



2020 ANNUAL REPORT

Right patient. Right place. Right time.

10TH
YEAR

NOTS
NORTHERN OHIO TRAUMA SYSTEM

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EXECUTIVE SUMMARY

Greeting from the NOTS Medical Director



It has been a decade of accomplishments for NOTS, all for the benefit of the care of patients in Northeast Ohio. It is an important moment to reflect broadly on what we can accomplish through teamwork and dedication. The COVID-19 crisis has raised concerns of the need to coordinate care on a large scale, and the inherent challenges of such an effort are painfully obvious.

Thankfully, we as a collective team of health care providers dedicated to the care of the trauma patient can marvel in our collective success. Highlights from the Annual Report include a sustained 3-year reduction in mortality for high ISS patients with penetrating injuries and a reduction since last year of the mortality rate in gunshot wound admissions. The number of falls, however, has continued to climb, suggesting an opportunity for collaborative injury prevention efforts to benefit the community. These all point to the value of accurate collective data reporting to identify and improve quality metrics. In the ongoing decades NOTS will strive

to make improvements in trauma care through analysis of the data, violence prevention, and appropriate transport of patients to the correct center, agnostic to the system providers work for.

Educational programming has been at the core of NOTS since its inception. That is no less true or vital today than it has been in the past. The transition of the annual educational program to a virtual experience may seem novel to some, but is an important approach to keep us updated while keeping us safe. It may inspire us to continue portions of this platform into the future as we look to broaden our impact. At least in the short-term it is a tool that we are very happy to provide in these uncertain times. None of this would be accomplished without the dedication of the NOTS staff which I have had the pleasure to partner with these last two years. Please take the admonition from me and the entire NOTS staff in wishing good health to you and your families.

Sincerely,

Matthew Walsh, MD, FACS

NOTS SYMPOSIUM OVER THE YEARS



1st Symposium
2011



2nd Symposium
2012



3rd Symposium
2013



4th Symposium
2014



5th Symposium
2015



6th Symposium
2016



7th Symposium
2017



8th Symposium
2018



9th Symposium
2019



10th Symposium
2020

This year was going to be our best year yet, but due to COVID-19, this year's event will be held virtually. This year's event will also be FREE. This is to honor all of you who are at the front line during the pandemic. NOTS thanks you!

10 YEAR ANNIVERSARY



2010

- Level I: The MetroHealth Medical Center
- Level II: Cleveland Clinic Fairview Hospital and Cleveland Clinic Hillcrest Hospital
- Development of NOTS and the Mission



2011

- NOTS Triage Guideline
- Blunt Spleen Injury Guideline
- Field Scene Triage Guideline

2012



2013

- Non-Trauma Center Guideline



2014

- Southwest General Health Center joined

2015



2016

- Violence Injury Prevention Program started



2017

- Level I: University Hospitals Cleveland Medical Center, Cleveland Clinic Akron General, University Hospitals Rainbow Babies and Children's Hospital joined
- Level III: University Hospitals Geauga Medical Center, University Hospitals Portage Medical Center, University Hospitals St. John Medical Center joined
- Spinal Motion Restriction Guideline
- Trauma Arrest Guideline
- Traumatic Brain Injury Guideline
- Hemorrhage Control Guideline



2018

- Imaging Guideline



2019

- Burn Guideline



2020

- First Live Virtual Symposium

NOTS STAFF



**Matthew Walsh,
MD, FACS**
NOTS Medical Director



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Trauma Program Manager



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MSSA, LSW**
Violence/Injury
Prevention Coordinator



**Olivia C. Houck,
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Data Specialist



**Tod Baker,
EMS-P**
EMS Coordinator

Throughout this report, you will see graphs that look across many years of NOTS data. To demonstrate the expansion of NOTS in 2016, these graphs contain a dotted line (representing “original NOTS”) and a solid line (representing “expanded NOTS”). The hospitals included in the dotted line are: Cleveland Clinic Fairview Hospital, Cleveland Clinic Hillcrest Hospital and MetroHealth Medical Center. The solid line includes, in addition to these three hospitals: Cleveland Clinic Akron General, Southwest General Health Center, University Hospitals Cleveland Medical Center, University Hospitals Rainbow Babies and Children’s Hospital, University Hospitals Geauga Medical Center, University Hospitals Portage Medical Center, and University Hospitals St. John Medical Center.

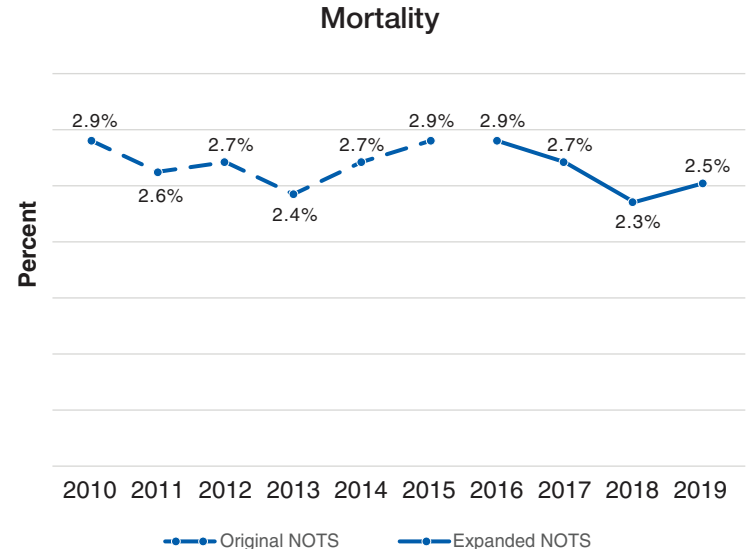
NOTS MISSION STATEMENT

To provide the highest **quality of care** to patients across the region by rigorously evaluating and improving outcomes, optimizing resources and providing education utilizing a collaborative approach with hospitals, emergency medical services and the public health services.

Right **patient.**

Right **place.**

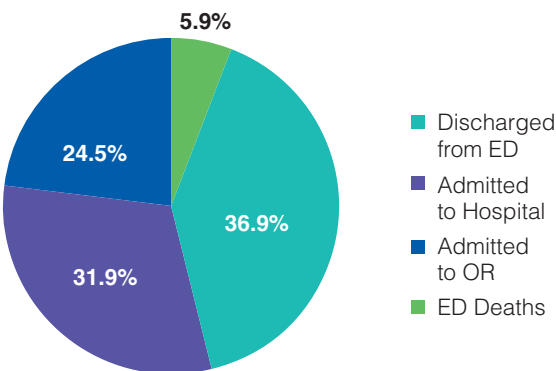
Right **time.**



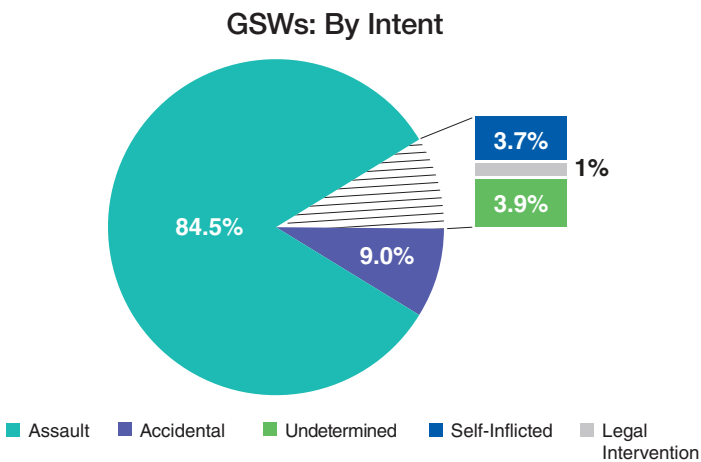
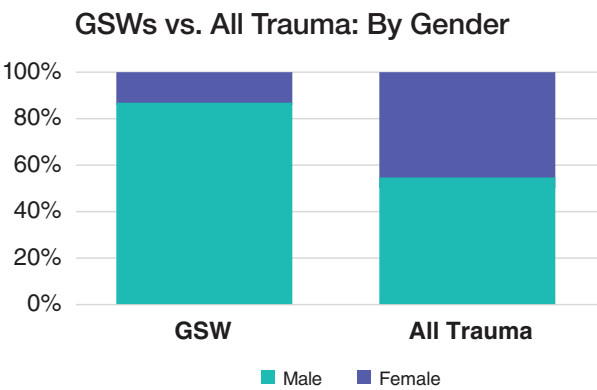
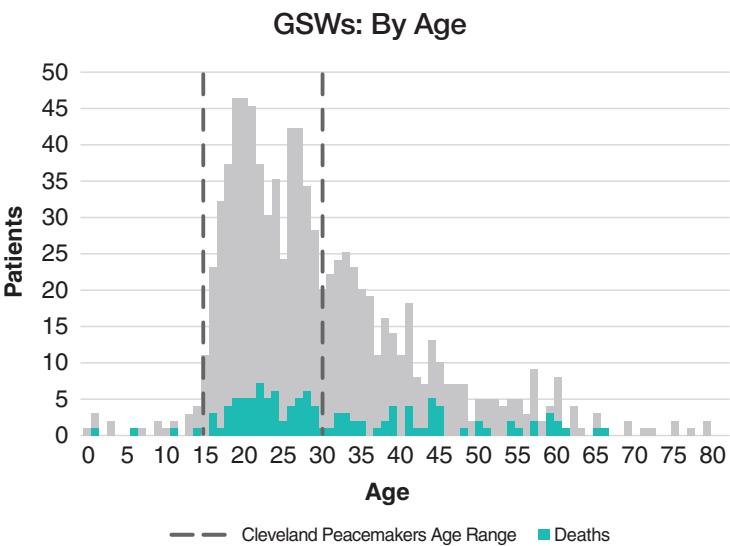
GUNSHOT WOUND

- There were 893 GSWs seen in 2019 (compared to 838 in 2018)
- 87% of GSW patients were male
- 40.3% were discharged from the ED
- 22.8% were taken directly to the OR from the ED
- Of those who were admitted, 42% went directly to the OR
- Of those who were admitted, 57% had a stay in the ICU, with an average ICU stay of 6.4 days
- The mortality rate of those who were admitted was 8.4%

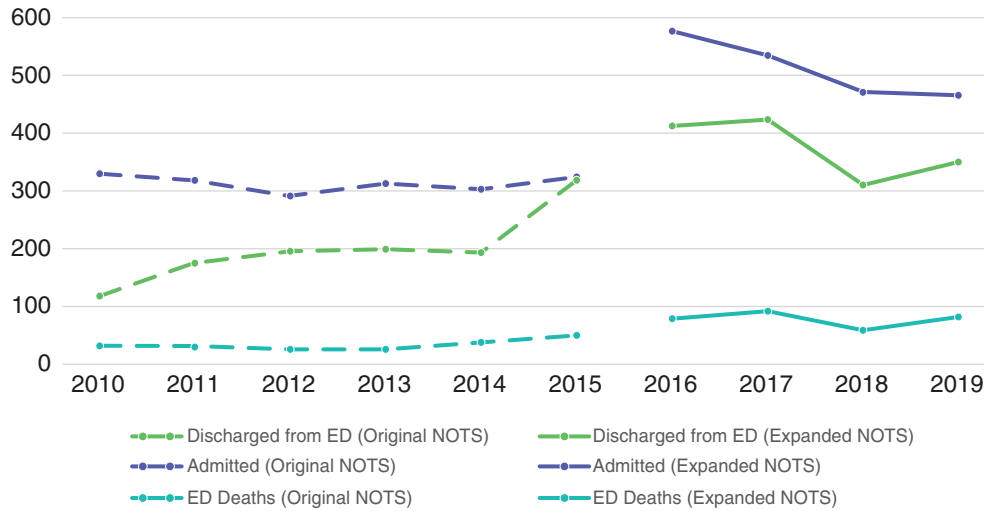
GSWs: By ED Disposition



GUNSHOT WOUND

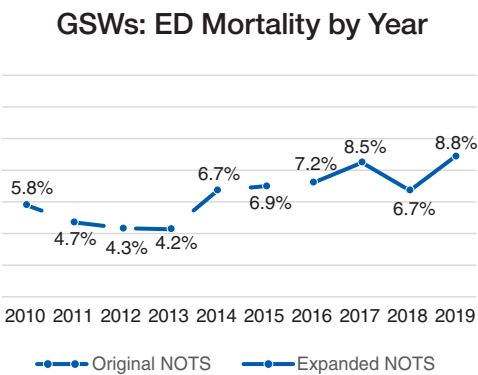
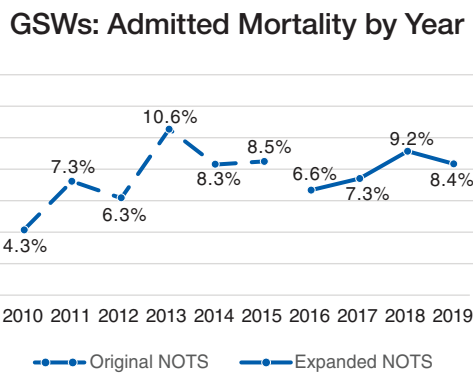
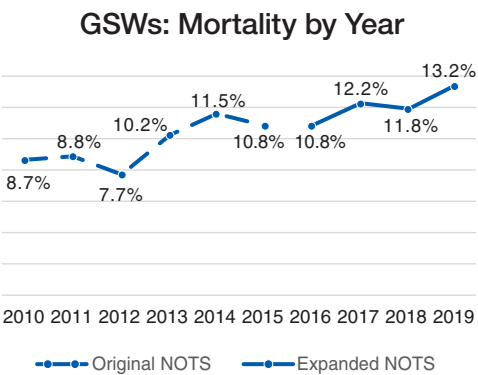


GSWs: By Year and ED Disposition



GUNSHOT WOUND

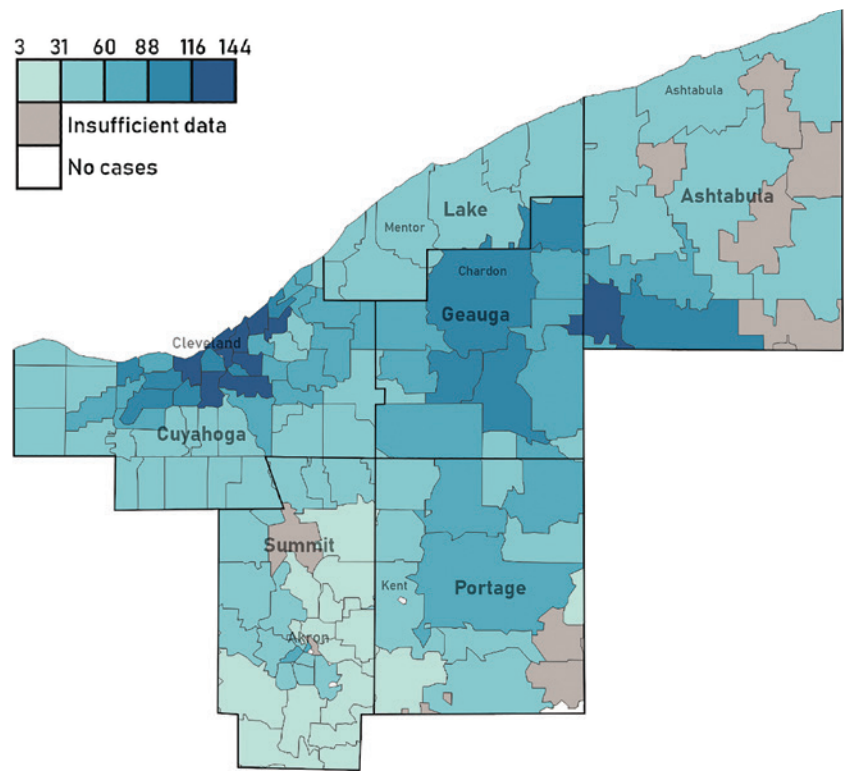
Overall, mortality from GSWs increased from 11.8% to 13.2%, from 2018 to 2019. While admitted mortality decreased from 9.2% to 8.4%, ED mortality increased from 6.7% to 8.8%. Since there were far more ED deaths (79) than admitted deaths (39), this resulted in the overall increase.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
ED Deaths	28	26	23	23	35	47	76	89	56	79
Admitted Deaths	14	23	18	33	25	27	38	39	43	39
Total	42	49	41	56	60	74	114	128	99	118
All GSWs	483	557	533	550	524	683	1060	1049	838	893

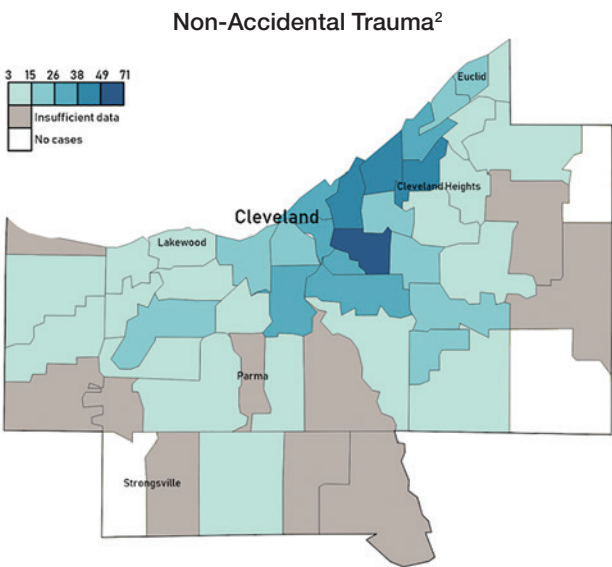
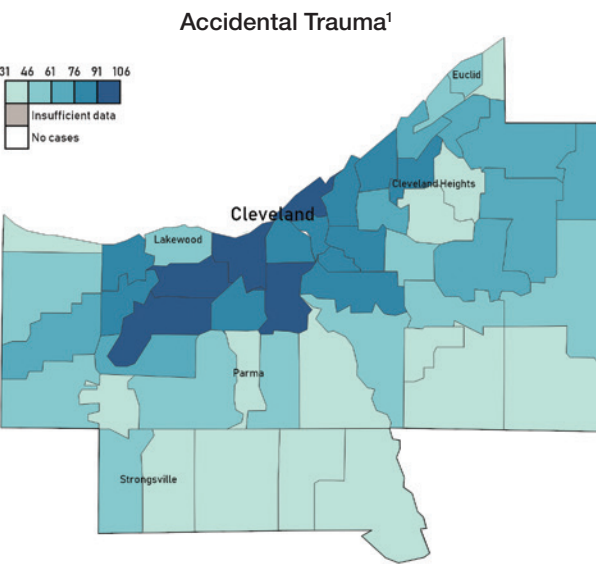
ALL TRAUMA

All Traumatic Injury Seen at NOTS Trauma Centers by Home ZIP Code (per 10,000 population)



ACCIDENTAL VS. NON-ACCIDENTAL TRAUMA

Accidental and Non-Accidental Trauma by Home ZIP Code in Cuyahoga County (per 10,000 population)



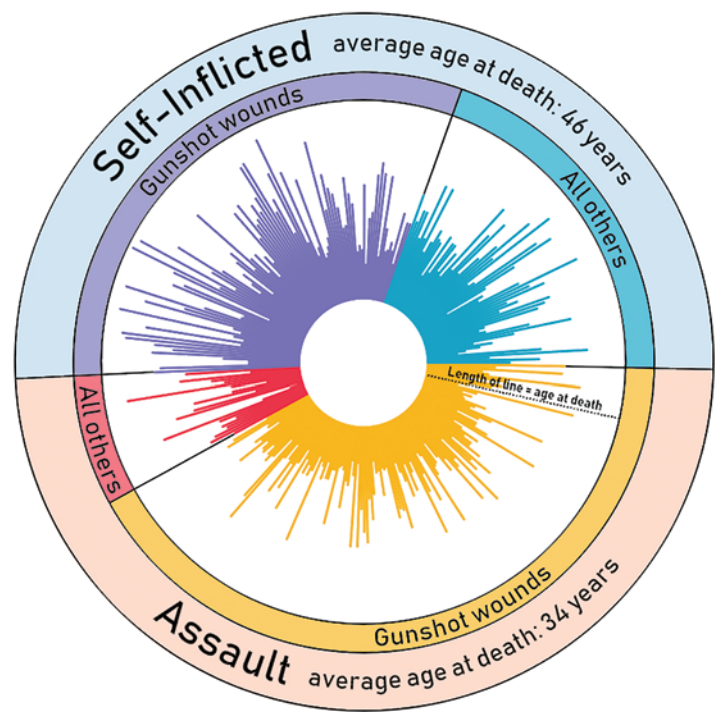
¹Accidental Trauma are mechanisms that were unintentional. Most often, these are fall or MVC injuries.

²Non-Accidental Trauma includes mechanisms related to assault, intentional self-harm, and legal intervention. Cuyahoga County Medical Examiner's Office data is included in this map to account for non-accidental trauma that wasn't seen at a trauma center.

Note: These maps are shown with different scales due to the difference in numbers of patients with these types of traumas. Shading is meant to show geographical concentration, but the legend should be referenced when comparing shading across maps.

NON-ACCIDENTAL TRAUMA

Non-Accidental Trauma Deaths in Cuyahoga County by Age



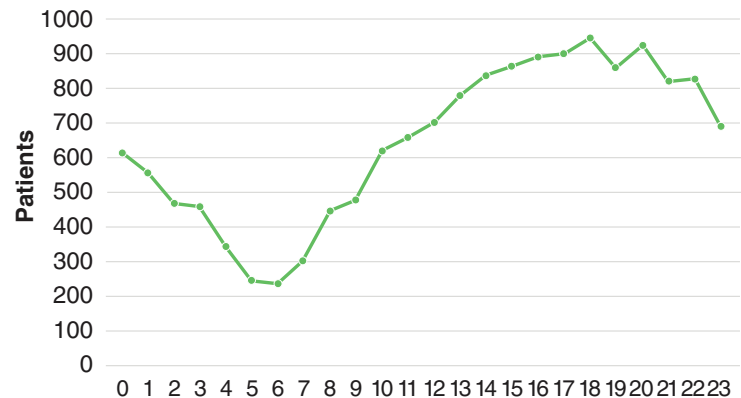
Note: Each line in the graphic represents an individual death. The length of the line represents age at death.

On average, non-accidental trauma deaths occur at a younger age than traumatic deaths as a whole. The average age of traumatic deaths that occur at NOTS trauma centers is 55 years. However, when looking at non-accidental trauma deaths in Cuyahoga County, using data from NOTS trauma centers and the Cuyahoga County Medical Examiner's Office, the average age is 40 years.

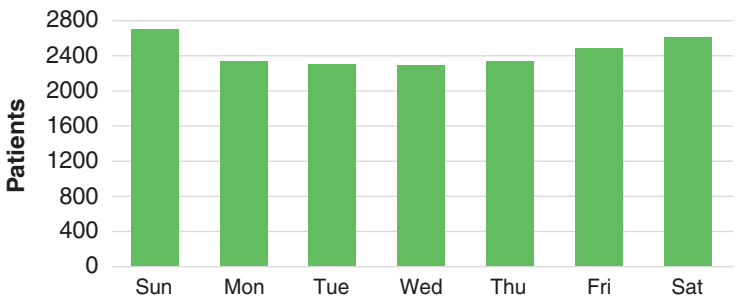
There are further differences within the non-accidental trauma group itself. Assault deaths, resulting from injuries inflicted by another person, average 34 years of age. However, deaths resulting from self-inflicted injuries tend to occur in an older age group, with an average of 46 years of age at death. In both groups, gunshot wounds made up the largest share of deaths.

FREQUENCY OF TRAUMA

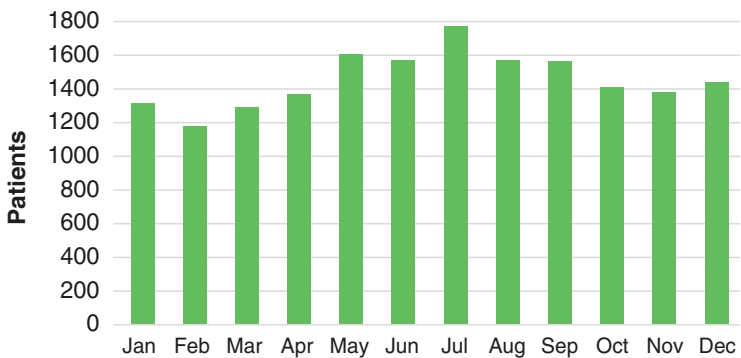
Frequency of Trauma: By Hour of Day



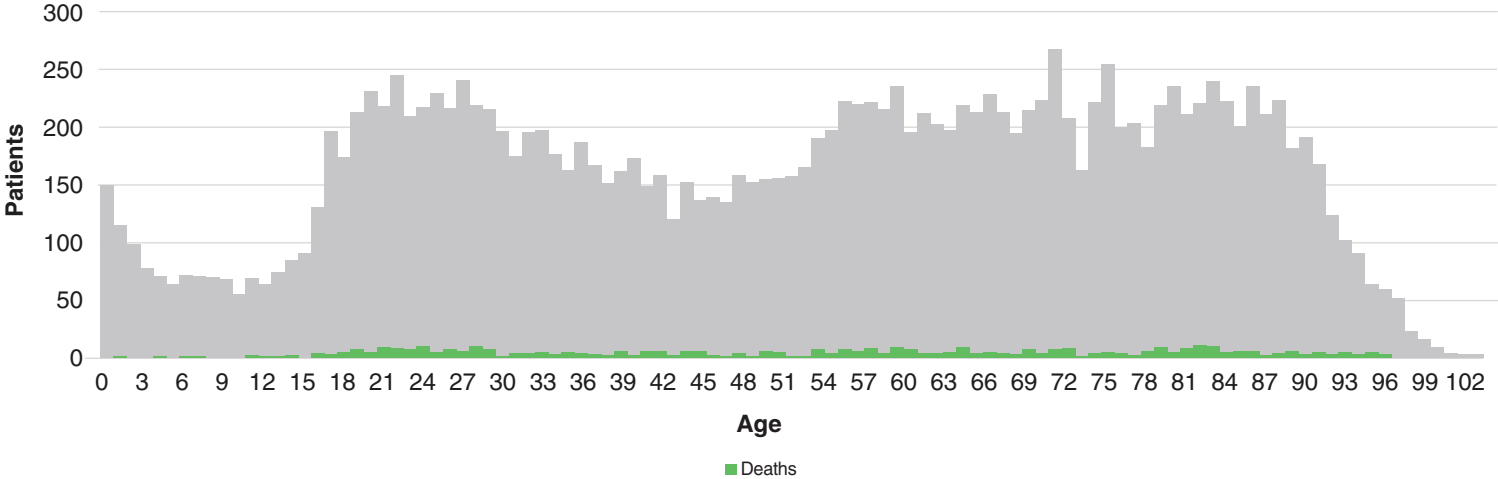
Frequency of Trauma: By Day of Week



Frequency of Trauma: By Month



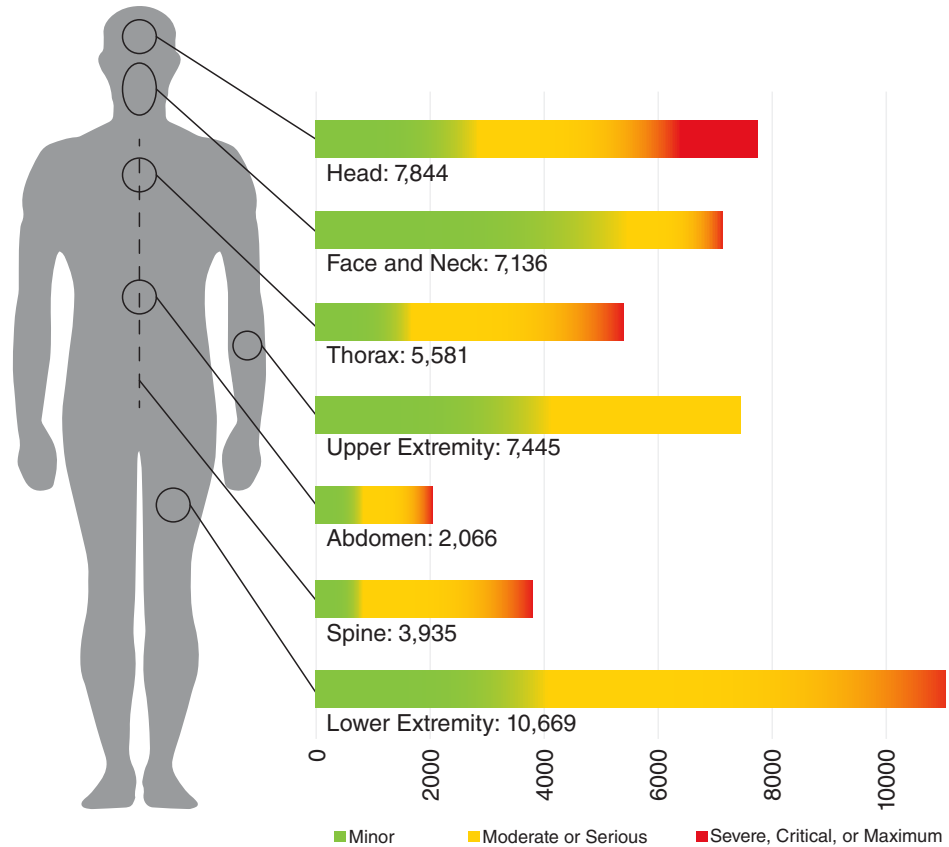
Frequency of Trauma: All Patients by Age



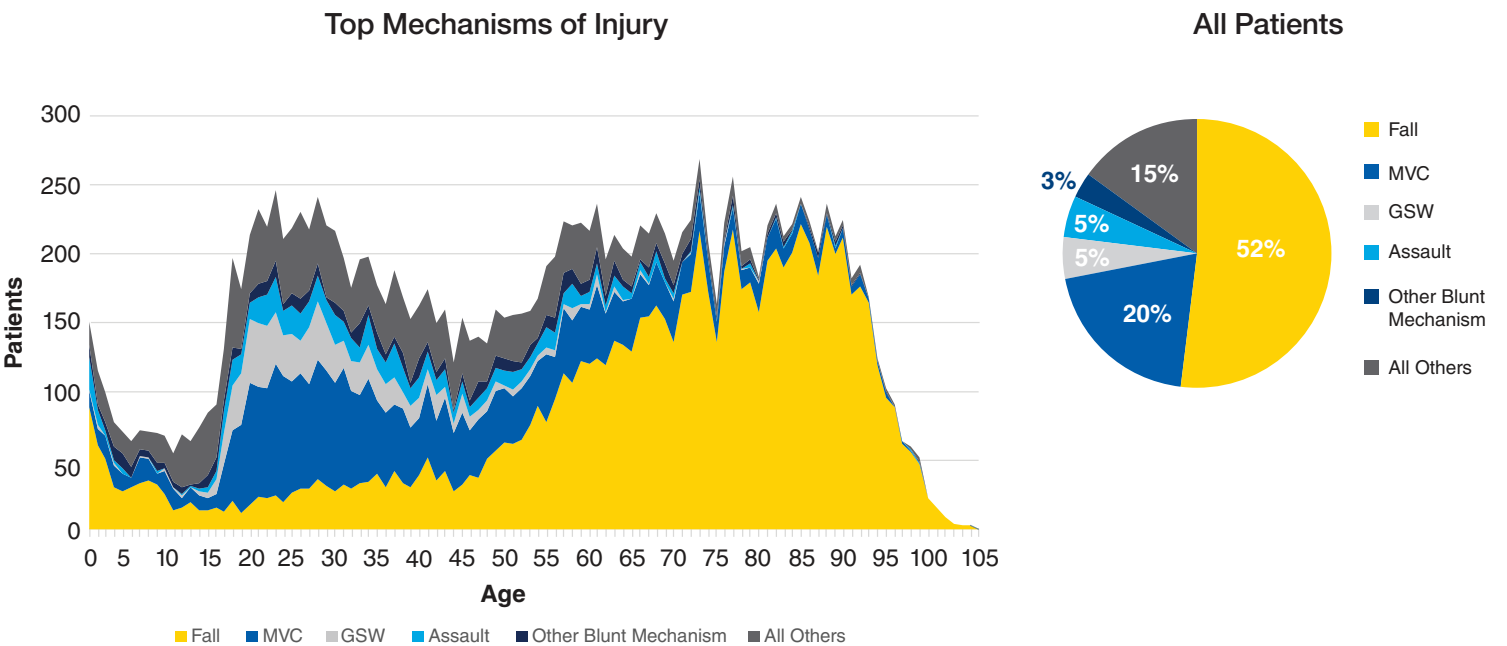
INJURIES

The trauma patient can have many individual injuries. 2019 data reflected almost 45,000 fully coded injuries, at an average of 3.3 injuries per patient. Each injury is assigned a score for severity of the injury, ranging from 1—minor and often encompassing bumps and bruises—to 6—maximum and virtually not survivable.

The severity scoring is used to calculate the patient's Injury Severity Score (ISS), which is a measure of how badly injured a patient is. The ISS falls on a scale from 1 (very minor) to 75 (maximum injuries almost certainly resulting in death). The higher an ISS, the higher the likelihood that the patient will not survive their injuries. Pages 33-36 will explore mortality rates for different ISS groups.



MECHANISM OF INJURY

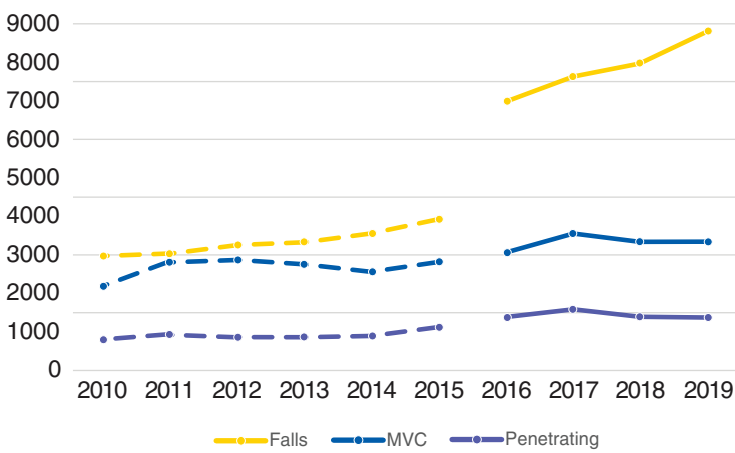


"Other Blunt Mechanism" refers to other blunt force trauma that does not fit neatly into another mechanism category. The most common injuries in this category include: "other cause of strike by thrown, projected, or falling object," "striking against or struck by other objects," and "caught, crushed, jammed, or pinched between moving objects."

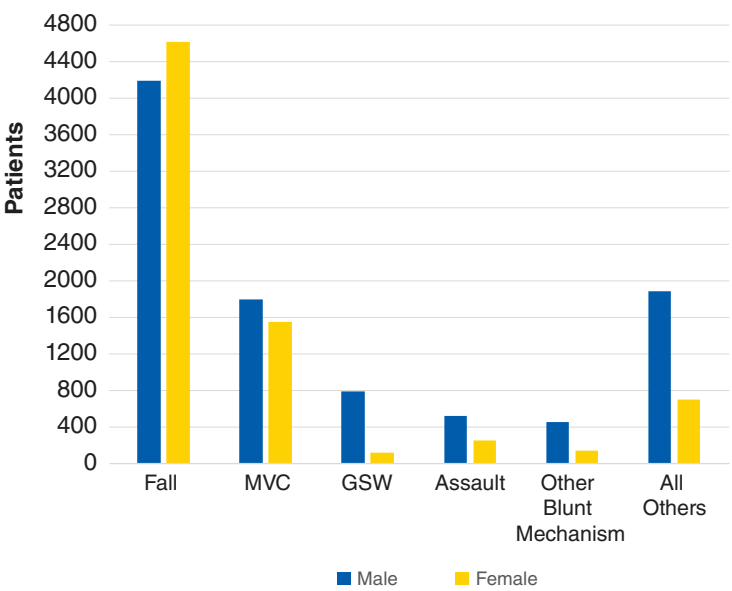
"All Others" includes Asphyxiation, Hanging, MVC vs. Pedestrian, Bicycle, ATV, Horse and Rider, Stab, Drown, Watercraft, Bite, Sport, Burn, and all otherwise unclassified.

MECHANISM OF INJURY

Top Mechanisms of Injury: By Year



Mechanism of Injury: By Gender



Note: "All Others" includes Asphyxiation, Hanging, MVC vs. Pedestrian, Bicycle, ATV, Horse and Rider, Stab, Drown, Watercraft, Bite, Sport, Burn, and all otherwise unclassified.

Mechanism of Injury by ISS Group

Mechanism	<9	9-14	15-24	25+
MVC	1642	499	195	106
Fall - 10ft or More	340	185	76	41
Fall - Under 10ft	1111	736	167	69
Fall - Same Level	1987	1696	224	115
Fall - Not Further Specified	322	228	49	45
Assault	354	133	32	13
Asphyxiation	2	1	0	1
Hanging	0	8	3	6
Motorcycle	189	129	43	46
MVC vs. Pedestrian	1642	499	195	106
Bicycle	170	76	21	16
ATV	105	61	18	10
Horse and Rider	40	11	1	1
Other Blunt	368	104	24	13
Other Penetrating	165	15	0	0
Stabbing	165	36	13	8
Drowning	0	9	0	4
GSW	379	184	78	149
Watercraft	2	0	1	0
Biting	63	4	0	0
Sport Injury	110	27	4	4
Burn	31	2	2	4
Unknown	29	14	5	8
Totals	9210	4657	1151	765

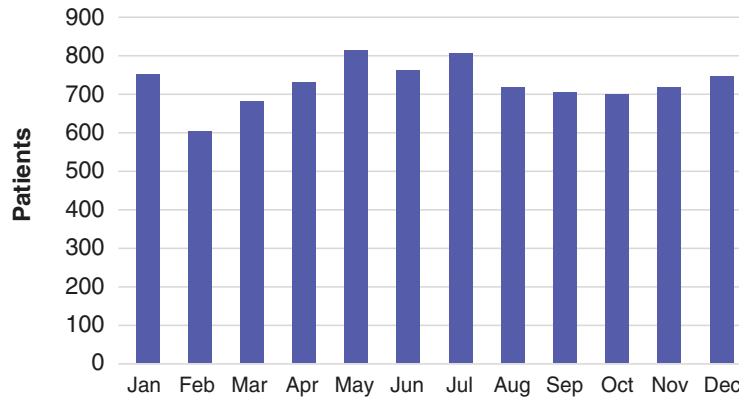
Mechanism of Injury by Age Group

Mechanism	<15	15-20	21-40	41-65	66-80	>80	Total
MVC	184	326	1389	996	323	135	3353
Fall - 10ft or More	82	36	203	315	106	47	789
Fall - Under 10ft	295	20	175	655	678	598	2421
Fall - Same Level	106	44	246	1008	1580	1822	4806
Fall - Not Further Specified	14	4	24	128	215	404	789
Assault	55	85	357	235	38		70
Asphyxiation or Hanging	10		34				44
Motorcycle	26		208	206	29	0	469
MVC vs. Pedestrian	59	49	167	139	48	18	480
Bicycle	88	30	62	125	29	0	334
Other/ Off-Road Vehicle	29	34	78	51	14		206
Horse and Rider	18		13	22	0		53
Other Blunt	89	47	170	191	73	23	593
Other Penetrating	18	21	77	77	16	0	209
Stabbing	23		163		86		272
Drowning			13			0	13
GSW	20	195	522	143	10	0	890
Biting	36		14	17	10	0	77
Sport Injury	51	69	14	17		0	162
Burn	45		27	32	17		121
Unknown		19		21	16	17	73
Totals	1198	1031	3958	4461	3204	3079	16931

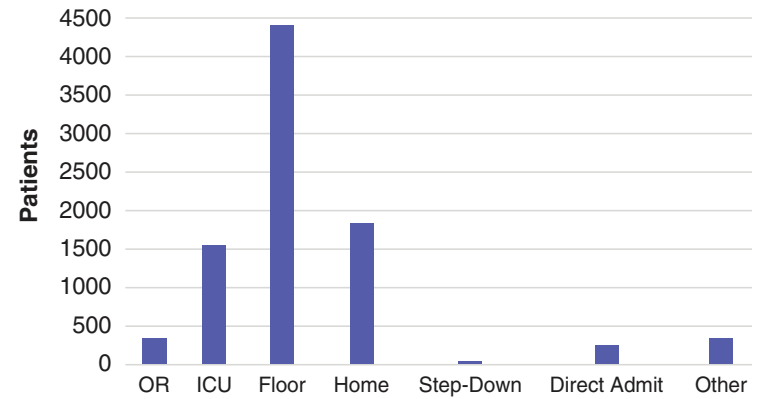
Note: Due to small case counts in some categories, some cells had to be combined to protect patient privacy.

FALLS

Falls: By Month



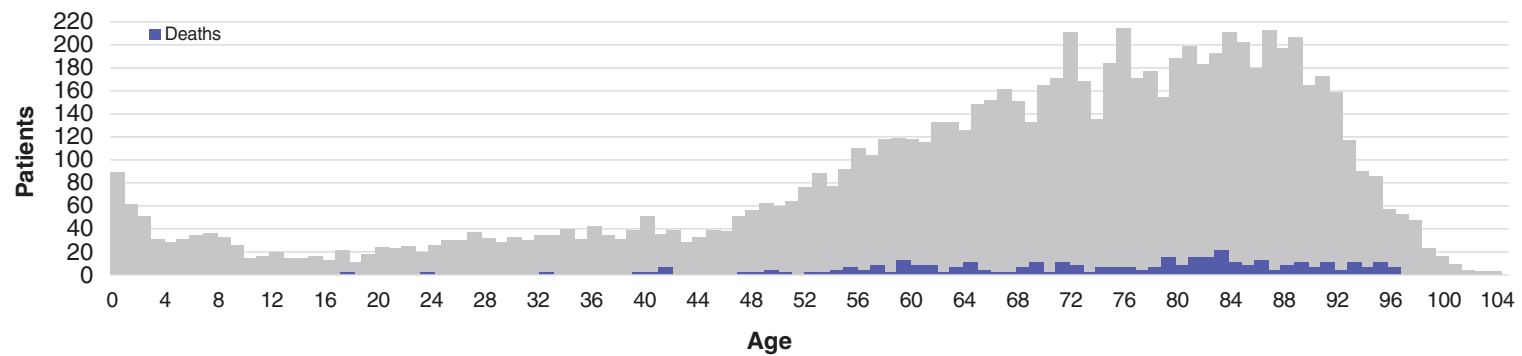
Falls: By ED Disposition



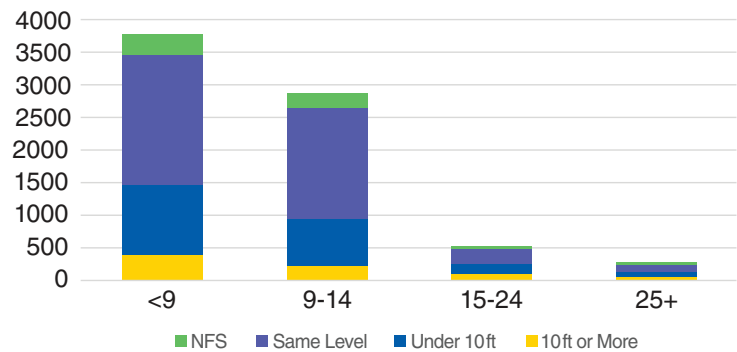
Note: "Step-Down" includes Step-Down Unit and Telemetry. "Other" includes Observation, Special Procedures, AMA, Correctional Facility, Morgue, Acute Care Facility, or other inpatient facility.



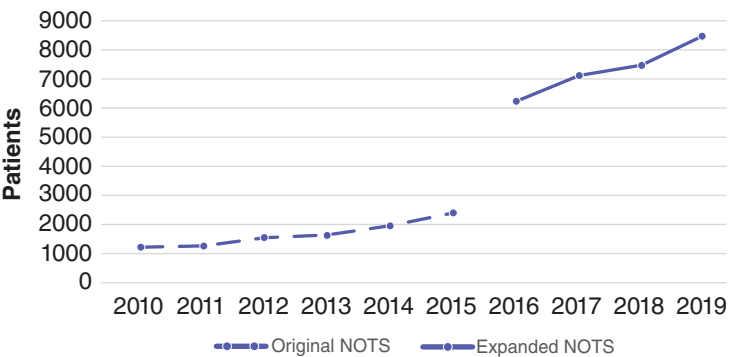
Falls: By Age



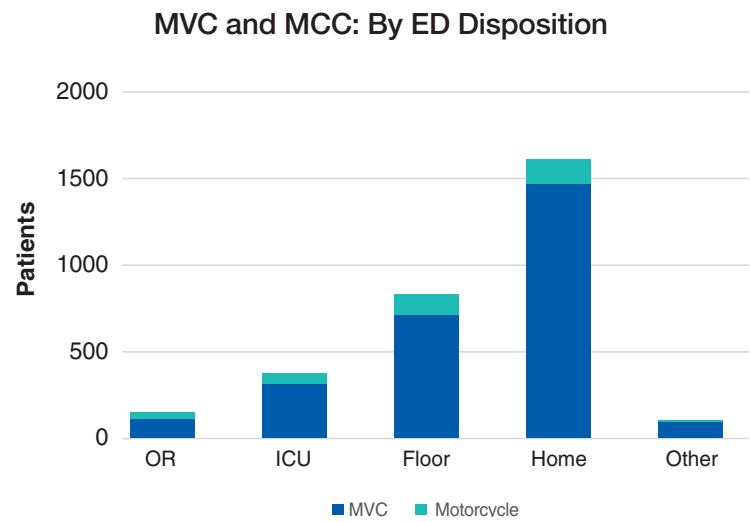
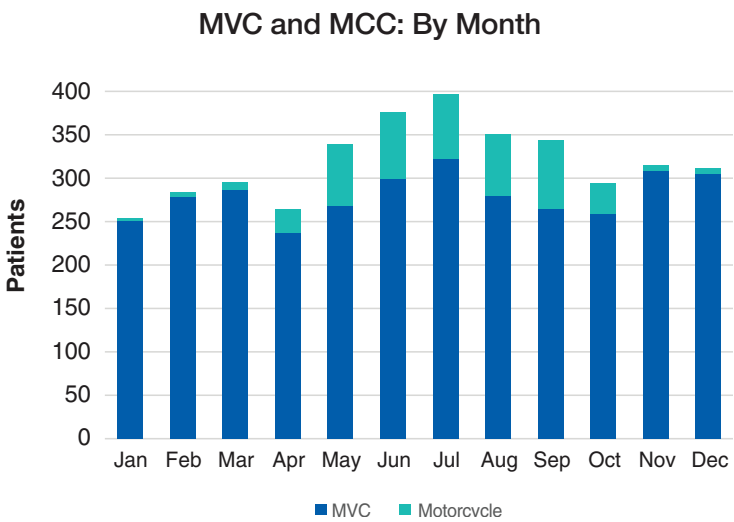
Falls: By Injury Severity Score (ISS)



Falls: By Year

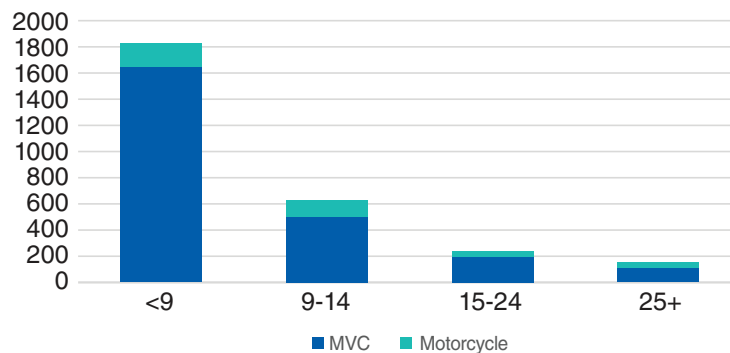


MOTOR VEHICLE AND MOTORCYCLE CRASH

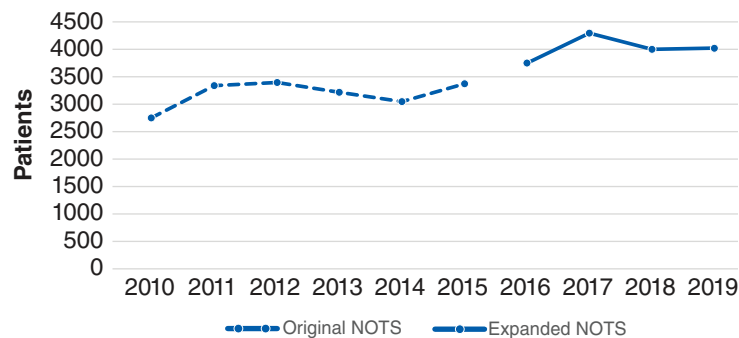


Note: "Step-Down" includes Step-Down Unit and Telemetry. "Other" includes Observation, Special Procedures, AMA, Correctional Facility, Morgue, Acute Care Facility, or other inpatient facility.

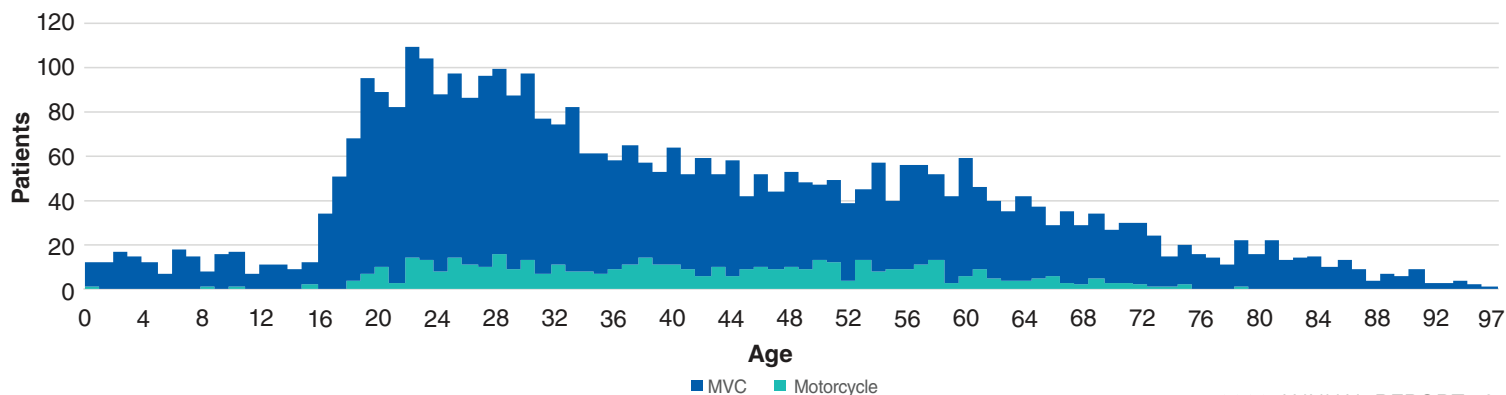
MVC and MCC: By Injury Severity Score (ISS)



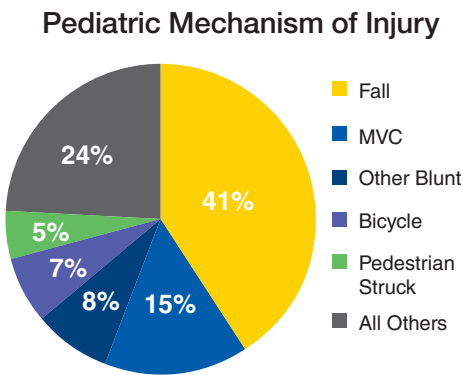
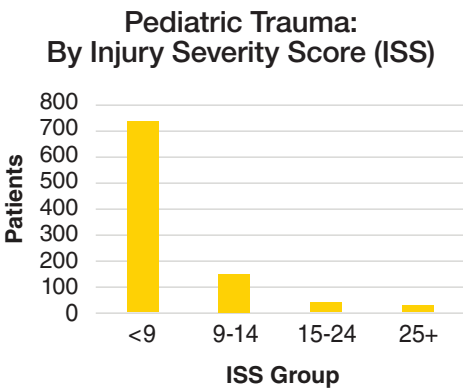
MVC and MCC: By Year



MVC and MCC: By Age



PEDIATRIC AND ADOLESCENT 14 YEARS OF AGE AND YOUNGER

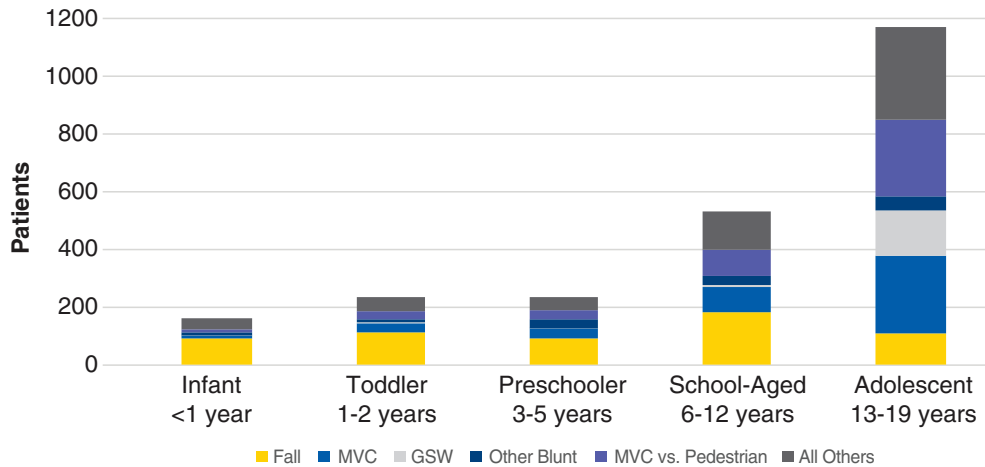


Mechanism of Injury	Patients
Fall	498
MVC	184
Other Blunt	89
Bicycle	88
MVC vs. Pedestrian	59
Assault	55
Sport Injury	51
Burn	40
Biting	36
Off Road/Other Vehicle	29
GSW	20
Other Penetrating	18
All Others*	26
Total	1193

“All Others” includes mechanisms with too few cases to be presented on their own: Asphyxiation, Hanging, Motorcycle, Stabbing, Drowning, and Horse and Rider.

PEDIATRIC AND ADOLESCENT 19 YEARS OF AGE AND YOUNGER

Pediatric Mechanism of Injury: By Age Group



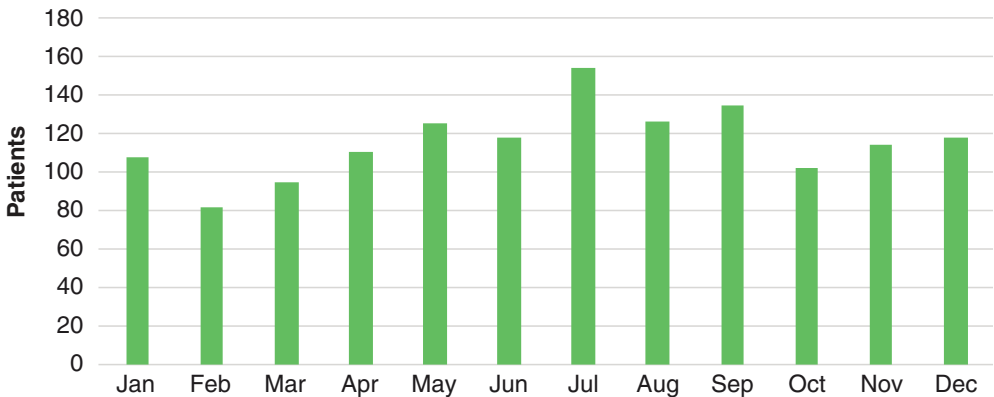
Pediatric Mechanism	Infant <1 year	Toddler 1-2 years	Preschooler 3-5 years	School-Aged 6-12 years	Adolescent 13-19 years
Fall	89	112	90	179	108
MVC	11	29	34	90	267
GSW			13		156
Other Blunt		19	28	30	49
MVC vs. Pedestrian		20		28	55
All Others	38	50	43	132	322

Note: Due to small case counts in some categories, some cells had to be combined to protect patient privacy.

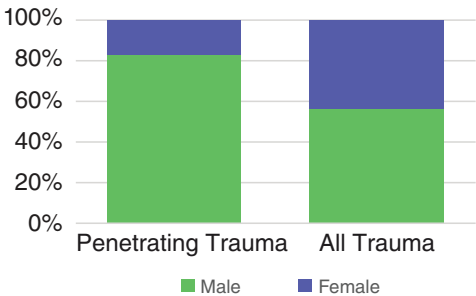


PENETRATING TRAUMA

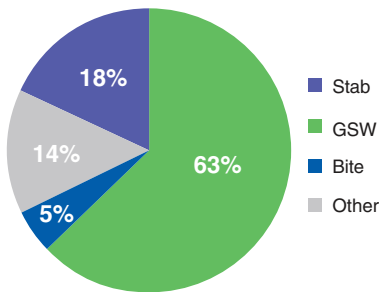
Penetrating Trauma: By Month



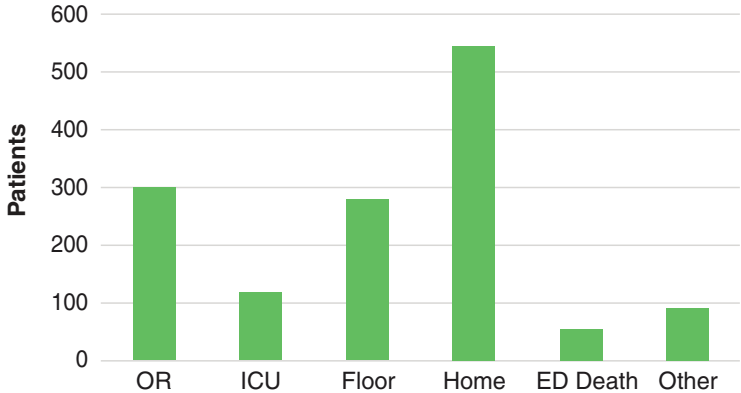
Penetrating Trauma vs. All Trauma: By Gender



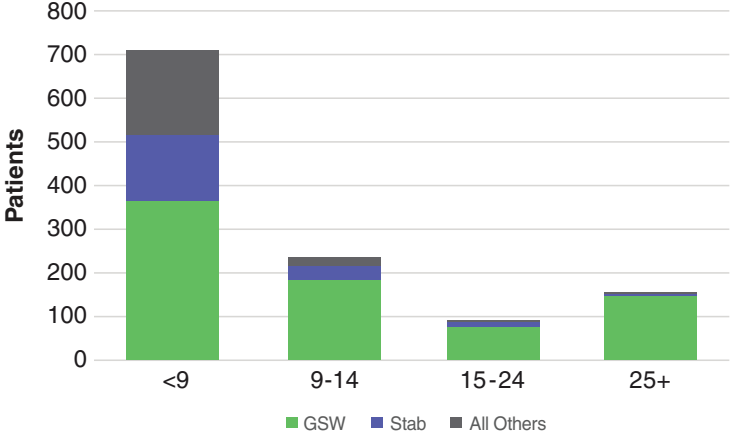
Penetrating Trauma: By Type



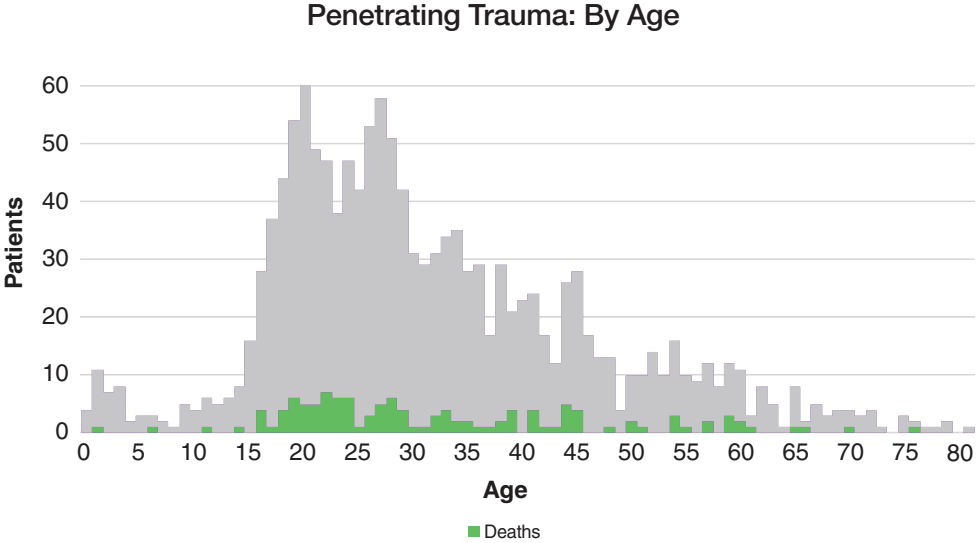
Penetrating Trauma: By ED Disposition



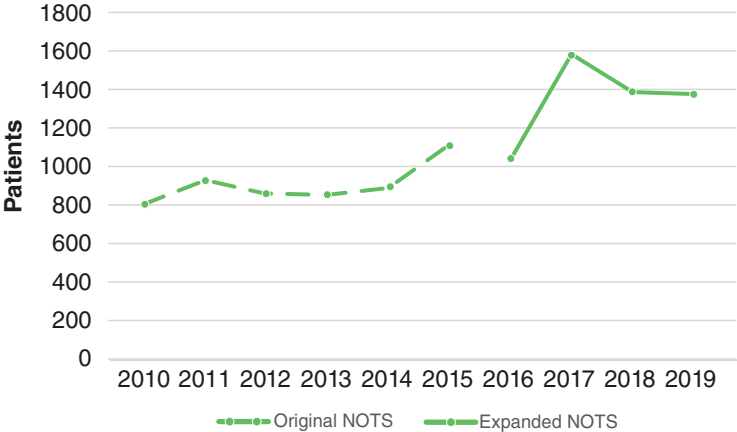
Penetrating Trauma: By Injury Severity Score (ISS) and Mechanism



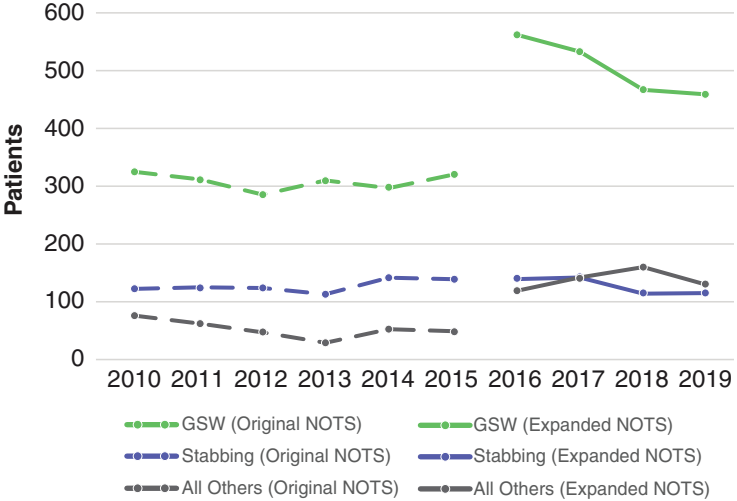
PENETRATING TRAUMA



Penetrating Trauma: Total by Year



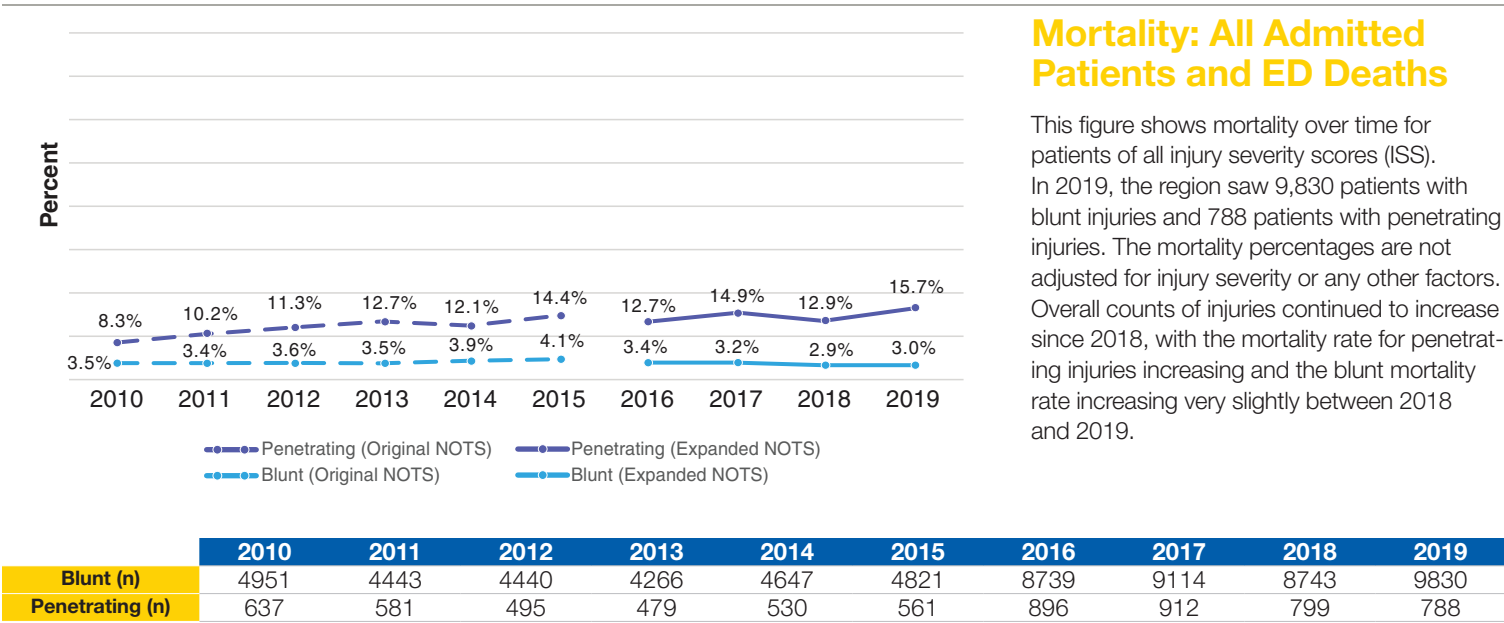
Admitted Penetrating Trauma: By Type and Year



Note: There is a large jump in GSW admissions between 2015 and 2016. With the nature of the NOTS expansion, we began capturing patients from a much larger geographic area, resulting in an increase in counts for many injury mechanisms. The increase seen in this graph is a due to a combination of a true increase in GSW admissions overall, and simply collecting data from more facilities.

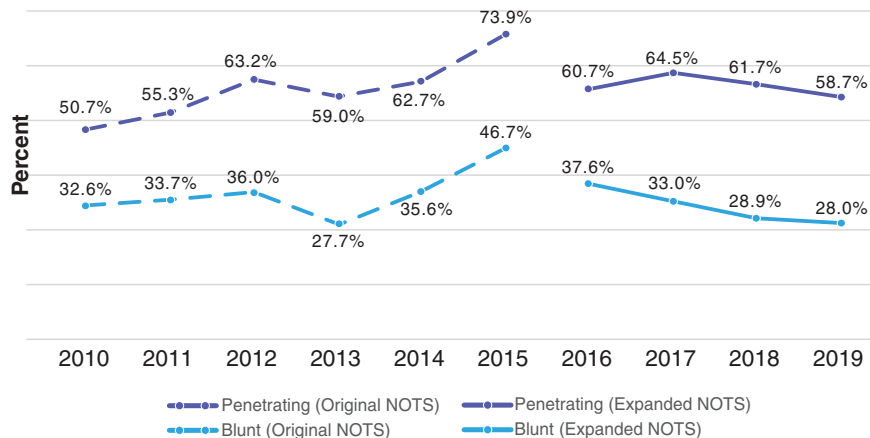
OUTCOMES

Figures on these pages show the trends of mortality in the NOTS region over time. Data includes all admission and ED deaths secondary to trauma, and is separated based on blunt and penetrating injuries. Blunt injuries are mechanisms of injury such as falls or motor vehicle crashes. Penetrating injuries mainly include gunshot wounds or stabbings. Included is the number of patients (n) by each category for each year. It is important to keep in mind the change in the overall NOTS patient population and injury trends that may have occurred with the expansion of the System in 2016. Therefore, caution must be taken when comparing trends before and after the NOTS expansion.



Mortality: All Admitted Patients and ED Deaths

This figure shows mortality over time for patients of all injury severity scores (ISS). In 2019, the region saw 9,830 patients with blunt injuries and 788 patients with penetrating injuries. The mortality percentages are not adjusted for injury severity or any other factors. Overall counts of injuries continued to increase since 2018, with the mortality rate for penetrating injuries increasing and the blunt mortality rate increasing very slightly between 2018 and 2019.



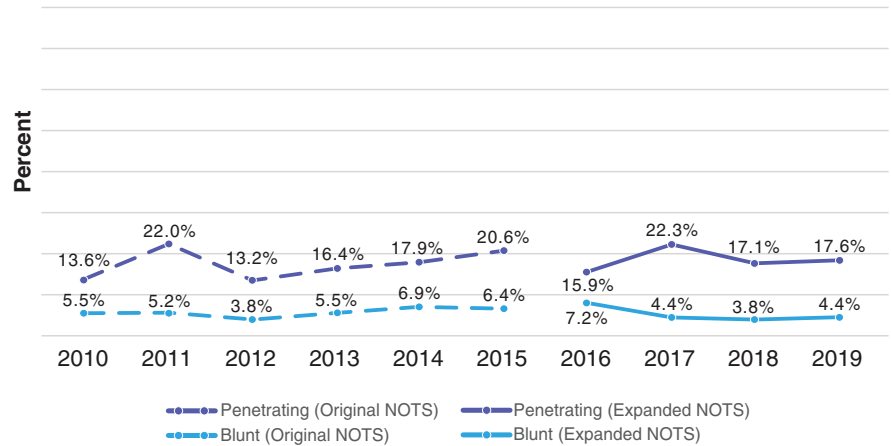
Mortality: Admitted Patients and ED Deaths With ISS of 25+

This figure represents the patients with the highest severity of injury: an ISS of 25 or higher. A large percentage of these patients have life-threatening injuries and a markedly reduced likelihood of survival. A general rule of thumb is that roughly 50% of patients with an ISS ≥ 25 do not survive their injuries. In 2019, both blunt and penetrating mortality continued to decrease in this group of patients.

Of note, part of the trauma surgeon's job is to respect family and patient wishes and recognize that it is our responsibility to allow people to die comfortably. At this time, we do not monitor how often we honor patient and family wishes to provide comfort care only and withhold life-sustaining therapy.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Blunt (n)	288	249	239	238	236	244	370	479	460	522
Penetrating (n)	73	76	76	83	83	88	141	155	120	155

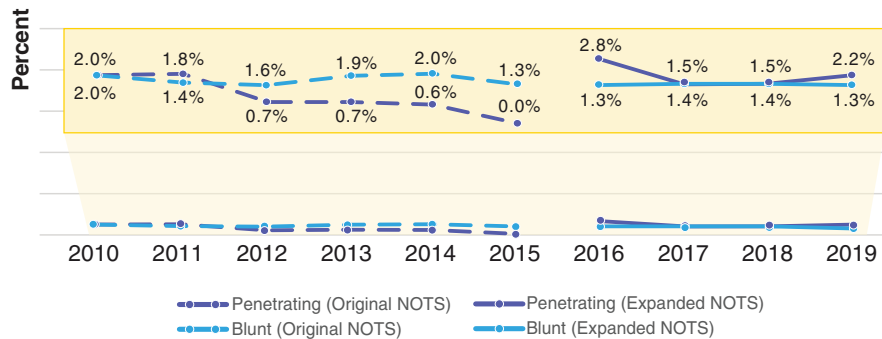
OUTCOMES



Mortality: Admitted Patients and ED Deaths With ISS of 15-24

This group represents patients with a moderate severity of injury. At the inception of NOTS, our specific goal was to improve the outcomes of this patient group. Though we may never reduce the number to zero, striving to do that is still our goal. Mortality for both penetrating and blunt injuries increased from 2018 to 2019.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Blunt (n)	434	501	479	457	467	486	745	857	815	860
Penetrating (n)	44	50	53	67	56	68	90	103	111	91



Mortality: Admitted Patients and ED Deaths With ISS of 9-14

Patients with a minor ISS of 9-14 are numerous, while deaths are relatively rare. Deaths in this patient group often have contributing comorbid health conditions. Penetrating mortality increased between 2018 and 2019, while blunt mortality decreased slightly.

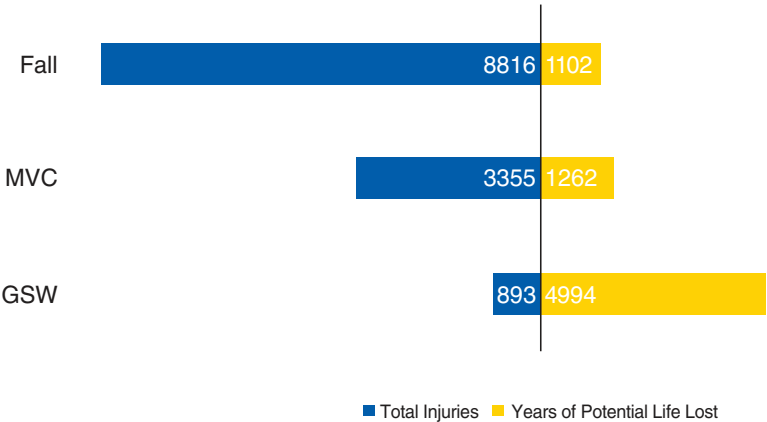
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Blunt (n)	1373	1173	1282	1164	1316	1454	3021	3268	3347	3748
Penetrating (n)	153	165	153	137	171	163	263	294	296	224

YEARS OF POTENTIAL LIFE LOST (YPLL)

Years of potential life lost (YPLL) is measure of the years a person would have lived had they not died prematurely. This is used to give an idea of population burden of disease. For example, a high amount YPLLs can point to lost contributions a person could have made to society. In these calculations, 75 years was used as the reference life expectancy.

We looked at YPLLs for the top three mechanisms of injury in 2019: falls, motor vehicle collisions (MVC), and gunshot wounds (GSW). YPLLs were inversely proportional to total injuries of that mechanism, with falls having the most injuries but fewest YPLLs and GSWs having to least injuries but highest YPLLs. This is because falls tend to be more fatal in older individuals and GSWs in general occur more often in younger individuals.

Years of Potential Life Lost for Top Three Mechanisms of Injury



	Total Injuries	Deaths	Mortality	YPLL*	Mean YPLL per Death
Fall	8816	174	2.0%	1102	6.3
MVC	3355	56	1.7%	1262	22.5
GSW	893	118	13.2%	4994	42.3

*This YPLL calculation assumes a 75-year life expectancy

NOTS RESEARCH COMMITTEE

Research Committee

Chair: Olivia Houck

Co-Chair: Michael Dingeldein, MD

The NOTS Research Committee, established in 2019, has completed establishing its procedures and necessary approvals for use of the NOTS regional trauma registry across NOTS. This is a very exciting development that will allow for collaborative research across the Cleveland area's hospital systems. The opportunity to conduct research with NOTS data is now open to researchers within all NOTS member institutions.

Regional Dataset Includes:



10
TRAUMA
CENTERS



17,000
PATIENTS PER YEAR (ABOUT)



10+
YEARS OF DATA



26+
DATA FIELDS*

*With planned future of expansion of data fields

COVID EDUCATION



Making Education a Priority During COVID

During the beginning of the COVID-19 pandemic, NOTS took the lead on continuing education for EMS/Fire. Between April 21, 2020 and July 22, 2020, NOTS was able to reach 1,426 total attendees with 513 unique attendees from 53 departments and organizations. NOTS has continued to push out education on this new platform and plans to continue this moving forward. Below are the classes that have been discussed thus far.

Classes included:

- Pulse Oximetry and Capnography
- Cardiology Review
- NOTS Chest Trauma
- Fire Education - Pump Operations
- Fire Education - Ladders
- Pediatric Abdominal Pain
- Trauma Case Review
- Pediatric Burns
- Fire Education - A Garden Apartment Case Review
- Mental Health in First Responders
- Environmental Emergencies

NOTS VIOLENCE PREVENTION PROGRAM

We are happy to share that our violence intervention program was accepted into the Health Alliance for Violence Intervention (HAVI). This membership provides technical support, educational opportunities and representation on work groups. NOTS Injury Prevention Coordinator, Andrea Martemus-Peters, participates on the Policy Working Group with other national program members. NOTS Board member Glen Tinkoff, MD and the violence prevention team have been providing guidance and support to a few emerging hospital programs in the United States.

Ohio's Spectrum News Channel interviewed the violence prevention team and highlighted the work being done at MetroHealth Medical Center and University Hospitals. The team continues to attend the annual Healing Justice Alliance Conference. The Conference provides program participants an opportunity to connect with their peers and learn best practices from other programs across the country and Europe. The theme for 2019 focused on self care. With focus on self-care at the conference, upon return, our program had a half day retreat.

The team works with community agencies across Northeast Ohio to provide social services to the patients. The need for safe housing continues to increase as patients and families return to the community. As we continue the NOTS Evaluation of Engagement and Patient Satisfaction research project, the research project's follow up phone calls have been able to help patients access counseling services for PTSD, schedule follow-up appointments in the trauma clinic and get food bank information.

The violence interrupters have contacted over 300 patients at the bedside and following up in the community. The rate of recidivism is <5%. The national average ranges from 10-34%. We are continuing to look for ways to aid those that are food insecure and need personal care products upon discharge. The collaboration of the Cleveland Peacemakers Alliance and hospital systems demonstrates benefits of violence prevention programs.



Top Image:

Left to Right: Carlos Williams, Channon Fair, Sharyna Cloud, Mar'Yum Patterson, Andrea Martemus-Peters and Dwayne Nelson

Bottom Image:

Left to Right: Andrea Martemus-Peter and Dwayne Nelson

NOTS ADVISORY BOARD

NOTS, at its inception, was a collaboration among health care systems with the goal of getting the “right patient to the right place at the right time.” As NOTS has matured, our mission has expanded beyond the walls of our own institutions to include health care providers throughout the region. In the past three years we have expanded even further as we launched online virtual training and continued support for the Stop the Bleed campaign.



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Critical Care, Burns and Acute
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Professor of Surgery, Case Western
Reserve University School of Medicine



Robert Wyllie, MD

Chief Medical Operating Officer
Systemwide Medical Operations
Associate Chief of Staff
Professor, Lerner College of Medicine
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Brandy Carney
Chief
Cuyahoga County Public Safety
& Justice Services

GLOSSARY OF TERMS

Adolescents: Patients ages 13-19 years.

Cause of Death: For the purpose of national mortality statistics, every death is attributed to one underlying condition, based on information reported on the death certificate, and uses the international rules for selecting the underlying cause of death from the condition stated on the death certificate. For injury deaths, the underlying cause is defined as the circumstance of the accident or violence that produced the fatal injury.

Coroner: A person whose standard role is to confirm and certify the death of an individual within a jurisdiction. A Coroner may also conduct or order an inquest into the manner or cause of death, and investigate or confirm the identity of an unknown person who has been found dead within the Coroner's jurisdiction.

Drowning: This category includes injuries from drowning/near drowning and submersion with and without involvement of watercraft.

Emergency Department (ED): A medical treatment facility specializing in emergency medicine and the acute care of patients who present without prior appointment, either by their own means or by that of an ambulance. The emergency department is usually found in a hospital or other primary care center.

ICD-10 Code: The International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) is a system used by physicians and other health care providers to classify and code all diagnoses, symptoms and procedures recorded in conjunction with hospital care in the United States.

Frequency: The number of times an event occurs.

Geriatric: Patient ages 65 and older.

Gunshot Wounds (GSW): This category includes injuries from firearms, including unintentional, suicide, homicide, legal intervention and undetermined intent.

Homicide: The killing or intent to kill of one person by another.

Incidence: The number of instances of illness or injury during a given period of time in a specified population.

Injury: Any unintentional or intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical or chemical energy or from the absence of such essentials as heat or oxygen. According to the Injury Surveillance Guidelines, an injury is the physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy. Injury can be a bodily lesion resulting from acute exposure to energy in an amount that exceeds the threshold of physiological tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements (air, water, or warmth), as in strangulation, drowning, or freezing. The time between exposure to the energy and the appearance of an injury is short. The energy causing an injury may be one of the following:

- Mechanical
- Radiant
- Thermal
- Electrical
- Chemical

International Classification for Diseases (ICD): The ICD provides the ground rules for coding and classifying cause of death data.

Injury Severity Score (ISS): The Injury Severity Score (ISS) is an established medical score to assess trauma severity. It correlates with mortality, morbidity and hospitalization time after trauma. It is used to define the term major trauma. A major trauma (or polytrauma) is defined as the Injury Severity Score being greater than 15.

Major Trauma: A patient with injuries that result in death, intensive care admission, major operations of the head, chest or abdomen, a hospital stay of three or more days, or an ISS of greater than 15.

Minor Trauma: A patient who is entered into the trauma system, has an ISS of less than or equal to 15, and survives until hospital discharge.

Mechanism of Injury (MOI): The manner in which a physical injury occurred (e.g., fall from a height, ground-level fall, high- or low-speed motor vehicle accident, ejection from a vehicle, vehicle rollover). The MOI is used to estimate the forces involved in trauma and, thus, the potential severity for wounding, fractures, and internal organ damage that a patient may suffer as a result of the injury.

Mortality: Deaths caused by injury and disease. Usually expressed as a rate, meaning the number of deaths in a certain population in a given time period divided by the size of the population.

Morbidity: Number of persons, nonfatally injured or disabled. Usually expressed as a rate, meaning the number of nonfatal injuries in a certain population in a given time period divided by the size of the population.

Pedestrian: This category includes injuries among pedestrians hit by a train, a motor vehicle while not in a traffic or another means of transportation.

Pediatric: Patients ages 0-15 years.

Penetrating: This category includes injuries caused by cutting and piercing instruments: knives, swords, daggers, power lawn mowers, power hand tools, household appliances.

Risk Factors: Characteristics of people, behavior or environment that increase the chance of disease or injury occurring. Examples: alcohol use, poverty, gender.

Struck By/Against: This category includes injuries resulting from being struck by or striking against objects or persons. This category includes being struck (unintentionally) by a falling object, being struck or striking objects or persons (sports) and injuries sustained in an unarmed fight or brawl.

Years of Potential Life Lost (YPLL): The concept of years of potential life lost involves estimating the average time a person would have lived had he or she not died prematurely.



NOTS 2020 Annual Report

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