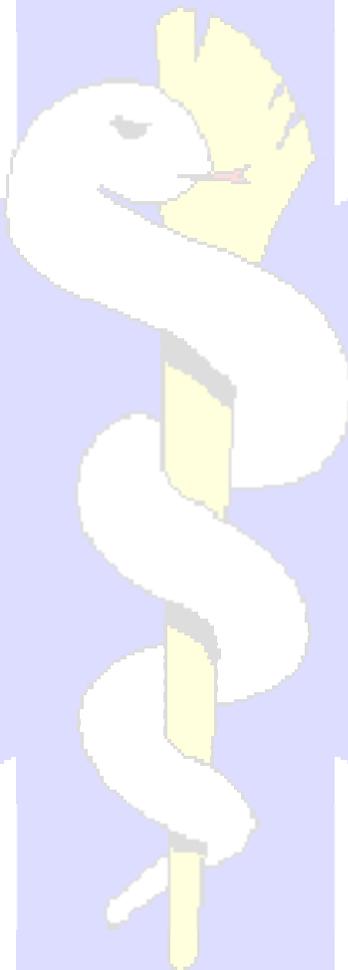




**NORTH DAKOTA**  
DEPARTMENT *of* HEALTH

2007-2008

# Emergency Medical Services Data Report



**North Dakota Department of Health**  
Division of Emergency Medical Services  
and Trauma

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# Emergency Medical Services Data Report 2007-2008

John Hoeven, Governor  
Dr. Terry Dwelle, State Health Officer



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600 E. Boulevard Ave.  
Bismarck, N.D. 58505-0200  
701.328.2371  
[www.ndhealth.gov](http://www.ndhealth.gov)

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# North Dakota State Online Ambulance Reporting

## History of Data Collection

Every licensed ambulance is required to submit data. N.D.A.C § 33-11-01-09.5 requires that all ambulance runs must be reported to the North Dakota Department of Health, Division of Emergency Medical Services and Trauma (DEMST) in the manner and form determined by DEMST.

The North Dakota Department of Health has collected ambulance information since the 1970s. Early in the program, paper copies of trip tickets were received from the various agencies, and a full-time employee at the Department of Health compiled the information. In the early 1990s, the Division of Emergency Health Services started scanning the trip tickets using a software package called EMScan. In July 2004, the DEMST entered into a partnership with Med-Media to have online data submission. Ambulances were given one year to transition from submitting paper trip tickets to online data submission.

North Dakota has been part of the national movement for pre-hospital data since the 1970s. The DEMST continues to stay closely aligned with the national dataset set forth by the National Highway Traffic Safety Administration in the National Emergency Medical Services Information System data standard. In 2007, the DEMST worked with Med-Media to transition the Statewide Online Ambulance Reporting (SOAR) system data set to NEMSIS Silver + Compliance. North Dakota was one of the first 10 states in the nation to submit data to NEMSIS.

## Data Quality Issues

In North Dakota, volunteers compose more than 90 percent of ambulance staffing. A problem with volunteer-based emergency medical services (EMS) is a heavy turnover rate, especially in ambulance managers. Also, ambulance volunteers have dedicated a large amount of time to serve their communities. Data input is perceived as another task that will require more volunteer time, taking volunteers out of the field and putting them into an administrative role.

With overtaxed volunteers, a number of ambulance services use billing companies for reimbursement. Approximately 44 percent of North Dakota ambulance services use their respective billing company for data entry to the state system, as well. Out-sourcing of data entry can cause a number of concerns with accuracy and validity of data.

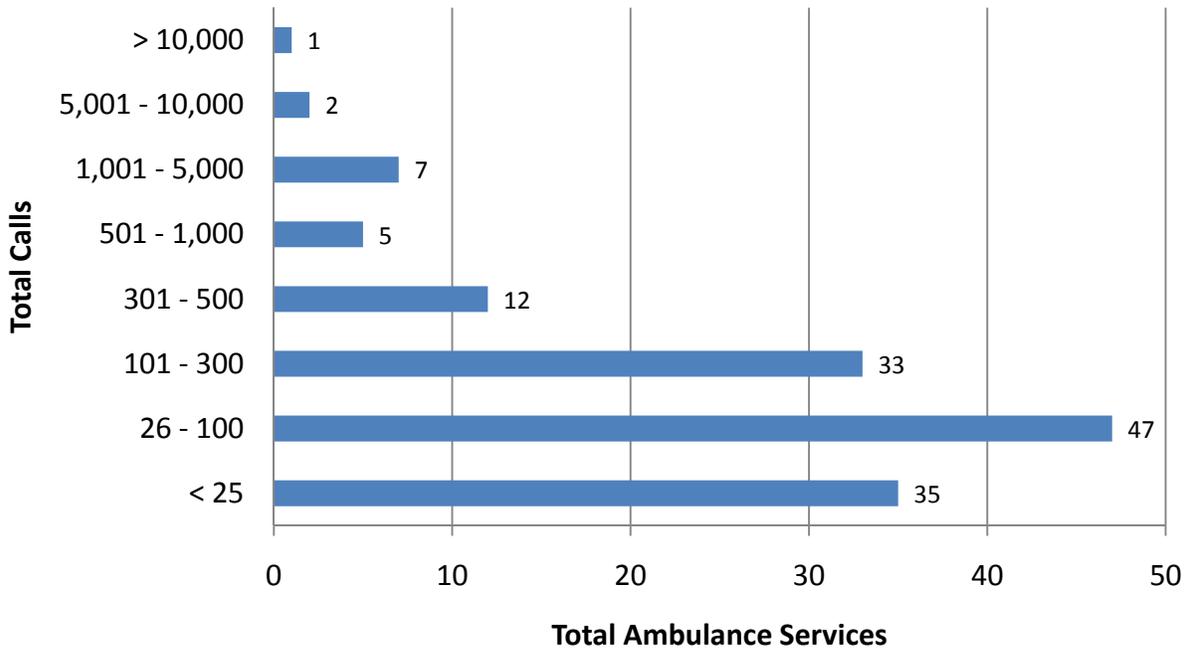
Another data concern is a lack of training. Providers who enter data may not have received any training in the software or proper coding. With the DEMST hiring a research analyst, regional data reports and training were given at regional EMS conferences.

SOAR data would benefit greatly from medical director quality improvement and quality assurance (QI/QA). Like many resources in rural states, doctors are in high demand and overtaxed. QI/QA would benefit not only data, but the entire state EMS system.

## State Ambulance Data

From Oct. 1, 2007, through Sept. 30, 2008, North Dakota EMS providers responded to 58,102 calls. Of the 58,102 calls, 97 percent were complete patient care reports. For a patient care report to be complete, all state-required fields must have been answered in an acceptable form. The reports include cancelled and refused transport. Two ambulance services did not report to the state any runs for the year: Aneta and Goodrich.

### Ambulance Call Volume, 2008



Currently, the division has 146 licensed ambulances. The DEMST collects data from the head ambulance (not substations) and Advanced Life Support (ALS) first responders. Eighty-two ambulance services do 100 or fewer ambulance calls per year, the number of ambulances did not change from 2006-2007 to 2007-2008. DEMST estimates that an ambulance service must do at least 400 ambulance calls per year to be financially self-sustaining through the billing process. Four hundred ambulance calls per year would allow the ambulance to generate enough revenue to have a combination of volunteers and minimally paid staff.



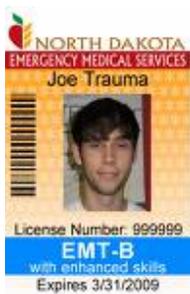
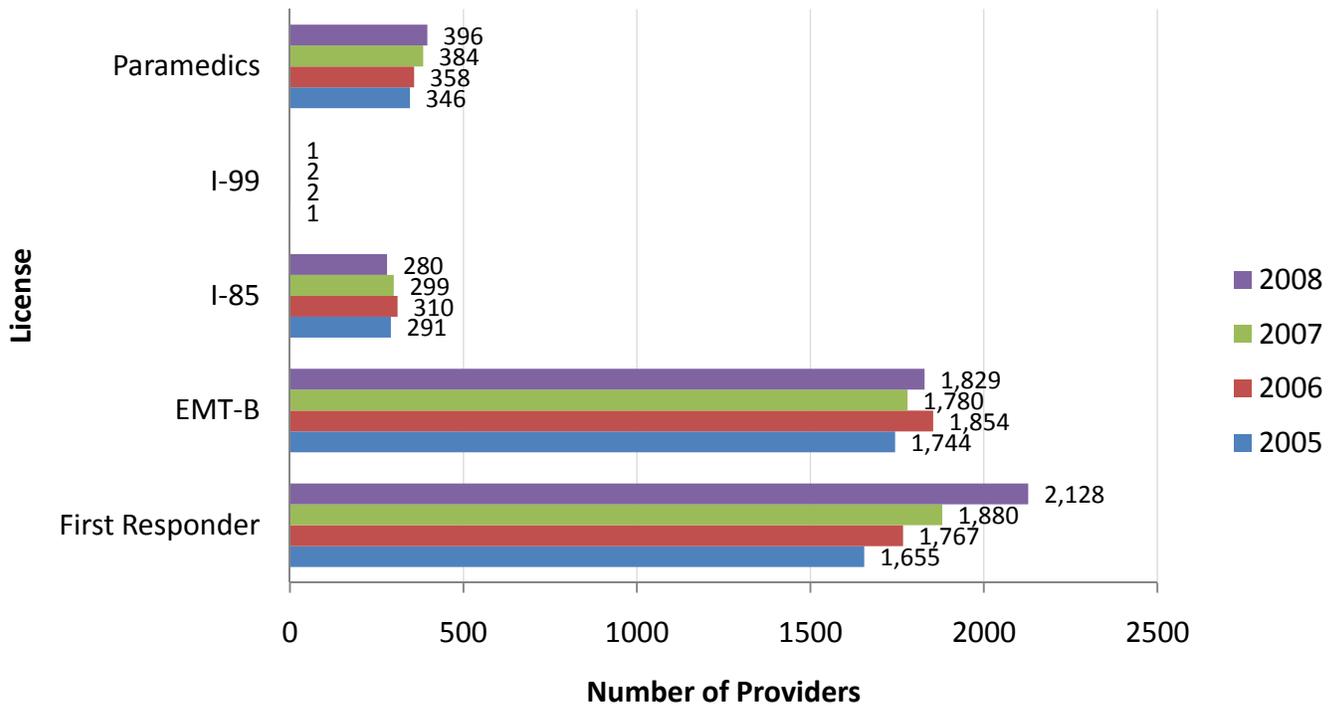
*Above – F-M Ambulance, Fargo, N.D.*

The 10 busiest ambulance services in North Dakota provided service for 71 percent of all ambulance calls for the last year. F-M Ambulance responded to more than 11,000 calls in North Dakota from October 2007 through September 2008. These numbers have remained static between last year and this year.



*Right – Altru Ambulance, Grand Forks, N.D.*

## EMS Providers



Over the past three years, the numbers of EMS providers has shown modest growth. An increase in first responders by 22 percent is very likely due to a training grant opportunity that began in 2005. The number of paramedics has increased by 13 percent in the last three years, most likely due to more employment opportunities and a workforce shortage. However, these numbers may not correlate to people actually working for an EMS agency. In North Dakota, an EMS provider may be certified or licensed and may never actually work in the field for an ambulance service.

The initial course requirements are as follows: first responder – 40 hours; EMT-Basic – 120 hours; intermediate – more than 120 hours; and paramedic – 1,200 hours. To recertify, the following refresher hours are needed: first responders – 16 hours; EMT-B – 24 hours; intermediate – 36 hours; and paramedic – 48 hours. First responders do not need continuing education to recertify. Continuing education is required as follows: EMT-B – 48 hours; intermediate – 36 hours; and paramedic – 24 hours. With the new education standards, the initial courses will be changing to competency based rather than time based.



In January 2008, DEMST started to collect information about each responder's employment classification. According to state law, a volunteer is someone who earns less than \$10,000 per year. On the application for state licensure, the individuals are asked whether they earn more or less than \$10,000 per year as an EMT, intermediate or paramedic. In the future, the DEMST will be better able to determine what percentage of ambulance staff volunteer.

The table to the right depicts the average response time for 911 calls using the following time parameters: 911 dispatch times to scene arrival times. Urban counties include Ward, Burleigh, Grand Forks and Cass. Rural counties include Williams, Stark, Mercer, Morton, Rolette, Ramsey, Walsh, Pembina, Traill, Stutsman, Barnes, Ransom and Richland. All other counties were classified as frontier. Counties were classified as frontier if the population is fewer than six people per square mile. Calls recorded with a greater than 60-minute or a zero minute response time were assumed to be erroneous and excluded from the average.

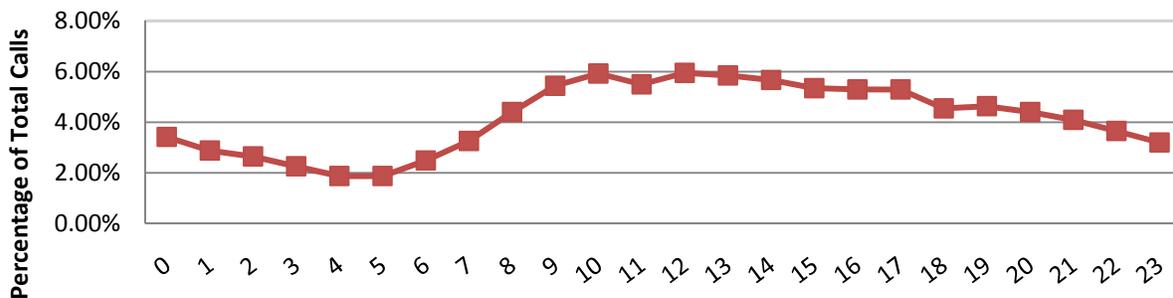
	Average in Minutes	Input Error (> 60 minutes)	Input Error (= 0 minutes)
<b>Frontier</b>	11.58	13	470
<b>Rural</b>	10.52	126	55
<b>Urban</b>	7.91	360	200

**Percentage of Calls by Day in the Week, 2008**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
13.0%	14.6%	14.4%	14.1%	14.5%	15.4%	14.1%

The call volume varies slightly throughout the week. Friday has the highest percentage of calls with 15.4 percent. This remained constant with last year's data report that stated 15.3 percent of calls were on Friday. Sunday has the lowest percentage of calls with 13.0 percent. Ambulance calls are slightly more frequent during midday and taper off throughout the afternoon and evening. Ambulance calls are least frequent during the early morning hours.

**Percentage of Total Calls by Hour (Graph), 2008**

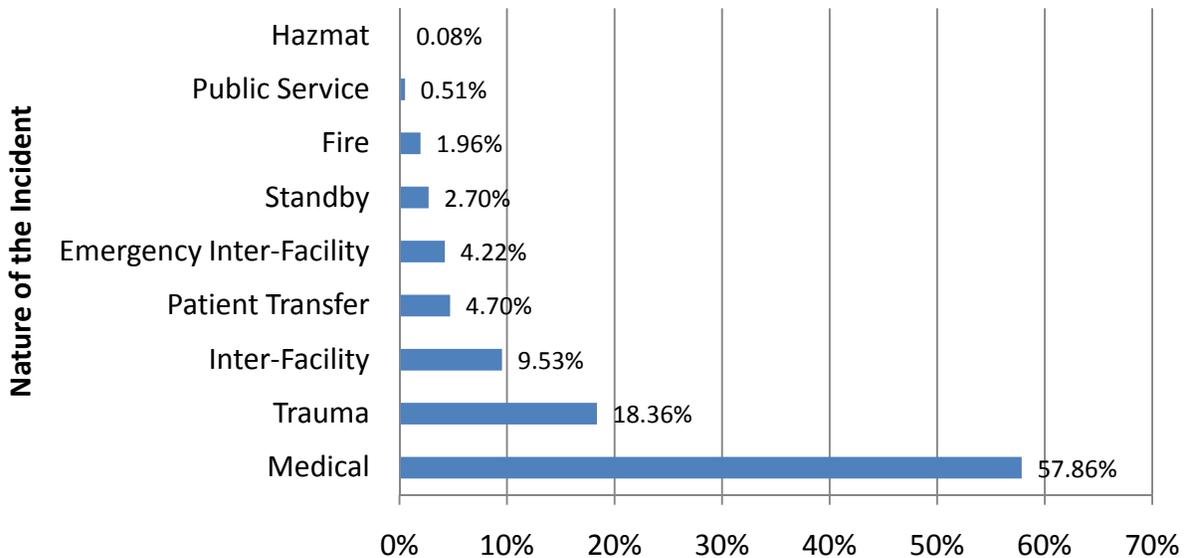


**Percentage of Total Calls by Hour (Table), 2008**

Hour	0	1	2	3	4	5	6	7	8	9	10	11
%	3.42	2.89	2.65	2.26	1.88	1.88	2.49	3.26	4.41	5.44	5.93	5.50
Hour	12	13	14	15	16	17	18	19	20	21	22	23
%	5.95	5.85	5.67	5.35	5.30	5.30	4.55	4.64	4.41	4.10	3.66	3.20

Of the completed reports, the largest percentages were for medical emergencies, followed by trauma incidents. The graph below shows the percentage of calls broken down by the nature of incidents. Medical and trauma incidents made up three-fourths of all ambulance calls for the last year.

### Percentage of Total Calls, 2008



The largest percentage of dispatch complaints for the last year is coded as other. Further

Top 5 - Dispatch Complaint 2006-2007	Percentage
Other	34.66%
Fall victim	7.46%
Traffic accident	6.00%
Unconscious, fainting, syncope	3.57%
Abdominal pain	2.79%

education and training about the software and the process of documentation should reduce dispatch complaints coded as other. Also, further education and dialogue with dispatchers may reduce the number of calls coded with a dispatch complaint

of other. Additional categories need to be added to make dispatch complaint a more descriptive and accurate data field. Currently, ambulances have 35 choices for dispatch complaint including other and unknown problem. Only the primary complaint reported to or received at dispatch can be submitted. The top five dispatch complaints remained the same from 2006-2007 and 2007-2008. The percentages fluctuated very little. Falls went up slightly, while traffic accident calls went down slightly.

Top 5 - Dispatch Complaint 2007-2008	Percentage
Other	30.88%
Fall victim	7.69%
Traffic accident	5.56%
Unconscious, fainting, syncope	3.27%
Abdominal pain	2.78%

The table to the right shows a correlation of higher age with more frequent EMS use. Nearly 40 percent of ambulance calls are for patients older than 65.

**Ambulance Calls by Age Range, 2008**

Age Range	Ambulance Calls	Census Data for ND
Under 5 years	2.27%	6.10%
5 to 9 years	0.76%	6.70%
10 to 14 years	1.42%	7.40%
15 to 19 years	4.41%	8.30%
20 to 24 years	5.30%	7.90%
25 to 34 years	8.03%	12.00%
35 to 44 years	8.57%	15.30%
45 to 54 years	11.29%	13.30%
55 to 59 years	5.47%	4.50%
60 to 64 years	5.45%	3.80%
65 to 74 years	11.11%	7.10%
75 to 84 years	14.99%	5.30%
85 years and over	12.65%	2.30%
Missing	8.30%	



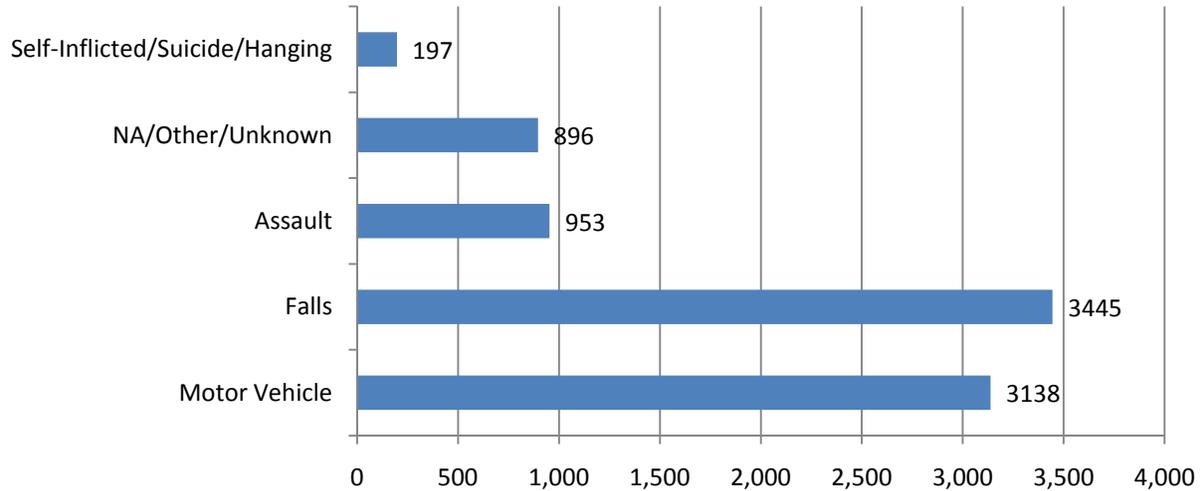
Residences are the most common place to which ambulances respond. Residence at 39 percent is followed by acute care facility at 24 percent. The percentage of the top two location types has remained static between last year and this year. Together, residences and acute care facilities make up for nearly 65 percent of all incident location types.

**Top 10 Call Volumes by Location Type, 2008**

Incident Location	Frequency
Residence	39.20%
Acute Care Facility	24.00%
Public Place	6.74%
Extended Care Facility	6.62%
Traffic Way 55+ mph	4.19%
Other Traffic Way	4.12%
Clinic/ Dr's Office	2.64%
Office/Business	2.59%
Not Provided	1.97%
Health Care Facility (clinic, hosp, nursing home)	1.48%

# Trauma Incidents

## Top Five Mechanisms of Injury for Trauma Calls, 2008

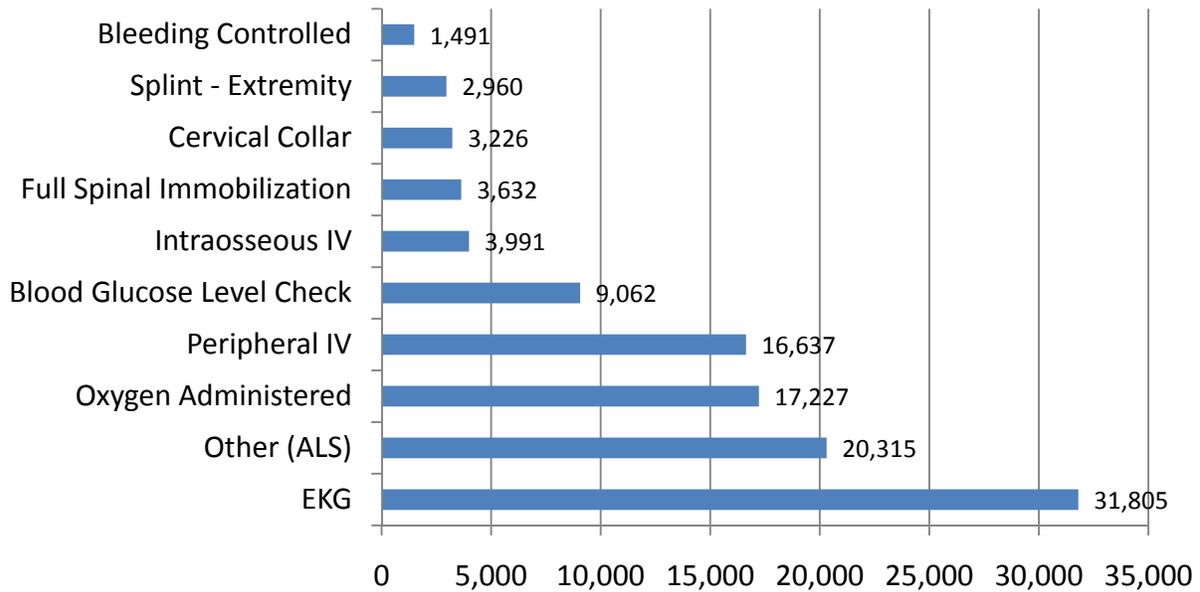


Falls surpassed motor vehicle calls this year by 317 calls. Together, falls and motor vehicle crashes make up nearly 70 percent of EMS trauma calls. Head trauma makes up the largest percentage for body site trauma, with 21.57 percent.

## Trauma Calls: Site of Injury by Type of Injury, 2008

Site	Ampu- tation	Blunt	Burn	Crush	Fracture	GSW	NA	Pene- tration	Soft Closed	Soft Open	%
Abdomen	0	154	14	9	1	6	0	30	108	28	2.66%
Arm	11	394	56	22	330	4	0	43	369	395	12.36%
Back/Spine	0	439	15	15	61	3	0	22	264	43	6.56%
Chest	4	325	29	15	74	6	0	19	212	41	5.52%
Eye	0	123	10	7	10	0	0	9	110	73	2.60%
Face	0	551	58	10	83	5	0	25	377	573	12.81%
Hand	22	108	35	20	45	1	0	27	126	283	5.08%
Head	1	1,036	31	22	71	15	0	34	599	1,024	21.57%
Leg/Foot	36	464	37	36	511	7	0	31	515	282	14.61%
Neck/Spine	0	303	29	7	90	0	0	13	237	31	5.41%
N/A	0	0	0	0	0	0	10	0	0	0	0.08%
Other/ Not Listed	0	6	0	0	3	0	0	0	6	4	0.14%
Pelvic/Groin	0	320	5	13	264	2	0	5	225	18	6.49%
Thigh	6	132	24	11	163	6	0	9	134	55	4.11%
%	0.61%	33.16%	2.61%	1.42%	12.99%	0.42%	0.08%	2.03%	24.99%	21.70%	100.00%

## Top 10 Procedures



Procedures are somewhat under-reported. Until recently, the state was not receiving procedures from those companies that had their own software or those who contracted for data input. This year, nearly 145,000 procedures or treatments were listed. EKG is reported as the most frequent procedure because two readings are required for each EKG and are reported as two separate procedures.

For questions or comments, please contact Tim Meyer or Lindsey B. Narloch at:

North Dakota Department of Health  
Division of Emergency Medical Services and Trauma  
600 E. Boulevard Ave., Dept. 301  
Bismarck, ND 58505-0200  
701.328.2388  
[tmmeyer@nd.gov](mailto:tmmeyer@nd.gov)  
[lindseybnarloch@nd.gov](mailto:lindseybnarloch@nd.gov)