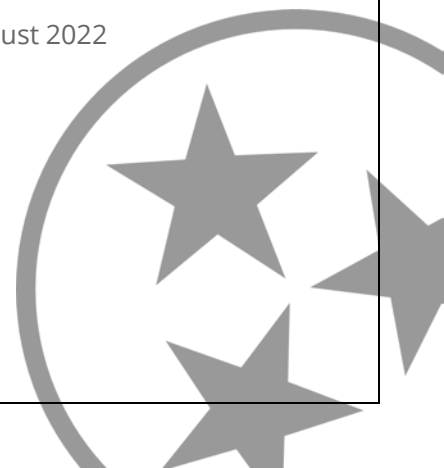




# 2022 Traumatic Brain Injury Annual Report

Tennessee Department of Health | Family Health and Wellness | August 2022





## Introduction

In 1993, the Tennessee General Assembly established the Traumatic Brain Injury (TBI) Program (T.C.A § 68-55-101-103, § 68-55-201-205, § 68-55-301-306, § 68-55-401-402, § 68-55-501-503) within the Tennessee Department of Health (TDH) to improve services for people with brain injury and their families. This legislation outlines all mandated components of the program which include development, composition, and duties of the TBI Advisory Council; designation of a TBI Coordinator and Coordinator duties; development and implementation of statewide TBI Registry; establishment of a TBI Trust Fund; and development of an annual report. In accordance with legislation, this annual report summarizes TBI Registry surveillance data, administration of the TBI Program, and program recommendations for improving service delivery for people with brain injury.

In 1996, the TBI Registry was established and began collecting brain injury data with the purpose of connecting people with brain injury to available resources and services. All non-federal hospitals are mandated to report any TBI-related hospital stays that are greater than 24 hours, except for patients who expired. If patients had at least one TBI code and expired because of the TBI, hospitals are mandated to report regardless of the length of stay. Patients meeting these criteria must be reported to the registry, regardless of residence. TBI-related emergency department visits are increasingly reported to the TBI Registry but are not mandated. TBI Registry diagnoses are captured in the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) coding system.

The TBI Registry collects data on a calendar year while the TBI Program operates on the state fiscal year. Therefore, TBI registry reporting reflects the calendar year of January – December 2021 and TBI Program reporting reflects fiscal year July 2021 – June 2022.

Analysis of TBI Registry data provides the foundation of program activities including planning and implementation of initiatives to reduce injuries throughout the state. This report first presents Tennessee TBI surveillance data followed by TBI Program progress, and other program components.

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# Traumatic Brain Injury Surveillance Report

January 2021-December 2021

## Executive Summary

*In 1993, the Tennessee General Assembly established the TBI Program to address the needs of persons with brain injury and their families. T.C.A. § 68-55-203 mandates that TDH develop and maintain a registry of these patients. Since its inception, the registry has collected data on over 150,000 patients and has connected people with brain injury in Tennessee with vital resources and services. Data from the registry has been advantageous in detecting populations at risk and prevalent mechanisms of TBI to improve prevention efforts. The findings in this report serve to continue and enhance program efforts.*

## Key Findings

**Total:** During the 2021 calendar year, **7,838 patients** met criteria for required reporting to the TBI registry. Of these, **6,903** were discharged from the hospital alive and the remaining 935 were deceased.

**Discharge Status:** A substantial proportion of TBI patients reported to the registry required extended care following their injury: **32%** of patients were discharged from the hospital to rehabilitation, skilled nursing, or other long-term care facilities.

**Age:** **60%** of TBI patients reported to the registry were **adults over 54 years** of age.

**Gender:** Overall, **60%** of TBI patients were **males**. The number of male patients exceeded females in every age group less than 85 years. The gender difference persisted and varied within racial/ethnic groups: 58% of non-Hispanic White patients were male compared to **67% of non-Hispanic Black** patients and **80% of Hispanic** patients that were males.

**Type of Injury:** **Intracranial injuries** were by far the most common type of TBI, present in **95% of patients** (sometimes in conjunction with other TBI diagnoses).

**Causes:** **Falls were the leading cause** of TBI, followed by motor vehicle crashes. Wider gender disparities existed amongst injuries caused by motor vehicle crashes, assault, and intentional self-harm, where males made up 64%, 76%, and 79% of TBI patients respectively.

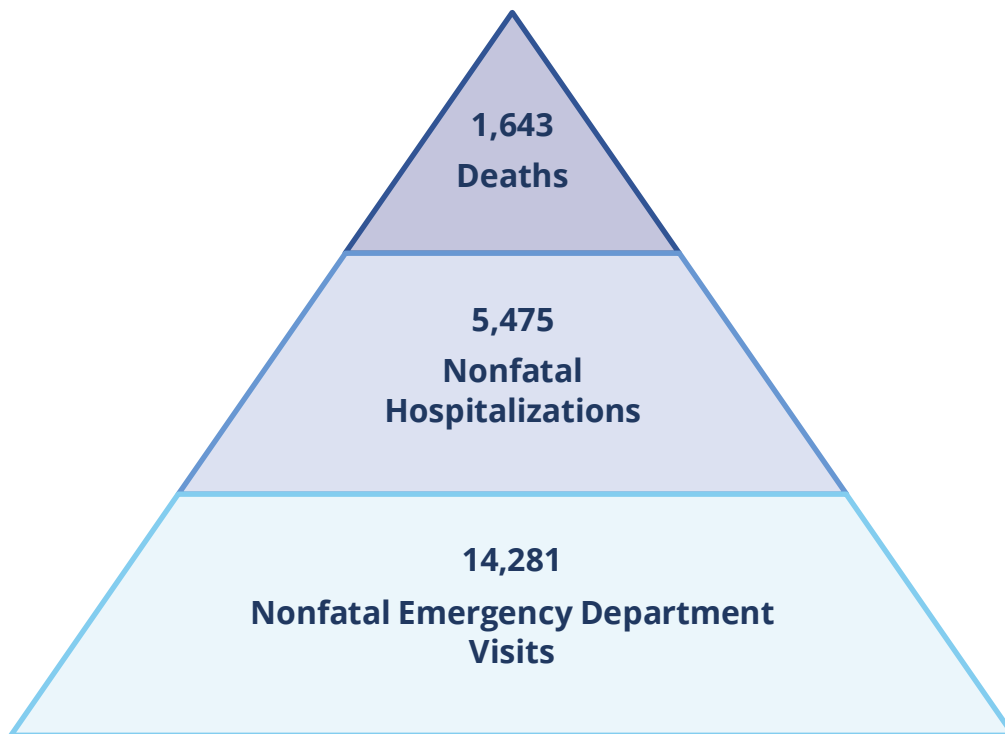
**Annual Trend:** The total number of TBI registry patients for 2021 represented a **6% increase** from **2017** and a **5% decrease** from **2020**.

## Background

A traumatic brain injury (TBI) is a disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury. Due to their nature, TBIs are a major cause of death and disability, making these injuries a significant public health problem across the United States. In 2020, **21,399** Tennesseans had a TBI- related ED visit, hospitalization, or death.

This graph highlights data from vital records and hospital discharge data and displays the severity of TBI incidents (ED visit only, hospitalization, and death). Because the TBI registry only reflects a subset of individuals with TBI, these data play a key role in TBI surveillance in Tennessee, capturing all emergency department visits and hospitalizations. 2020 is the latest data available, therefore it reflects a different year than the data presented on the following pages that is specific to the TBI registry.

### Severity of TBI: Deaths, Hospitalizations and ED Visits in 2020<sup>1</sup>



*Note: The figure describes the burden of TBI deaths and injuries in Tennessee based on latest (2020) and finalized hospitalization and death records.*

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1. Tennessee Department of Health, Office of Vital Records and Vital Statistics; Tennessee Department of Health, Office of Population Health Surveillance

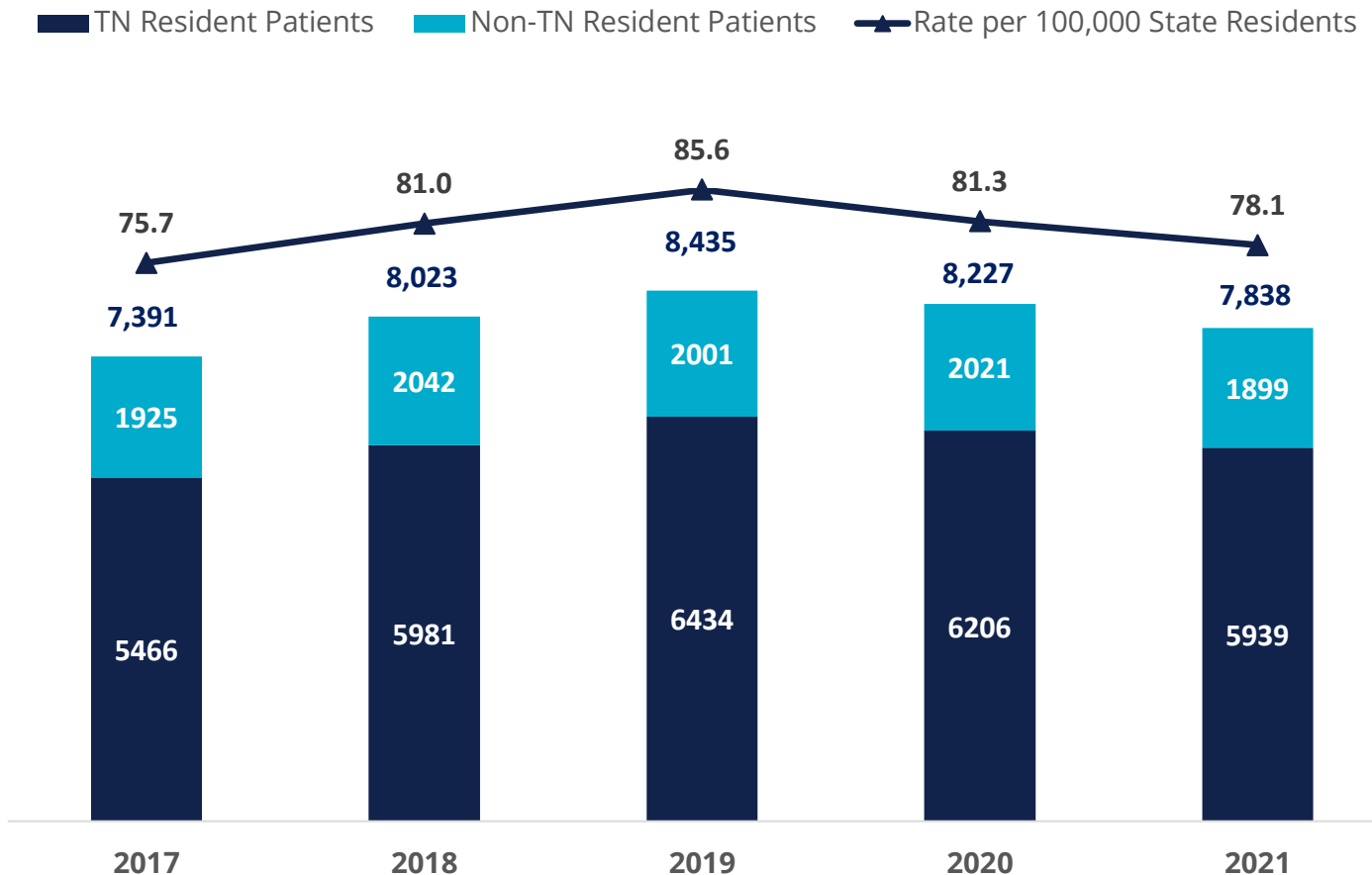
## 2022 TBI Registry Data

This section presents data from the state TBI Registry. Non-federal hospitals in the state are required to report TBI-related hospitalization or death to the registry. This data is for the calendar year 2021.

### Annual Trend in TBI Registry Patients

#### Number and Rate of TBI Registry Patients, 2017-2021

From 2017-2021, approximately 8,000 patients were reported to the TBI registry each year and an overall 6% increase in patients reported was observed. From 2020 to 2021, the number of patients decreased by 5%. The percentage of total registry patients who were **Tennessee residents** was consistent at approximately 75%.





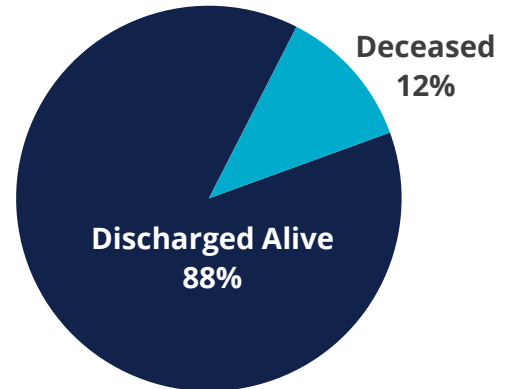
## Overview of Registry Patients

In 2021, 7,838 TBI patients were reported to the registry

### Breakdown by Mortality

All non-federal Tennessee hospitals are mandated to report TBI-related hospitalizations and deaths that occur at or during transport to the hospital. TBI-related deaths that occur outside of the hospital are not included in the registry.

Of 7,838 TBI patients reported to the registry in 2021, 6,903 were discharged from the hospital alive and the remaining 935 were deceased. The average length of hospital stay amongst all TBI registry patients was 7.7 days.



### Discharge Status of Nonfatal Injuries (N=6903)



**50%**  
Routine discharge to **home**



**36%**  
Discharged to **rehabilitation, skilled nursing, or other long-term care facility**



**12%**  
Discharged to home under the care of **organized home health service organization**



**2%**  
Discharged to **another hospital** for further care

### Key Points

- Half of TBI Registry patients with non-fatal injuries were discharged home.
- One in two (50%) TBI Registry patient with non-fatal injuries required further care and were discharged to rehabilitation, skilled nursing, or other long-term care facilities.

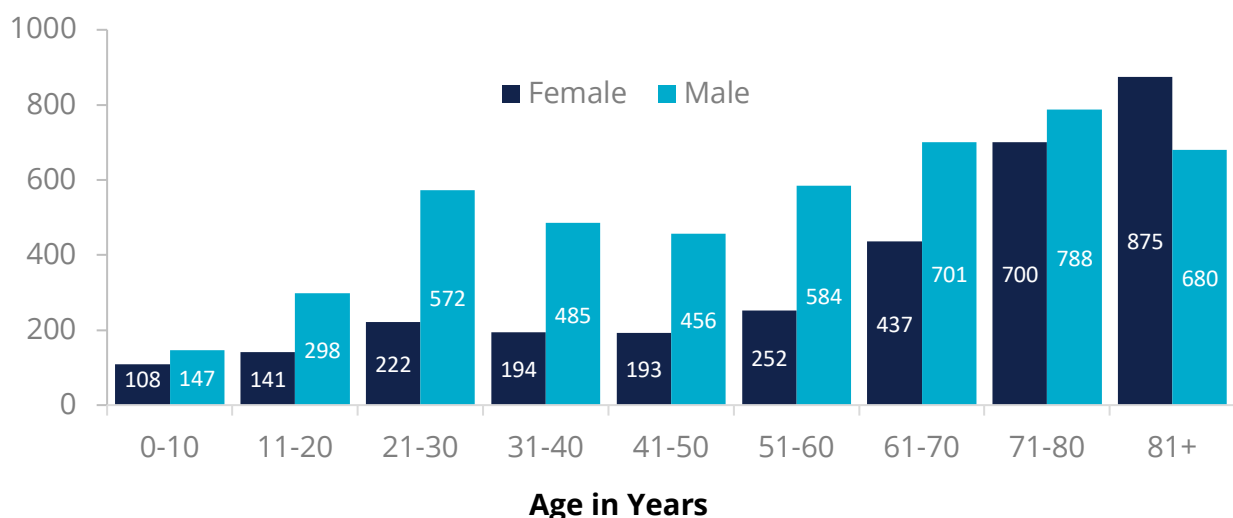


# Demographic Characteristics of TBI Patients

## 2021 TBI Registry Patients by Age Group and Sex

Most TBIs reported to the registry occurred in the older adult population: 64% of patients were over 50 years of age. Across all age groups, except adults 81 and older, more males (60%) sustained TBIs than females. In the oldest age group, age 81 and over, most patients were female. Nonetheless, after accounting for the population of each sex, males aged 81 and over, have a higher rate of TBIs than females.

### Number of Patients



Among TBI patients less than 70, the vast majority were male.

**Among patients 70 and younger, there were over two times as many male TBI patients as female patients.**

The age group with the largest gender gap was from 21 to 30 years, where the number of male patients was over three times that of female patients.

For TBI patients aged 0-70, there were 7 male patients...



...for every 3 female patients



### Key Points

- The number of TBI Patients increased with patient age. **The 81+ age group had the highest number of TBI patients.**
- Males outnumbered females in every age group except for the oldest category (81+). After adjusting for age, however, males have a higher rate of TBIs than females.
- The gender difference was especially wide for the younger age groups, where most patients were male.

## 2021 TBI Registry Patients by Race and Ethnicity

The racial/ethnic demographics of the TBI Registry patients reflect the demographics of Tennessee as a whole. Overall, **76%** of patients were non-Hispanic (NH) White.



## Rate by Race/Ethnicity (per 100,000 people)

There are differences in TBI across various race and ethnicities. For NH White Tennesseans, there were 81.8 patients reported to the Registry for every 100,000 people in the population, compared to 76.9 per 100,000 for NH Blacks. The rate was lowest for Hispanics at just 30.8 TBI Registry patients per 100,000 people in the population.



\* People who are Hispanic may be of any race.

## Key Points

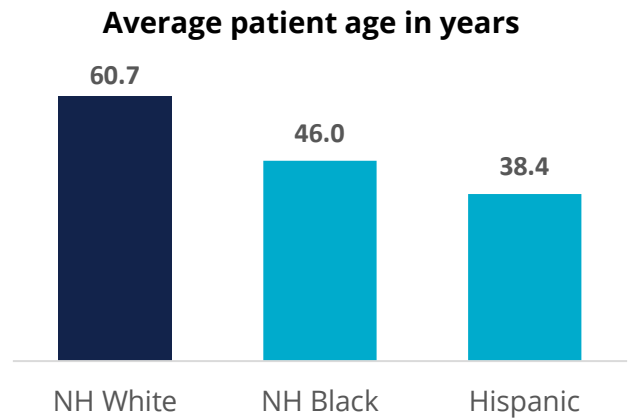
- The population that was most affected in 2021 were **NH White Tennesseans**.

## Key differences across the three main racial/ethnic groups

### Age

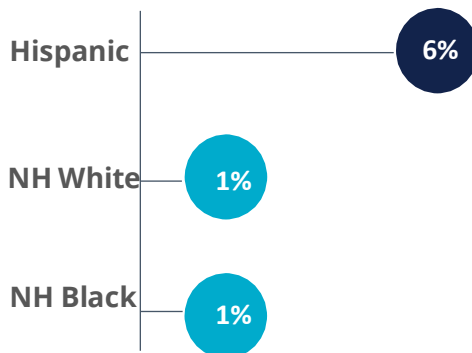
NH White patients were significantly older on average than NH Black or Hispanic patients. The average age of NH White TBI Registry patients was **60.7 years** compared to approximately **46.0 years** for NH Black patients and **38.4 years** for Hispanic patients.

Over half (53%) of NH White patients were 65 or older, compared to just 26% of NH Black patients and 15% of Hispanic patients.

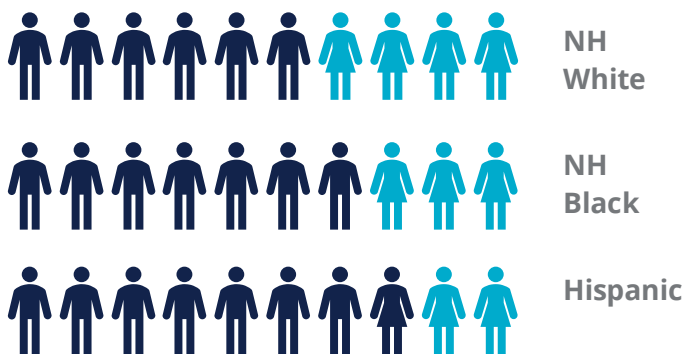


### Work-relatedness

Hispanic patients (**6%**) had the highest number of work-related injuries, compared to NH Whites (**1%**) and NH Black patients (**1%**).



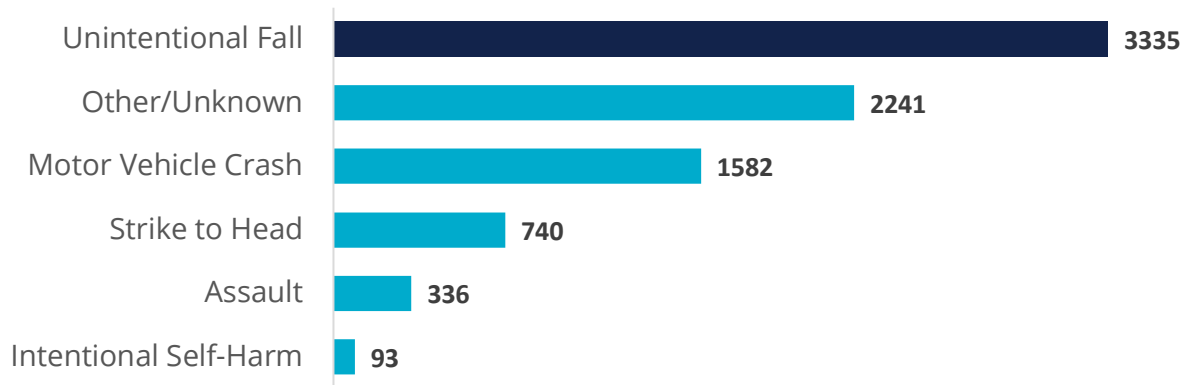
### By the percentage of patients that were male



The **male majority** seen across all TBI patients was much more pronounced for NH Black and Hispanic patients. Over half (58%) of NH White patients were **male**, compared to 67% of NH Black patients and 80% of Hispanic patients.

## External Cause of TBI

External cause refers to the mechanism by which the patient sustained their traumatic brain injury. Hospital reporters are not required to include this information, as the mechanism is often unknown, but they are encouraged to capture this whenever possible. For 2021, 78% of registry patients had information about the external cause of injury. Overall, **unintentional falls** were the most common cause of injury amongst TBI registry patients, accounting for **3,335 cases (43%** of TBI registry patients).



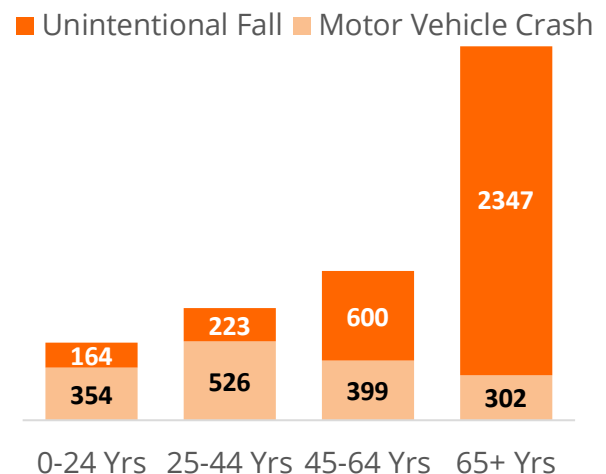
**Falls due to an “Unknown” cause accounted for 1432 cases and 809 cases were “Other.” Other included cases such as firearm discharge, sport-related injuries, and being thrown off/struck by horse.**

## TBI Registry Patients by Leading External Causes and Age

Cause of injury differed greatly by age, with motor vehicle crashes accounting for most injuries in the younger age groups, and unintentional falls most common for the older age groups.

Among patients less than 44 years, the number of TBIs resulting from motor vehicle crash was twice that of unintentional fall. However, among older the patients, the reverse was the case.

The number of TBI resulting from an unintentional fall was almost 2x motor vehicles in patients 45 and 64 and 8x in patients 65 and older. Overall, most unintentional falls were male (54%). However, females 65+ were the majority (52%).

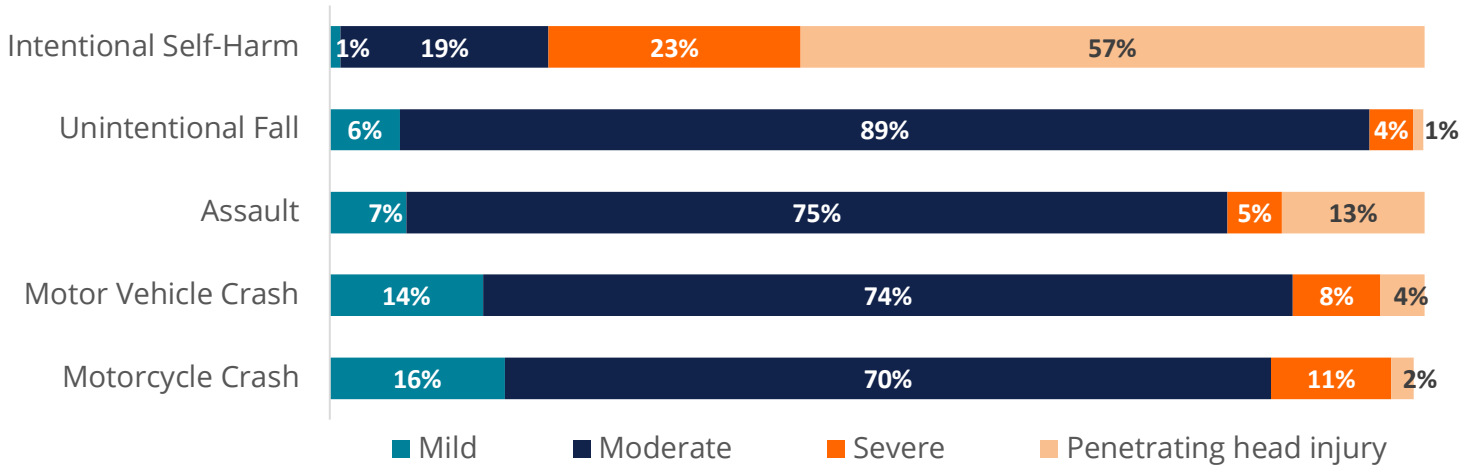


## Key Points

- Unintentional falls were the leading cause of injury for TBI Registry patients overall, but motor vehicle crashes were the cause of injury for most patients under 45 years of age.

## Severity of TBI by Cause of Injury

Severity of injury varied by external cause. Although injuries caused by intentional self-harm represented just 1% (N=113) of TBI Registry patients overall, these injuries were most likely to be categorized as **severe** and as **penetrating brain injuries**. This increased lethality reflects the dominant method of self-harm amongst these cases: 89% involved a firearm.



## Percentage of Patients that were Male



For TBIs caused by motorcycle crashes, approximately **8 out of 10** patients were **male**.



For TBIs caused by assault and intentional self-harm, approximately **3 out of 4** patients were **male**.

**Male patients** represented the majority of TBI patients within every cause of injury, but this majority was especially pronounced for assault, intentional self-harm, and motor vehicle and motorcycle crashes.



**Unintentional Fall**

54% male



**Strike to Head**

56% male



**Motor Vehicle Crash**

65% male



**Assault**

76% male



**Intentional Self-Harm**

78% male



**Motorcycle Crash**

84% male

# Patient Residence by State and County

## Top Ten Tennessee Counties by Rate

The ten Tennessee counties shown below had the highest rates of TBI registry patients per 100,000 residents. Counties with less than 11 cases were suppressed.

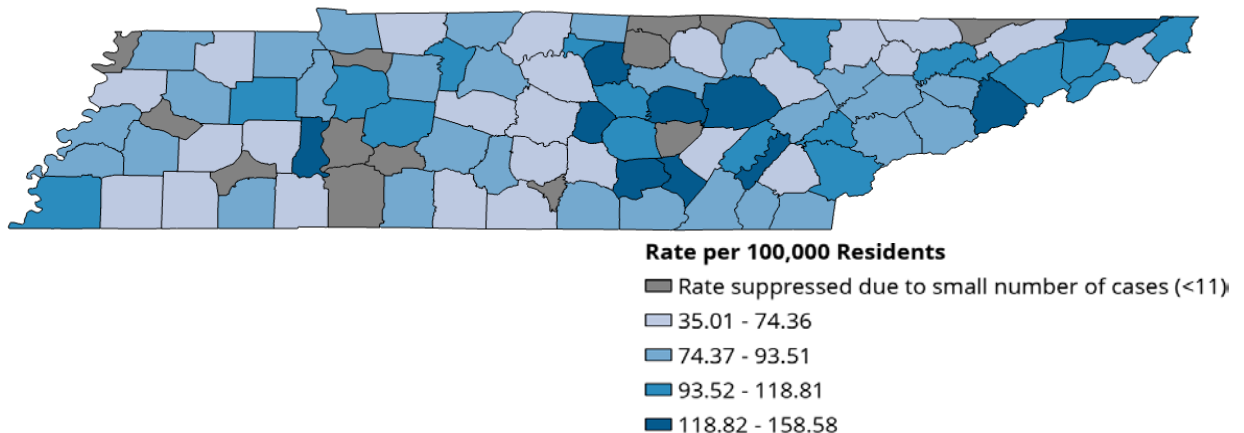


## Key Points

- Three out of four patients reported to the TBI registry were Tennessee residents, with most out-of-state residents from neighboring states.
- Sequatchie was the Tennessee county with the highest rate of TBI registry patients for 2021.

## Rate per 100,000 Residents

The counties shaded in the darkest blue are those with the highest rates of TBI patients. The map shows several areas with multiple high-rate counties clustered together, including in the Northeast, Southeast, and Upper Cumberland regions.



# Traumatic Brain Injury Program Report

July 2021 – June 2022

## Executive Summary

In 1993, the Tennessee General Assembly established the Traumatic Brain Injury (TBI) Program (T.C.A. § 68-55-101-103, § 68-55-201-205, § 68-55-301-306, § 68-55-401-402, § 68-55-501-503) within the Department of Health (TDH) to improve services for people with brain injury and their families. Due to their nature, TBIs are a major cause of death and disability. In 2020, there were approximately 19,756 TBI-related emergency department visits and hospitalizations and 1,643 TBI-related deaths in Tennessee.

This report summarizes Traumatic Brain Injury Program progress made from the state fiscal year July 1, 2021 – June 30, 2022. The TBI Program reports and collects data on the state fiscal year, which differs from data collection for the TBI Registry. Within this report the program area is addressed by first briefly citing the Tennessee Code Annotated (T.C.A.) followed by a description of program history, annual progress, accomplishments, and recommendations.

## Key Program Accomplishments



TBI Program was awarded two grants over five (5) years totaling **\$1,087,295** in federal funding from the Administration of Community Living (ACL).



TBI Program contracted with non-profit agencies to provide case management, personal care services, respite care, and education and training.



TBI Service Coordinators provided education to **2,612** individuals statewide.



Eight (8) TBI Service Coordinators provided case management to approximately **786** individuals.



TBI Program provided information and resource assistance to approximately **9,628** individuals.



Personal care services were provided to **20** residents of the Crumley House Brain Injury Rehabilitation Center and to individuals in affordable and accessible apartment facilities in Memphis.



Brain Links provided **31** trainings to **4,257** participants.



## ***TBI Advisory Council***

### **T.C.A. 68-55-102. Composition**

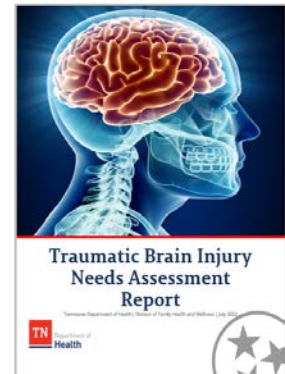
In 1993, the TBI Advisory Council held their first meeting and have continuously meet quarterly since that time. The Council is composed of nine (9) members appointed by the Governor. In FY22, the TBI Advisory Council was comprised of the following members:

<b>Council Member</b>	<b>Representation Category</b>
<b>Susan Usery</b>	Department of Education
<b>Amy Boulware</b>	Survivor, Family Member, Primary Caregiver
<b>Stephanie Congo</b>	Survivor, Family Member, Primary Caregiver
<b>Avis Easley</b>	Department of Mental Health and Substance Abuse Services, Department of Intellectual and Developmental Disabilities
<b>Alicia Fitts, Chair</b>	Survivor, Family Member, Primary Caregiver
<b>Dr. CJ Plummer</b>	Health Care Professional
<b>Lucy Crider</b>	Department of Human Services, Vocational Rehabilitation
<b>Brian Potter, Vice-Chair</b>	Survivor, Family Member, Primary Caregiver
<b>Michelle Batchelder</b>	Survivor, Family Member, Primary Caregiver

### **T.C.A. 68-55-103. Duties**

The duty of the TBI Advisory Council is to advise the TBI Coordinator in the development of program policies and procedures, make recommendations, and perform other duties as necessary for the implementation of a statewide plan to assist people with TBI and their families.

During FY22, the Council provided invaluable recommendations in the continued development and implementation of the TBI Program. A key activity that the Council participated in was the development and promotion of the statewide TBI Needs Assessment. Council members provided feedback and advice to effectively examine services and supports for people living with TBI and to examine gaps in knowledge, practices, and skills of service providers.



## **TBI Coordinator**

### **T.C.A. 68-55-201. TBI Coordinator – Designated**

A full-time TBI Coordinator has been in place since the program was established, supervising, and directing the program as described in this report. Other TBI Program staff include one (1) epidemiologist that oversees the TBI Registry and its surveillance.

The TBI Coordinator along with other department staff regularly consult with TBI Advisory Council members to secure advice and guidance in fulfilling the duties and responsibilities of the coordinator.

### **T.C.A. 68-55-202. TBI Coordinator – Duties**

#### *Funding*

As stated by legislation, the TBI Coordinator has continued to aggressively seek and obtain funding from all available private and federal sources, including Medicaid waivers, in partnership with other state agencies. All funding aids in the development, implementation, and revision of state plans and services for persons with TBI.



**Federal Funding:** In FY22, the program was awarded \$1,000,895 for a five-year grant from the Administration of Community Living (ACL) to aid in expanding statewide coordinated system of TBI services by building upon existing state infrastructure.



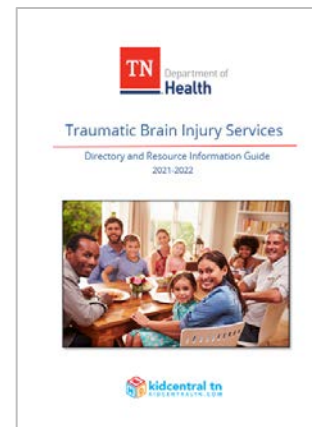
**Federal Funding:** In FY22, the program applied and was awarded \$86,400 in funding via the American Rescue Plan Act of 2021 (ARPA) from the Administration for Community Living to expand the public health workforce within the disability networks.



**Traumatic Brain Injury Waiver:** Currently, no waivers available to persons with TBI in Tennessee. The TBI community continues to promote the need of a TBI-specific Medicaid waiver, which many states have funded and implemented successfully. Waivers help people with disabilities due to TBI live independent lives – while also providing them access to funding for home, community, socialization, or work support services as well as therapy or other medical costs associated with their treatment.

### Available Programs and Services

Legislation requires the TBI Coordinator to identify available programs and services for persons with TBI. During FY22, a comprehensive resource directory, *Traumatic Brain Injury Services and Resource Information Guide* was updated and distributed statewide. Resources include post-acute rehabilitation services, long-term care programs, respite services, and day treatment programs. This resource has increased awareness of the TBI Program and other services and resources that can be utilized by eligible people with traumatic brain injuries. The directory is available on the program website: [Resources \(tn.gov\)](https://www.tn.gov/resources).



### Gaps in Service

The TBI Coordinator provides technical assistance as requested by persons with TBI, families, and providers. Examples include providing information on resources and services, referrals to rehabilitation programs, referrals to TBI service coordinators, and providing state and local data.

During FY22, the TBI Program developed, administered, and analyzed a statewide needs assessment. The objective of the assessment was to describe services and support needs for people TBI and their families and to examine gaps in knowledge and skills of TBI service providers. The results from the assessment will serve as a basis for developing and enhancing needed programs and services across Tennessee.

### Key Findings

**Most common barriers** to care reported by persons with TBI include:



1. Location of services (not located locally or conveniently, long distance travel, and difficulty accessing transportation).
2. Lack of support or advocacy.
3. Enrollment process (difficulty understanding paperwork and getting started with services and supports).

**Most sought-after services** needed by persons with TBI include:



1. Information and referral services.
2. Financial management assistance.
3. TBI service coordination or case management.
4. Recreation services.
5. Legal or advocacy services.

Top **barriers preventing desired living arrangements** for persons with TBI:



1. Insufficient financial resources.
2. Lack of accessible and affordable housing.
3. Lack of conveniently located housing to facilitate care.

Most **common behavioral and mental health** concerns reported by persons with TBI:



1. Irritability
2. Poor Decision-Making Skills
3. Impulsiveness
4. Anxiety
5. Depression

**Least available community living support services** for persons with TBI:



1. Residential Housing – Behavioral Issues
2. Supported- Housing
3. Personal Assistance Services

Top three **COVID-19 pandemic concerns** for persons with TBI, family members, and caregivers include the following:



1. Isolation (i.e., lack of social or emotional support, physical support).
2. Mental Health (i.e., increased depression, anxiety, suicidal thoughts, other mental health concerns).
3. Financial Stability (i.e., unable to pay monthly or day-to-day bills).



TBI **service providers noted that COVID-19 pandemic** affected TBI survivor's access to care (i.e., medical services, information, and resources). **Barriers to access to care** was associated with **increased isolation and mental health**

\*Note: results of the assessment were not statically significant due to small sample size.

The TBI Coordinator and Advisory Council have made plans to collaborate and utilize the statewide traumatic brain injury needs assessment results to revise the state plan with short-term and long-term goals and objectives.

### *Surveillance Data: TBI Registry*

Legislation requires the TBI Coordinator to implement, oversee, receive, and evaluate surveillance data from the Tennessee brain trauma registry. Surveillance data is used to develop and revise the state plan to meet the changing needs of the population.

Legislation also requires the TBI Coordinator to evaluate surveillance data regarding the quality of services provided, including outcome and impact on the quality of life of persons with TBI. Currently, surveillance data in the TBI registry does not capture the quality of services provided. During FY22, the TBI Coordinator began to investigate possible ways to better evaluate TBI Program impact and outcomes.

### *Traumatic Brain Injury Awareness and Training*

In FY22, the TBI Program, including contracted non-profit agencies, provided trainings and education throughout the state on topics promoting the causes, effects, prevention, treatment, and rehabilitation of head trauma injuries.

The TBI Coordinator in collaboration with Brain Links and the Brain Injury Association of Tennessee (BIATN) virtually hosted the 32<sup>nd</sup> Annual Brain Injury Survivor, Family and Caregiver Event. Topics included mental health, resilience, and resources with a total of 60 persons with brain injury, family members, caregivers, and service providers in attendance.

TDH has been a recipient of the Center for Disease Control (CDC) Core Violence and Injury Prevention Grant since 2005. Since 2018, TBI prevention has been a focus area for the grant. As a result, TBI is an educational topic at each of the quarterly injury prevention stakeholder meetings. The meetings are attended by state staff and other key stakeholders.

Contracted non-profits agencies, including the service coordinators and Brain Links, regularly present at seminars, workshops, conferences, and events to aid in enhancing the ability for state personnel to meet the needs of people with brain injury. During FY22, service coordinators and Brain Links staff provided trainings to attendees such as clinical/medical providers, coaches and other athletic personnel, domestic violence services staff, in-home services and supports staff, law enforcement personnel, and criminal justice system staff.



A total of **81 trainings** and presentations occurred across the state with a total number of **4,257 attendees**.

During FY22, contracted Brain Links staff designed and revised training materials, outreach materials and fact sheets. Examples of materials include: (1) Survivors, Families and Caregivers Toolkit; (2) TBI Toolkit for Service Professionals; (3) TBI Toolkit for Healthcare Providers, 3<sup>rd</sup> Edition; and (4) TBI Toolkit for School Nurses, 3<sup>rd</sup> Edition. All materials are available in English and Spanish at the Brain Links website: [Helpful Resources \(tndisability.org\)](https://www.tndisability.org).

The TBI Coordinator along with the TDH Injury Prevention Program continues to distribute and promote the *Center for Disease Control (CDC) Pediatric Mild Traumatic Brain Injury Guidelines*. Guidelines have been distributed to members of the Tennessee American Academy of Pediatrics, Tennessee Academy of Family Physicians, Cumberland Pediatric Foundation, and the Children's Emergency Care Alliance to promote information on the treatment of mild TBI.

The TBI Program has continued partnering with GetSchooledOnConussions to provide and promote the Teacher Acute Concussion/COVID Tool (TACT). The TACT aids in delivering Return to Learn (RTL) content into the hands of busy classroom teachers and other school personnel. TACT empowers classroom teachers to do all they can to support students with cognitive inefficiencies after a concussion or brain injury.



**34** teachers and other school personnel have utilized the TACT.



**142** teachers and other school personnel have been trained on the TACT.

In addition, the TBI Coordinator attended the National Association of State Head Injury Administrators (NASHIA) conference to learn new information, resources, and services within the TBI field. This allows for better educate other state personnel working with people with TBI.

### *TBI Clearinghouse*

The TBI Clearinghouse has been operational since 1994 and is accessible via a toll-free number (1-800-882-0611) or via the state TBI Program website at [Traumatic Brain Injury \(tn.gov\)](https://www.tn.gov). Information is routinely, at least quarterly, updated on available services, resources, and education across the state and nation.

### Statewide Compliance and Licensure

Until July of 2022, TDH oversaw the certification and licensure of healthcare facilities in Tennessee. Starting in July of 2022, the board of licensing and certifying healthcare facilities moved to a new agency, the Health Services and Development Agency (HSDA). The TBI Coordinator works with appropriate staff to ensure licensure compliance and to monitor and updated licensure requirements specific to this population, as needed. Annually, the TBI Coordinator conducts monitoring site visits to ascertain that the scope of services in program contracts are being adequately and appropriately addressed by the contractor. During FY22, all site visits were deemed satisfactory.

### Case Management

In accordance with legislation, the TBI Program has developed a case management system for persons with brain injury. Currently, there are eight (8) service coordinators employed via contracts by various non-profit entities. Some contracts are based in small brain injury or disability-related agencies and others are in hospital or rehabilitation settings. Service coordinators across the state assist people with brain injury and their families in all 95 Tennessee counties. Each agency has established a Brain Injury Support Center in its service area to assist children and adults. Services include providing information and education on TBI; developing a comprehensive plan of care; providing referrals to available resources; coordinating services for individual client advocacy; assisting in applying for and access services; overseeing local area support groups and developing new programs and activities.



In FY22, service coordinators provided case management to approximately **253** new persons with brain injuries.



In FY22, service coordinators provided case management to approximately **533** returning persons with brain injuries.

During FY22, service coordinators across the state held TBI Support Groups both in-person and virtually for persons with brain injury, family members, caregivers, and service professionals.



A total of **53 in-person and virtual support groups** were held with approximately **945 attendees**.



Service Coordinators **referred 358 people to TBI Support Groups**.



Service coordinators provided information and resource assistance to approximately **9,565** individuals.



### *Brain Injury Association of Tennessee (BIATN)*

During FY22, the TBI Coordinator has provided technical assistance to BIATN Executive Director, staff, and board members. The TBI Coordinator has worked with BIATN to improve the organizations website and develop an organizational plan. This collaboration aims to improve the quality of life of individuals, families, caregivers, and healthcare professionals impacted with brain injury by providing critical information, education, support, prevention, and advocacy through community-based, state, and national resources.

### **TBI Registry**

T.C.A. 68-55-203 and 204

In 1996, the TBI Registry began collecting data on brain injury in the state. The registry is supported by an epidemiologist housed within the TBI Program. The epidemiologist ensures that the data is timely, accurate, and complete. Mandated reporting hospitals submit data on inpatients (length of stay greater than 24 hours) or any deceased patients with TBI-specific ICD-10 diagnosis codes. Patients seen in emergency room who were sent home the same day are not included in the registry. Hospitals are required to report within six (6) weeks following the close of the quarter. All hospitals in the state are currently in compliance with this legislation.

In 2021, of 7,838 TBI patients reported to the registry, 6,903 were discharged from the hospital alive and the remaining 935 were deceased.\*



In FY22, **7,063** registry letters were sent to persons with brain injury in Tennessee.

The registry serves to connect people with brain injury with needed services and resources. Tennesseans reported to the registry receive a letter and program brochure to bring awareness of services available through the TBI Program. For many, this letter is the first link to information regarding needed resources and services.

\*Note: see the annual TBI Surveillance Report for an analysis of registry data.

## Traumatic Brain Injury Trust Fund

### T.C.A. 68-55-401. Fund Established

The TBI Trust Fund has been established and is funded through increased fines of six (6) traffic violations. Those fines, listed in legislation (T.C.A. 68-55-301-306), are collected by the Department of Safety and deposited into the TBI Trust Fund. Fund annual revenues average approximately \$1.0 million. Over the years, the Fund has seen a significant decrease in revenue. Since FY15, revenues have decreased approximately 20% (Figure 1).

One major contributing factor to decreased revenues is the COVID-19 pandemic. Comparing FY20 and FY21, revenues decreased by 20%. This significant decrease can be attributed to decreased driving time, decreased written traffic citations, and decreased traffic fines. In FY22 revenues only increased 2%.

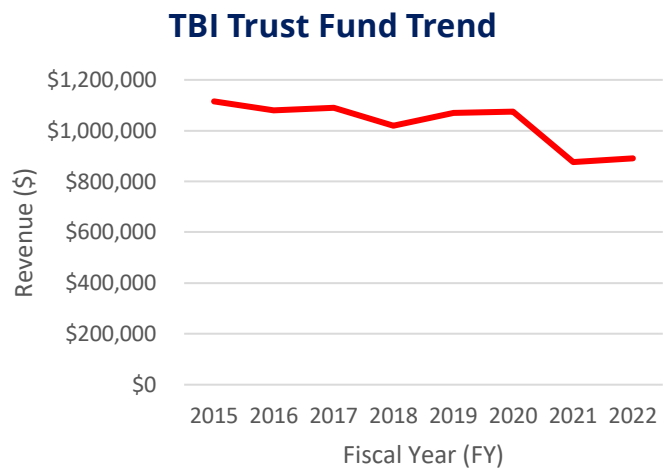


Figure 1. TBI Trust Fund revenues

### T.C.A. 68-55-402. Grant Programs

In FY22, the TBI Program awarded competitive and sole source grants to agencies and across the state. Grants were awarded to provide personal care services, service coordination, recreation and respite services, training, and education. The TBI Program is contracted with:

Agency/Organization	Contracted Services
<b>Brain Injury Association of Tennessee</b>	Service Coordination
<b>Chattanooga Area Brain Injury Association</b>	Service Coordination
<b>Crumley House Brain Injury Rehab Center</b>	Service Coordination Personal Care Services
<b>Disability Rights Tennessee</b>	Service Coordination
<b>Fort Sanders Regional Medical Center</b>	Service Coordination
<b>Jackson Madison County General Hospital District</b>	Service Coordination
<b>Tennessee Community Resource Services Agency</b>	Personal Care Services
<b>Easterseals Tennessee</b>	Recreation and Respite Services
<b>Tennessee Disability Coalition</b>	Training and Education

## Youth Sports-Related Injuries

### T.C.A. 68-55-502 and 503. School and Community-Based Youth Athletic Activity

In 2018, Tennessee passed legislation aimed at reducing youth sports concussion and increasing awareness of traumatic brain injury. Both public and private school sports and recreational leagues for children under 18 that require a fee are affected by the law, which covers all sports.

TDH annually reviews the approved pertinent information and forms to inform and educate coaches, school administrators, youth athletes, and their parents or guardians of the nature, risk, and symptoms of concussion and heady injury, including continuing to play after a concussion or head injury. Required materials are free of charge and available at the TDH website: [TN Sports Concussion Law](#).



To provide needed resources on concussion, the TDH has continued to collaborate with Vanderbilt Medical Center and other professionals to annually review and update the Tennessee *Return to Learn/Return to Play: Concussion Management Guidelines*. The guidelines are widely available at the TDH TN Sport Concussion Law webpage listed above. The document persists to be a valuable resource for educators, coaches, health care providers, families, and athletes.

The TBI Program also promotes the Safe Stars Initiative, which is a collaboration between the TDH and the program for Injury Prevention in Youth Sports at the Monroe Carrell Jr. Children’s Hospital at Vanderbilt. The program recognizes youth sports leagues in Tennessee that adhere to high standards of safety. The program helps leagues implement policies on various safety topics, such as concussion education, injury prevention, and weather safety. More information on the Safe Stars Initiative can be found at [Safe Stars Initiative \(tn.gov\)](#).



In FY22 a total of **51 organizations** have been recognized as a Gold Standard Safe Stars Youth Sports

In July 2021, the Safe Stars Act (T.C.A. 49-6-1501 to 1503) was passed stating that with the 2022-2023 school year each Tennessee Local Education Agency and public charter school that provides a school youth athletic activity must implement pertinent safety standards.

## ***Conclusion and Recommendations***

Traumatic brain injury contributes to a significant proportion of death and disability in the State of Tennessee. Fortunately, T.C.A. 68-55-203 has enabled the TBI Program to assist over 150,000 Tennesseans with brain injury since this legislation came into effect. Continuous surveillance of TBI and needs assessment of individuals affected by TBI allow for targeted interventions that may alleviate this burden moving forward.


Advancements in neurological science and clinical care allow for improved intervention and better long-term outcomes for TBI patients. However, these injuries still occur at alarming rates and often, patients are still in need of long-term assistance. The findings in this report not only emphasize the continued need for these TBI patient resources in Tennessee, but also highlight the opportunity to enhance TBI prevention efforts across the state.

Although much has been accomplished, injuries persist. Work must continue to address the needs of all people with brain injury in the state, particularly in the areas of Medicaid waivers, residential services, day programs, long-term care, and rehabilitation.



The Council extends their gratitude for the opportunity to work to improve the lives of people with traumatic brain injury throughout Tennessee.



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