



Trauma Services 2008 Annual Report



**509 Biltmore Ave
Asheville, NC 28801**

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Introduction

As a State designated Level II Trauma Center, Mission Hospitals has made a commitment to provide the best care available to the victims of trauma and has seen an increasing number of admissions related to injury over the years.

Mission Hospital implemented the Trauma Services Department to assure high quality trauma care and to guarantee adherence to state and national standards and guidelines. The Trauma Service organization offers a comprehensive team approach from admission to discharge of the trauma patient, including the following:

- Board certified Trauma/Critical care surgeons
- Board certified Ortho/Trauma surgeons
- Trauma Program Director/Nurse Coordinator
- Trauma and Ortho Physician Assistants
- Emergency Physicians
- Trauma Nurse Clinician
- Regional Advisory Coordinator
- Bioterrorism Coordinators
- Trauma Registrars
- Trauma/Critical Care Respiratory Therapists
- Trauma/Emergency Nurses
- Critical Care Nurses
- Trauma Floor and Intermediate Care Staff
- Chaplains
- Physical, Occupational and Speech Therapists
- Discharge Planners

Care of the trauma patient is coordinated by the trauma team, as listed above, and many other specialties that provide a complete systematic approach to the injured patient. These specialties include:

- Orthopedic Surgery
- Neurosurgery
- Plastic Surgery
- Thoracic Surgery
- Vascular Surgery
- Maxillofacial Surgery
- Cardiology
- Hand Surgery
- Radiology
- Interventional Radiology
- Urology
- Ophthalmology

The goal of Mission Hospitals Trauma Services is to provide optimal trauma care spanning injury prevention, education, acute and rehabilitative care through re-entry into the community. This is accomplished by utilizing a broad spectrum of services provided or coordinated by Mission Hospitals Trauma Services including injury prevention education, health care provider education, clinical care, case management and continuous performance improvement (CPI). Bringing together resources and working as a team makes all the difference for the victim, the family, the health care provider as well as the community.

The Trauma Registry is an intricate part of the Mission Hospitals Trauma Service. All data is gathered and maintained by the Trauma Registrar's in a database created specifically for our needs. Mission Hospitals as well as all the other Trauma Centers in the State utilizes the National Trauma Registry of the American College of Surgeons (NTRACS) to document and monitor all aspects of trauma care. The goal of the Trauma Registry is to improve trauma care by monitoring the care provided, evaluating the process and outcome and interpreting data to assist in developing injury prevention programs, research and for education development.

Data is transferred to the North Carolina Trauma Registry State Data Collection Agency weekly. This data is integrated into the state system along with the data from the other Trauma Centers in North Carolina and provides a valuable source of demographic, clinical and research information statewide.

Mission Hospitals Trauma Registry also submits data once a year to the National Trauma Data Bank (NTDB), which provides a valuable source of nationwide information.

Mission Hospital's 2008 Annual Trauma Report is created to give an overview of the trauma patient population, demographics, injury data, trauma care, outcomes and trends for January 2008 – December 2008. This report reflects only data on those patients that meet the criteria to be entered into the Trauma Registry, which includes the following:

1. All admissions with primary ICD-9 diagnosis codes 800.0 – 959.9 admitted 24 hours or greater.
2. All trauma related deaths including Emergency Department deaths.
3. All trauma related patients transferred from Mission Hospitals to another acute care facility.
4. All trauma related patients treated in the OR or ICU, even if discharged less than 24 hours.

All other patients treated for an injury and released from the ED, or those that expire at the scene are not included in the Trauma Registry.

Trauma Services Staff

Trauma Surgeons

Michael Buechler, M.D. – Medical Director
William Shillinglaw, D.O.
Abenemar Arrillaga, M.D.
Errington Thompson, M.D.
Ann Conquest, M.D.

Ortho/Trauma Surgeons

Michael LeCroy, M.D.
Kenneth Graf, M.D.
Harold Frisch, M.D.

Trauma Program Manager/Coordinator

Kelli Moore, RN, BSN

Trauma Registrars

Leanne Adams
Sandy Rinehart
Kim Brow

Trauma Nurse Clinician

Terrie Smith, RN

Trauma Physician Assistants

Elisha Moss, P.A.
Ed Ransdell, P.A.

MATRAC Coordinator

Mark Johnson, RN

Regional Hospital Preparedness Planners- SMAT

Debbie Gilbert
Riley Bennett, Assistant

Analysis of the 2008 Data set

The following report is a result of an analysis of the Mission Hospitals Trauma Registry for the period of January 1, 2008 through December 31, 2008.

In 2006 we began tracking the number of patients that meet the criteria to be called a Code Trauma or a Trauma Alert that were treated and released from the ED. They are referred to as limited data sets (LDS). They are included in the Trauma Registry for counting purposes, but are not transferred to the State and are not included in the State Registry.

For the purposes of this report the LDS patients are not included, other than in the first graph.

The patients represented in each table or figure are those with valid data for all fields referenced in that table or figure. Therefore, the number of patients represented may vary. The number of patients in the data set is 2841.

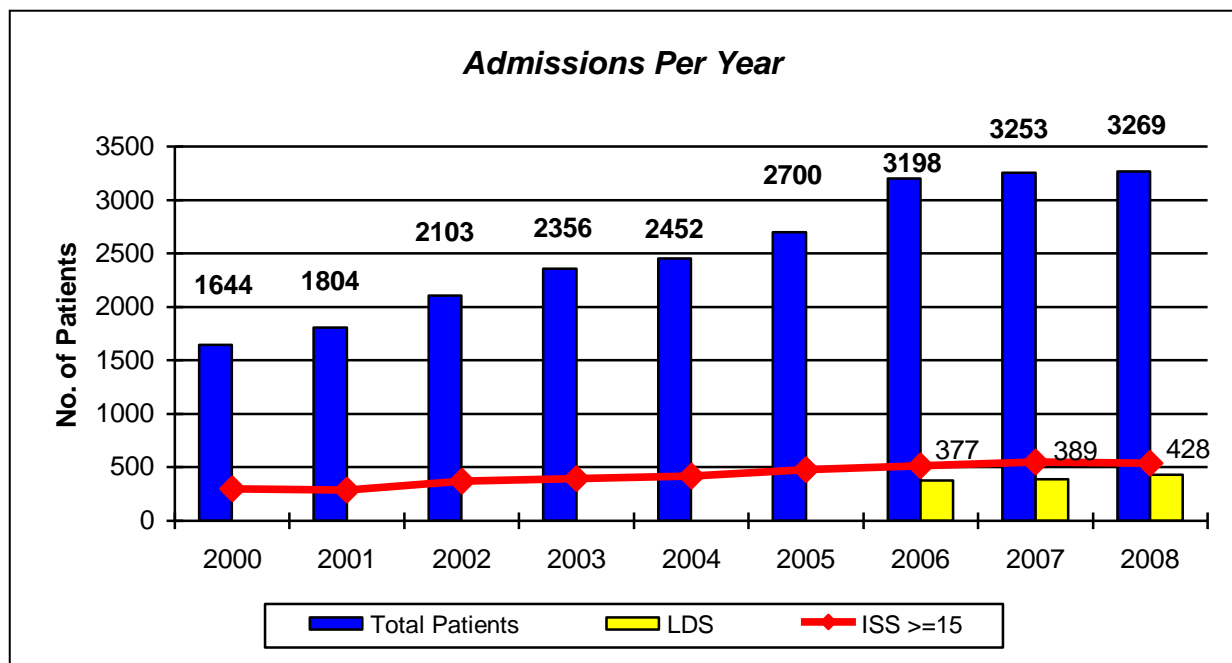
Prepared by:

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Trauma Services
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Number of Records by Year

This graph shows the steady increase of trauma admissions to Mission Hospitals over the past 9 years. The total number of patients seen in 2008 was **3269** with **428** of them being limited data sets.



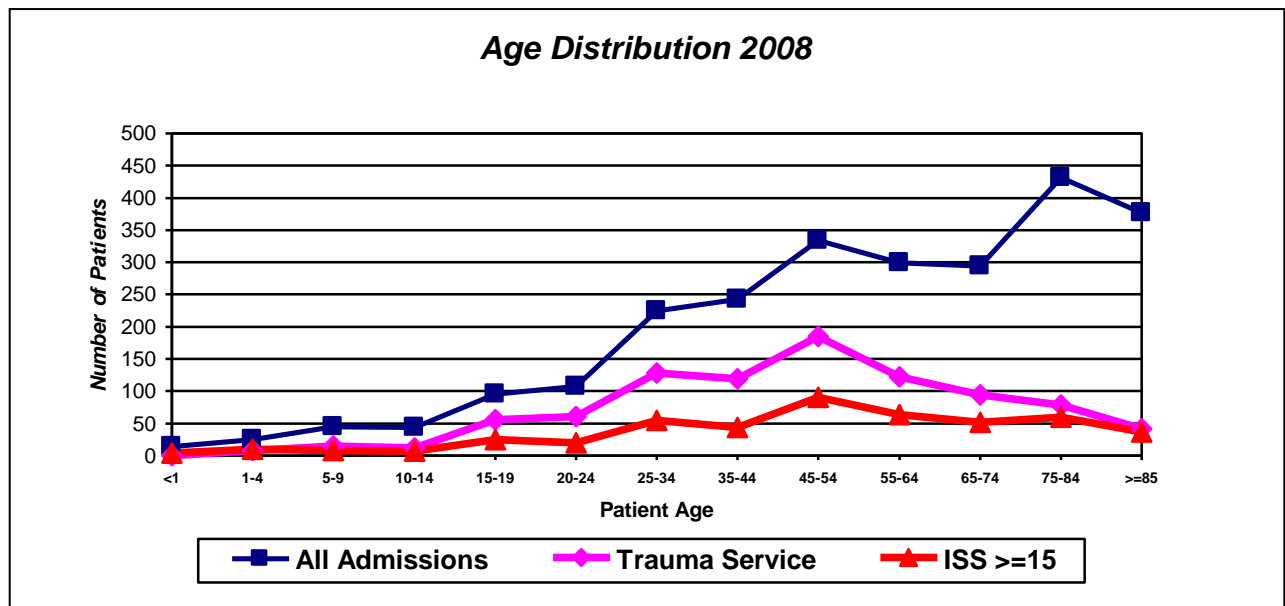
The Injury Severity Score (ISS) is a system of numerically stratifying injury severity. The ISS system has a range of 1-75 and the risk of death increases with the higher score. ISS of 15 or more represents the more severely injured patient.

Year	No. ISS >=15
2000	299
2001	287
2002	371
2003	397
2004	416
2005	476
2006	512
2007	553
2008	538

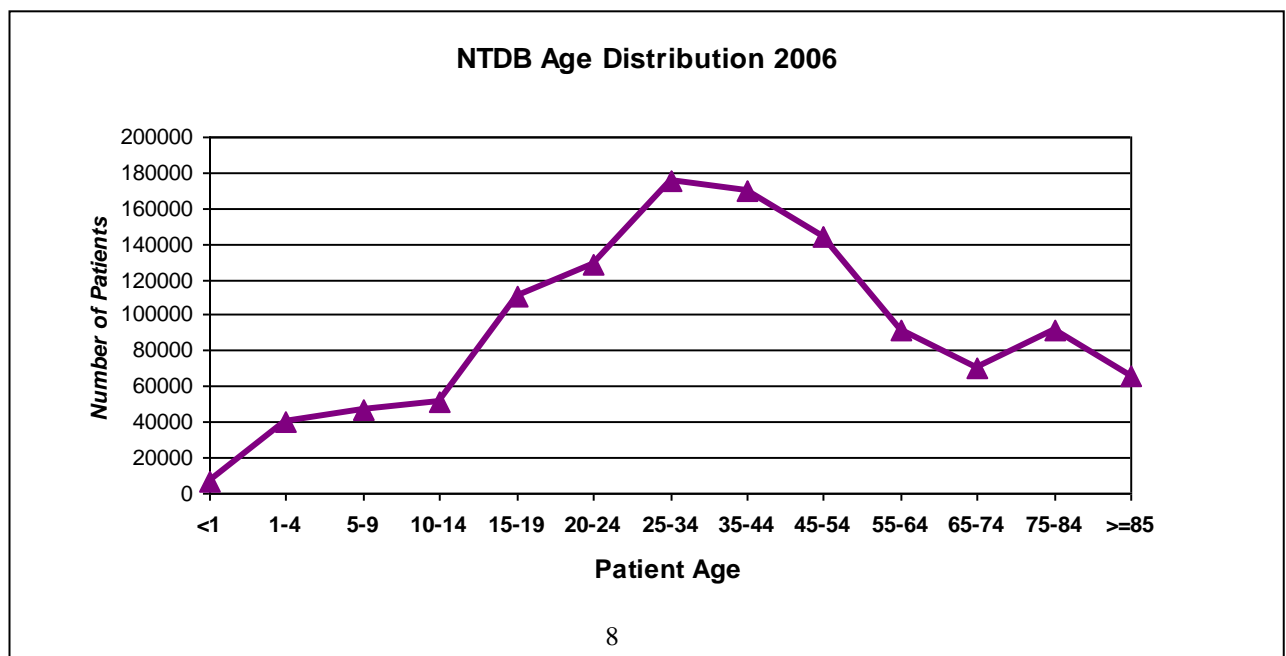
Demographics - Age Distribution

The graph below depicts the age distribution for the general trauma population admitted to Mission Hospital along with the patients admitted specifically to the Trauma Service and patients with an ISS of 15 or greater.

The peak age is between 75 and 84 for the general trauma population, which is consistent with the large retirement community in Asheville and surrounding areas. This is in contrast to the peak age of 25 to 34 for the general trauma population seen outside of the Asheville area, as shown in the second graph from the National Trauma Data Bank. The Trauma Service patient at Mission is more in line with the national peak range starting at 25 but does not fall off until around age 55. Which is still older then the national numbers and poses some challenges for the Trauma Service at Mission.



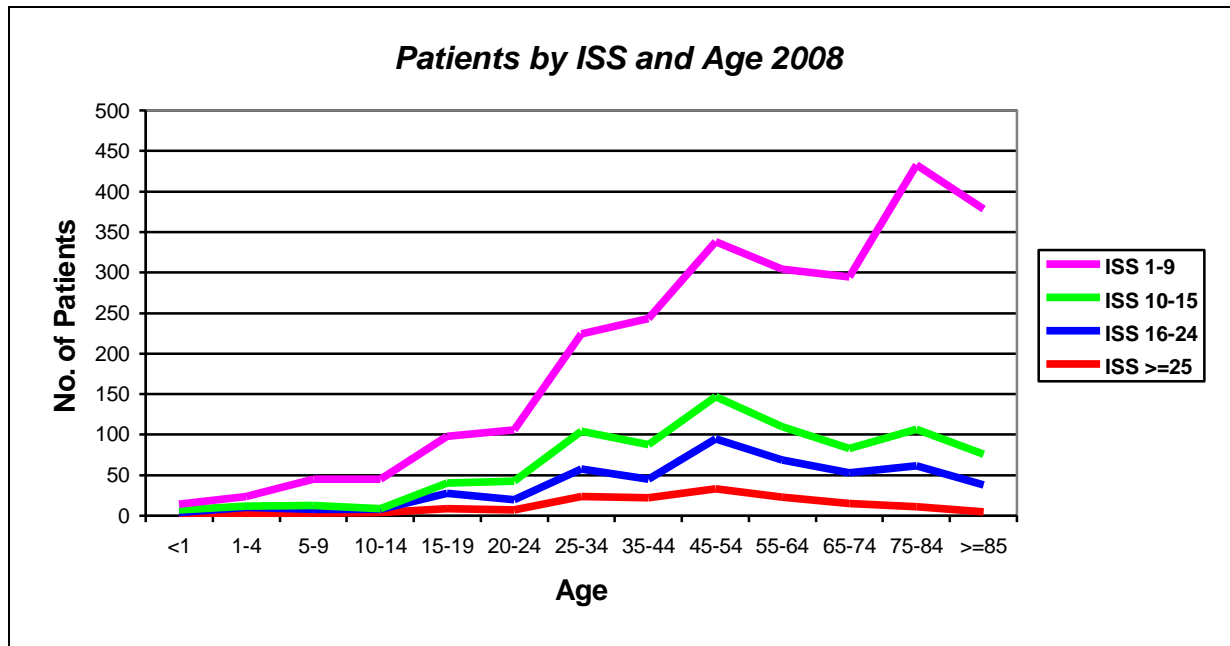
The NTDB 2006 Data was used for this graph. The 2008 data is not available yet.



Demographics of Trauma Patients

Patients by ISS and Age

The graph below depicts the age distribution for the general trauma population admitted to Mission Hospitals by ISS and Age.



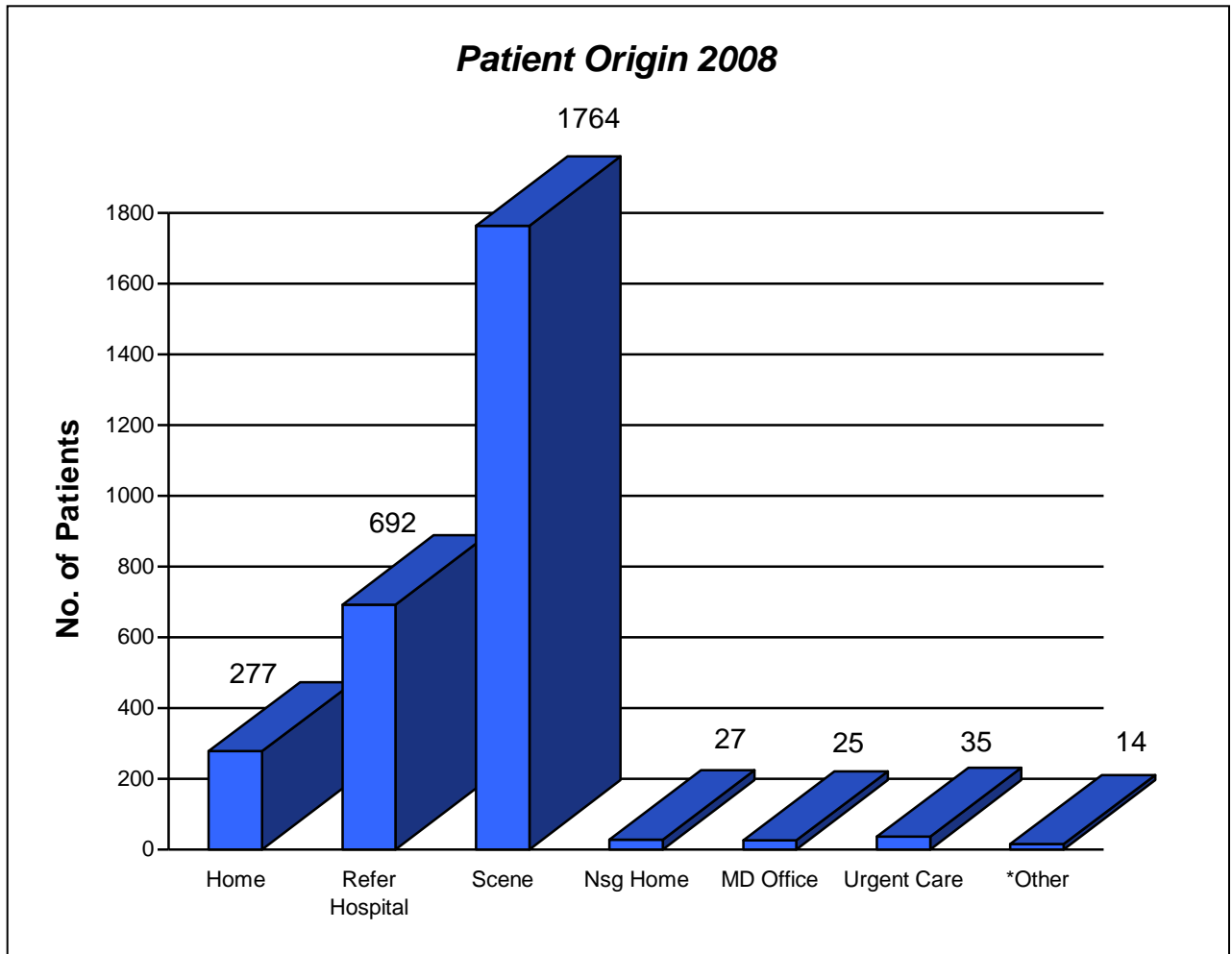
Age Range	No. Of Patients	No. Of Pt's ISS 1-9	No. Of Pt's ISS 10-15	No. Of Pt's ISS 16-24	No. Of Pt's ISS >=25
<1	14	7	3	4	0
1-4	25	12	2	8	2
5-9	45	32	5	5	3
10-14	44	36	1	4	4
15-19	95	58	12	19	9
20-24	107	63	23	13	7
25-34	225	120	46	34	24
35-44	243	155	43	23	22
45-54	334	191	52	62	33
55-64	299	194	41	46	23
65-74	294	212	30	38	15
75-84	431	326	45	51	11
>=85	377	302	38	33	5

Pre-Hospital Statistics

Patient Origin

62% of the trauma patients admitted to Mission Hospitals arrived from the scene, while 24% were transferred from referral hospitals.

*Other = EMS Station, Clinic and Jail

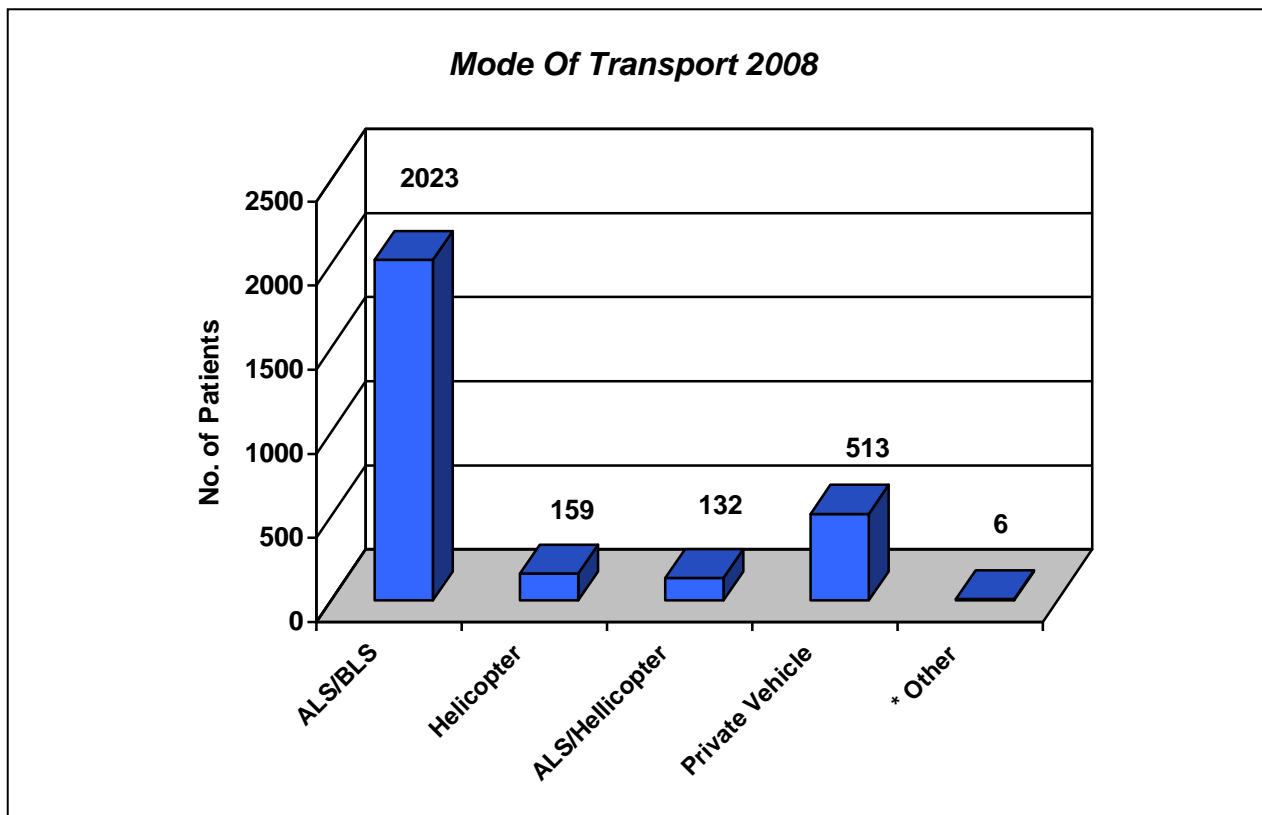


Pre-Hospital Statistics

Mode of Transport

Advanced Life Support ambulance, helicopter and private vehicle are the primary means of transport for trauma patients to Mission Hospitals.

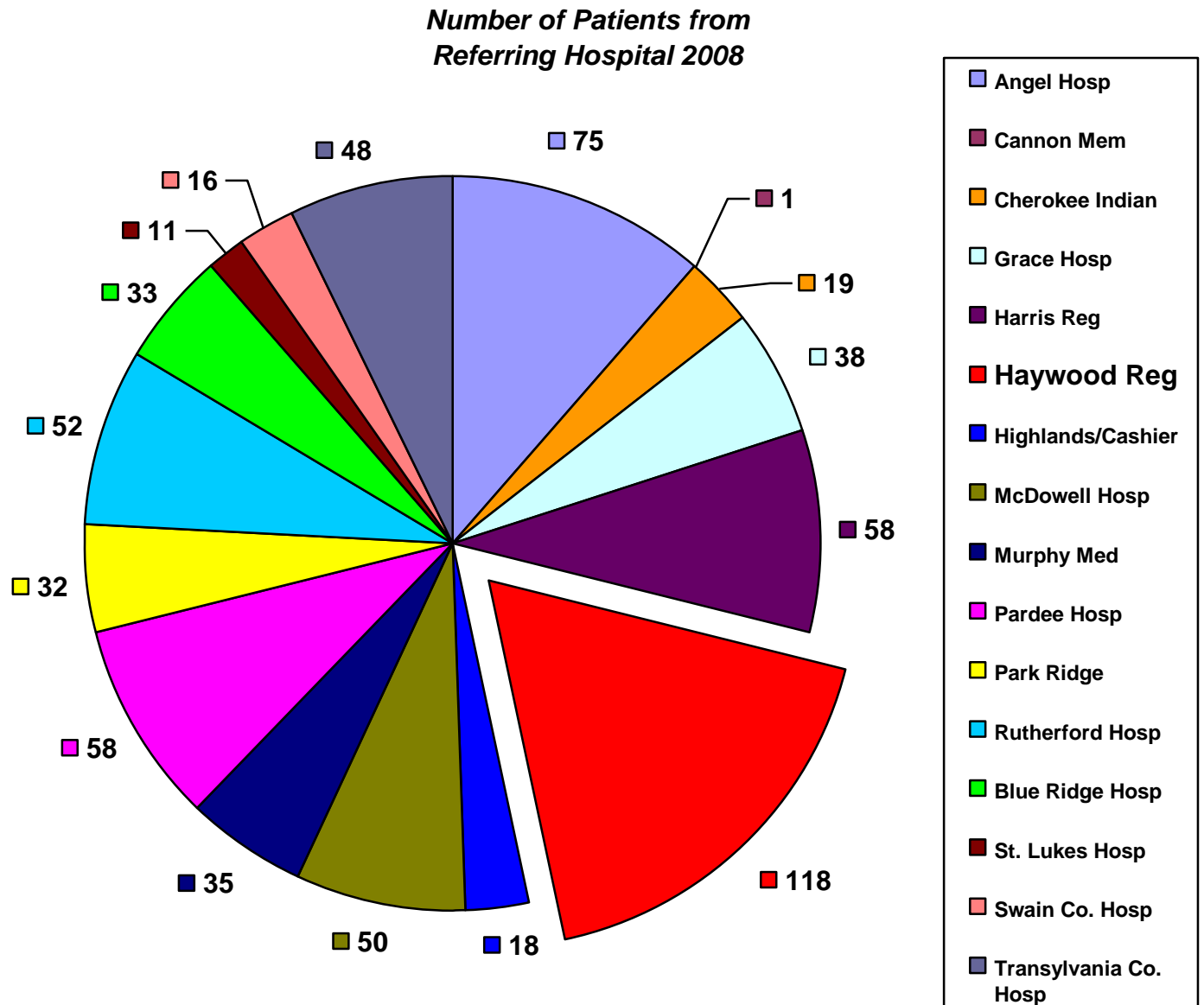
*Other = Other, Police and Walk



Hospital Statistics

Referring Hospital for Transferred Patients

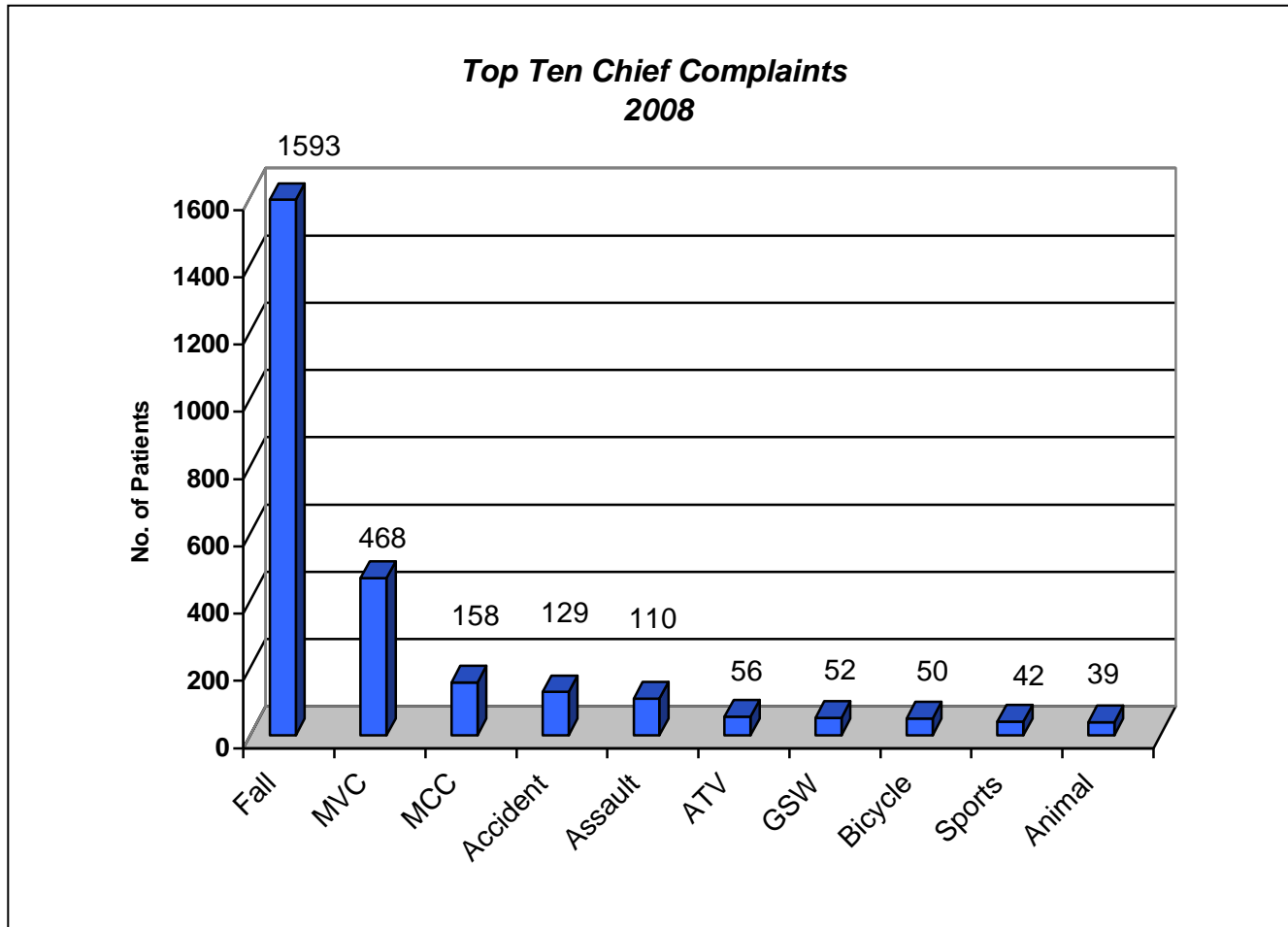
The graph below shows the number of patients admitted to Mission Hospitals from the referral hospitals in the Mountain Area Trauma RAC. HaywoodRegional Hospital tops the list with a referral rate of 17%.



Hospital Statistics

Chief Complaint

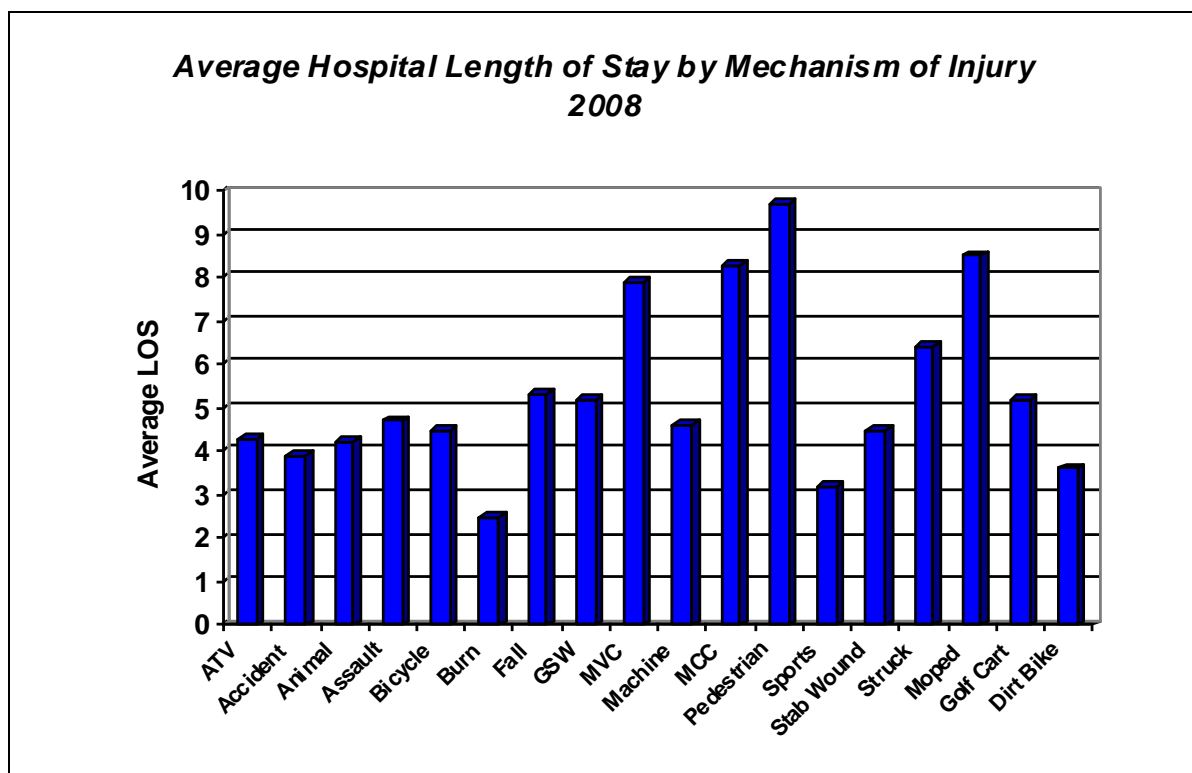
The majority of trauma patients seen at Mission Hospitals come from falls with 1593 admissions followed by MVC's with 468 admissions.



Complaint	Total
Stabwound	30
Moped	30
Pedestrian	26
Burn	21
Struck	20
Golf Cart	8
Machine	6
Dirt Bike	3

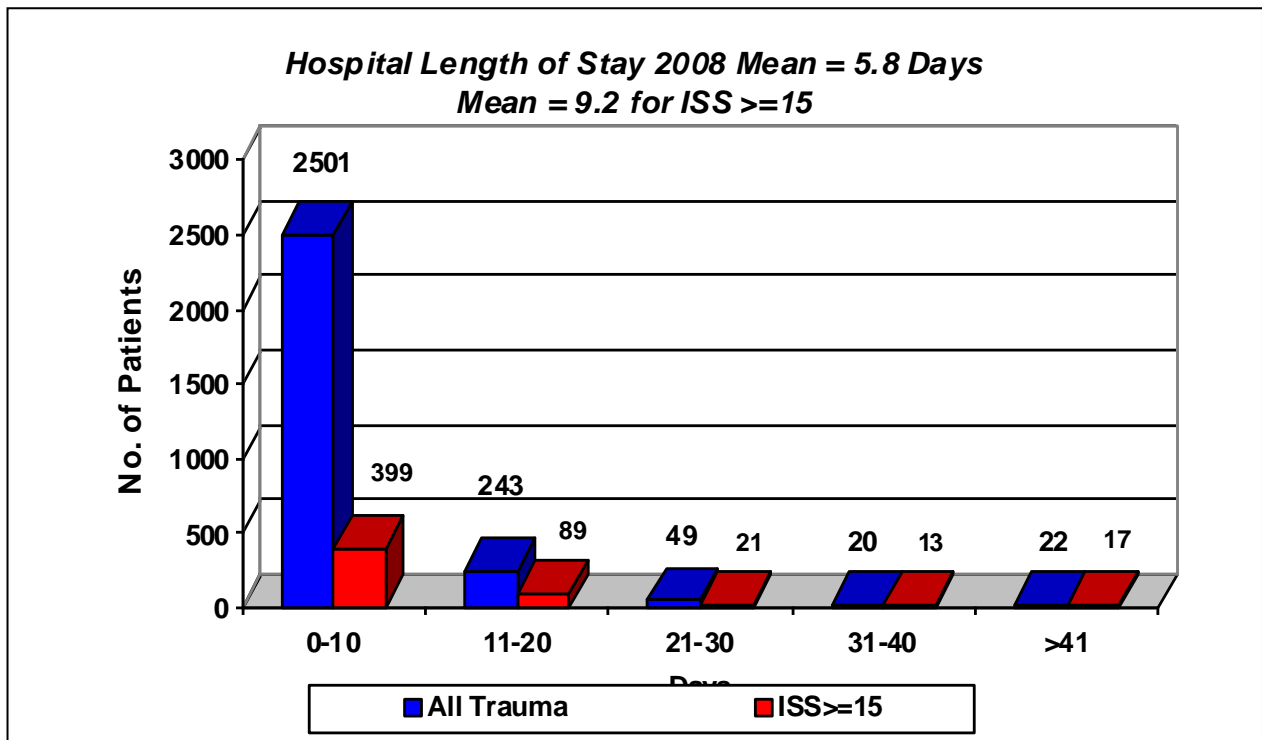
Hospital Statistics

Average hospital length of stay by Mechanism of Injury.



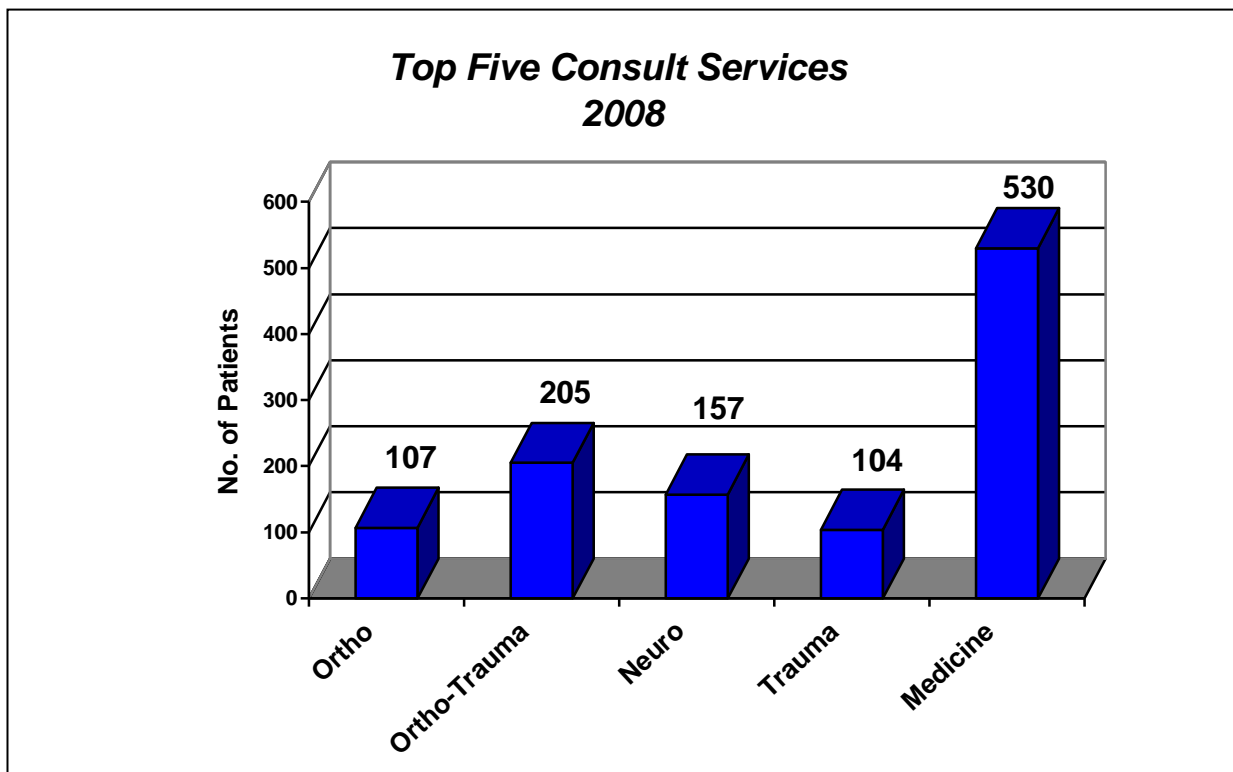
Mechanism of Injury	Number of Patients	Avg Los
ATV	56	4.3
Accident	129	3.9
Animal	39	4.2
Assault	110	4.7
Bicycle	49	4.5
Burn	21	2.5
Fall	1591	5.3
GSW	52	5.2
MVC	468	7.9
Machine	6	4.6
Mtrcycle Crash	159	8.3
Pedestrian	24	9.7
Sports	42	3.2
Stab Wound	30	4.5
Struck	180	6.4
Moped	30	8.5
Golf Cart	8	5.2
Dirt Bike	3	3.6

Hospital Statistics



Consultations

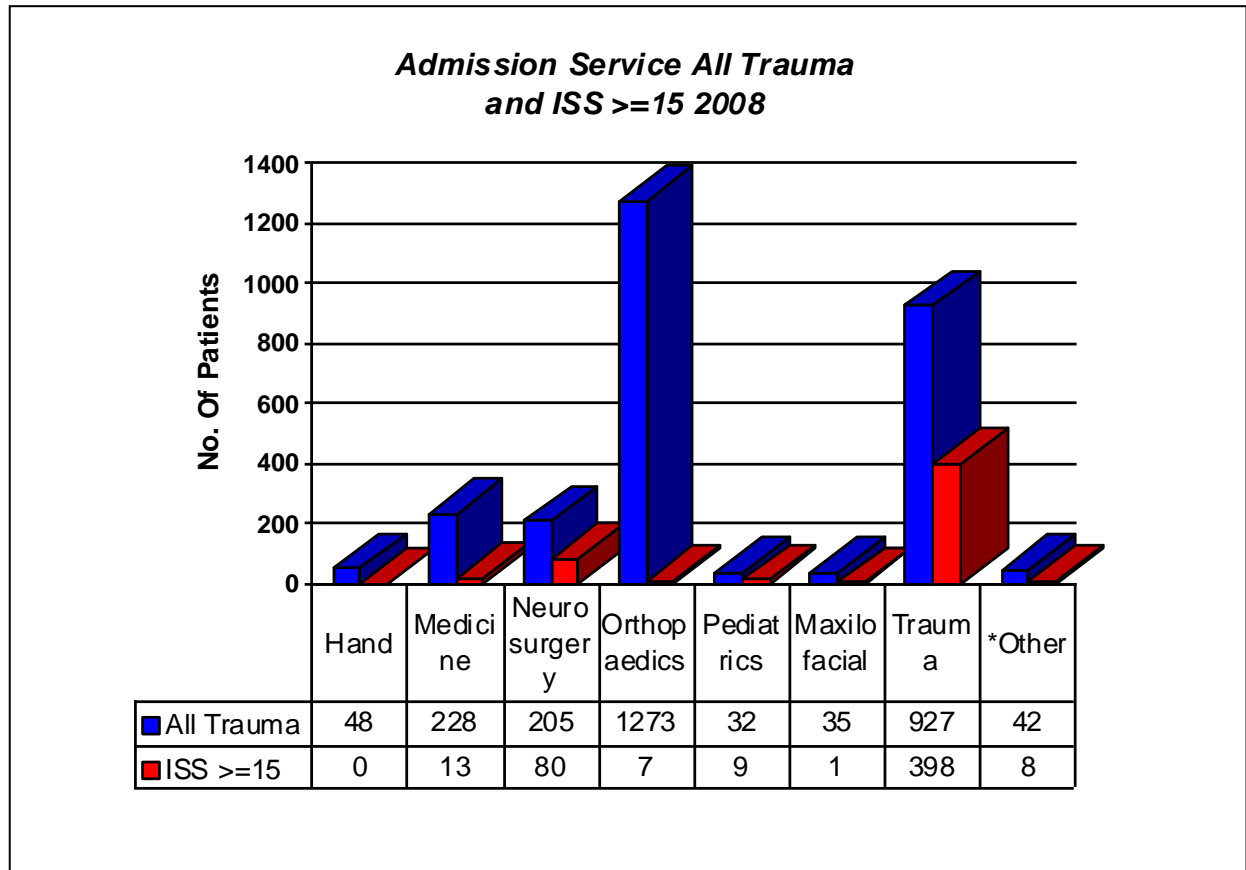
Medicine is the most frequently consulted service, due to the high number of elderly patients with hip fractures that require pre-op clearance. Ortho-Trauma & Neurosurgery follow.



Hospital Statistics

Admitting Service

*Other = Cardiology, CT Surgery, Gen Surgery, OB/Gyn, Ophtha, Psychiatry, Urology & Vascular Surgery

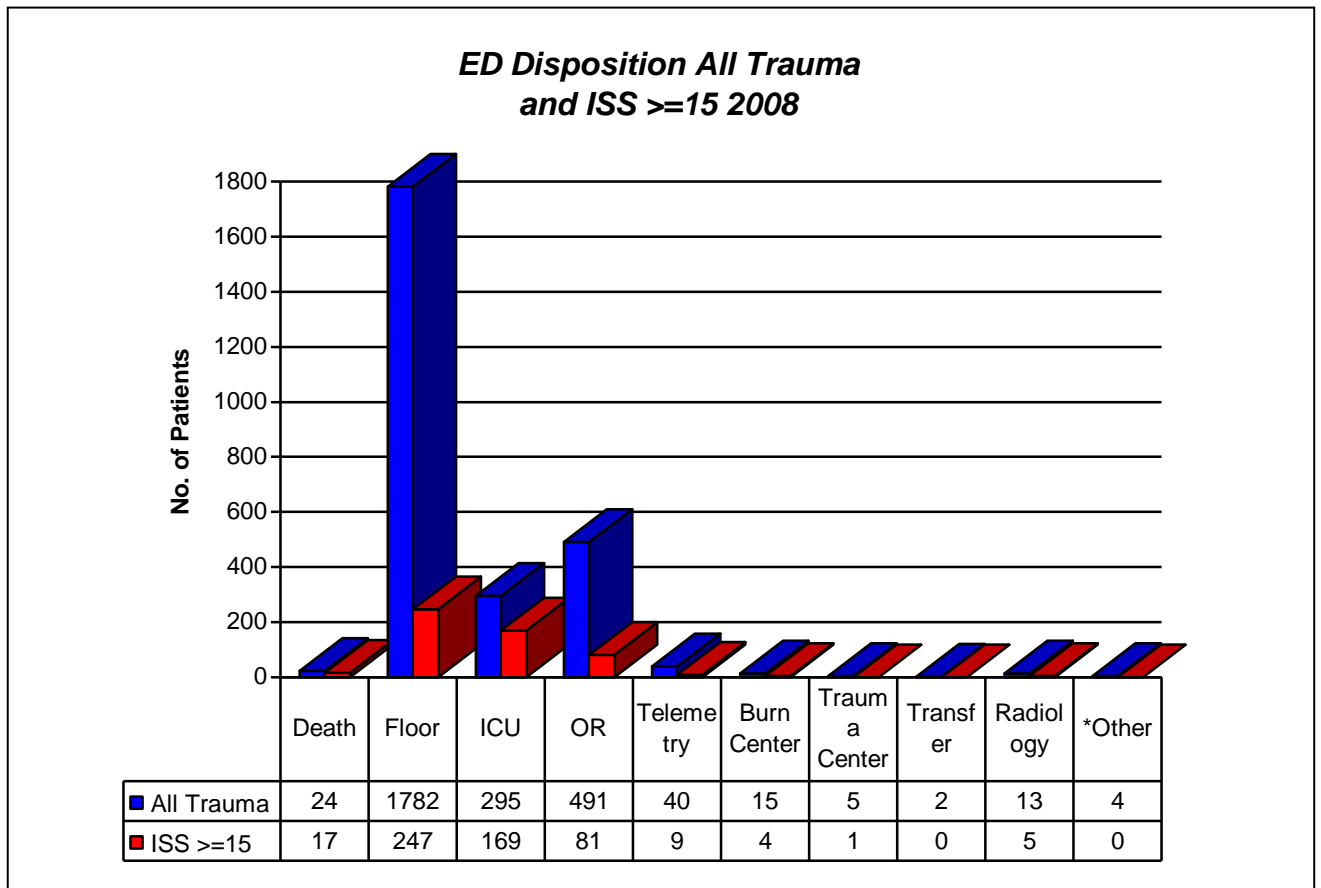


Hospital Statistics

ED Disposition

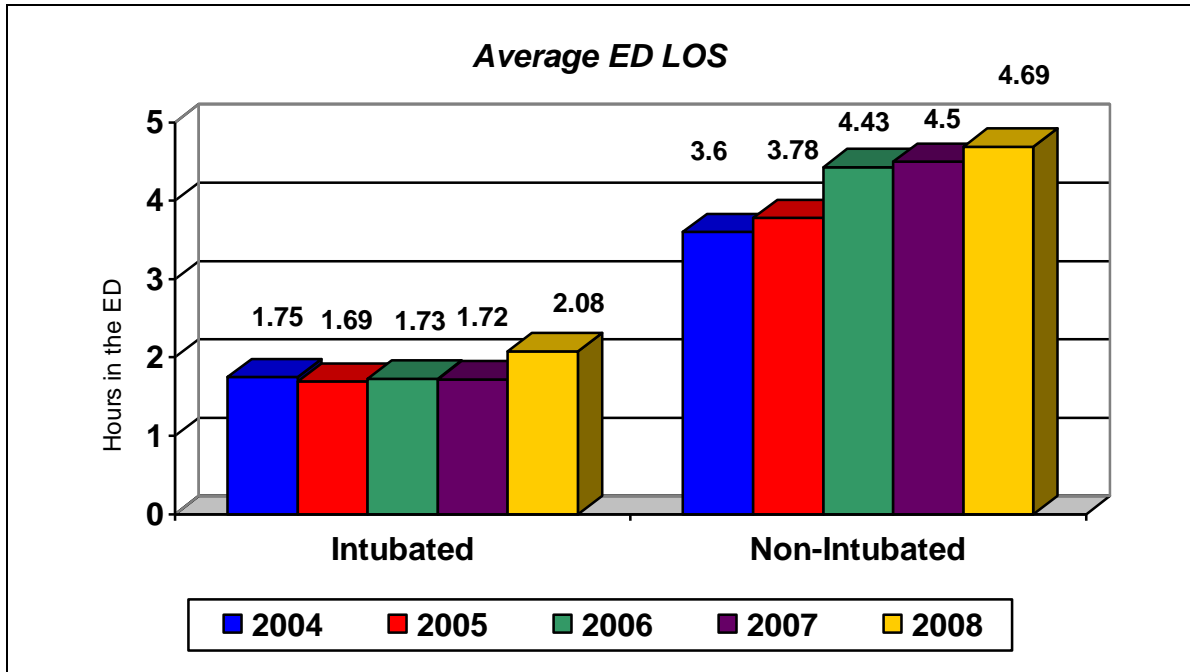
In 2008, 67% of the trauma patients went to the floor from the ED, 18% went to the OR, and 11% went to the ICU.

*Other = Jail & L&D

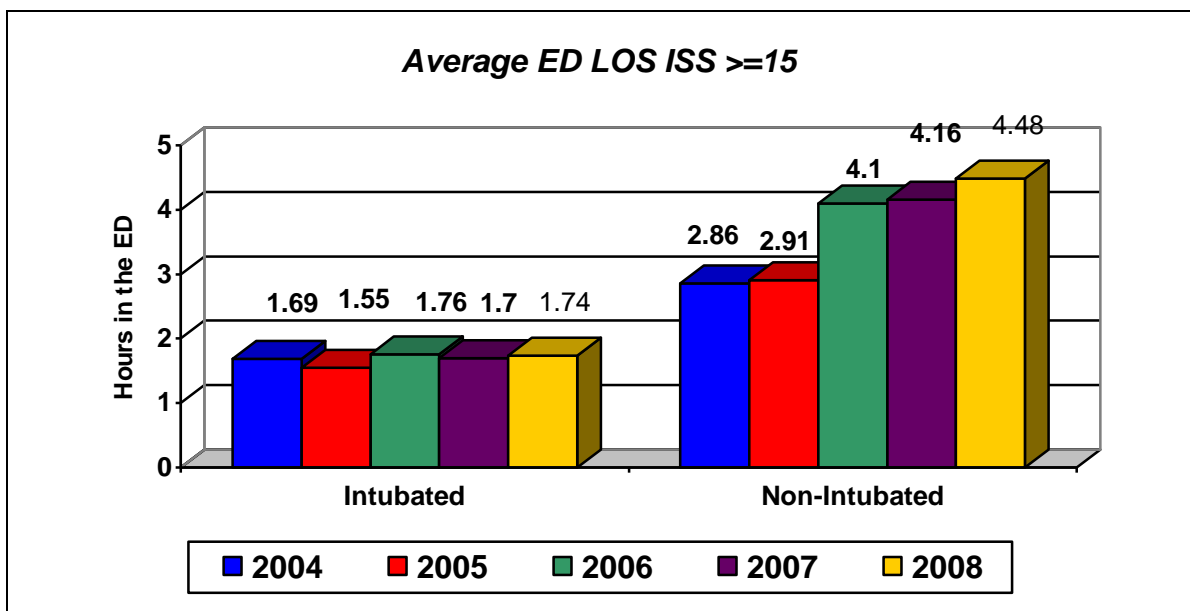


Hospital Statistics

Average ED length of stay 2004, 2005, 2006, 2007 & 2008

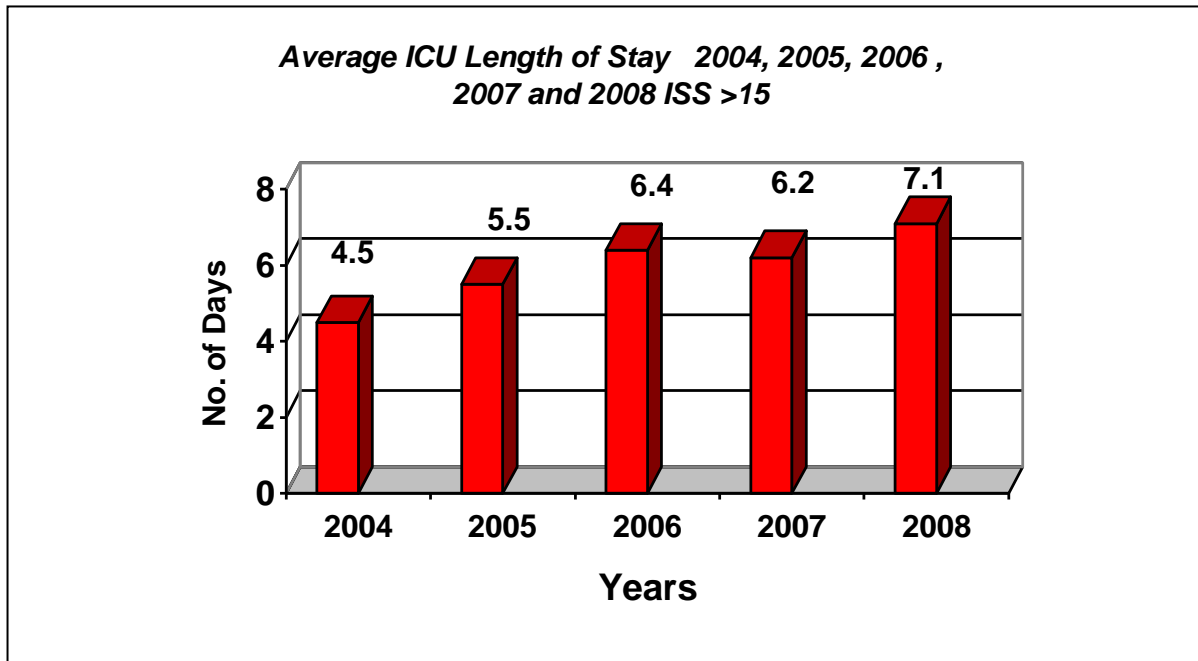


Average ED Length of stay ISS ≥ 15 2004, 2005, 2006, 2007 and 2008

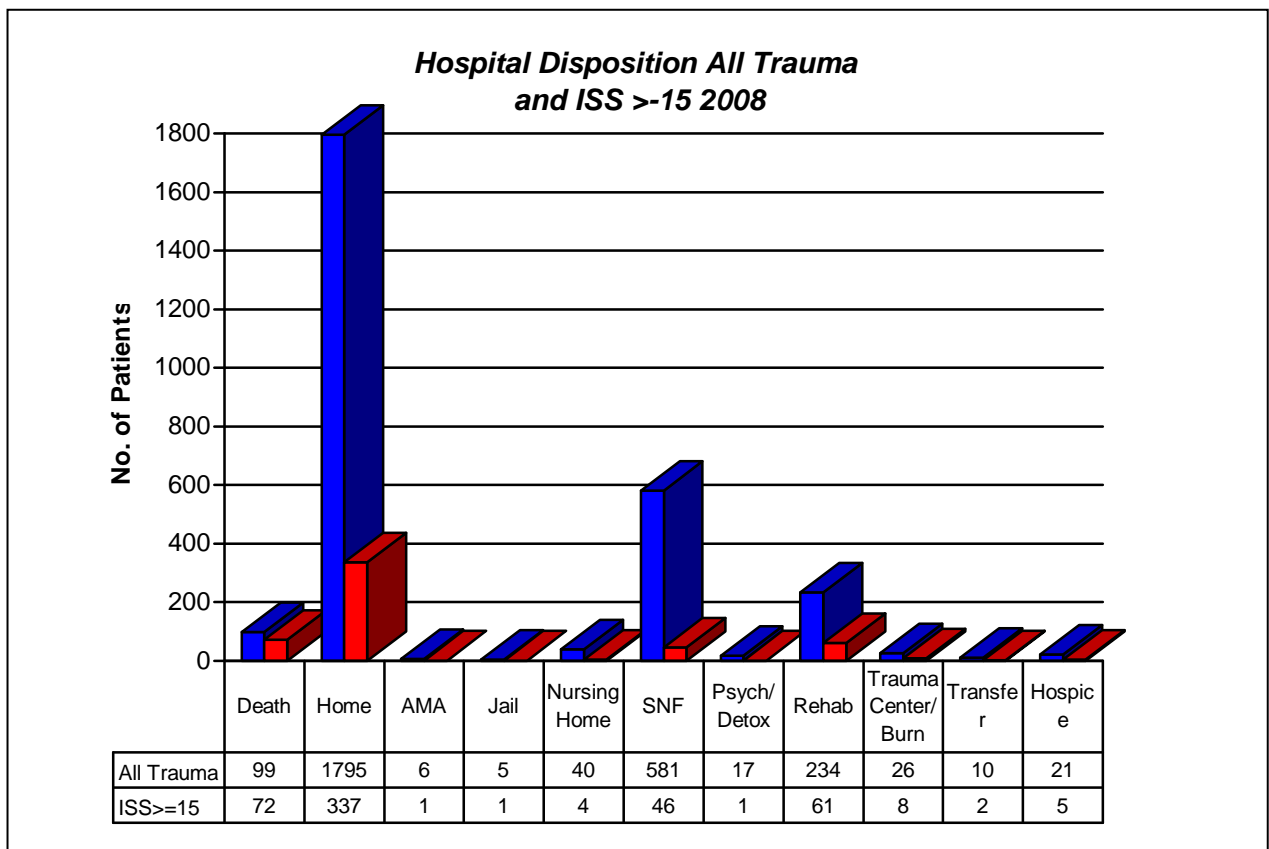


Hospital Statistics

Average ICU length of stay ISS ≥ 15 2004, 2005, 2006, 2007 and 2008



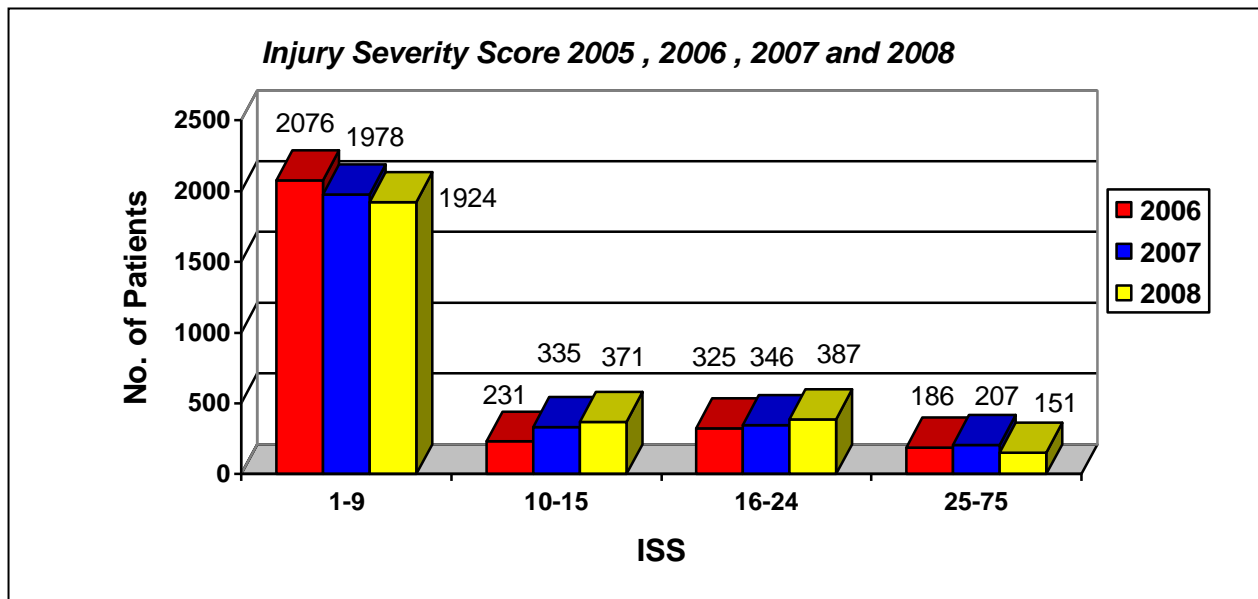
Hospital Disposition All trauma and ISS ≥ 15 2008



Injury Severity and Outcome Statistics

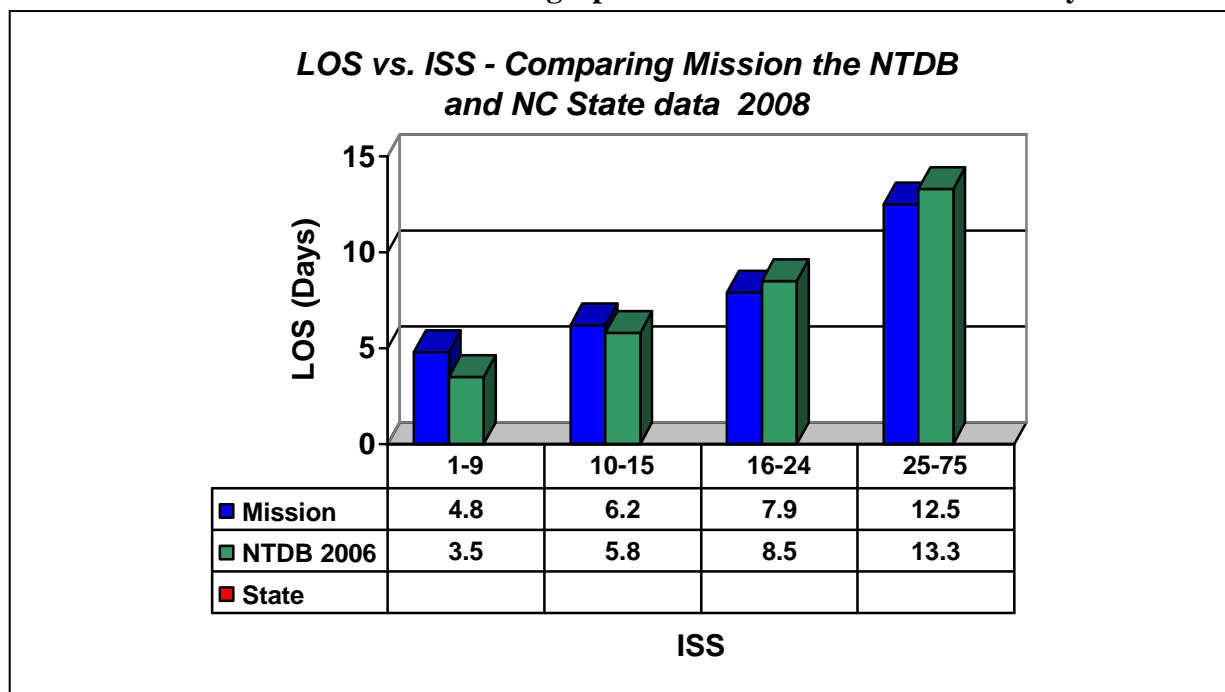
Injury Severity Score Distribution

Approximately 68% of trauma patients had an ISS score between 1 and 9 , 13% between 10 and 15, 14% between 16 and 24 and 5% 24 and greater for 2005.



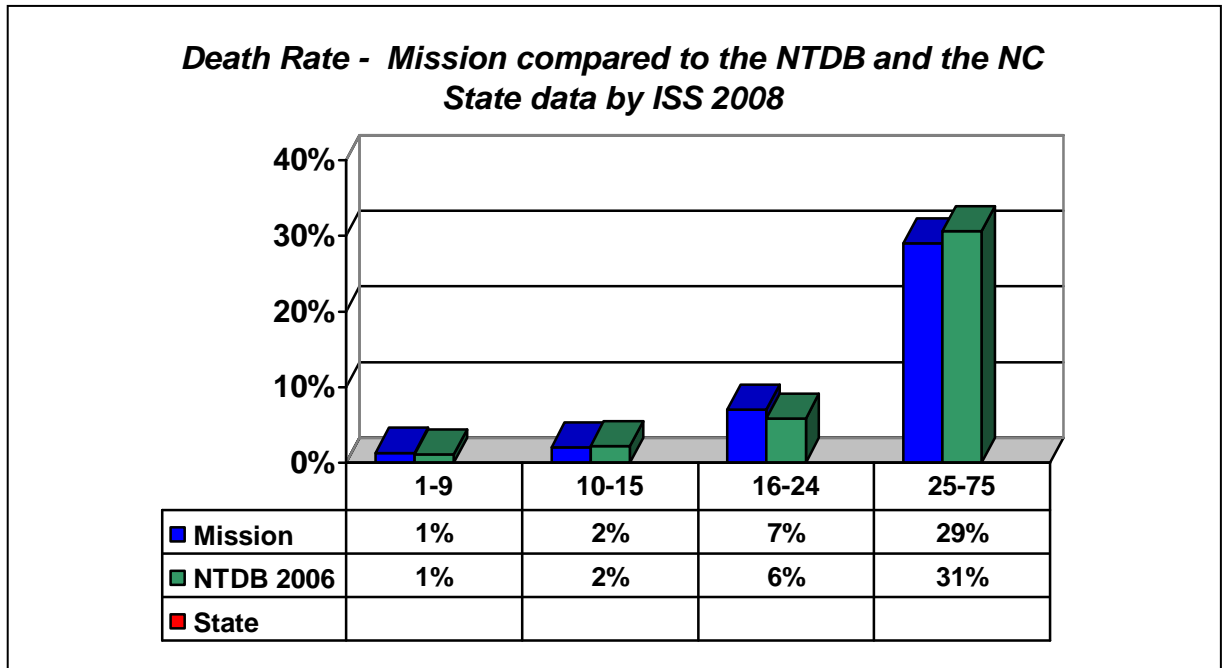
The following two graphs compare Mission Hospitals to the National Trauma Data Bank and the NC State Data from January 1, 2008 – December 31, 2008.

The NTDB 2006 data was used for this graph. The 2008 data is not available yet.



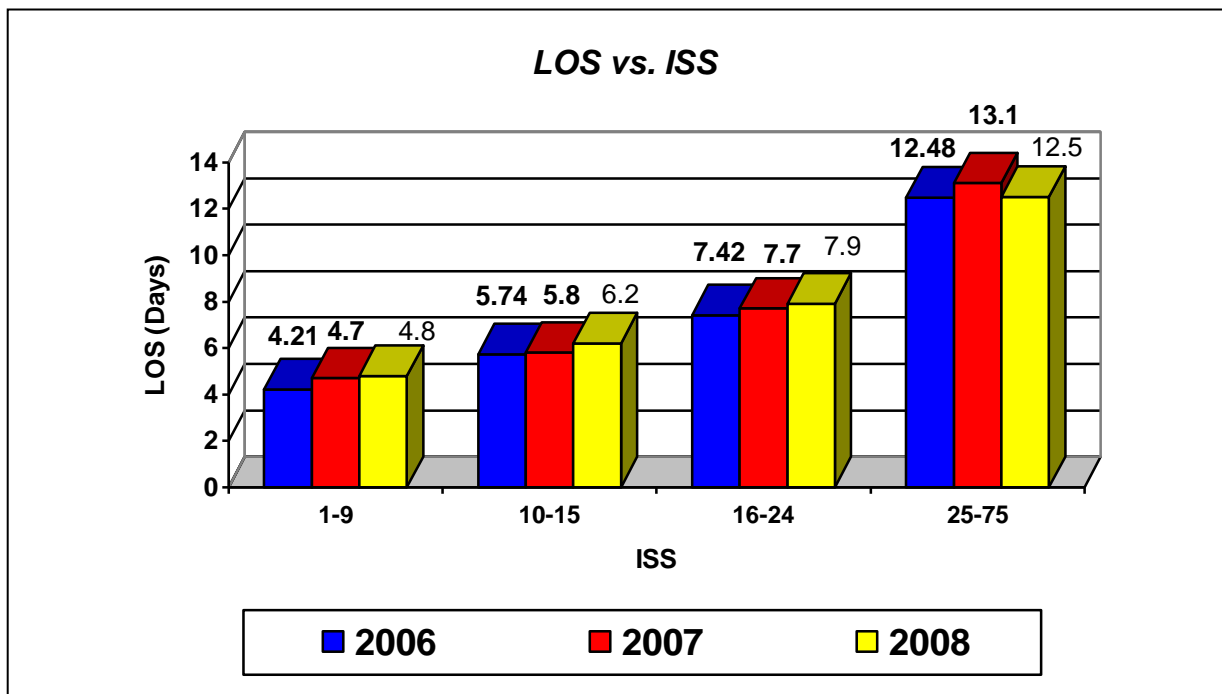
Injury Severity and Outcome Statistics

The NTDB 2006 data was used for this graph. The 2008 data is not available yet.



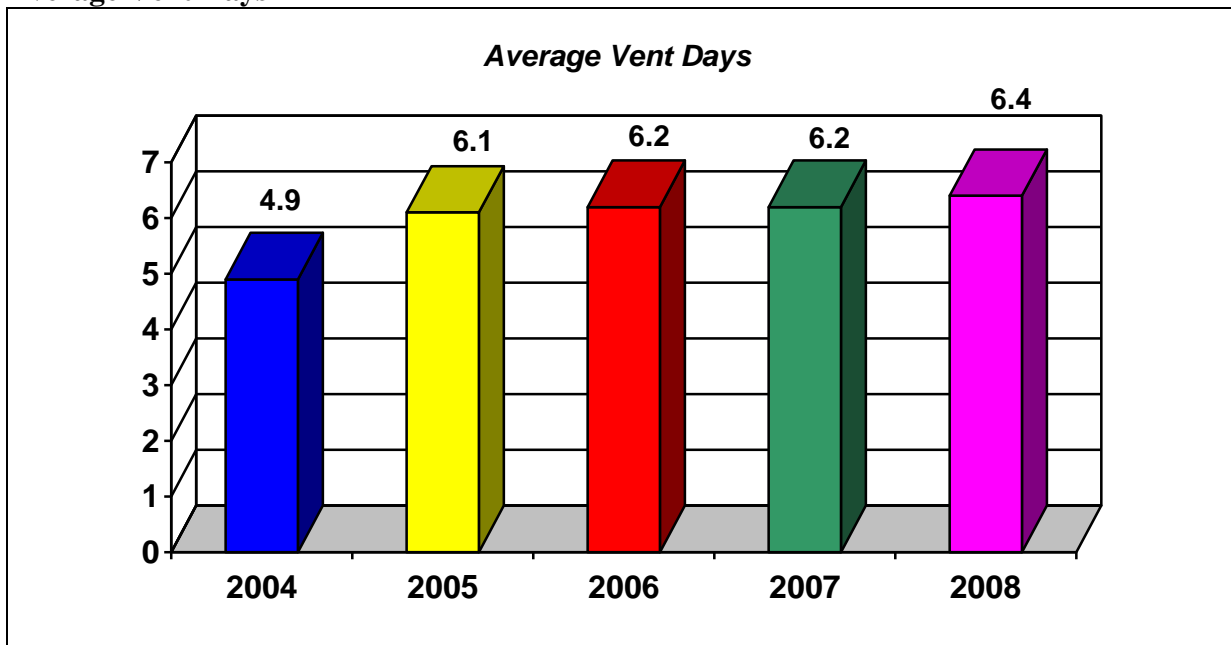
Length of Stay vs. ISS 2006, 2007 and 2008

The following graph shows the mean length of stay. The slight increase in the LOS is due to a change in the methodology that the Registry uses to calculate LOS, in 2008..



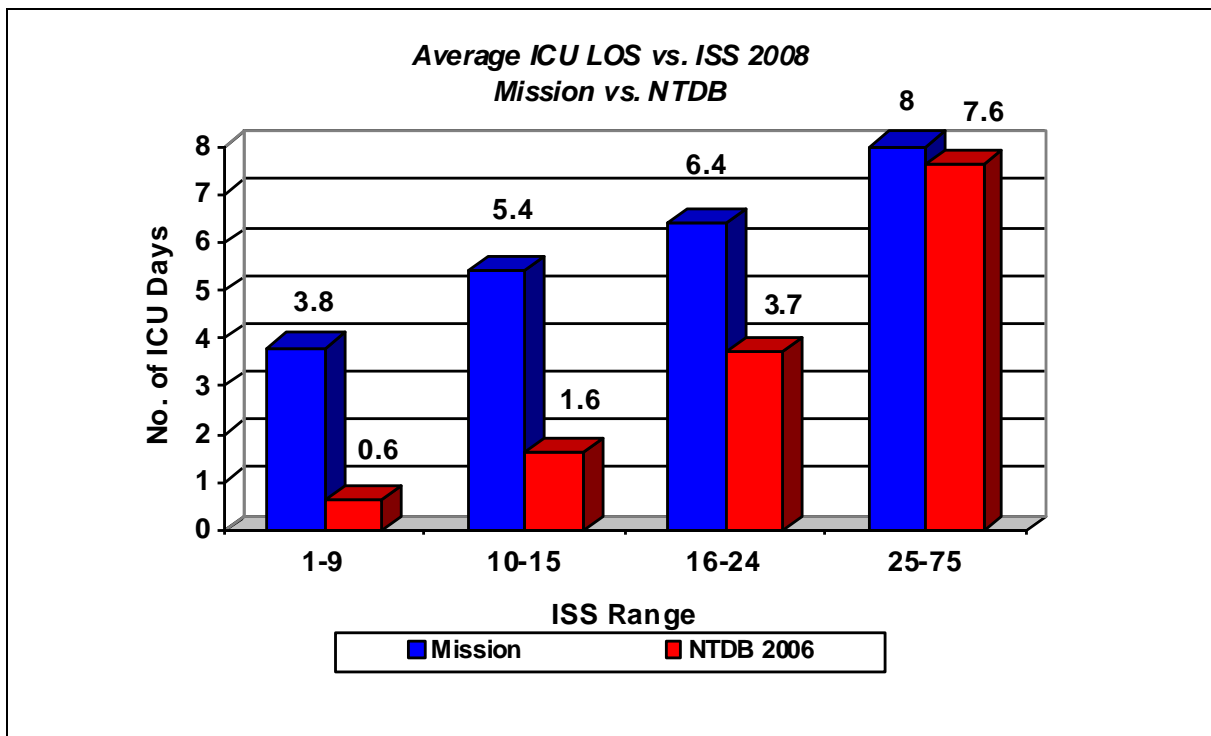
Injury Severity and Outcome Statistics

Average Vent Days



Average ICU LOS and ISS Score

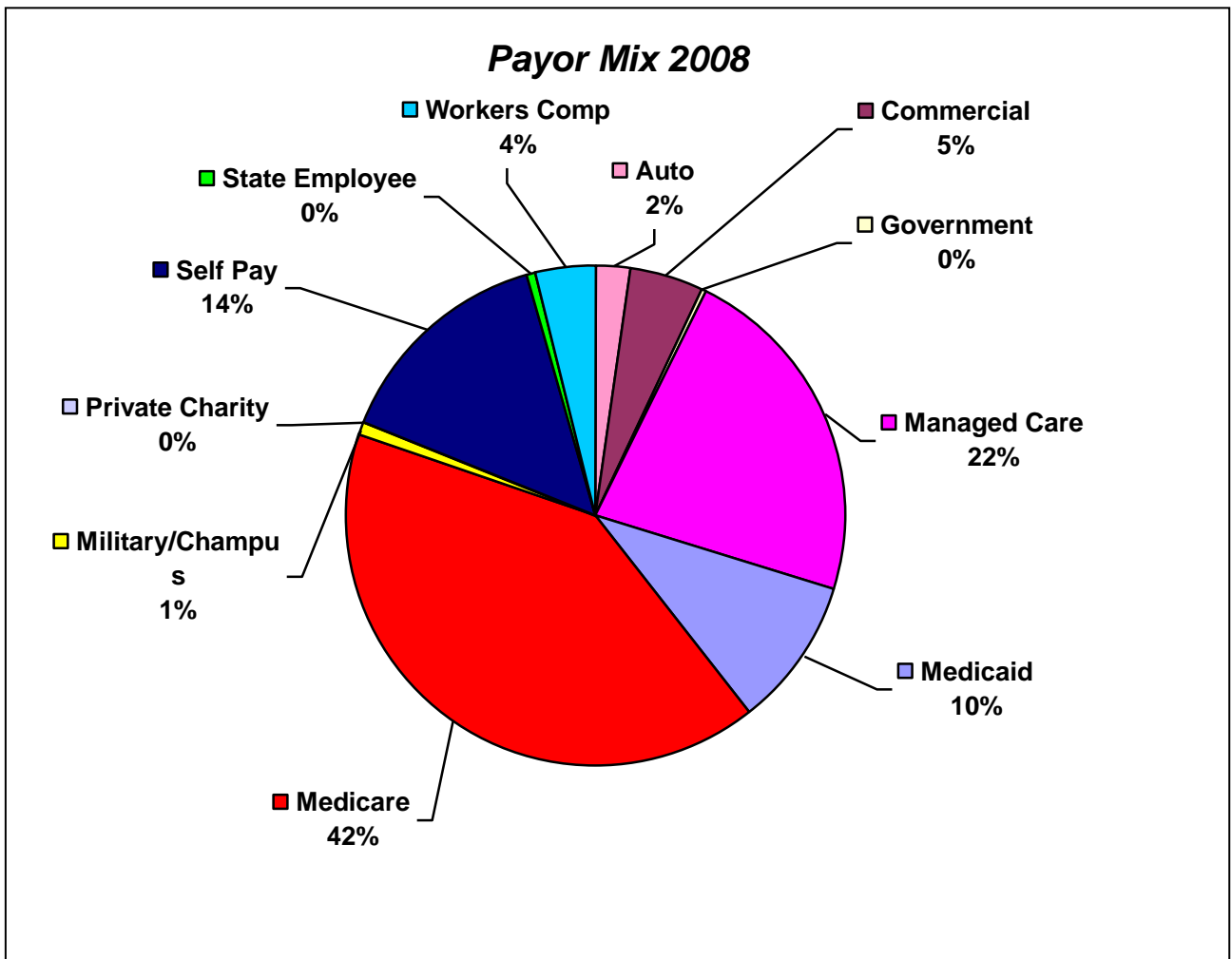
The NTDB 2006 data was used for this graph. The 2008 data is not available yet.



Financial Statistics

Payor Mix

The Mission Hospitals Trauma Registry does not contain accurate data regarding hospital costs, charges, costs per case, etc. This data is best obtained from the Mission Hospitals financial database.



Payor Mix ISS greater or equal to 15

