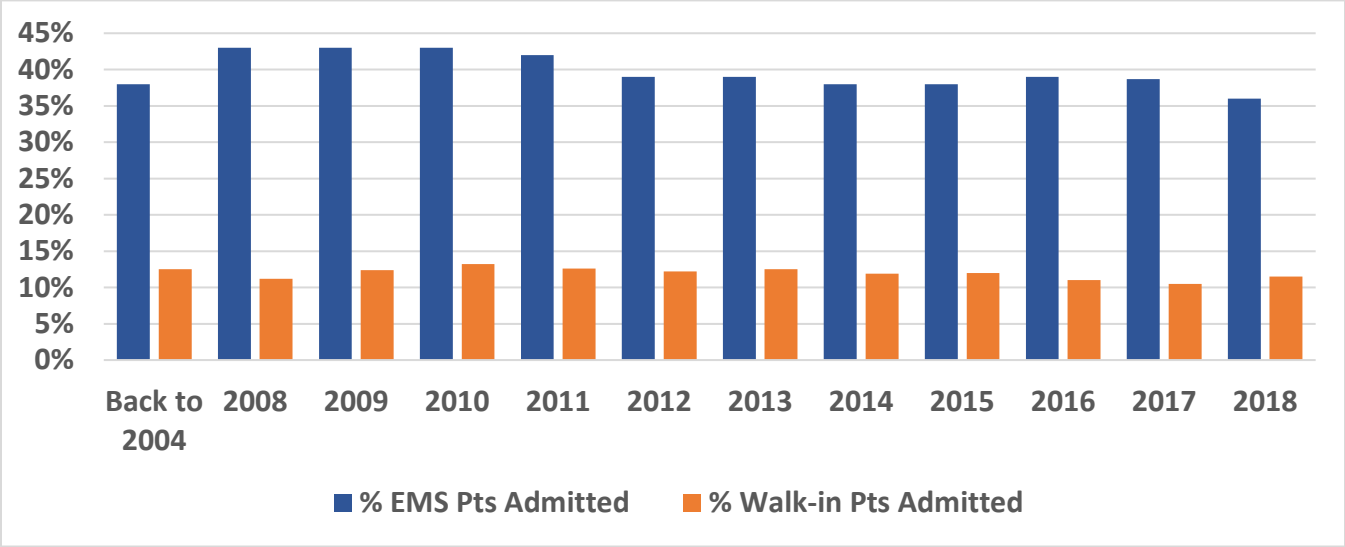
Graph 5. ED transfer % by cohort. Lower volume ED's tend to have higher transfer rates. The average in the preliminary data for 2018 is 2.2%.

Percentage of Patients that Arrive by EMS, and then the Percentage of those Patients that Require Admission to the Hospital

The percent of patients seen in the ED that arrive in an ambulance. The second statistic is the percentage of those patients arriving by ambulance that are subsequently admitted to the hospital.



Graph 6. Patient % admitted after arriving in the ED via EMS. About 36% of patients arriving by EMS are admitted. For patients that do not arrive by EMS, the admission rate is about 11.5%.



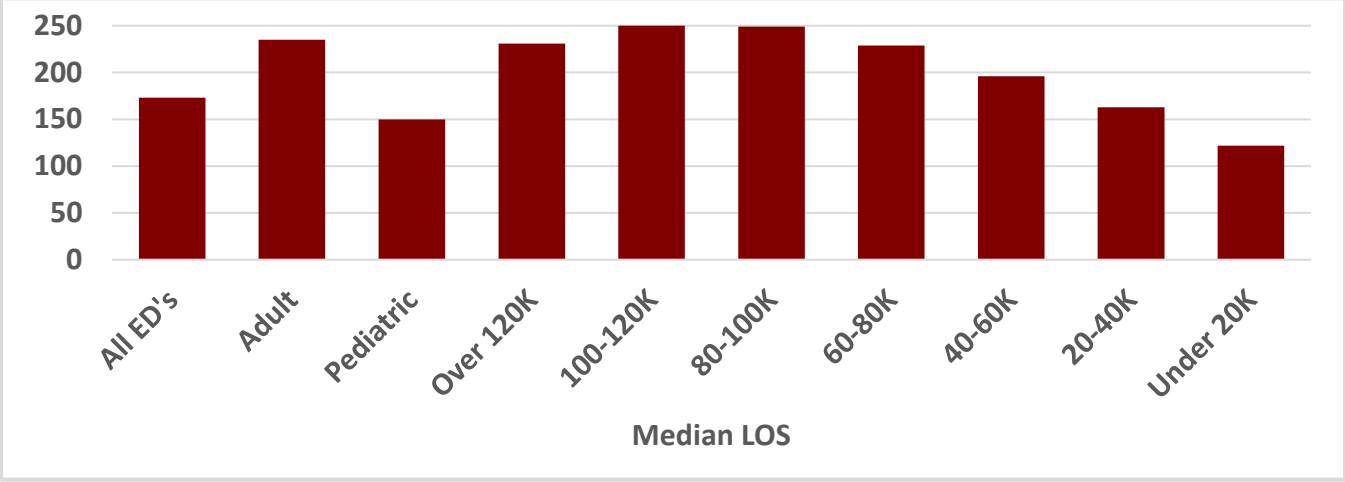
Graph 7. Patient % admitted after arriving in the ED via EMS or by walk-in means. About 36% of patients arriving by EMS are admitted. For patients that do not arrive by EMS, the admission rate is about 11.5%.

Median Length of Stay, for Patients that are Admitted, for Patients that are Treated and Released, and for all Patients

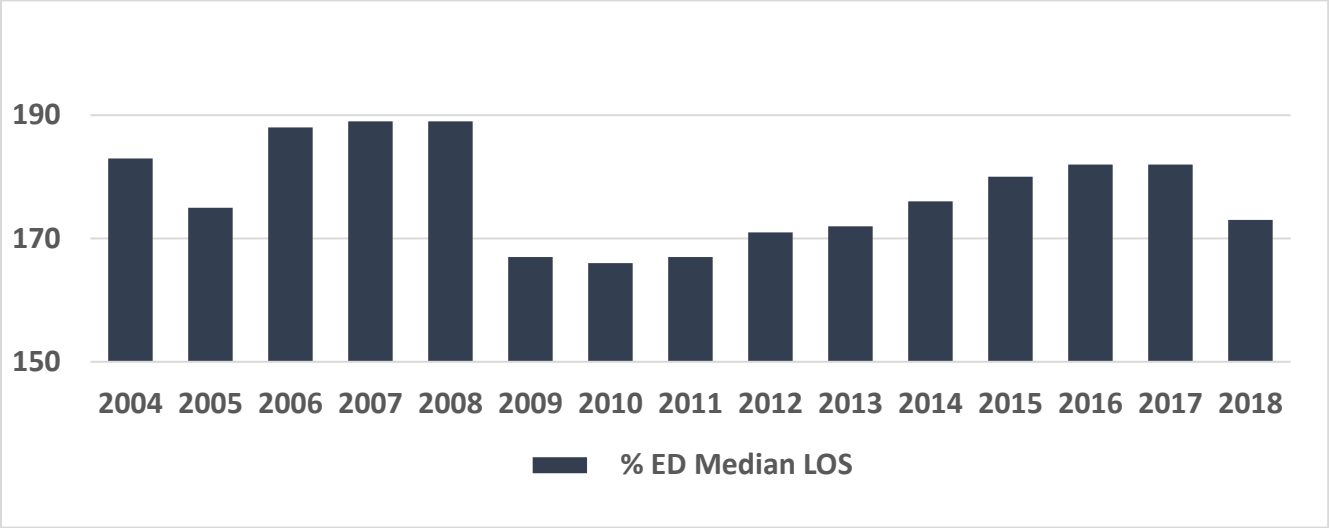
The EDBA analysis of time markers for process flow has found that an arithmetic ***mean*** does not characterize the function of the ED as well as the ***median*** number. So the ***median*** statistic is utilized for all time parameters in the EDBA survey.

CMS has been focused on studying the process flow for admitted patients, expressed as a median time. Hospital and ED leaders will recognize this as CMS Clinical Quality Measure ED-1 (and NQF 0495).

The Median Length of Stay for all ED patients is displayed in Graph 8, by cohort. The trend over years is displayed in Graph 9.



Graph 8. Median Length of Stay for all ED patients. The average is 173 minutes.

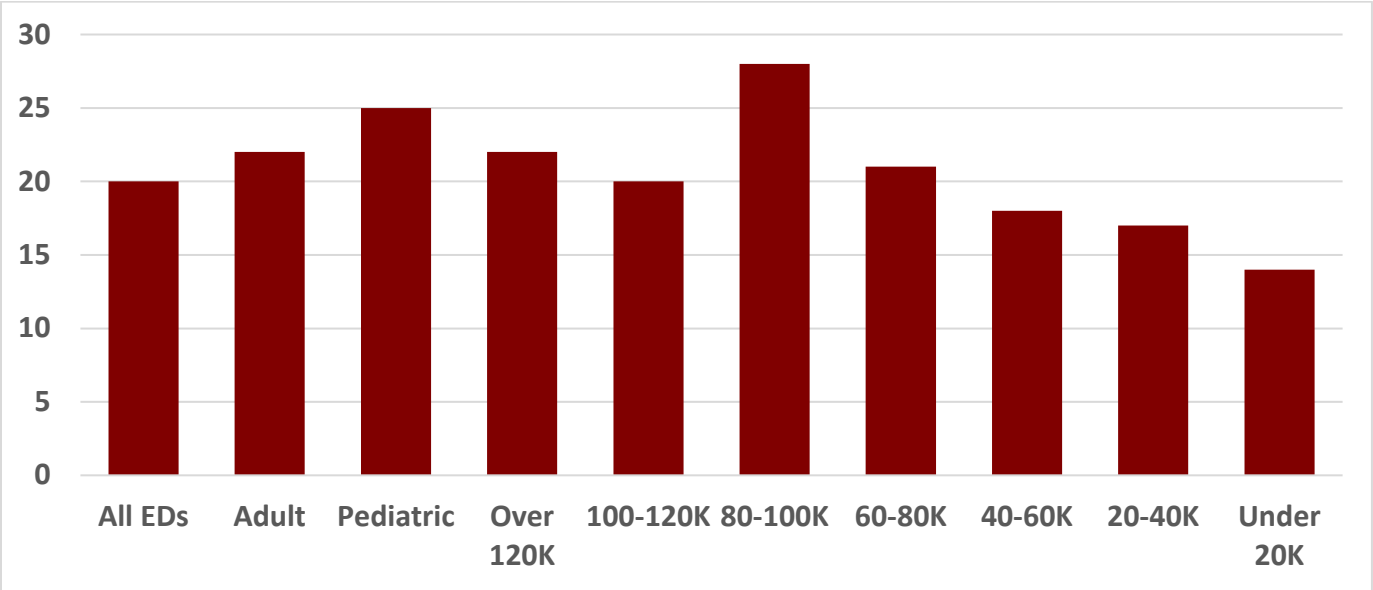


Graph 9. ED Median LOS for all Patients trended over the last 14 years. This statistic is remarkably stable over the last 14 years.

Median Times for Door to Bed and Door to Doctor for all Patients

The number of minutes for patients to be placed in a treatment area, and then seen by a responsible emergency physician or advanced practice providers (APP's), reported as a median. The start time for this interval is generally when the patient is first recognized as a patient by the ED staff, and a time of arrival is placed on the chart.

There has been a correlation noted between door to doctor and walkaway rates of patients from the ED. Where processing times in the greeting area decreased, the walkaway rate decreased.



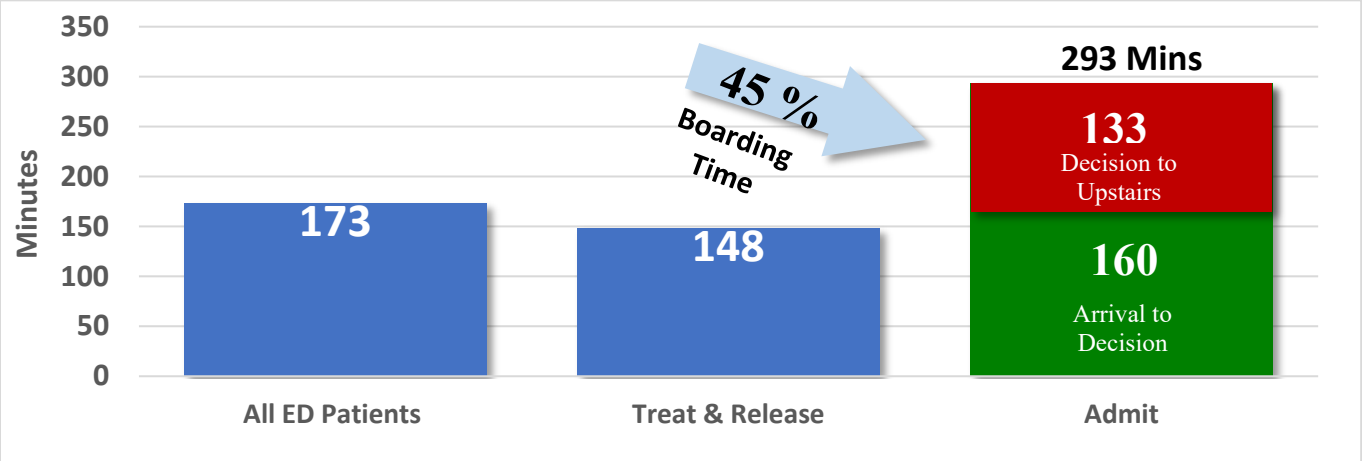
Graph 10. Median Time, in minutes, from Door to Doctor (or APP). The preliminary data for 2018 report the average is 20 minutes.

ED Median Patient Admission Time (which includes "Boarding Time")

The median length of stay for admitted patients includes all aspects of moving those patients through the ED. Flow includes the total time from patient arrival and recognition as a patient, through the time to contact with a physician or advanced provider, to the time of decision regarding disposition, to the time of patient movement out the doors of the ED to the inpatient unit. It is best expressed as a MEDIAN time, as do all time elements in the ED process.

The overall structure of the Median Length of Stay is depicted in Diagram 1. It is important for ED leaders to understand the construct of the time elements for the patient that is Admitted from the ED and appreciate that 45% of the admitted patient length to stay in the ED is for Boarding.

Diagram 1. Admit time for admitted patients is 293 minutes, with "Arrival to Decision" of 160 minutes, and "Decision to Upstairs" is 133 minutes.



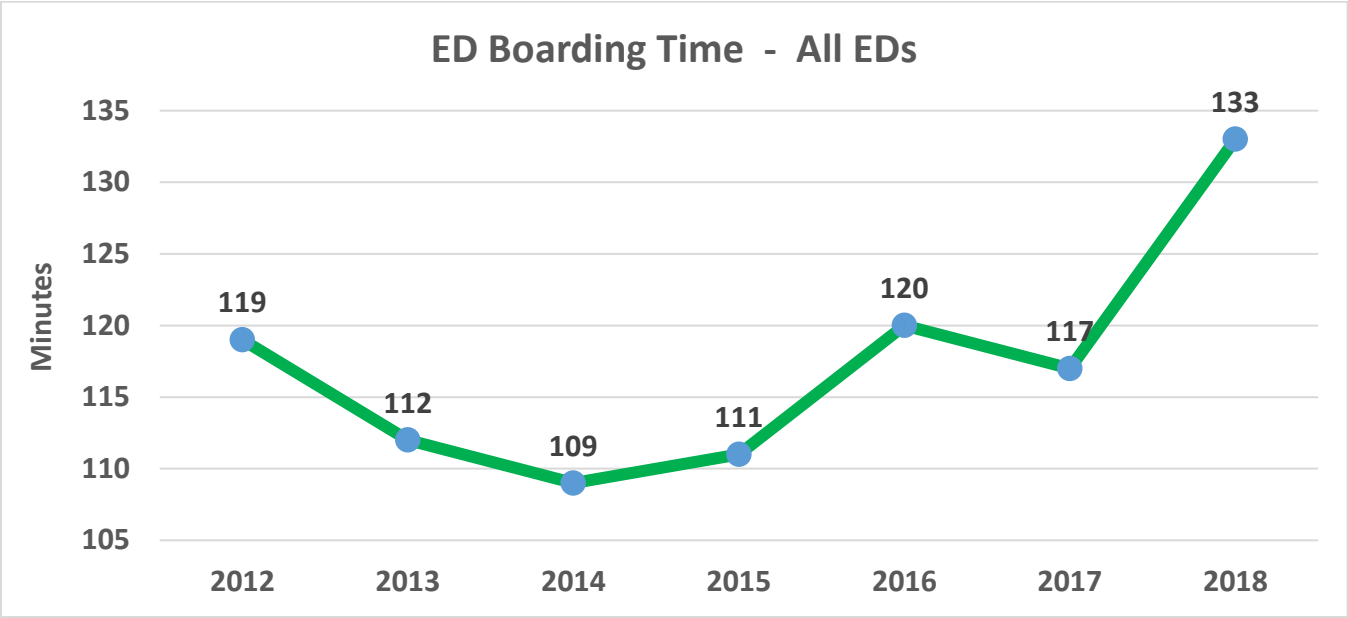
Included within this measure is the time measure ED-2 (NQF 0497), or in CMS language: Median time (in minutes) from admit decision time to time of departure from the ED for patients admitted to inpatient status. This is the length of boarding of an inpatient in the ED, so most ED leaders call this time interval "boarding time".

ED leaders were given the opportunity to reduce ED boarding through the publication of Boarding Time on the CMS Hospital Compare website. The data in Graph 12 would show that very little progress has been made in reducing boarding time in ED's and remains an opportunity for the industry.

Graph 11 allows ED leaders to view each cohort's calculated percentage of time that admitted patients spend in boarding time. Across all EDs, the admitted patient has about 39% of his/her time in the ED spent after the decision is made to admit.

ED Type	Arrival to Decision Time	Decision to Upstairs Time "Boarding Time"	Median Total Admitted Pts Time in ED	Boarding as % of Total ED Time for Admitted Pts.
All EDs	**160 mins**	**133 mins**	**293 mins**	**45%**
Adult EDs	**202**	**155**	**357**	**43%**
Pediatric EDs	**203**	**84**	**287**	**29%**
Over 120K	**278**	**166**	**444**	**37%**
100 to 120K	**245**	**153**	**398**	**38%**
80 to 100K	**253**	**178**	**431**	**41%**
60 to 80K	**242**	**125**	**367**	**34%**
40 to 60K	**227**	**94**	**321**	**29%**
20 to 40K	**197**	**70**	**267**	**26%**
Under 20K	**141**	**90**	**231**	**39%**

Graph 11. Median Length of Time for ED patients who are admitted, their Arrival to Decision and "Boarding Time". Percent of Total Time spent Boarding is in the right column.



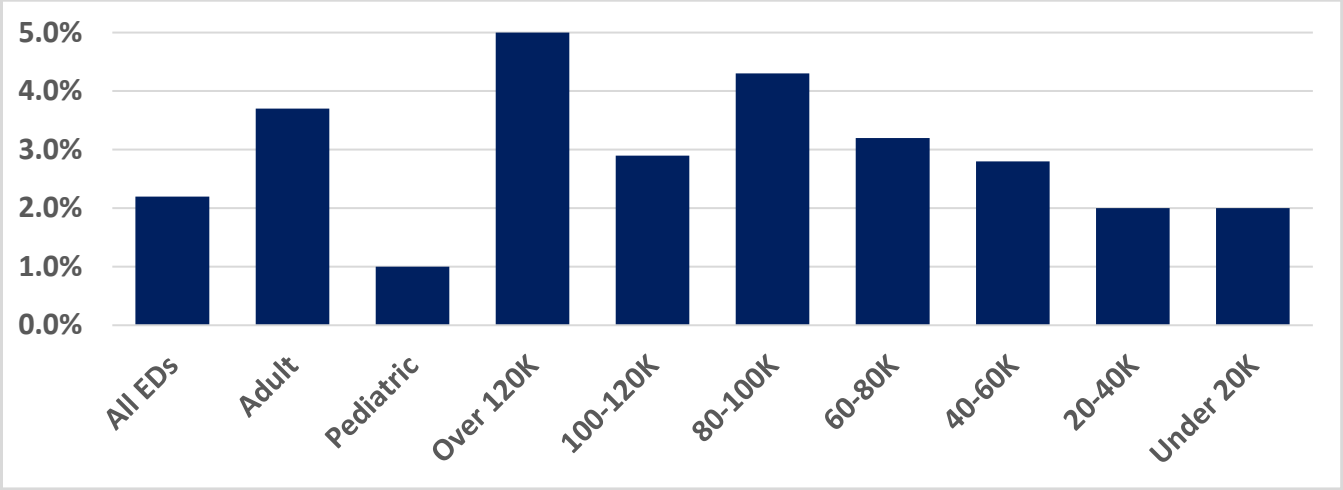
Graph 12: ED Boarding Time from 2012 through 2018.

Understanding the importance of time intervals on the flow of patients through any ED, the EDBA data has been summarized in a single table, with fractal indicators for the median, 75th percentile, and 90th percentile. That set of data points will be in the final report for the 2018 data year.

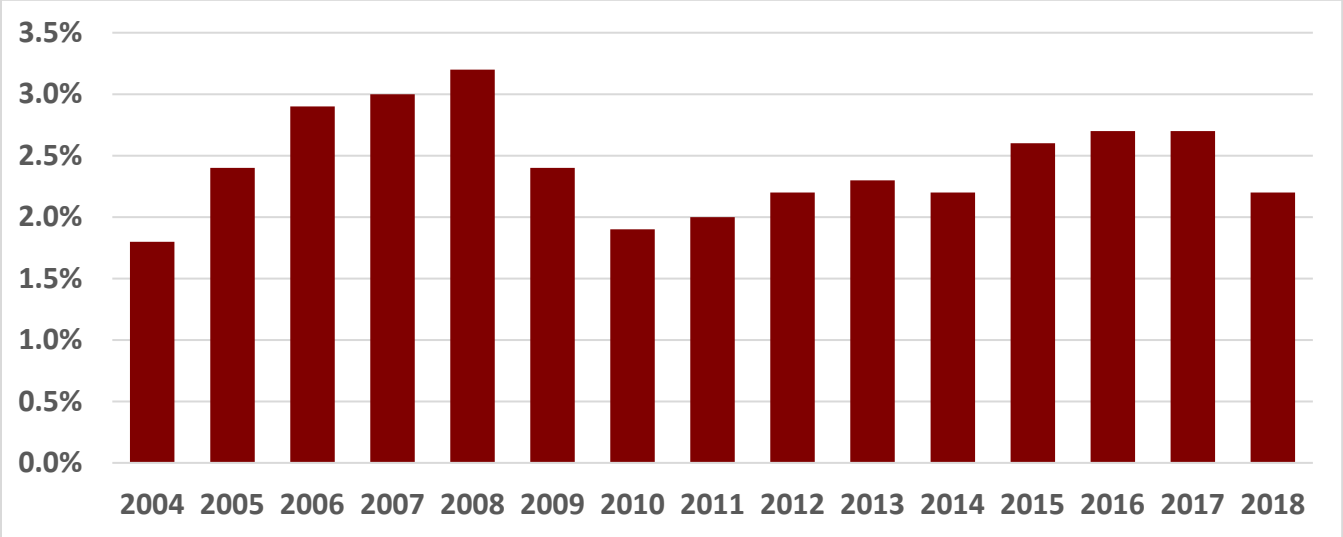
Left Before Treatment Complete (LBTC)

A single statistic that compiles the annual number of patients who are recognized by the ED, but leave prior to completion of treatment. This provides the most complete accounting for all patients who leave the ED before they are supposed to, and includes those patients who leave before or after the Medical Screening Exam, those that leave against medical advice (AMA), and those that elope.

The LBTC rate had trended lower across EDBA hospitals over the prior 15 years, as displayed in Graph 14. In 2010, the rate dropped below 2% for the first time. In 2018, the number is 2.2%. The EDBA data indicates there is correlation between intake processing of patients, overall flow, and walkaway rates. Despite ED volume and acuity increases that challenge ED providers, improved operations have been evident in many EDs.



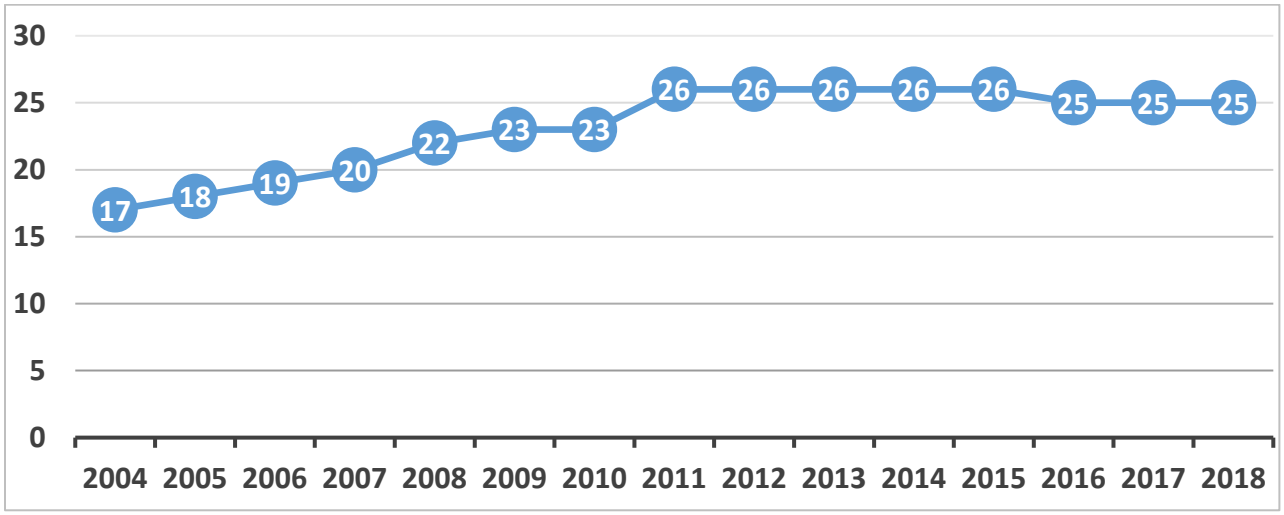
Graph 13. % of Patients who Leave Before Treatment Complete (LBTC). The average is 2.2**%.**



Graph 14. % of patients who Leave Before Treatment Complete (LBCT), over 15 years.

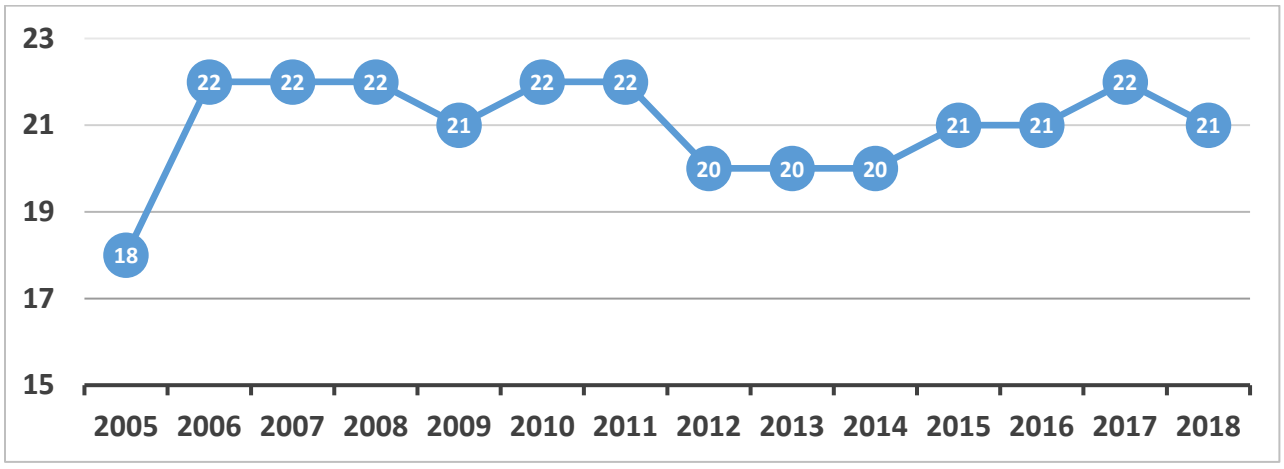
Usage Rates of Diagnostic Services, measured as Number of Units of Service per Hundred Patients Seen

The EDBA respondents reported on data regarding EKGs obtained; X-ray imaging studies done; and advanced imaging by CT, MRI, and ultrasound performed. The number of procedures done were then divided by the number of patients seen, and the number expressed as procedures per 100 patients seen. It was reported this way *so that it does not unintentionally get interpreted to reflect the percent of patients that had those diagnostic tests performed* (this is how the CDC reports the use of these tests in the NHAMCS study)



Graph 15. Number of EKGs per 100 patients seen, over 15 years.

Utilization of CT scans appears to have peaked, and has decreased during the last four years, based on the EDBA data surveys, and displayed in Graph 16. CT utilization peaked at 22 CT scans per 100 patients between the years 2006 and 2011. Starting in 2012 there is a drop-in utilization, which for 2018 is about 21 CT procedures per 100 patients.



Graph 16. Number of CT procedures per 100 patients seen, very stable over 15 years.

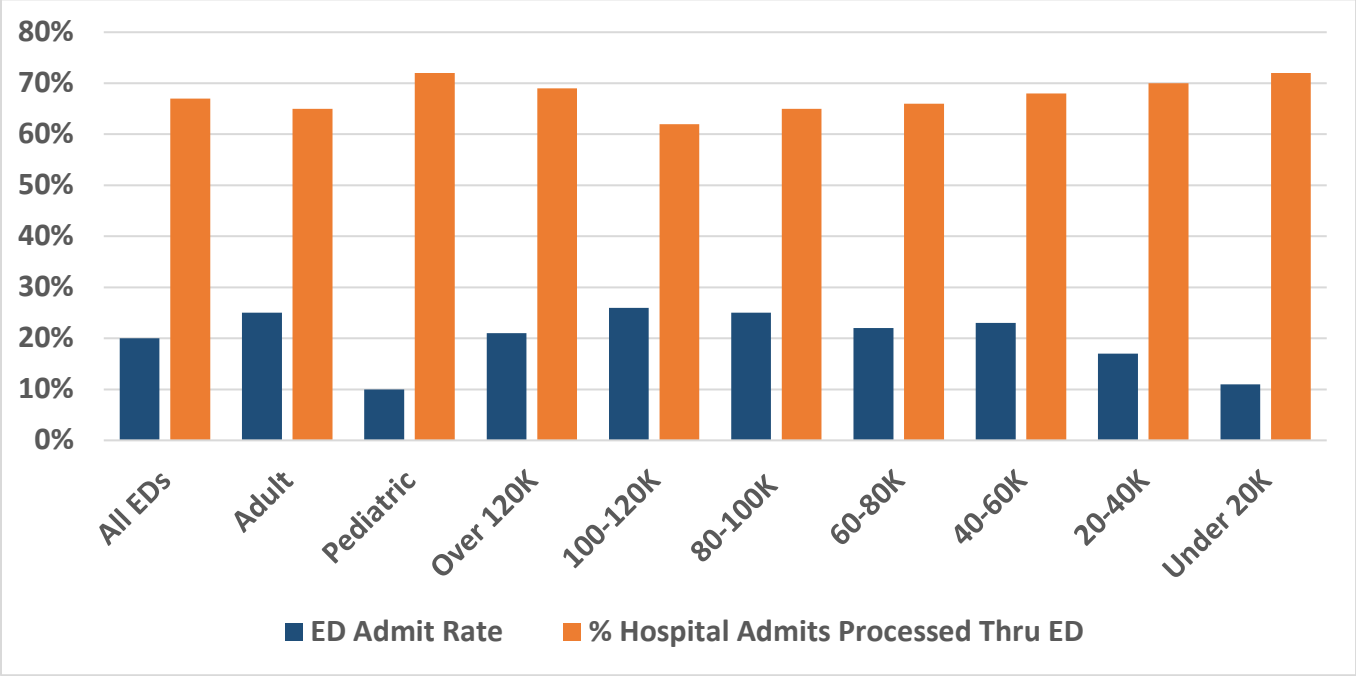
Trauma centers utilize diagnostic imaging to evaluate patients with critical injuries. Within the EDBA data set, the data has been sorted into separate cohorts of Trauma Centers. Pediatric trauma centers have very different profiles than general EDs, so they are excluded. The three cohorts are Trauma Level I and II centers; Level III and IV centers; and all other EDs. Adult trauma centers utilize about 27 CT procedures per 100 patients seen.

CT scans are used more frequently in Level I and II trauma centers than in lower level centers. There are 27 CT procedures per 100 patients in Level I and II trauma centers, and around 19 procedures in lower level and non-trauma centers. ED leaders should be aware of the differences, and when called upon to study their utilization, should compare their experience to cohorts at a similar level of trauma designation and pediatric mix.

Percentage of Hospital Admissions that are Processed thru the ED

This number is calculated from the number of patients that are placed in the status of "admitted" or "observation" status in a hospital, looking at the percentage that are processed in through the ED.

Consistently through the 15 years of this survey, the smaller hospitals have the highest utilization for processing in patients to the inpatient units. The small community EDs are processing at least 70% of hospital admissions, and several small EDs are managing over 80% of admissions. Combined with the longer ED lengths of stay for admitted patients, ED leaders can appreciate the difficulty of managing more admitted patients for longer periods of time. This challenges the ED staff to find open space for incoming patients and leads to the difficulty keeping walkaway rates from climbing.



Graph 17. ED Admissions as a Percent of All ED visits, and Percent of Hospital Inpatients Processed through the ED. The numbers for 2018 are 20% and 68%.

Emergency Department Staffing

ED Staffing Ratios

The EDBA has hosted three summits to develop the most effective definitions of staffing, and markers of care. The definitions developed and published by the EDBA consider four classes of ED staff: physicians, advanced practice providers (APPs), nurses (not differentiating the various levels of staff nurses), and the group composed of personnel that function in technical and clerical roles. The ED care team is ever-changing. Many departments have teams that include pharmacists, scribes, medical assistants, social workers, trainees, and care coordinators as well as patient navigators, transporters and ED dedicated environmental services workers. So too will the EDBA staffing ratios and definitions of care team members evolve over time.

For the last five years, the data has tallied the scheduled number of work hours in an average day for nurses, techs, clerks, physicians, and advanced practice providers providing clinical service. All staffing ratios have been calculated using the same mathematical formula: Number of ED patients visiting the ED on an average day, divided by the number of scheduled hours for persons in a clinical role in an average day—a common calculation for physician productivity. The preliminary 2018 Staffing Ratios are reported in Graph 18.

At the initiation of the EDBA studies 21 years ago, it was necessary to develop a formula that allowed comparison of staffing ratios where APPs were working in collaboration with emergency physicians (most patients seen with a physician than without). At that time, the shared role of ED patient management by physicians and APPs did not allow the same level of productivity of APPs as physicians. In calculating the overall productivity of the licensed independent practitioners (physicians plus APPs) in an ED, the APP hours were assigned a factor of 0.5 the number of physician hours. This remains the convention for reporting on staffing ratios in EDBA publications.

In addition to the rations above, the EDBA has analyzed another staffing metric called Worked Hours Per Unit of Service (WHPOUS) for the past three years. This is presented in Graph 19. This particular metric is benchmarked by most major labor management companies in today's market. This information is presented for our members as a guide and comparative value. The data used to calculate WHPUOS can vary widely without strict definition and adherence to guidelines with regard to management, orientation, education and other "non-productive" hours that may or may not be included in the calculation.

The EDBA asks only for "staffing hours for a departments average day", thus our WHPUOS calculation does NOT include traditional "non-productive" time. Overall, there was no change in the average number of staffed patient care hours (excluding MD & APP) in 2018. The average remained steady at 2.6.

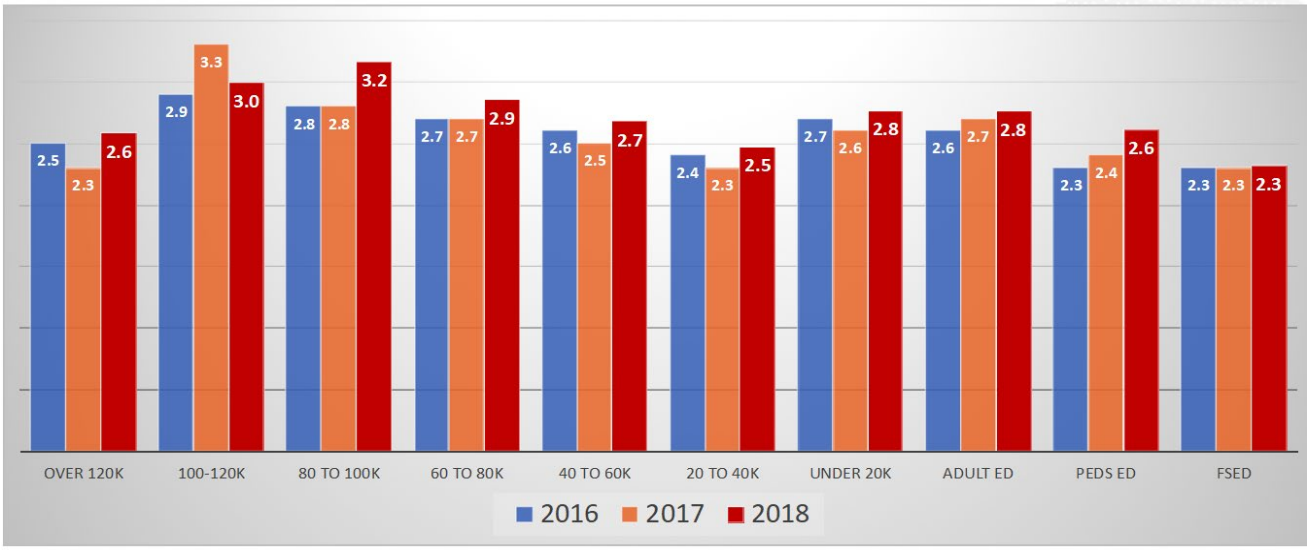
For 2018, there is a small decrease in productivity in terms of the ratios, which speaks to the overall theme of sicker patients and flat volume. On the hospital staffing side it looks like a slight increase in RN hours or flat hours and slight decrease in volume, but the support services ratios are trending badly over the last three years. This is suggesting that ED's are cutting their ancillary help to retain their RN ratios at reasonable levels. This has led to complaints in from ED physicians that they have inadequate clerical help.

Preliminary Staff Ratios 2018

Facility Type	RN Ratio	Tech Clerk Ratio	MD Ratio	MD+APP Ratio	WHPUOS
Over 120K	0.6	1.6	3.3	2.7	2.6
100-120K	0.6	1.4	2.8	2	3.0
80-100K	0.5	1.3	2.6	2.1	3.2
60-80K	0.6	1.6	2.9	2.2	2.9
40-60K	0.6	1.5	2.8	2.4	2.7
20-40K	0.6	1.9	2.7	2.1	2.5
Under 20K	0.5	1.6	1.4	1.5	2.8
FSED	0.7	2.4	2.2	1.9	2.8
Adult ED	0.6	1.5	2.5	2.1	2.6
Pediatric	0.6	1.9	2.2	2.1	2.3

Graph 18. Preliminary Staff Ratios for ED disciplines in 2018. All staffing ratios have been calculated using the same mathematical formula: Number of ED patients on an average day, divided by the number of scheduled hours for persons in a clinical role in an average day—the common calculation for physician productivity.

Worked Hours Per Unit of Service (RN, Tech, Clerk)



Graph 19. Worked Hours per Unit of Service for ED disciplines in 2018.

Design Elements for Renovation or New ED Design

First concern: Square Footage and Visits per Square Foot

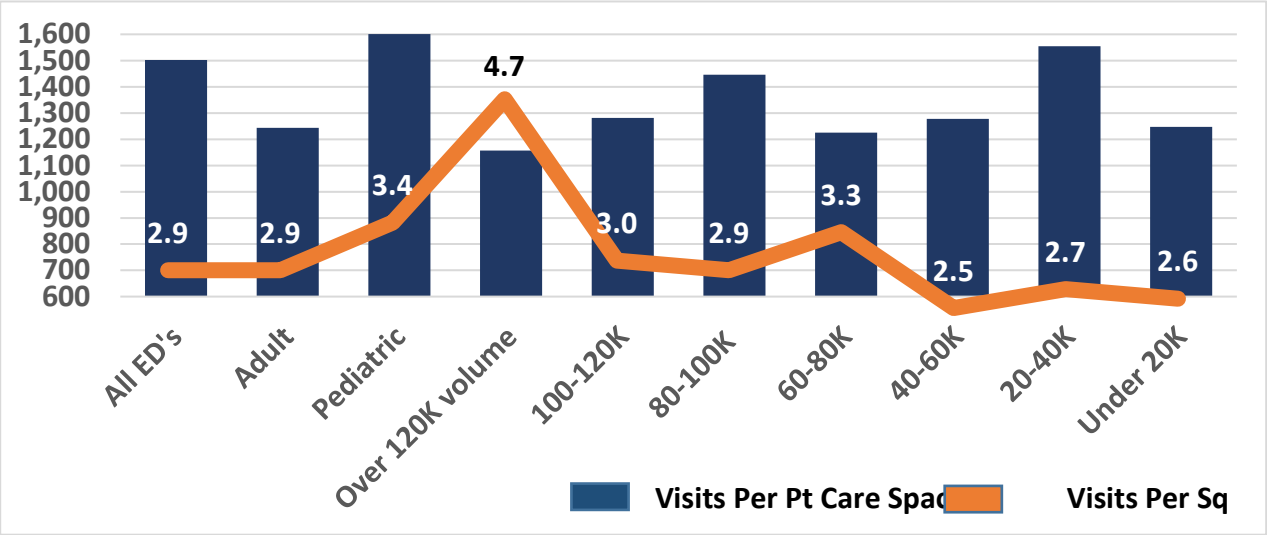
The square footage contained within the Emergency Department. Most EDs report a gross square footage number as approximated by the hospital facility managers. The Visits per Square Foot is then calculated by dividing the annual visits by the square footage.

Analysis for the year 2018:

It is a crude proxy for how "space compact" an ED is. Most EDs are sized so that they see 3 to 3.5 visits per square foot. Small EDs generally have a relatively larger size. For those EDs that are very small relative to volume, the space compression can result in higher walkaway rates. Results are summarized in Graph 20.

Many hospital CEOs will insist that the ED be built for 2,000 encounters per bed because that rate is a known fact to business consultants. Like many "facts" about the ED, this one is wrong.

Most EDs are designed to see 1300 to 1700 visits per patient care space. The average across all ED's is 1,502 patient visits per care space. Small EDs generally have a relatively smaller number of patients seen per care space. Pediatric EDs see patients more quickly, so have relatively higher utilization, at about 1,714 visits per care space. For those EDs that have high numbers of visits per bed, the result is generally higher walkaway rates. For those EDs that saw more than 1,900 visits per space, the walkaway rate jumped to over 3%.



Graph 20. ED Square Footage and Care Space Relative to ED Volume. An average ED supports 2.9 visits per square foot. ED visits per Patient Care Space Average 1,300 to about 1,600, except in Pediatric ED's.

2018 Cohort Summary – ED

	Total Sites	PPD	Hi CPT Acuity	Peds %	Admit %	Transfer %	EMS Arrival	EMS Arrival Admit	Median LOS	LOS Treat & Release	LOS Fast Track	LOS Admit
Total for All Full-Service EDs												
2018 Prelim Results	802	113	71%	13.0%	20.0%	2.2%	18%	36%	173	148	119	293
Over 120K EDs												
2018 Prelim Results	9	375	67%	14.0%	21.0%	0.2%	26.0%	38%	231	183	132	444
100 to 120K EDs												
2018 Prelim Results	17	289	73%	4.0%	26.4%	1.2%	26.0%	40.3%	251	209	128	398
80 to 100K EDs												
2018 Prelim Results	40	241	74%	10.0%	25.0%	1.0%	25.0%	42.0%	249	208	129	431
60 to 80K EDs												
2018 Prelim Results	113	186	74%	9.0%	22.0%	1.5%	24.0%	40.0%	229	198	134	367
40 to 60K EDs												
2018 Prelim Results	162	134	75%	11.0%	23.0%	2.0%	19.0%	43.0%	196	173	107	321
20 to 40K EDs												
2018 Prelim Results	220	79	73%	13.0%	17.0%	2.6%	15.0%	34.0%	163	142	102	267
Under 20K EDs												
2018 Prelim Results	160	33	67%	16.0%	11.0%	5.0%	11.0%	25.0%	122	112	99	231
Pediatric EDs												
2018 Prelim Results	52	82	50%	93.0%	10.0%	1.0%	8.0%	26.0%	150	139	117	287
Adult EDs												
2018 Prelim Results	123	165	79%	2.0%	25.0%	1.0%	24.0%	42.0%	235	201	135	357
Freestanding EDs												
2018 Prelim Results	87	50	62%	19.0%	5.0%	4.0%	5.0%	7.0%	112	104	81	284
Specialty EDs												
2018 Results	20	18	79%	9.8%	19.1%	8.2%	21.8%	45.3%	255	244	0	298

2018 Cohort Summary – ED *(continued)*

	Boarding Time	LBTC	Door to Bed	Door to Doc	EKG per 100	Xray per 100	CT per 100	MRI per 100	US per 100	% Hosp Admits thru ED	Visits per Foot	Beds	Visits per Space
Total for All Full-Service EDs													
2018 Prelim Results	133	2.2%	10	20	25	39	21	0.9	5	67%	2.9	32	1,502
Over 120K EDs													
2018 Prelim Results	166	5.0%	16	22	34	43	30.0	2	7	69%	4.7	86	1,159
100 to 120K EDs													
2018 Prelim Results	153	2.9%	13	20	36	48	28.5	2	6	62%	3.0	79	1,281
80 to 100K EDs													
2018 Prelim Results	178	4.3%	15	28	29	45	24	2.0	6	65%	2.9	61	1,446
60 to 80K EDs													
2018 Prelim Results	125	3.2%	11	21	32	43	28	2.0	7	66%	3.3	50	1,225
40 to 60K EDs													
2018 Prelim Results	94	2.8%	11	18	30	43	25	1.1	6	68%	2.5	35	1,278
20 to 40K EDs													
2018 Prelim Results	70	2.0%	9	17	26	40	21	0.4	5	70%	2.7	20	1,555
Under 20K EDs													
2018 Prelim Results	90	2.0%	8	14	21	36	17	0.1	2	72%	2.6	10	1,247
Pediatric EDs													
2018 Prelim Results	84	1.0%	13	25	5	26	4	0.5	5	72%	3.4	21	1,398
Adult EDs													
2018 Prelim Results	155	3.7%	11	22	34	46	28	1.9	6	65%	2.9	47	1,244
Freestanding EDs													
2018 Prelim Results	19	2.0%	6	11	15	34	15	0.0	4	6%	1.7	13	1,839
Specialty EDs													
2018 Results	0	0.0%	0	0	0	0	0	0.0	0	0%	0.0	0	0

The National Hospital Ambulatory Medical Care Survey: The on-line 2016 Emergency Department Summary Tables

James Augustine, MD - Vice President, EDBA
Nick Jouriles, MD - President, EDBA

Please take the opportunity to review the CDC statistical survey of Emergency Department (ED) visits for 2016. This report was released On April 1, 2019.

The calendar year 2016 Emergency Department Summary Tables are available (1). It is a wealth of information on Emergency Medicine in America, both the patients and the practice. The CDC data tables are now published without an analysis and take about three years to be published. For reference, the last year that the CDC published its own analysis of the data tables was for the year 2007 (7).

It is critical that ED leaders understand the data and trends in this report and can compare them to the ED practice sites that they are responsible for. The EDBA will continue to access these CDC reports, provide an analysis, and give members the opportunity to compare results to local emergency care data. The report, with local community analysis, should be discussed with the hospital and community leaders.

The 2016 report is 38 pages and contains 27 data tables. The report reviews census data, patient demographics, and ED operations. The survey now has 25 years of annual data (original year of data collection and reporting was 1992), which have been used to identify trends in the ED visits that are important for Emergency Department, hospital, and public health practitioners to understand. This report begins to tabulate some of the important trends from those many years of data. Not all data elements are present across all the study years, so some can be trended only over a shorter period of years.

The 2016 data report is based on a sampling of 19,467 ED patient care reports from 265 Emergency Departments. National population census data was used to estimate utilization of ED services by populations. Repeat – this is an estimate based on a sampling of 19, 467 / 145 million visits [0.013%] and 265 / 4800 hospital based ED's [5.6%].

Some data reporting for 2016 was done in the context of addressing issues in emergency care brought to light in the ACEP 2014 National Report Card; the U.S. Government Accounting Office report on ED Crowding; the Institute of Medicine 2006 ED Report on on-call issues and pediatric care; and the U.S. Department of Health and Human Services Healthy People 2020 goals. It also reflects some of the outcomes, intended or otherwise, of the 2009 Affordable Care Act.

Highlights of the NHAMCS tables for the year 2016

- Visit estimates increased from 136.9 million in 2015 to 145.6 million in 2016. This estimate would mean the 2016 ED visits went up 6.4% from 2015.
- ***The 10-year volume change is 24.7%, and for the last 20 years has increased 61.2%*** (the 1996 ED visit estimate was 90.3 million). The last 15 years of volume estimates are reported in Table 1, along with the estimates of ED patients that were then admitted to the hospital.
- There is a difference in volume estimations between the CDC, AHA, and EMNet. The AHA

estimated 2016 visits at 142.6 million in 4,840 ED's, and 144.8 million visits in 2017. EMNet estimates 151.6 million ED visits in 2016 in 5,273 ED's, which includes Freestanding ED's.

- The CDC typically estimates the lowest volume of ED visits. The NHAMCS survey DOES NOT include visits to freestanding ED's.
- The trend of ED's seeing older, sicker patients, combined with continued growth in retail clinics, telehealth, and other sources of care for non-emergent problems, will yield a net increase in severity/complexity for full service ED's.

Table 1. Estimated ED Visits, and Rate of Admission and Observation from the ED.

Year	NHAMCS Estimated ED Visits (millions)	Admission & Observation (%)
2001	107.5	12
2002	110.2	12
2003	113.9	14
2004	110.2	13
2005	115.3	12
2006	119.2	13
2007	116.8	13
2008	123.8	13
2009	136.1	12
2010	129.8	13
2011	136.3	14
2012	130.9	14
2013	130.4	12
2014	141.4	11
2015	136.9	13
2016	**145.6**	**12**

Who Are the Hospitals?

- In terms of hospital characteristics, 71% are "voluntary" or non-profit, and 12% proprietary or for profit.
- 81% of visits were to facilities that are designated as MSA (metropolitan statistical area), 19% are non-MSA or rural.
- Only 68 visits per 1000 persons (15% of all ED visits) are to teaching hospitals and 390 are to non-teaching hospital. Most residents now training in emergency medicine will go to non-teaching facilities after graduation, so this has implications for leaders in emergency medical education.

Who Are the Patients?

- The NHAMCS survey DOES NOT include visits to freestanding ED's and urgent care centers. The trend of ED's seeing older, sicker patients, combined with continued growth in retail clinics, telehealth, and other sources of care for non-emergent problems, will yield a net increase in severity/complexity for full service ED's.
- High utilizers continue to be nursing home residents, the homeless, black persons, patients over age 75 years, and infants.
- Infants under age 1 had 987 visits per 1000 persons. This is relatively high utilization and represents an opportunity for education to parents in the perinatal time.
- There were about 2.2 million visits for patients who reside in nursing homes, for a utilization of 1594 visits per 1000 residents. About 33% of nursing home patient ED visits resulted in hospital admission (739K), with an average length of stay in the hospital of 5.7 days.
- Persons who were classified as "homeless" represented a larger visit load for ED's compared to prior years. In 2016, homeless persons accounted for an estimated 1,446,000 visits, at a rate of 2630 visits per 1000 estimated number of homeless persons. Those visits were about 1% of total ED visits. In 2015, homeless persons 869,000 visits, a rate of 1540 visits per 1000, and about 0.6% of total ED visits.
- The population studies indicate the utilization rate of the ED was 458 visits per 1000 population in 2016 and varied by ethnicity. The CDC categorized visit rates by race for white, black, and other races. The visit rate was 435 visits per 1000 white persons. The visit rate was 804 visits per 1000 black persons. There were 404 visits per 1000 Hispanic persons. The visit rate was 172 visits per 1000 persons of other races (Asian, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, and persons with more than one race).
- For the nation, 15.8% of ED visits are seniors (over age 65 years) and 18.8% are pediatric patients (defined by NHAMCS as under age 15). Some emergency departments are developing service lines to accommodate higher percentages (Geriatric EDs, Pediatric, Observation Units) accordingly.

- An estimated 4.3% of ED visits were non-urgent, with the highest rates of these visits for patients under age 15.
- About 2.7% of visits were by patients that had been seen in the same ED in the preceding 72 hours (this estimate was 5.7% in 2015), and the CDC estimates that 4.9% of ED visits were for follow-up. This is a very important baseline history, as some hospitals are using these data points as quality markers.

How Do They Arrive?

- In 2016, arrival by ambulance occurred about 15.8% of the time. EDBA's most recent survey reported 17% ambulance arrivals, measured across 75 million ED visits. At the 17% rate, there were about 25 million ambulance arrivals to ED's in 2016.
- About one-third of patients over age 65 who arrived at the ED were transported by ambulance. About 41% of visits made by patients aged 75 and over arrived by ambulance.
- Patients under 15 years have the lowest ambulance utilization.
- This survey finds that approximately 38% of patients arriving by ambulance are admitted, which matches EDBA reported data.

Why Do They Arrive?

- Reason for visit was coded using a classification system developed by CDC's National Center for Health Statistics. The NHAMCS has an extensive set of tables that relate to that classification, and estimates are presented by age and sex. In that classification, the number one presenting complaint to U.S. EDs in 2016 was stomach and abdominal pain, accounting for around 9% of visits. Next is chest pain at 5% of visits.
- There is a table that shows the percent of visits made by patients presenting to EDs with a chronic disease. Hypertension was the most frequent condition (24.2%), followed by diabetes (11.4%), depression (10.1%), asthma (10.1%), substance abuse and alcohol misuse (8.3%), coronary artery disease (5.9%), and COPD (5.6%). These are very similar to numbers published in prior years.
- Injuries accounted for an estimated 42.2 million visits, or 29% of ED visits. By comparison, in 2009 there were an estimated 45 million encounters for injuries. This trend reflects the success of many injury prevention programs, leading to an ED population distribution that is less injury and more illness.
- The leading causes of injury, poisoning, and adverse effect-related ED visits were falls (10.5 million visits, 23% of total injury visits) and motor vehicle traffic crashes (3.7million visits, 8.1% of total injury visits).
- There were 5.5 million visits with a primary diagnosis of mental disorder noted in the ED. At about 2.4 million visits, a mental health provider saw the patient in the ED.

When Do They Arrive?

- Most EDs have a recognizable weekly and daily arrival pattern, but almost 60% of care delivered is provided outside of traditional business hours. There was no change in the percent of ED visits (41%) that took place during traditional "business hours" of 8a to 5p on weekdays. The ED therefore provides a vital service – health care availability when everyone else is closed.

What is Done to Them/for Them/with Them?

- The use of diagnostic testing and treatment continues several trends.
    - More patients are presenting with symptoms that raise issues about a cardiac etiology. About 20% of patient visits result in an EKG provided, and about 5.4% result in cardiac markers being analyzed.
    - Imaging procedures of some type were provided in about 48% of ED visits.
    - The use of CT was documented in about 17.5% of visits having at least one scan provided, and about half of those were CT scans of the head. **It should be noted that NHAMCS quantifies the number and percent of visits where a CT scan was performed. In contrast, the EDBA data survey reports the number of CT procedures that are performed per 100 patients. This is an important distinction for ED leaders, because the procedure rate will always be higher than the percent of visits where the procedure was performed.**
    - MRI scanning is increasing in frequency. In 2016, the report indicated that MRI scanning was provided at 0.9% of ED visits.
    - In 2016, the following tests, among others, were provided at ED visits: toxicology screen (4.4%); blood culture (3.3%); lactate (2.2%); arterial blood gas (2.1%); D-dimer (2.0%). Pregnancy testing was done in 8.3% of ED visits.
- ED staff performed CPR in an estimated 208,000 visits in 2014. In 2016 the number was lower, with an incidence too low to estimate by the CDC
- Intubation was performed at 346,000 ED visits in 2016.
- According to the ED records, about 16.6% of ED visits were seen by Physician Assistants (PA's), and 42% of those patient visits did not also see a physician. 12.2% of patient visits were seen by Nurse Practitioners, and 43% of those patient visits did not also see a physician. In total, 42 million patients were seen by APPs (28.8% of all ED patient visits), and 17.6 million of those patients were not also seen by a physician. (12% of all ED patient visits).

Where Do They Go When They Leave the ED?

- There is now a very complex set of tables that report on patient disposition from the ED, and what elements are associated with hospital admission
- A total of 17.4 million ED visits resulted in hospital admission or transfer. About 8.7% of all ED visits resulted in hospital admission at the hospital where the ED visit occurred. Placement in observation units accounted for an additional 2% of all ED visits. The reported admission rate is much lower than EDBA data, which found that about 16.9% of the 75 million visits resulted in placement in an inpatient unit. NHAMCS data indicates that the average patient visit admitted through the ED stays in the hospital 4.5 days
- The report indicates that 2.4 million visits resulted in transfer of the patient to another hospital for medical reasons, and an additional 21.6million patient visits resulted in transfer to a psychiatric hospital.
- There is a table that lists the 20 most common diagnoses for visits resulting in admission through the ED. The leading principle diagnosis group includes those that reflect heart disease, including non-ischemic pathology, ischemic pathology, syncope, and chest pain. Next was pneumonia; followed by cerebrovascular disease; and psychoses.
- In 2016, the number of deaths on arrival or in the ED was estimated at 270,000. In 2013, there were about 303,000 visits that resulted in death.
- In 2016, about 535,000 visits resulted in hospital admission to the mental health or detoxification unit of their hospital, and as mentioned above, about 1,629,000 patient visits resulted in transfer to a different hospital with psychiatric capability. Patient visits resulting in admission to some hospital for mental health issues totaled 2,164,000 ED visits, which is about 5,930 patient visits a day.

How Long Does It Take?

- The wait times continue to improve and now 39% of patient visits wait less than 15 minutes to see a provider and 72% are seen in under an hour.
- The median time to see a physician or APP decreased to 17 minutes. The EDBA data reports that the median time spent in the ED remained around 180 minutes, which includes time with the physician/APP as well as other clinical services.
- The NHMACS survey reported 12% of patient visits spent more than 6 hours in the ED.

Quality Performance Measures

- About 3.2 million visits resulted in the patient leaving before treatment was complete, or about 2.2% of all visits.
- There are hospital quality indicators related to re-admissions to the hospital. ED leaders must be aware of the baseline level of activity for this. The CDC report in 2011 indicated that 6.3% of patients admitted through the ED had been discharged from a hospital in the last 7 days.

- At about 2.9% of visits (compared to 4.7% in 2011) resulting in hospital admission, the patient had been seen in the same ED within the prior 72 hours.

Who Pays for the ED Visit?

- Payor mix in 2016 changed in line with trends from prior years. This is the third year that Medicaid and CHIP accounted for the largest expected source of payment, at 37.7%. Next was private insurance at about 31.8% of ED visits, Medicare (21.6%), and no insurance (8.4%). **Table 2** reflects the trend in the payor mix over the years of CDC data collection. For most emergency departments Medicare and Medicaid will make up at least 50% of the payor mix.
- The trend continues for decreased use of EDs by patients who identified worker's compensation as the source of payment, which is down to 0.7%.
- The most frequent payer type for admission to the ED hospital through the ED was Medicare (43%), followed by private insurance (35%), Medicaid or CHIP or other state-based program (30%), and no insurance (3.9%).

There is a composite assembly of selected characteristics of ED visits for the past 5 years, in Table 3.

ED Planning Aspects of the CDC numbers

ED visits have increased from 369 visits per 1000 population in 1995 to 458 per 1000 population in 2016. The ED population is aging, in line with the demographics of the country. Persons aged 75 and over had 605 visits per 1000 population in 2016. What does that mean for ED planning? EDs need to prepare for larger numbers of patients and have processes that are more friendly to the older population. This population group is not going to shrink. In addition, older patients require more time and more work-up/treatment. And since they are admitted to the hospital more often, they spend more time in the ED as boarders. Planning new or renovating old ED's should account for these shifting demographics.

The survey numbers confirm the higher acuity trend that has been reported in EDBA studies. There are more high acuity visits; senior patients; ambulance arrivals; diagnostic tests; and patients with mental health issues. Injury visits continue to shrink. The biggest increase in injuries is occurring in the elderly.

There is ongoing increase in the use of diagnostic tools in the ED, especially EKGs. The use of CT scanning appears to have plateaued, but MRI, and other special imaging procedures like ultrasound, are increasing.

There is a continuing growth in the percentage of overall hospital admissions presenting through the ED. The EDBA data survey finds that about 69% of hospital inpatients are processed through the ED. This clearly demonstrates that the ED is the "Front Door to the Hospital".

Summary Talking Points from NHAMCS and EDBA data

- There is a long-term trend that American ED visits are increasing by at least 2% annually.
- More patients arrive with medical illnesses than injuries with that gap widening each year.
- More patients are elderly and arrive by EMS.
- The largest group of patients being seen in the ED have Medicaid or CHIP insurance.
- The highest utilization rate of emergency services per population is by homeless persons, then nursing home residents.
- A growing number of ED visits result in the patient being seen ay APPs (Physician Assistants and Nurse Practitioners). An estimated 28.1 million patient visits were seen by APPs (20.5% of all ED patient visits), and 11.9 million of those patient visits were not also seen by a physician (8.7% of all ED patient visits).
- About 3.0% of ED visits resulting in hospital admission were for patients that had been seen recently in the same ED.
- Admission rates are falling, except in the mental health group.
- There are growing numbers of patient visits related to primary mental health issues. In about 2.4 million visits, a mental health provider saw the patient in the ED, and in about 2.2 million ED visits the result was admission to the mental health unit of a hospital.

Payer	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992
Commercial Insurance	31.8	34.3	34.6	36.0	35.1	34.9	36.9	38.6	41.9	39	39.7	39.9	35.7	36.4	38.9	40.2	40.2	38.9	37.8	37.6	38	37.1	34.7	36.8	36
Medicaid, CHIP	37.7	34.8	34.9	30.0	29.5	31.8	31.4	29.3	24	25.2	25.5	24.9	22.2	21.4	19.7	17.5	16.7	17.4	17.9	17.9	21	22.8	24.7	23.2	22.7
Medicare	17.8	17.7	17.5	19.6	18.3	18.4	17.7	17	18.4	17.2	17.3	16.6	15.3	16.3	15.4	14.8	15	15	14.5	15.5	15.5	15.5	14.9	15.6	15.1
Medicare & Medicaid	3.8	3.6	3.1	4.1	4.1	4.2	3.8	3.6	3.4	3															
No insurance	8.4	9.8	11.8	15.1	14.1	16	16.1	15.5	15.4	15.3	17.4	16.7	16	14.1	14.5	14.7	17.4	16.2	15.1	16.2	16.8	16.7	13.4	14.1	13.8
Worker's Compensation	0.7	0.9	0.8	1.1	1.1	1.1	1.2	1.2	1.3	1.6	1.8	1.7	1.8	1.9	2	2.5	2.8	3	3.2	3.5	3.4	3.9			
Other	3.8	4.0	3.1	5.6	4.6	4.1	3.7	3.4	4.6	2.4	3.5	2.4	2.8	2.5	2.3	2.2	2.6	3.2	2.9	4.1	3.3	8.3	6.5	6	6.8
Unknown	11.4	10.8	7.8	5.8	9.1	5.8	4.7	6.7	6.1	9	4.7	6.5	5.3	6.5	6.2	7.2	5	5.8	7.4	5.4	1.9	4.7	2.5	2.1	1.7

Table 2. Payer Mix percent of ED Visits over the years of the Data Survey.

Table 3. Characteristics of ED Visits over the past 7 years of the Data Survey.

	2016	2015	2014	2013	2012	2011	2010
Seen During Business Hours	**41.1%**	40%	40.5%	39.6%	39.4%	39.4%	39.1%
Wait time to see practitioner	**Median 17, mean?**	Median 18, mean?	Median 21, mean 43.7	Median 23, mean 43.6	Median 21.4, mean 43.7	Median 27. Mean 48.9	Median 28 minutes
"Nonurgent Visits"	**4.3%**	5.5%	4.3%	5.0%	4.0%	4.0%	4.0%
EMS Arrival	**15.8%**	15.1%	13.9%	14.5%	15.6%	15.7%	16.3%
Injury as cause of visit	**42,253,000**	38,959,000	40,019,000	37,211,000	37,400,000	40,200,000	37,900,000
	29% of visits	28.4% of visits	28.3% of visits	28.5% of visits	28.5% of visits	29.4% of visits	29.2% of visits
Self-Inflicted injuries	**575,000**	575,000	468,000	383,000	419,000	836,000	713,000
All CT scans	**25,421,000**	22,598,000	20,818,000	20,223,000	20,100,000	21,500,000	21,300,000
	17.5% of visits	16.5% of visits	14.7% of visits	15.5% of visits	15.4% of visits	15.8% of visits	16.4% of visits
CT Scan of Head	**11,869,000**	10,385,000	10,044,000	9,409,000	9,331,000	10,560,000	10,347,000
	8.2% of visits	7.6% of visits	7.1% of visits	7.2% of visits	7.1% of visits	7.7% of visits	8% of visits
EKG	**29,588,000**	26,621,000	24,911,000	23,764,000	23,300,000	26,000,000	24,100,000
	20.3% of visits	19.4% of visits	17.6% of visits	18.2% of visits	17.9% of visits	19.1% of visits	18.6% of visits
MRI	**0.9% of visits**	0.7% of visits	0.8% of visits	0.7% of visits	0.6% of visits	0.6% of visits	0.5% of visits
Cardiac Enzyme Testing	**7,879,000**	5,685,000	7,581,000	8,974,000	9,700,000	19,100,000	17,800,000
	5.4%	4.2%	5.4%	6.9%	7.4%	14.1%	13.7%
CPR	**Estimate not possible**	Estimate not possible	208,000	204,000	Estimate not possible	122,000	133,000
Endotracheal intubation	**346,000**	370,000	310,000	276,000	219,000	259,000	277,000

	2016	2015	2014	2013	2012	2011	2012
Pt admitted after being seen in ED during last 72 hours	**2.9%**	3.0%	3.5%	5.1%	3.4%	4.7%	3.9%
Pt. admitted, and discharged from any hospital in last 7 days	**Not reported**	Not reported	Not reported	Not reported	Not reported	6.3%	5.6%
APP Seen along with Physician	**24,413,000**	16,255,000	14,700,000	16,342,000	17,062,000	14,400,000	12,783,000
	16.8% of visits	11.9% of visits	11.1% of visits	12.6% of visits	13.1% of visits	10.5% of visits	9.9% of visits
APP Seen Without Physician	**17,582,000**	11,844,000	12,000,000	8,169,000	9,029,000	10,410,000	9,668,000
	12.1% of visits	8.7% of visits	8.5% of visits	6.2% of visits	6.9% of visits	7.6% of visits	7.5% of visits
Mental Health Provider seen	**2,357,000**	2,052,000	1,565,000	1,514,000	2,920,000	1,900,000	1,760,000
Mental Health Admission	**2,164,000**	1,482,000	1,189,000	1,079,000	1,284,000	1,714,000	1,535,000
Admit or Obs or Transfer for admission, not mental health	**17,432000**	17,793,000	14,547,000	16,183,000	18,904,000	21,064,000	21,894,000
	12% of visits	13% of visits	10.3% of visits	12.4% of visits	14.5% of visits	15.4% of visits	16.8% of visits
Died in ED	**270,000**	195,000	369,000	303,000	140,000	183,000	240,000
Left before Treatment Complete	**3,158,000**	3,744,000	2,805,000	3,193,000	3,889,000	4,339,000	3,713,000
	2.2% of visits	2.7% of visits	2.0% of visits	2.5% of visits	3.0% of visits	3.2% of Visits	2.8% of visits

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