

2021 Annual Trauma Data Report

TRISTATE TRAUMA COALITION

THE HEALTH  COLLABORATIVE

Tristate Trauma Coalition Annual Report 2021

The Tristate Trauma Coalition (TSTC) is a group of multidisciplinary agencies and organizations which collaborate to serve the community by improving patient outcomes and providing a forum for independent health care facilities and systems, emergency medical services, and community partners to work together to improve the care of the injured patient. The mission to enhance the care of the injured patient is achieved through collection and analysis of data from hospitals in the region, providing quality professional trauma education, and convening stakeholders to collaborate. The TSTC is made up of 25 hospital members. The Health Collaborative (THC) is the convener, Regional Trauma Organization, and trauma education program manager for the TSTC.

The 2021 Annual Report of the Tristate Trauma Coalition contains data from local trauma centers and hospitals that treat trauma-related injuries in the Tristate Region of southwest Ohio, northern Kentucky, and southeast Indiana. The data were reported in the 2021 calendar year (CY2021). All trauma facilities in the State of Ohio are required to submit trauma patient data to the State of Ohio EMS/Trauma Data Registry on a quarterly basis. As the Regional Trauma Organization for the TSTC, THC submits quarterly data to the State on behalf of certified trauma centers. The report is reflective of aggregate trauma data and covers 11,925 records of patients treated across the region for CY2021. Current and historical data presented in this report were pulled from ESO TraumaBase system in October 2021. The accuracy of these data is reliant on manual entry at the facility delivering care. The visuals included in this report represent the aggregated regional data as queried, without statistical analysis performed. Duplicates occur in the data set when patients are transferred between trauma facilities. These duplicates are not removed from the data used in this report. Unless otherwise indicated, figures and tables in this report represent data reported in 2021.

Tristate Trauma Coalition Facilities

Aggregate data in this report represent the following facilities:

Level 1 Trauma Centers	Level 3 Trauma Centers
UC Health – University of Cincinnati Medical Center	Atrium Medical Center
Cincinnati Children’s Hospital Medical Center	Kettering Ft. Hamilton Hospital
	Tri-Health Bethesda North Hospital
	UC Health – West Chester Hospital
TSTC Non-Trauma Facilities	
Adams County Regional Medical Center	Mercy Health Queen City Medical Center
Cincinnati Children’s Hospital Liberty	Mercy Health West Hospital
Clinton Memorial Hospital	The Christ Hospital
Mercy Health Anderson Hospital	The Christ Hospital Liberty
Mercy Health Clermont Hospital	TriHealth Bethesda Arrow Springs
Mercy Health Fairfield Hospital	TriHealth Bethesda Butler
Mercy Health Harrison Hospital	TriHealth Good Samaritan Hospital
Mercy Health Jewish Hospital	TriHealth Good Samaritan Western Ridge
Mercy Health Mt. Orb Medical Center	TriHealth McCullough-Hyde Hospital
Mercy Health Rookwood Medical Center	

Summary of Findings

Trauma registry data queried show a decrease in volume from CY2020 to CY2021, although April 2020 (878 pts) was significantly lower than April 2021 (1085 pts). The 2021 data show a consistency in demographics and patient population. Population in the Tristate is approximately 3.1

million based upon the 2020 census. ¹ Patients 64 years of age or older represent the highest number of traumatic injuries. Falls continue to be the leading cause of traumatic injury. Top 5 causes for traumatic injury after falls are near drowning, struck by or against, other, gun shot, and cut/pierce. The top 5 causes of death from traumatic injury are suffocation, gun shot, near drowning, and pedestrian. Falls result in the longest average length of stay, but seldom result in death. Most trauma patients that present to the emergency department were either admitted the floor, held for observation or a step-down unit. Blunt force trauma continues to be the highest percentage for type of injury. For the past 3 years, the injury severity score (ISS) remains consistent. The ISS illustrates that more minor trauma injuries present to the emergency department. Transportation in the region is largely supported by ambulance services yet it appears that private or public vehicle usage has increased year over year. The wait time for transportation to transfer an emergency department patient to another facility is more than 4 hours.

Regional Opportunities for Improvement

The data queried for CY2021 identify an opportunity to investigate wait time for patients to be transferred to another facility to determine if the current 4+ hour wait for many patients has downstream impacts.

Falls continue to lead in traumatic injury mechanism and length of stay. With patients 64 years and older having the most traumatic injuries and with this segment of the population increasing by approximately 1.7% from 2020 to 2021. ² These data indicate that investigation of interventions, such as fall prevention programs could have benefit in the region.

Acknowledgements

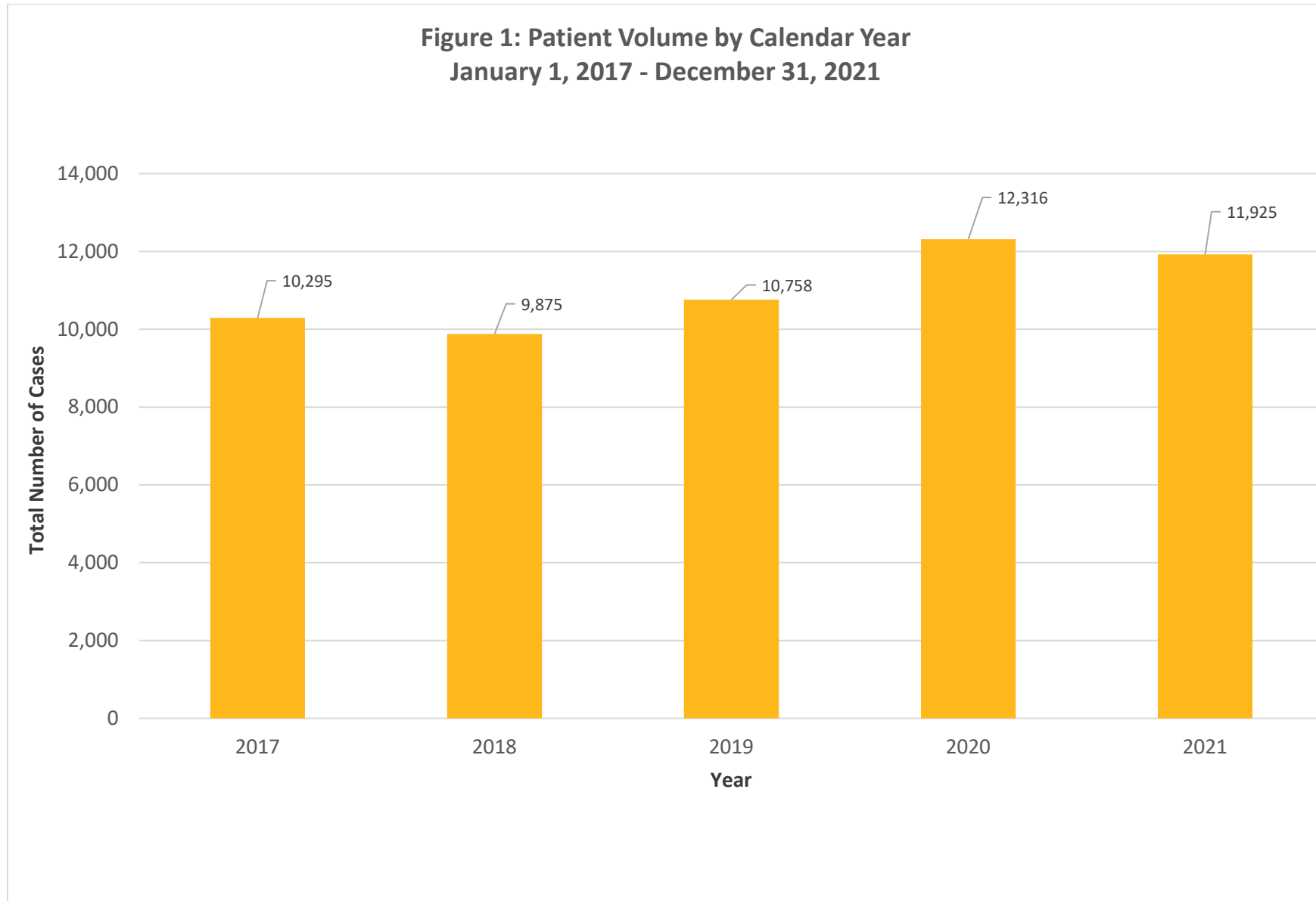
This report would not be possible without the expertise and hard work of the TSTC hospitals' registrars. THC would also like to thank the partnership with Q-Centrix, specifically Cathleen Murray, who assisted with data submissions and visual creation.

¹ <https://www.census.gov/quickfacts>

² <https://www.census.gov/quickfacts>

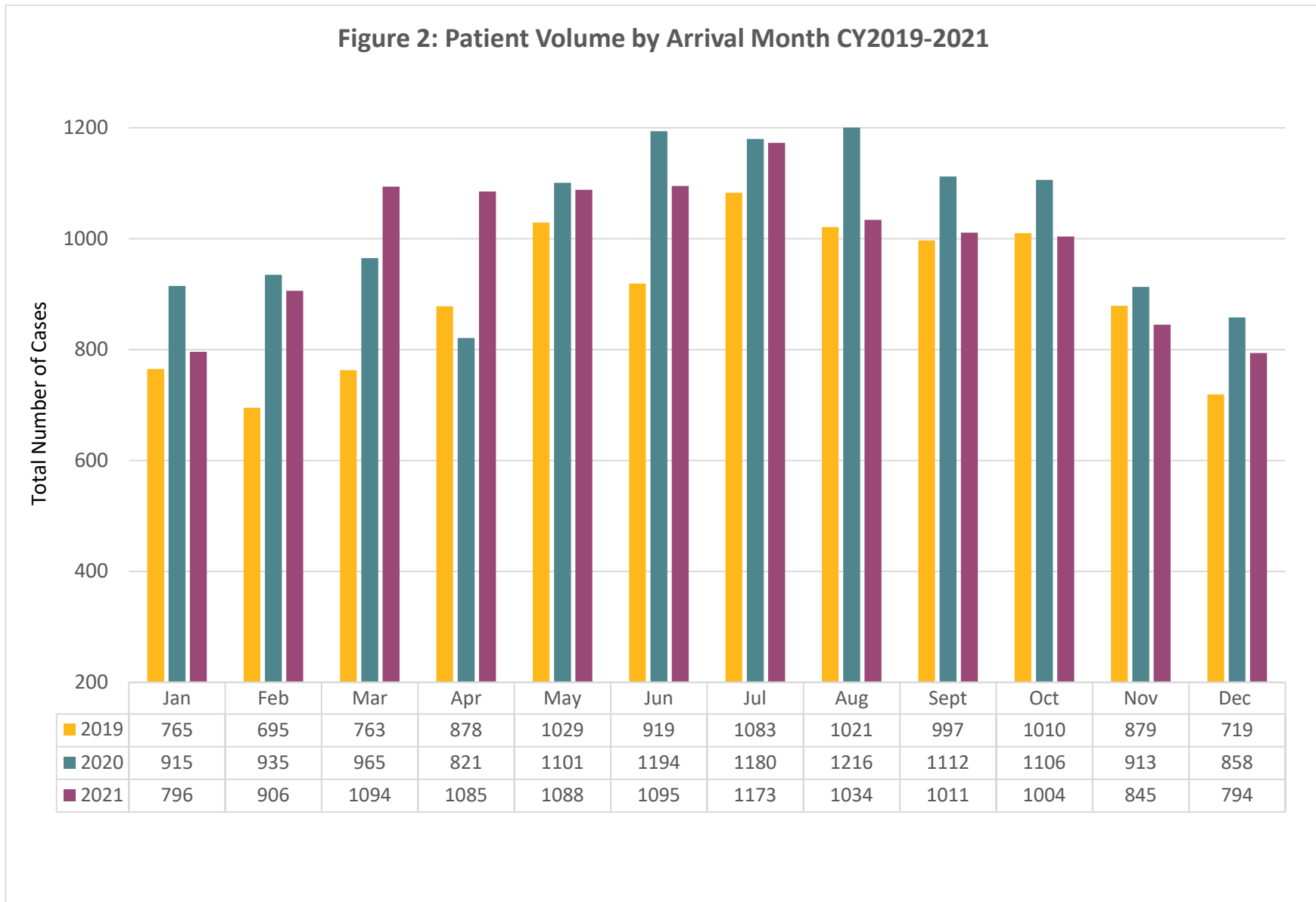
Patient Volume by Calendar Year

Figure 1 displays the total number of cases for all facilities in the Tristate Trauma Coalition (TSTC) for the last five years.



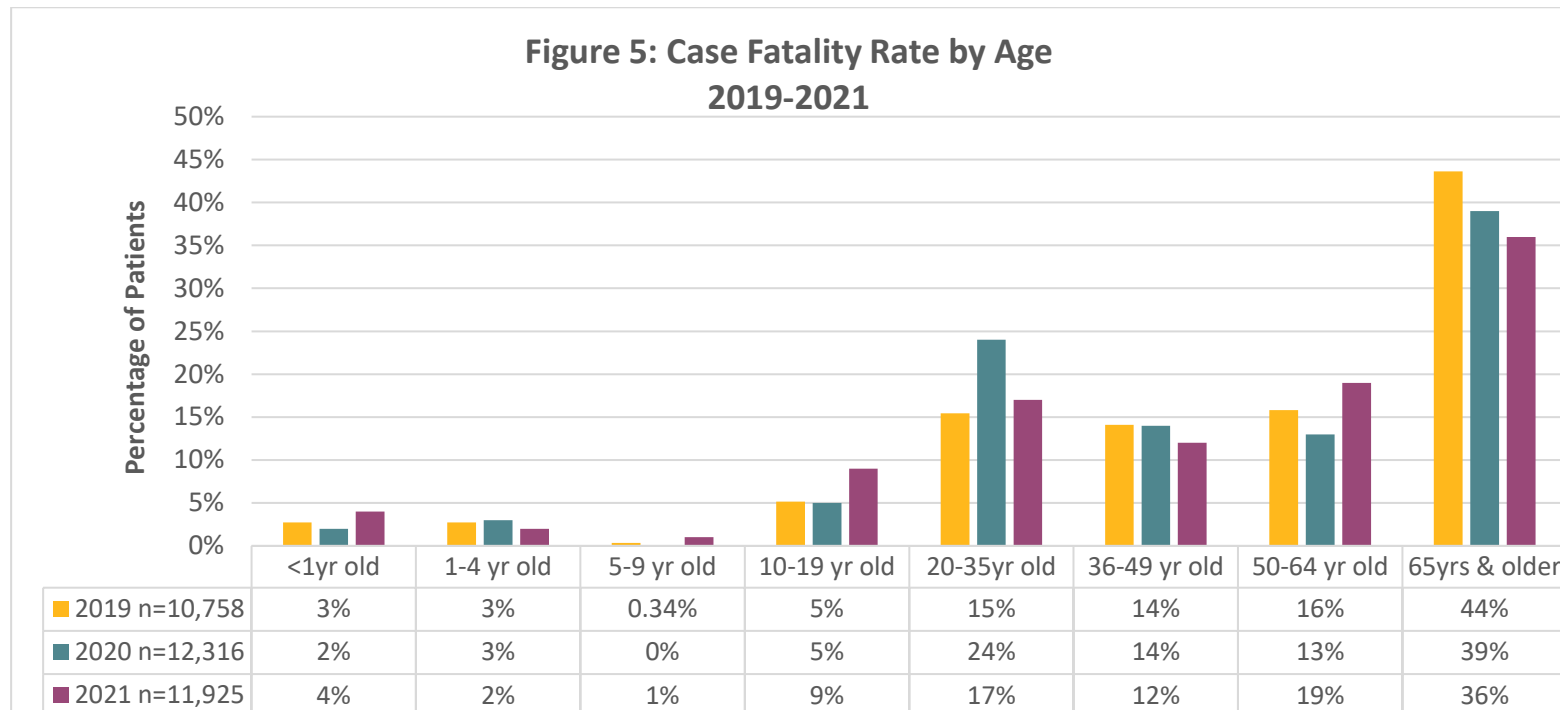
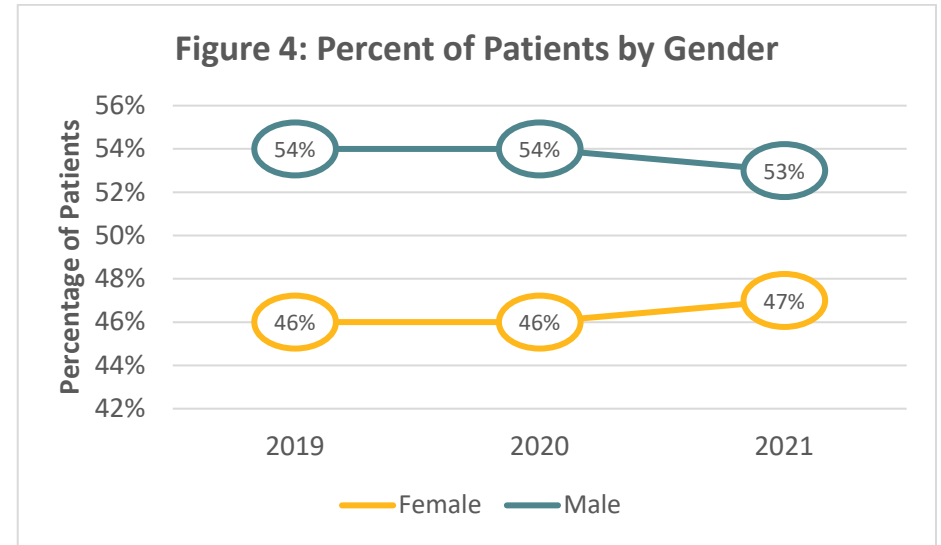
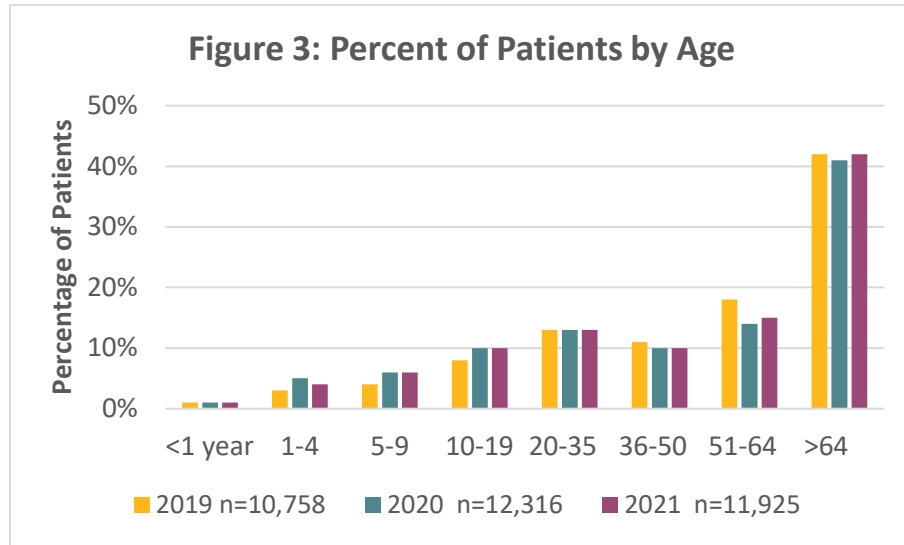
Patient Volume by Arrival Month

Figure 2 indicates that during the summer months a higher number of traumas were reported at TSTC facilities. There was a decrease in traumas in 2021 compared to 2020.



Percent of Patients by Age & Gender

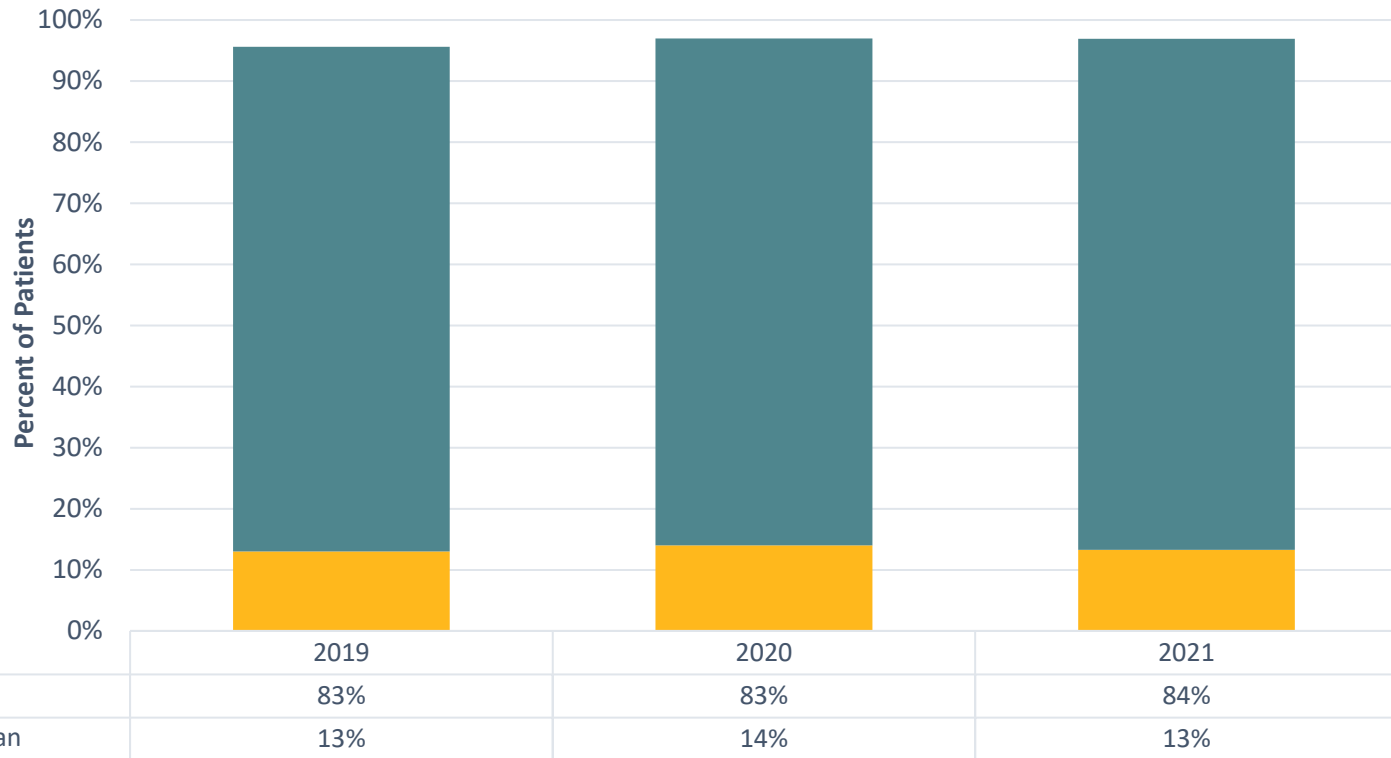
Figures 3-5 indicate that patients 64 years and above have a higher incidence of trauma related injuries: over the past three years, those over age 64 accounted for more than 50% of trauma injuries in the region and 36%-44% of trauma-related fatalities. The percentage of trauma patients by gender has remained relatively stable and balanced. Figure 5 notes a slight increase in female patients in 2021.



Percent of Patients by Race

Figure 6 illustrates in the Tristate; white persons account for the 50.6% of the population³. In 2021, white persons suffered 84% of traumas in the region and have been consistently over-represented in the population experiencing traumas in the past three years. Black or African American persons account for 40.3% of the population and less than 15% of traumas reported. Of note: Asian, American Indian, Native Hawaiian, Pacific Islander, and Other Race, together, represented 2% of the traumas reported.

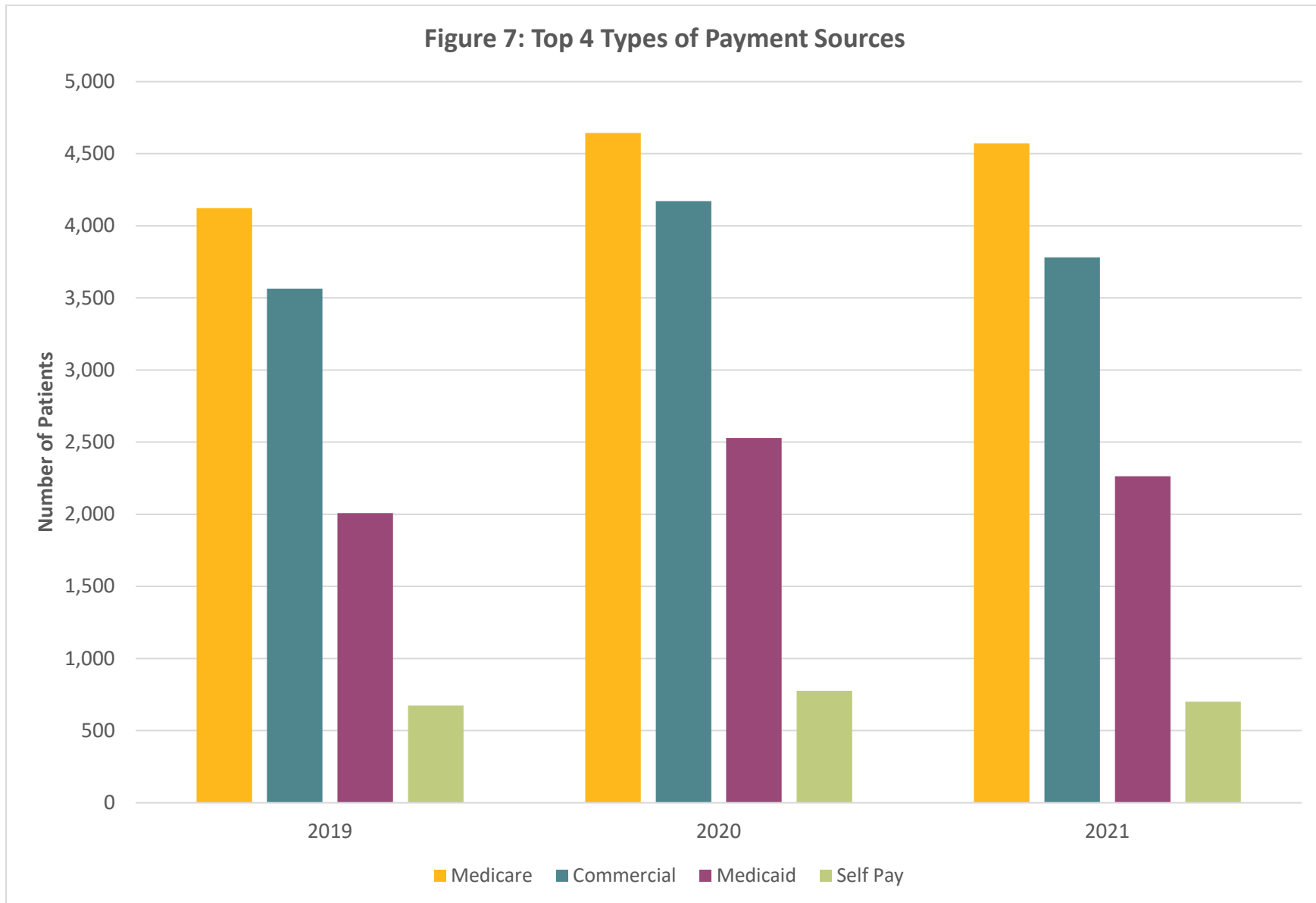
Figure 6: Percent of Patients by Race*



*All other races represent less than 2% of traumas reported.

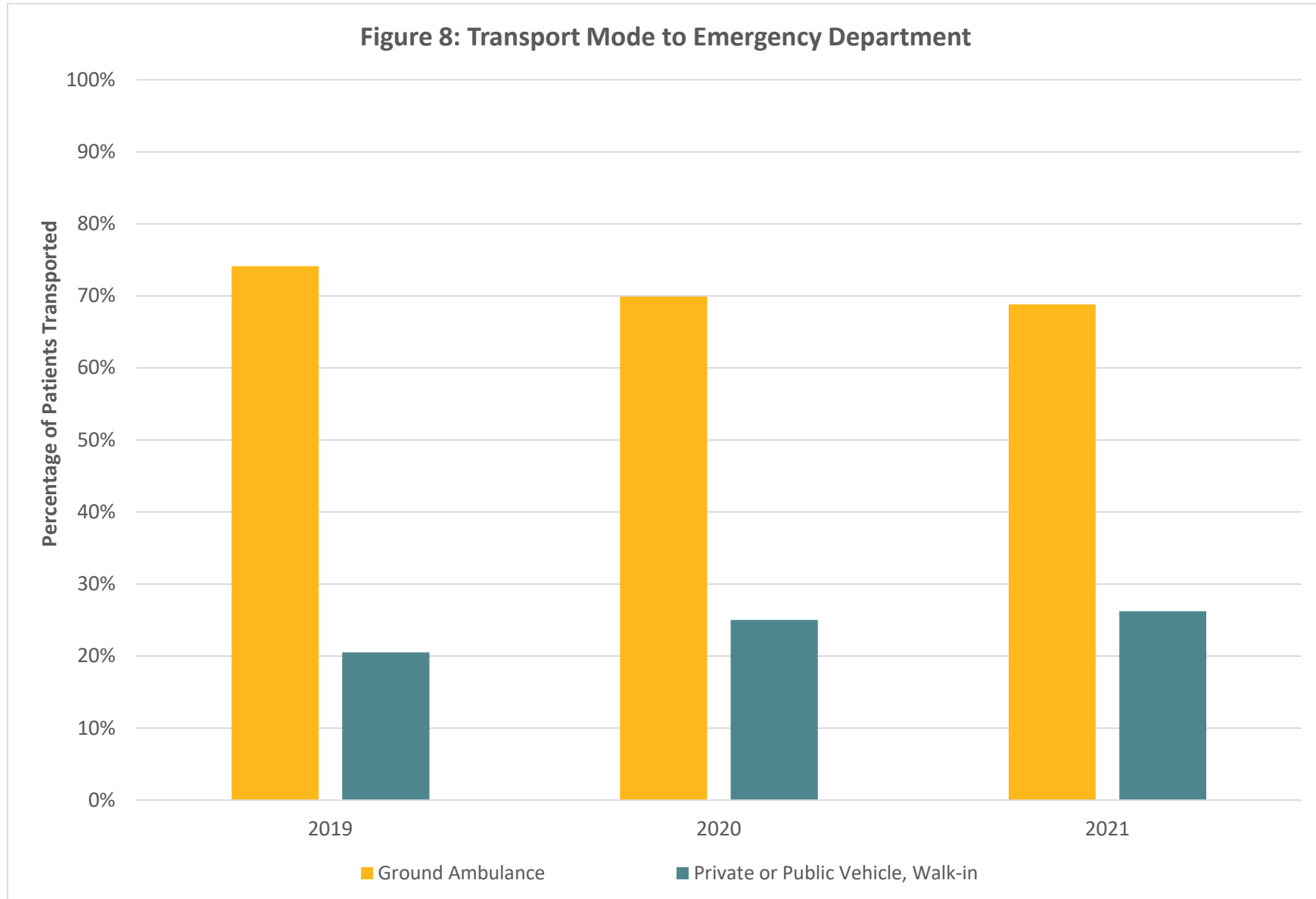
Type of Payment Source

Figure 7 illustrates that patients experiencing trauma injuries most frequently are Medicare beneficiaries.



Transport Mode to Emergency Department

Figure 8 illustrates the different modes of transportation taken to the hospital. While ambulance services provide the highest percentage of transportation, the use of private vehicles has consistently increased from 20% to 26% of patients over the past three years. Less than 6% of patients were transported by helicopter, police, other or transportation was not documented.



Mechanism of Injury

Mechanism of injury is as shown in Figure 9, falls provided the largest number of injuries in the region, 7,219, followed by motor vehicle crash. Falls also accounted for the longest average length of stay, as shown in Table 1. While falls are most prevalent, they account for 0.18% of trauma-related deaths. Thirty-six percent of suffocation events resulted in death in 2021, as shown in Table 1.

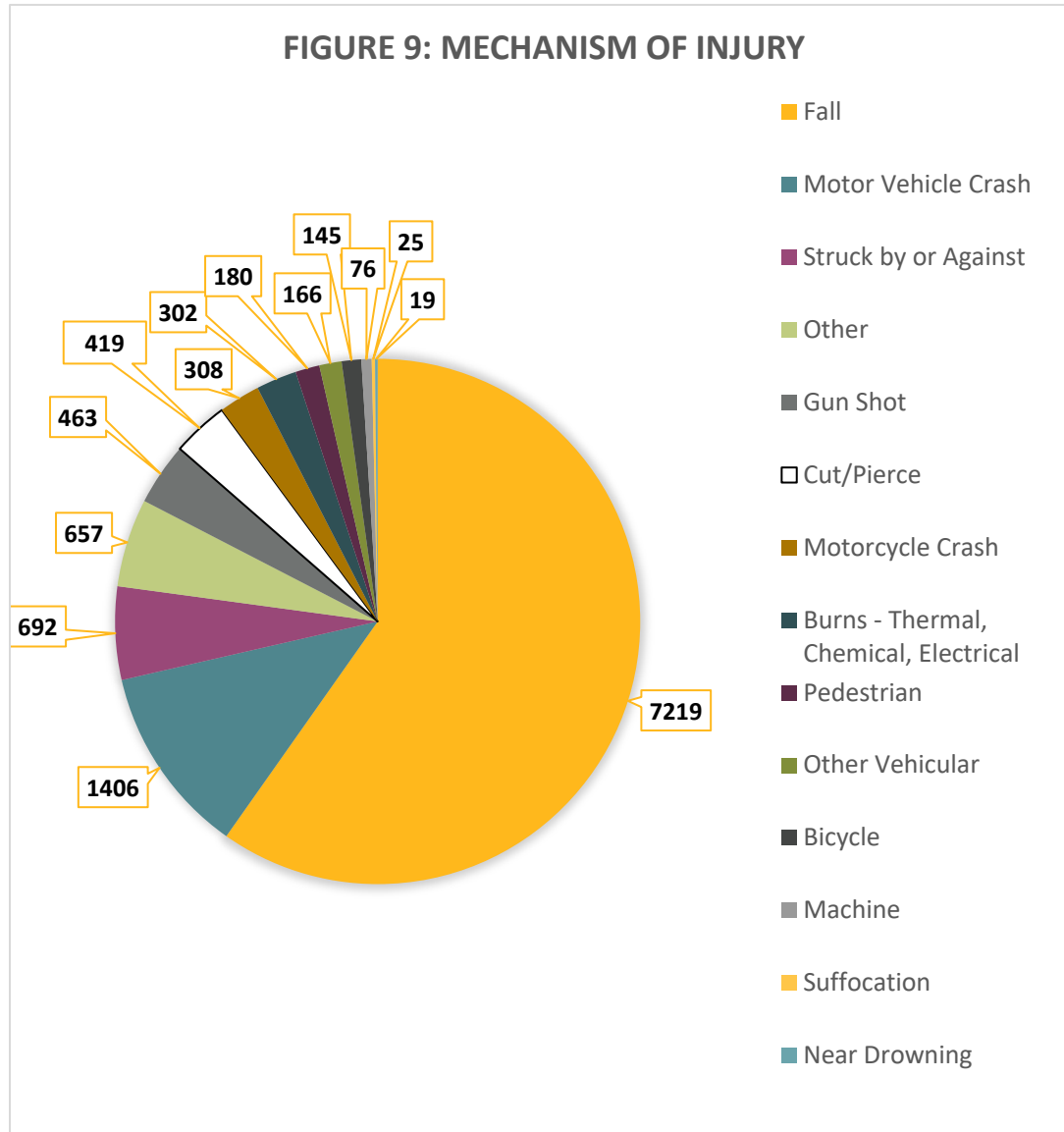


Table 1: Average Hospital Length of Stay (Days)

Fall	103.84
Motor Vehicle Crash	20.37
Other	10.13
Struck by or Against	9.18
Gun Shot	6.66
Cut/Pierce	5.65
Motorcycle Crash	4.40
Burns - Thermal, Chemical, Electrical	4.15
Pedestrian	2.76
Other Vehicular	2.21
Bicycle	2.06
Machine	1.10
Suffocation	0.34
Near Drowning	0.31

Table 2: Percentage of Events Resulting in Death

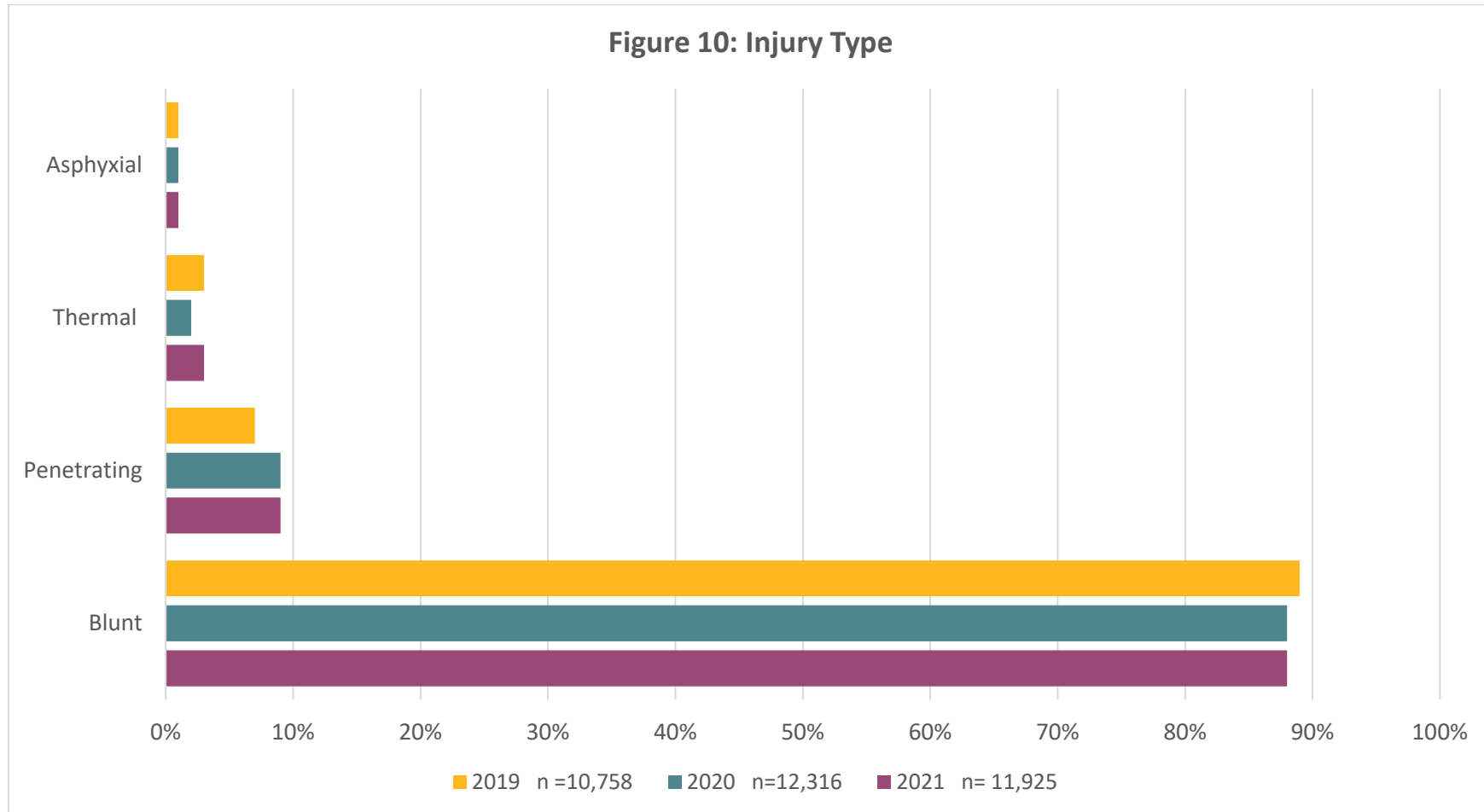
Suffocation	36.00%
Gun Shot	8.86%
Near Drowning	5.26%
Pedestrian	5.00%
Motor Vehicle Crash	1.56%
Bicycle	1.38%
Burns - Thermal, Chemical, Electrical	0.99%
Motorcycle Crash	0.65%
Other Vehicular	0.60%
Other	0.46%
Struck by or Against	0.29%
Cut/Pierce	0.24%
Fall	0.18%
Machine	0.00%

Injury Type

Four injury type categories are reported:

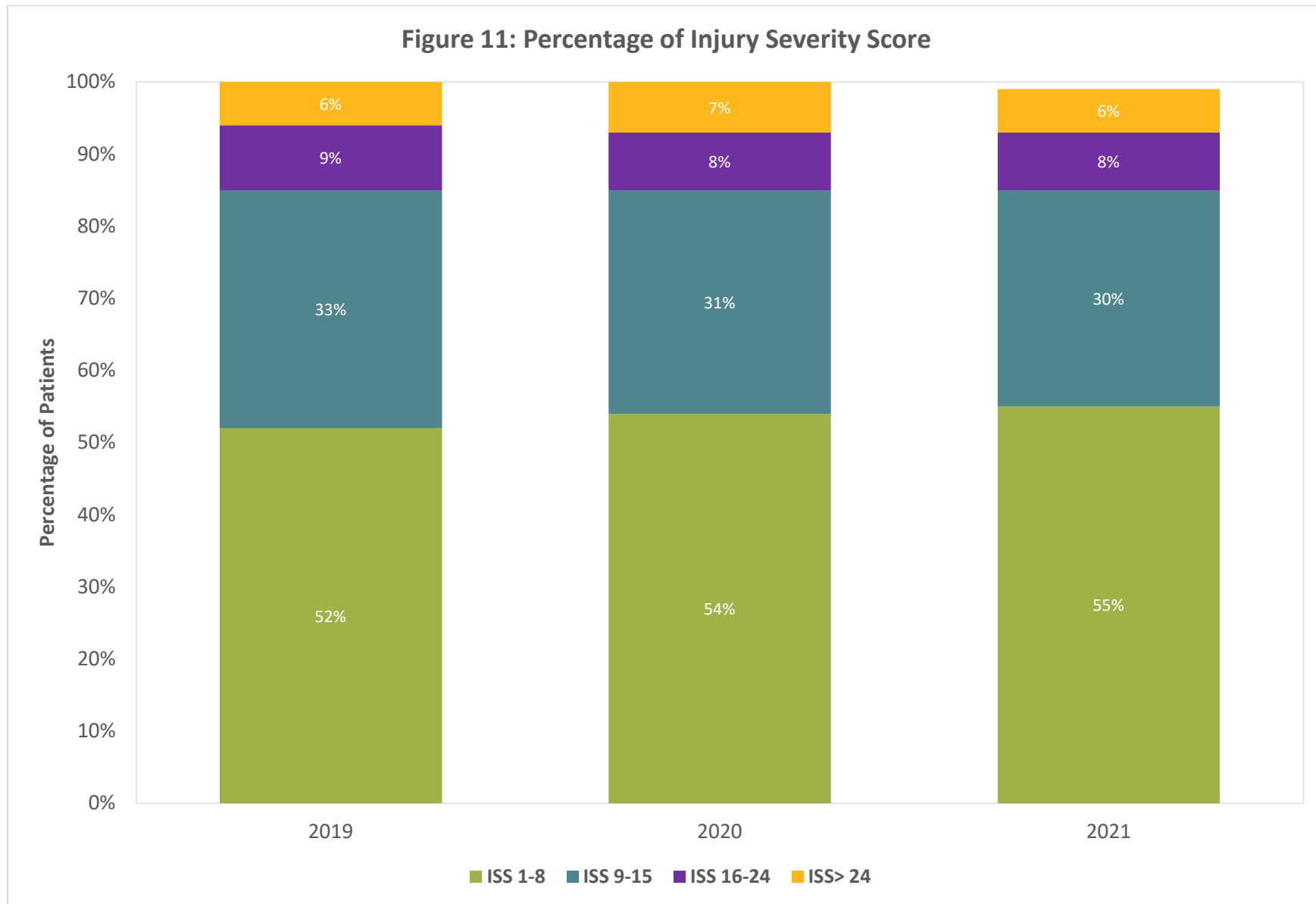
- Blunt – Impact from a blunt object
- Penetrating – Produced by a tool that is edged, pointed, or beveled.
- Thermal – Exposure to high temperature or direct contact with flame.
- Asphyxial – Respiration is prevented by external pressure

As shown in Figure 10, blunt trauma has, and continues to, account for nearly 90% of the trauma injuries in the region. The cases in Figure 9 illustrate the patients disposition upon discharge from the Emergency Department.



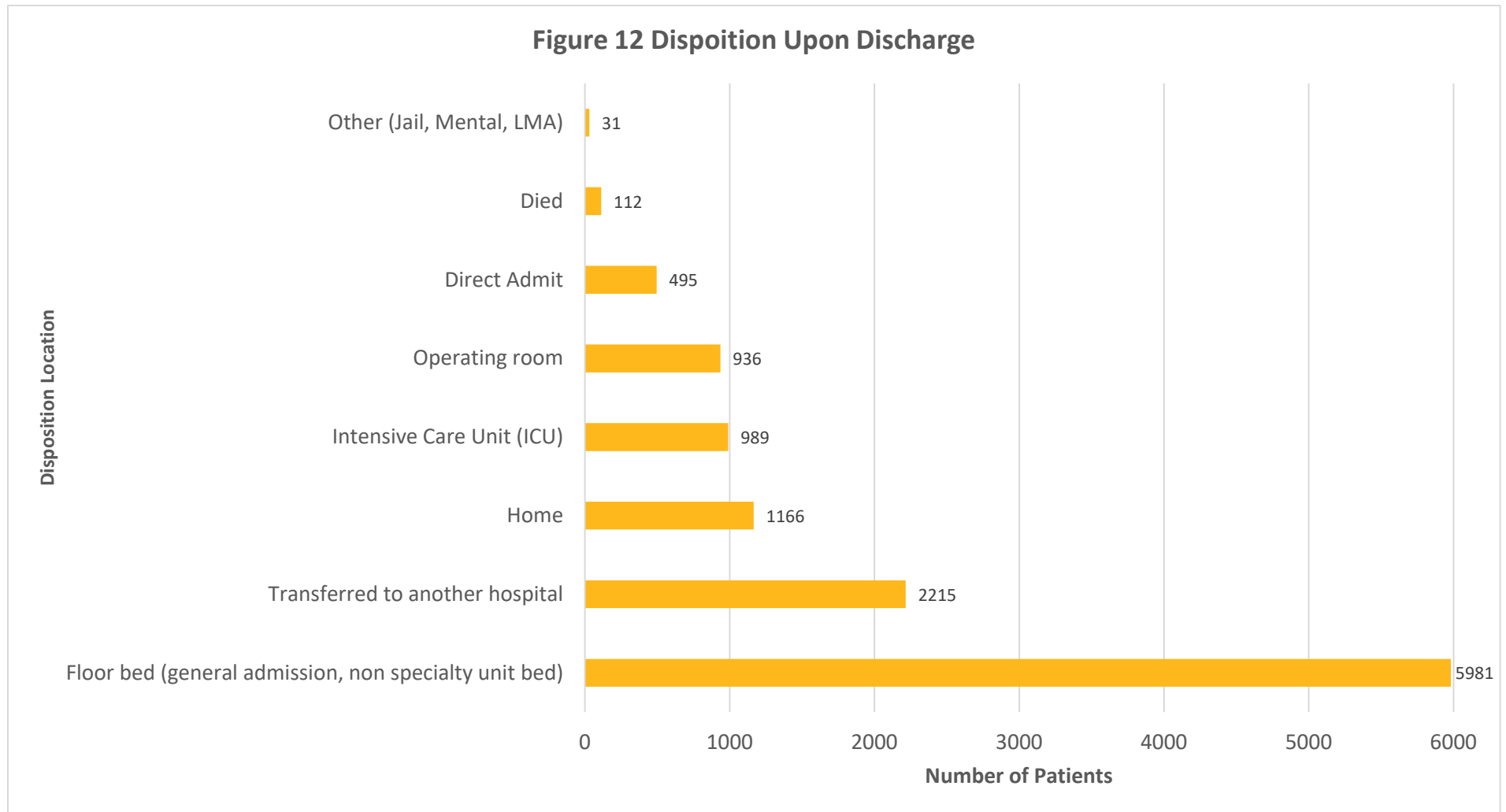
Injury Severity Score

The Injury Severity Score (ISS) is the sum of the squares of the highest AIS code in each of the three most severely injured ISS body regions. A higher ISS indicates more severe injury. Figure 11 indicates that just over half of all trauma patients annually are assessed with an ISS of eight or below indicating that the majority of trauma patients present with less severe injuries. Isolated Hip Fracture excluded from report.



Disposition Upon Discharge

As shown in Figure 12, the majority of trauma patients that present to the emergency department are transferred to a hospital floor or observation, while 19% are transferred to another facility.



Emergency Department Length of Stay of Patients Transferred

Figure 13 categorizes the length of emergency department stay prior to transfer to another facility. This transfer is often to a higher level of care. In 2021, 43% of trauma patients awaiting transfer waited four or more hours.

