



Department of
Health



TBI TRAUMATIC
BRAIN INJURY
**ANNUAL
REPORT**
2023 | FAMILY HEALTH
AND WELLNESS





The Tennessee Department of Health expresses its gratitude to the agencies and individuals who have contributed to this report and to all persons with traumatic brain injuries, their families, and caregivers.

TRAUMATIC BRAIN INJURY PROGRAM STAFF

Ashley Bridgman | MPH, MS
TBI Program Director
☎ 615.741.1230
✉ Ashley.N.Bridgman@tn.gov

Brenda Ruiz | MPH
TBI Program Epidemiologist
☎ 615.253.2802
✉ Brenda.Ruiz@tn.gov

Lorie Bridges | BA
Communications Specialist
☎ 615.741.0315
✉ Lorie.Bridges@tn.gov



For questions or further information, please contact the TBI Program director via the information above.



TENNESSEE DEPARTMENT OF HEALTH STAFF

Ralph Alvarado, MD, FACP
Health Commissioner

Tobi Amosun, MD, FAAP
Deputy Commissioner for Population Health

Elizabeth Harvey, PhD, MPH
Assistant Commissioner for Family Health And Wellness

Angela Miller, PhD, MSPH

Ashley Moore, MPH

Ibitola Asaolu, DrPH, MPH

Terrence Love, MS

FY23 TBI ADVISORY COUNCIL MEMBERS

Michelle Batchelder | Family Member

Amy Boulware | Family Member

Lucy Crider | Department of Vocational Rehabilitation

Stephanie Congo | Survivor

Avis Easley | DMHSAS/DIDD

Alicia Fitts | *Chair* | Family Member

Dr. C.J. Plummer | Health Care Professional

Brian Potter | *Vice-Chair* | Caregiver

Susan Usery | Department of Education

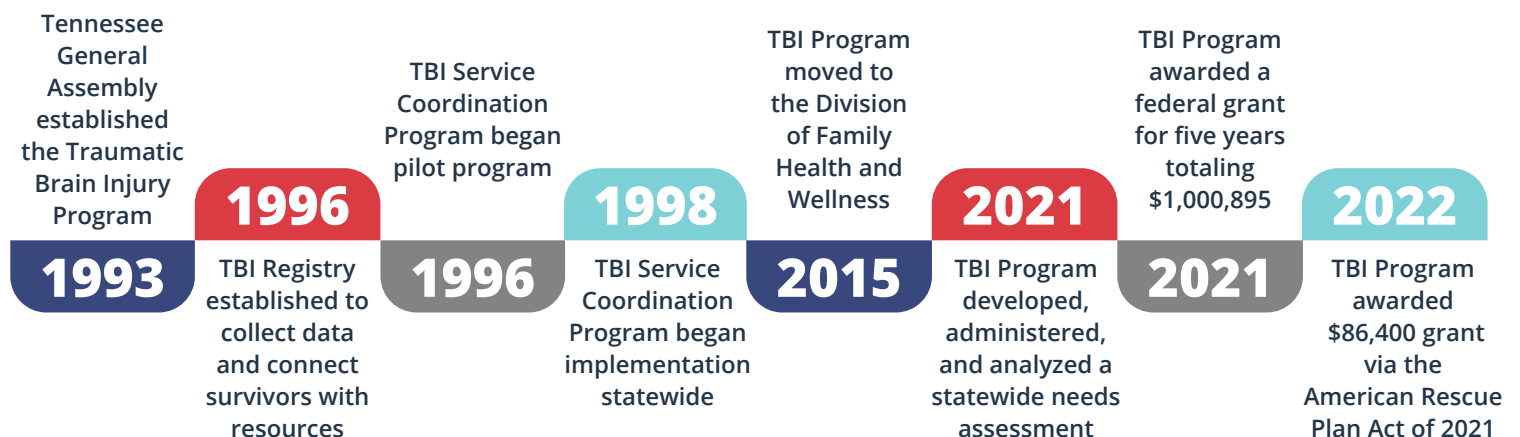


1993 | The Tennessee General Assembly established the Traumatic Brain Injury (TBI) Program (T.C.A § 68-55-101-103, § 68-55-201-205, § 68-55-301-306, § 68-55-401-402, § 68-55-501-503) within the Tennessee Department of Health (TDH) to improve services for persons with brain injury and their families. 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 duties; development and implementation of a 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 persons with brain injury.

1996 | The TBI Registry was established and began collecting brain injury data with the purpose of connecting persons with brain injury to available resources and services. In Tennessee, all non-federal hospitals are mandated to report any TBI-related hospital stays that are greater than 24 hours, except for patients who have 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.



MILESTONES



EXECUTIVE SUMMARY

The 2023 Traumatic Brain Injury (TBI) Annual Report is split into two sections including an analysis of data collected by the Tennessee Department of Health's Traumatic Brain Injury Registry and the Traumatic Brain Injury Program. The first section of the report focuses on TBI surveillance data collected throughout the 2022 calendar year and specific diagnostic requirements as established by T.C.A. § 68-55-203. Data from the TBI Registry has been advantageous in detecting populations at risk and prevalent mechanisms of TBI to improve prevention efforts.

The second section of this report focuses on a comprehensive overview of the progress made within the TBI Program during the state fiscal year, July 1, 2022 – June 30, 2023. Within this report, the program area is addressed by briefly citing the Tennessee Code Annotated (T.C.A.) followed by a description of program history, annual progress, accomplishments, and recommendations.

The findings of this report serve to continue and enhance program efforts to better serve persons with brain injury, their families, caregivers, and service providers.



**THE TBI
REGISTRY**
collects data on a
CALENDAR YEAR
reporting reflects
**JANUARY 2022 –
DECEMBER 2022**



**THE TBI
PROGRAM**
operates on the
STATE FISCAL YEAR
reporting reflects
**JULY 2022 –
JUNE 2023**



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's TBI surveillance data followed by TBI Program progress, and other program components.



KEY SURVEILLANCE FINDINGS



TOTAL: During the **2022** calendar year, **8,007 patients** met criteria for required reporting to the TBI Registry. Of these **7,089** were **discharged** from the hospital **alive** and the remaining **918** were **deceased**.



DISCHARGE STATUS: A substantial proportion of TBI patients reported to the registry required extended care following their injury: **37% of patients** were **discharged** from the hospital **to rehabilitation, skilled nursing, or other long-term care facilities**.



AGE: **65%** of TBI patients reported to the registry were adults **over 50** years of age.



GENDER: Overall, **60%** of TBI patients were **male**. 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 76% of Hispanic patients were male.



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 willful self-harm, assault and motor vehicle crashes, where males made up 75%, 71% and 65% of TBI patients respectively.



ANNUAL TREND: While not statistically significant, the total number of TBI Registry patients for **2022** represented a **2% increase** from 2021 and 0.2% decrease from 2018-2022.

KEY PROGRAM ACCOMPLISHMENTS



TBI Program continued collaborative statewide partnerships with 10 non-profit agencies and organizations that facilitated the provision of essential services such as case management, personal care services, respite care, as well as education and training initiatives.



Eight (8) TBI Service Coordinators provided case management to approximately 1,085 persons with traumatic brain injury.



TBI Program partnered with the Brain Injury Association of Tennessee (BIATN) to develop an online referral system to the state TBI Service Coordination Program. During FY23, 133 individuals were connected to their local TBI Service Coordinator through the online referral system.

OVERALL, THE TBI PROGRAM PROVIDED **INFORMATION AND RESOURCE ASSISTANCE** TO APPROXIMATELY **10,686 INDIVIDUALS**.



Personal care services were provided to 17 residents at the Crumley House Brain Injury Rehabilitation Center and to 10 residents at two (2) affordable and accessible apartment facilities in Memphis.



Brain Links, a program under the Tennessee Disability Coalition, conducted 37 trainings with a total of 2,050 attendees.



TBI Services Coordinators offered educational presentations, trainings, webinars, and exhibits to 6,151 individuals statewide.

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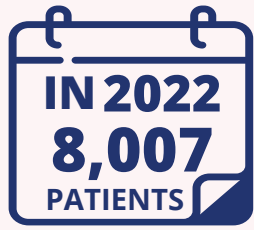
TBI TRAUMATIC
BRAIN INJURY
**SURVEILLANCE
REPORT**

January 2022 – December 2022

SURVEILLANCE REPORT SUMMARY

◀ JANUARY 2022 – 02
DECEMBER 2022

TOTAL



7,089
were discharged from the hospital
ALIVE



918
were
DECEASED

DISCHARGE STATUS

37%
of 7,089 patients*
were **DISCHARGED TO**



REHABILITATION



SKILLED NURSING



LONG-TERM CARE

**A substantial proportion of TBI patients reported to the registry required extended care following their injury.*

CAUSES

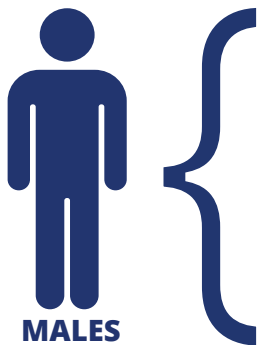


FALLS were the leading cause of TBI (42%)

Followed by **MOTOR VEHICLE CRASHES** (20%)



In 2022, there were more male patients across all injury categories, particularly in cases of:



75% Willful Self-Harm Injuries

71% Assault-Related Injuries

65% Motor Vehicle Crash-Related Injuries

GENDER DISPARITIES



For **EVERY FIVE TBI REGISTRY PATIENTS** less than 81 years, **THREE** were **MALE*** (60%)

**There were more male than female patients across all racial/ethnic groups, with Hispanics having the most pronounced disparity.*

TYPE OF INJURY

95%
of TBIs involved **INTRACRANIAL INJURIES** sometimes in conjunction with other TBI diagnoses



ANNUAL TRENDS

There was a slight increase in the **NUMBER OF PATIENTS** reported to the TBI registry in 2022:



2% INCREASE*
2021 - 2022

**The increase in TBIs noted between 2021 and 2022 was not statistically significant.*

AGE



ALMOST 2/3 patients reported to the registry were **ADULTS OLDER THAN 50 YEARS OF AGE (65%)**

TBI

A traumatic brain injury is a disruption in the normal function of the brain caused by a bump, blow, jolt to the head, or penetrating head injury.



► The pyramid presented below highlights data derived from both vital records and hospital discharge data, displaying the different levels of severity seen in TBI incidents (limited to ED visits, hospitalizations and deaths).

Given that the TBI Registry encompasses a portion of the overall TBI cases, these data assume a critical role in Tennessee's TBI surveillance efforts by encompassing all emergency department visits and hospital admissions. It is noteworthy that the data pertain to the year 2021, the latest data available, and stands distinct from the subsequent pages which present data exclusively from the TBI Registry.

Compared to the hospital discharge data from 2020, the most pronounced difference was in the number of nonfatal emergency department visits for TBI. There were over 2,000 more nonfatal emergency department visits for TBI in 2021.

Note: The figure describes the burden of TBI deaths and injuries in Tennessee based on latest (2021) and finalized hospitalization and death records.

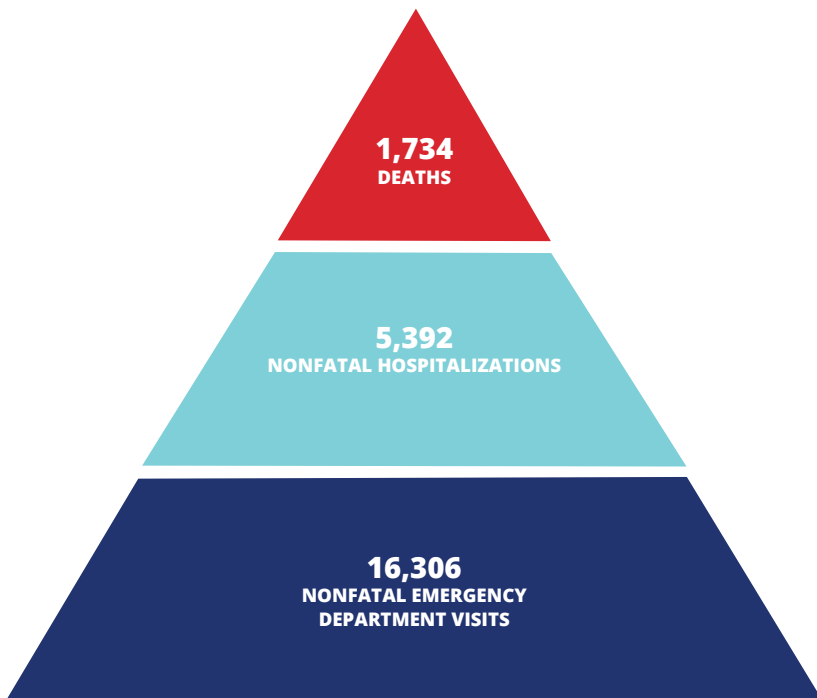
Due to their nature
TBIs ARE A MAJOR CAUSE OF DEATH AND DISABILITY,
making these injuries a significant public health problem across the United States.



IN 2021,
23,432 TENNESSEANS
had a TBI-related emergency department visit, hospitalization, or death.



SEVERITY OF TBI
23,432 Tennesseans | TBI-Related Deaths¹,
Hospitalizations, and Emergency
Department Visits² in 2021



1. Deaths, Tennessee Department of Health, Office of Vital Records and Vital Statistics
2. HDDS, Tennessee Department of Health, Office of Population Health Surveillance



**JANUARY 2022 -
DECEMBER 2022**

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. These data are for the calendar year 2022.

24 HOURS
Only hospital stays longer than 24 hours are reported to the TBI Registry. The numbers shown do not account for all the TBIs across the state.

**ANNUAL TRENDS IN TBI
REGISTRY PATIENTS**

**2018 -
2022**

APPROXIMATELY
8,000
PATIENTS
PER YEAR

**2%
INCREASE*** **↑** **2021 -
2022**

**The increase in TBIs noted between 2021 and 2022 was not statistically significant.*

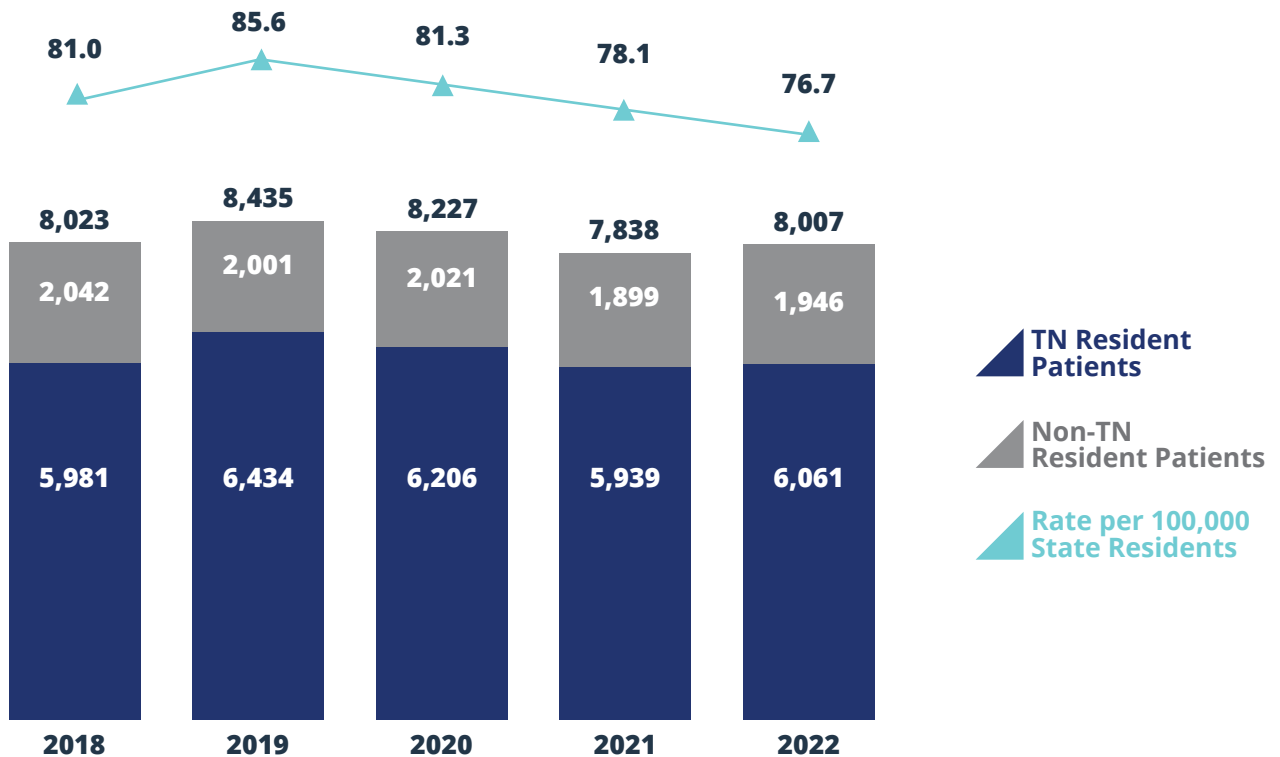
2018 - 2022



about
3 in 4

of all TBI patients were
TENNESSEE RESIDENTS

NUMBER AND AGE-ADJUSTED RATE OF TBI REGISTRY PATIENTS | 2018-2022



▼ BREAKDOWN BY MORTALITY



In 2022, **8,007 PATIENTS** were reported to the **TBI REGISTRY**



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 the **8,007 TBI PATIENTS** reported to the registry in 2022, **7,089** were **DISCHARGED** from the hospital **ALIVE** and the remaining **918** were **DECEASED**.



The **AVERAGE** length of **HOSPITAL STAY** amongst all TBI Registry patients was **7.9 DAYS**.

▼ DISCHARGE STATUS OF NONFATAL INJURIES (N=7,089)

50%



of TBI Registry patients with non-fatal injuries were

DISCHARGED HOME.

50%



of TBI Registry patients with non-fatal injuries **REQUIRED FURTHER CARE** and were discharged to rehabilitation, skilled nursing, or other long-term care facilities.

37%

Discharged to rehabilitation, skilled nursing, or other long-term care facilities

11%

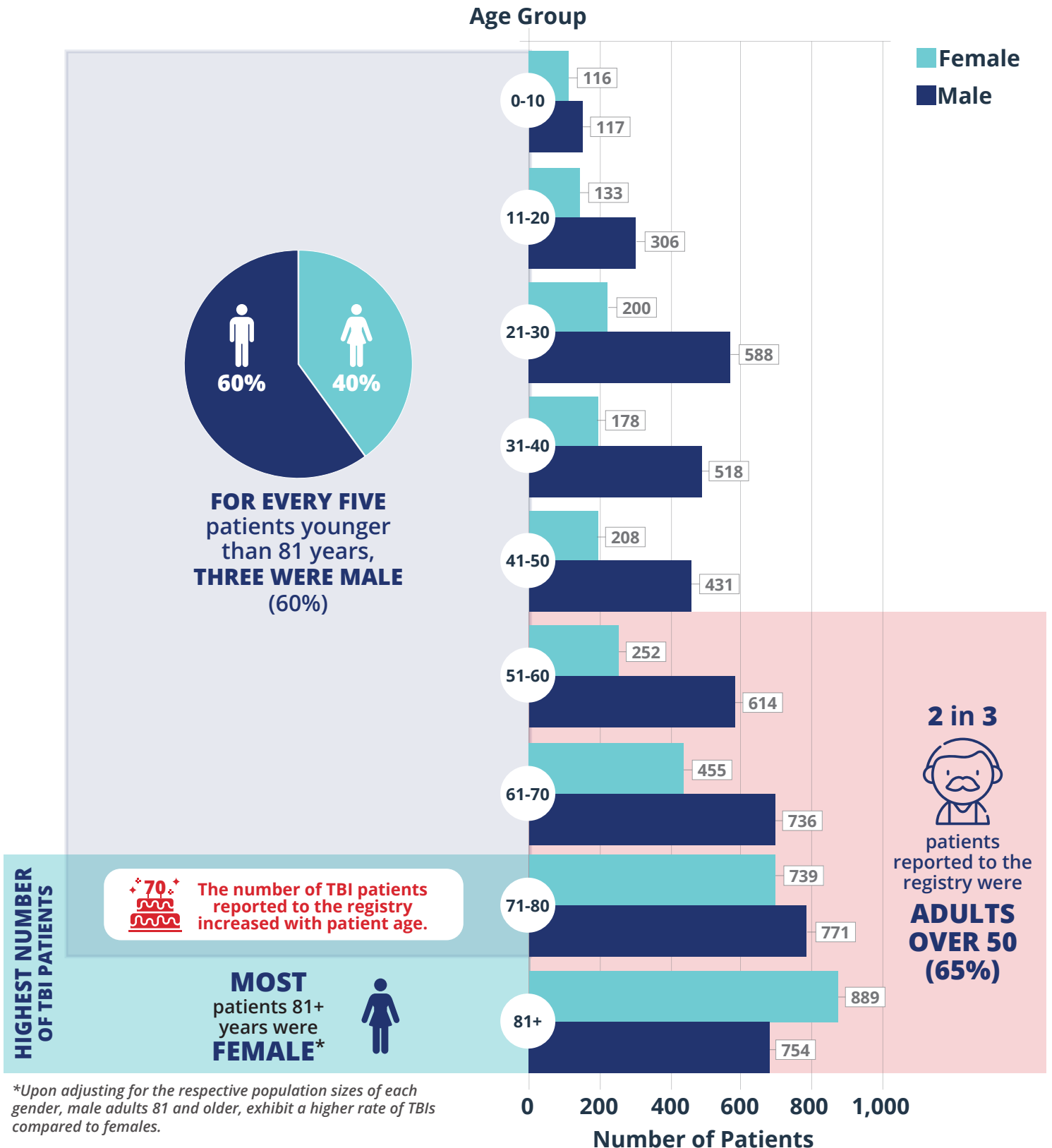
Discharged to the care of home health service organizations

2%

Discharged to another hospital for further care

DEMOGRAPHIC CHARACTERISTICS of TBI PATIENTS

2022 TBI REGISTRY PATIENTS BY AGE GROUP AND SEX



*Upon adjusting for the respective population sizes of each gender, male adults 81 and older, exhibit a higher rate of TBIs compared to females.

The racial/ethnic demographics of the TBI Registry patients reflect the demographics of Tennessee as a whole. There are differences in TBI across various races and ethnicities. Among patients reported to the registry:

74%
 were
 non-Hispanic
 White

14%
 were
 non-Hispanic
 Black

9%
 were
 non-Hispanic
 Other/Unknown

3%
 were
 Hispanic*

▾ **RATE/ETHNICITY**
 per 100,000 population

40.0

HISPANIC*
 TBI patients were reported to the registry for every 100,000 people in the Tennessee population

72.5

NON-HISPANIC BLACK
 TBI patients were reported to the registry for every 100,000 people in the Tennessee population

80.8

NON-HISPANIC WHITE
 TBI patients were reported to the registry for every 100,000 people in the Tennessee population

*People who are Hispanic may be of any race.

▾ IN 2022, NON-HISPANIC WHITE TENNESSEANS WERE MOST AFFECTED BY TBI.

▾ **WORK-RELATED TBI DISPARITY**

10%

1%

1%

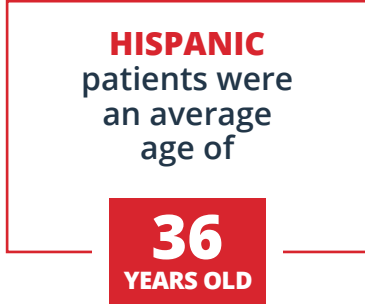
Hispanic patients had the highest number of work-related injuries.

- Hispanic Patients
- Non-Hispanic White Patients
- Non-Hispanic Black Patients

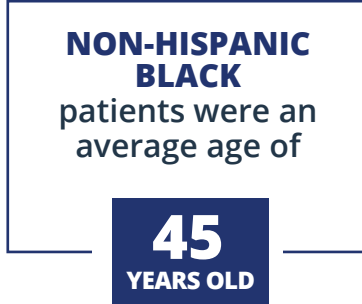


KEY DIFFERENCES ACROSS THE THREE MAIN RACIAL/ETHNIC GROUPS

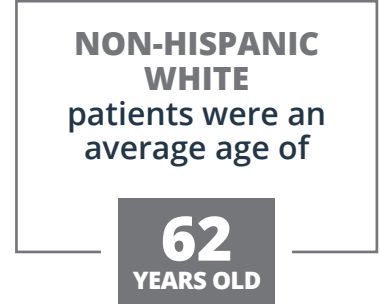
AGE



12%
of Hispanic patients were 65 or older



23%
of non-Hispanic Black patients were 65 or older



55%
of non-Hispanic White patients were 65 or older

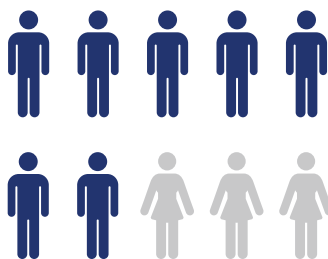
✓ RACIAL AND ETHNIC MINORITIES WERE DIAGNOSED WITH TBI AT A YOUNGER AGE. THE AVERAGE AGE OF HISPANIC AND NON-HISPANIC BLACK TBI REGISTRY PATIENTS WAS AT LEAST 17 YEARS YOUNGER THAN NON-HISPANIC WHITE TBI REGISTRY PATIENTS.

SEX

HISPANIC and NON-HISPANIC BLACK MALES had a **HIGHER BURDEN OF TBIs** than non-Hispanic White males.



Hispanic Patients **76%**



NH Black Patients **67%**



NH White Patients **58%**

EXTERNAL CAUSE OF TRAUMATIC BRAIN INJURY

NUMBER OF TBI PATIENTS BY DIAGNOSIS CATEGORY

The most common TBIs reported were intracranial injuries. Most registry patients (95%) were diagnosed with **AT LEAST ONE** intracranial injury.



7,597
INTRACRANIAL INJURY

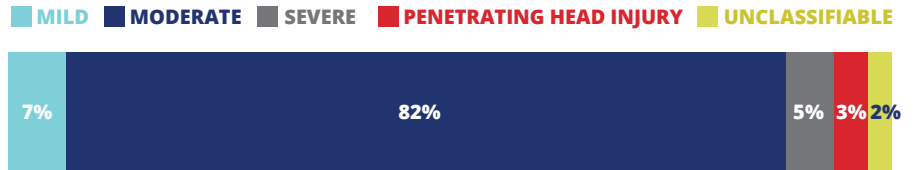


1,853
SKULL FRACTURE



630
CONCUSSION

TBIs reported to the registry are classified (in order of increasing severity) as: mild, moderate, severe, or penetrating head injury.



Other types of TBI such as pediatric abusive head trauma, crushed skull, or optic injuries were also reported.

REGISTRY TOTALS FOR 2022 | BY EXTERNAL CAUSE (N=8,007)

Sum of percentages is greater than 100% due to some patients having more than one external cause.



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.



42%
UNINTENTIONAL FALLS



30%
UNKNOWN & OTHER*



20%
MOTOR VEHICLE CRASHES



9%
STRIKE TO HEAD



3%
ASSAULT



1%
INTENTIONAL SELF-HARM



In 2022, 70% of registry patients had information about the external cause of injury



Unintentional falls were the leading cause of injury, accounting for 3,366 TBI registry patients (42%)



1,834 were injuries due to an unknown cause

599 injuries were due to other* causes

*Other includes cases such as: firearm discharge, sport-related injuries, being thrown off/struck by horse, etc.

TBI REGISTRY PATIENTS BY LEADING EXTERNAL CAUSES: UNINTENTIONAL FALLS AND MOTOR VEHICLE CRASHES

CAUSE OF INJURY DIFFERED GREATLY BY AGE



Among TBI patients **44 YEARS** or younger, most injuries occurred due to **MOTOR VEHICLE CRASHES**

Among patients less than 44 years, the number of TBIs resulting from motor vehicle crashes was almost twice (1.7 times) that of unintentional falls.



Among TBI patients **45 YEARS** or older, most injuries occurred due to **UNINTENTIONAL FALLS**

The number of TBIs resulting from unintentional falls was almost 4 times that of motor vehicle crashes in patients 45+ years.

TBIs caused by unintentional falls in patients 65+ were:



MOST COMMON AMONG FEMALES* (53%)



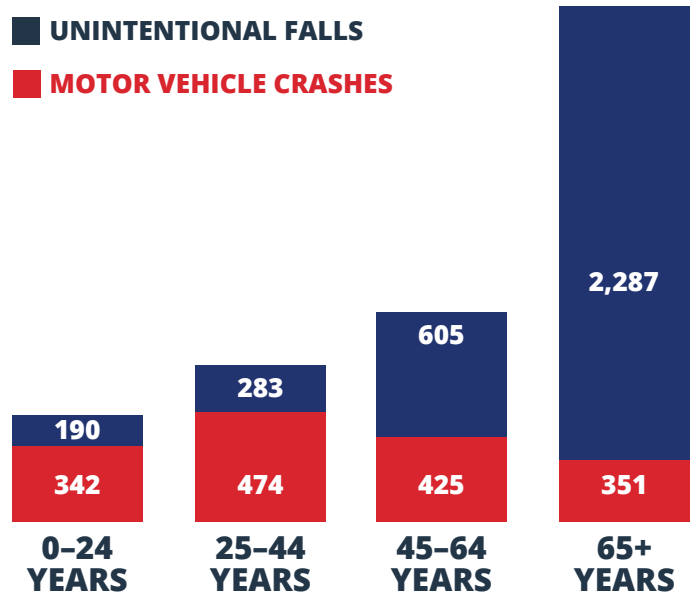
6.5 TIMES MORE LIKELY THAN A TBI CAUSED BY MOTOR VEHICLE CRASHES

**After accounting for the population of each sex, males aged 81 and over, have a higher rate of TBIs than females.*

EXTERNAL CAUSE AND AGE

UNINTENTIONAL FALLS

MOTOR VEHICLE CRASHES



GENDER DISPARITIES IN MOTOR VEHICLE CRASHES

THE NUMBER OF TBIs RESULTING FROM MOTOR VEHICLE CRASHES WAS NEARLY DOUBLE (1.9 TIMES) IN MALE PATIENTS COMPARED TO FEMALE PATIENTS



THE MALE PATIENT MAJORITY WAS ESPECIALLY PRONOUNCED IN INDIVIDUALS WITHIN THE AGES 25-44, WHERE 71% OR 7 IN 10 PATIENTS WERE MALE

SEVERITY OF TRAUMATIC BRAIN INJURY BY CAUSATION



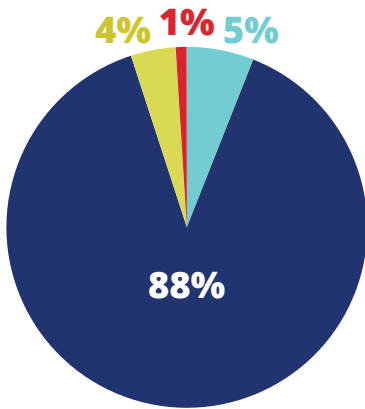
Severity of injury varied by external cause. Although injuries caused by intentional self-harm represented just 1% (N=89) of TBI Registry patients overall, these injuries were most likely to be categorized as **SEVERE** and as **PENETRATING BRAIN INJURIES**.



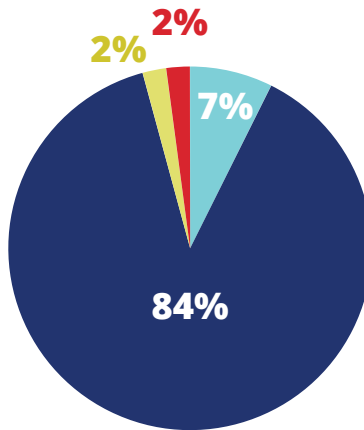
85% INVOLVED A FIREARM

This **INCREASED LETHALITY** reflects the dominant method of self-harm amongst these cases.

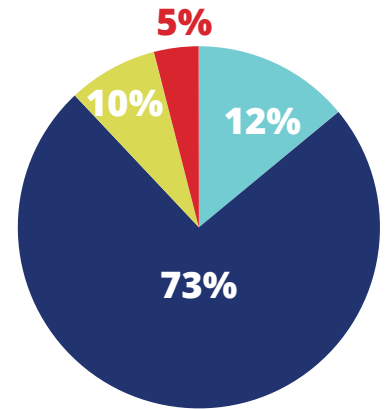
CLASSIFICATION	MILD	MODERATE	SEVERE	PENETRATING HEAD INJURY
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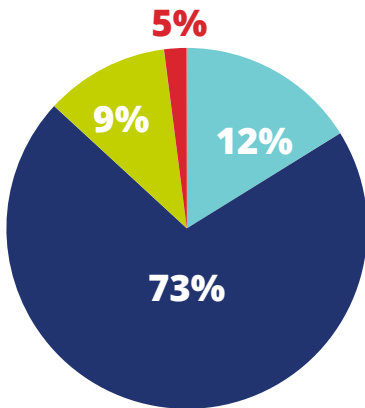
UNINTENTIONAL FALLS



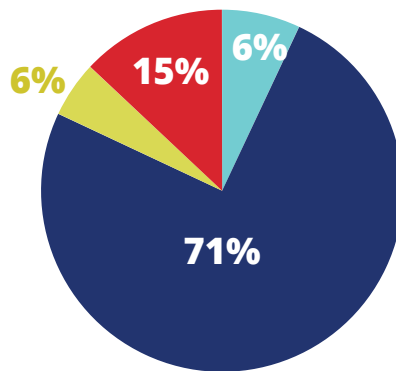
STRIKE TO THE HEAD



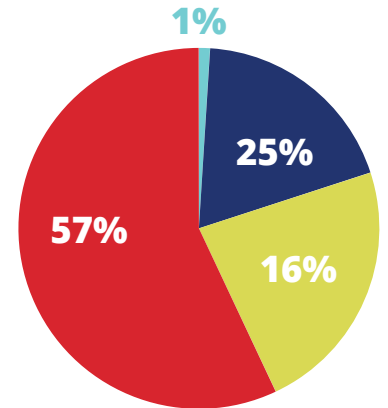
MOTOR VEHICLE CRASHES



MOTORCYCLE CRASHES



ASSAULT



INTENTIONAL SELF-HARM

DISPARITIES IN CAUSES OF INJURY BY GENDER



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



**MOTORCYCLE
CRASHES**

84%
MALE

16%
FEMALE



**INTENTIONAL
SELF-HARM**

75%
MALE

25%
FEMALE



ASSAULT

71%
MALE

29%
FEMALE



**MOTOR
VEHICLE CRASHES**

65%
MALE

35%
FEMALE



**STRIKE
TO HEAD**

58%
MALE

42%
FEMALE



**UNINTENTIONAL
FALLS**

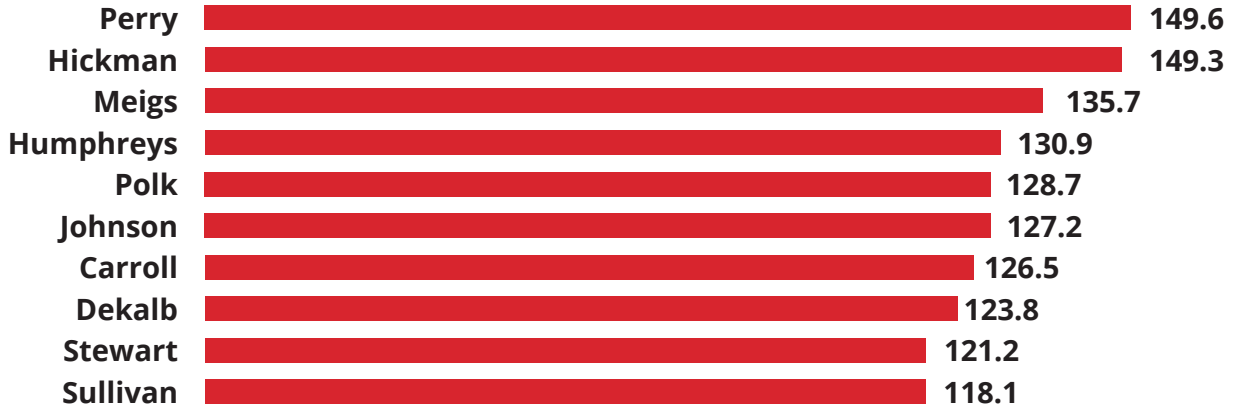
55%
MALE

45%
FEMALE

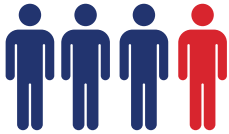
PATIENT RESIDENCE BY STATE AND COUNTY

TOP TEN TENNESSEE COUNTIES BY RATE

The ten (10) Tennessee counties shown below had the highest rates of TBI Registry patients per 100,000 residents. Counties with less than eleven cases were suppressed.



KEY POINTS



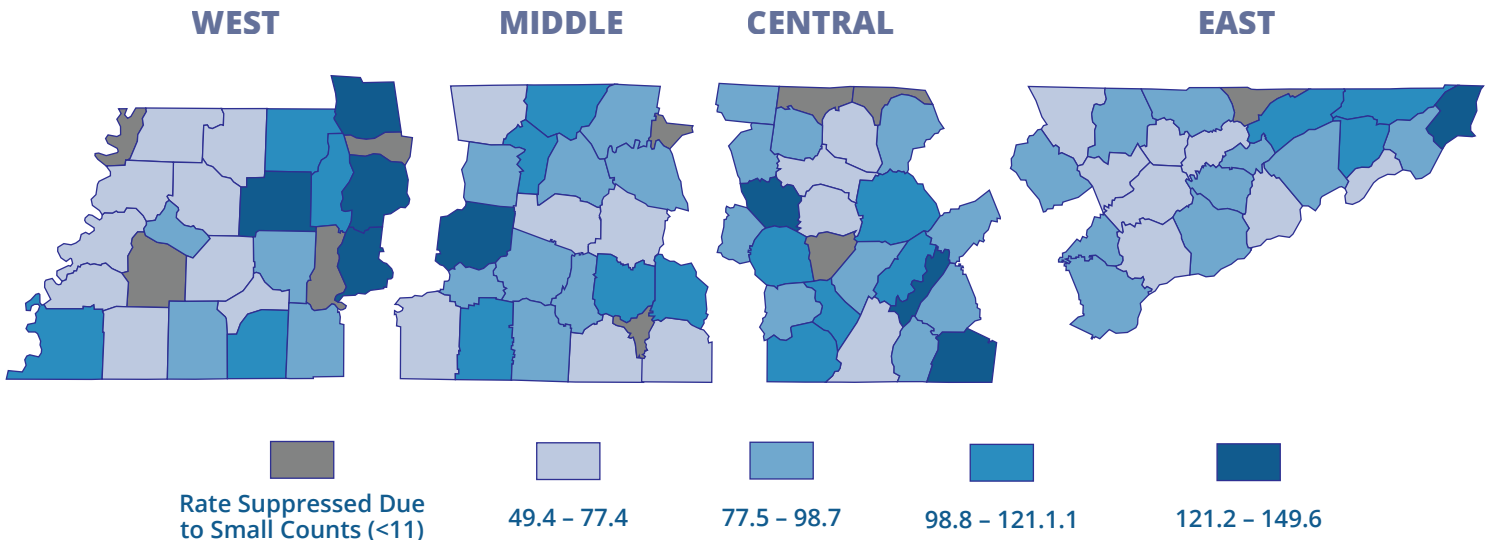
Three out of four patients reported to the TBI Registry were Tennessee residents, with most out-of-state patients residing in neighboring states.



Perry was the Tennessee county with the highest rate of TBI Registry patients for 2022.

AVERAGE TBI RATE IN TENNESSEE | 86.0 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.



Data Source: Tennessee Department of Health, Traumatic Brain Injury Program



TBI TRAUMATIC
BRAIN INJURY
**PROGRAM
REPORT**

July 2022 – June 2023

TBI ADVISORY COUNCIL

T.C.A. 68-55-102

Composition

The inaugural gathering of the TBI Advisory Council was held in 1993 and the group has continuously met quarterly since that time. The Council has nine (9) members appointed by the Governor. In FY23, the TBI Advisory Council was composed of the following members:

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

T.C.A. 68-55-103

Duties

The TBI Advisory Council’s responsibility is to give advice to the TBI Coordinator in the development of program rules and procedures, make recommendations, and perform other duties as necessary to assist persons with TBI and their families.

In FY23, the Council provided recommendations to enhance and improve implementation of the TBI Program. One key activity the Council participated in was to analyze the TBI Needs Assessment Report and State Plan. This valuable activity provided feedback and suggestions to the program to better examine the gaps in services and resources for people with TBI.

Council recommendations are found on page 24 of the program annual report.



TBI COORDINATOR

T.C.A. 68-55-201
TBI Coordinator - Designated

Since the inception of the program, a dedicated full-time TBI Coordinator has been actively overseeing and managing program operations. Other TBI Program staff include one (1) .5 FTE epidemiologist that oversees the TBI Registry and its surveillance and one (1) .5 FTE Communication Specialist that aids in developing and implementing media content for the program.

The TBI Coordinator, in collaboration with other department staff, regularly consults with the TBI Advisory Council to obtain advice and guidance regarding program implementation.



T.C.A. 68-55-202
TBI Coordinator - Duties

The TBI Coordinator pursued funding from all available private and federal sources. All secured funding aids in development and implementation of the TBI Program in Tennessee.

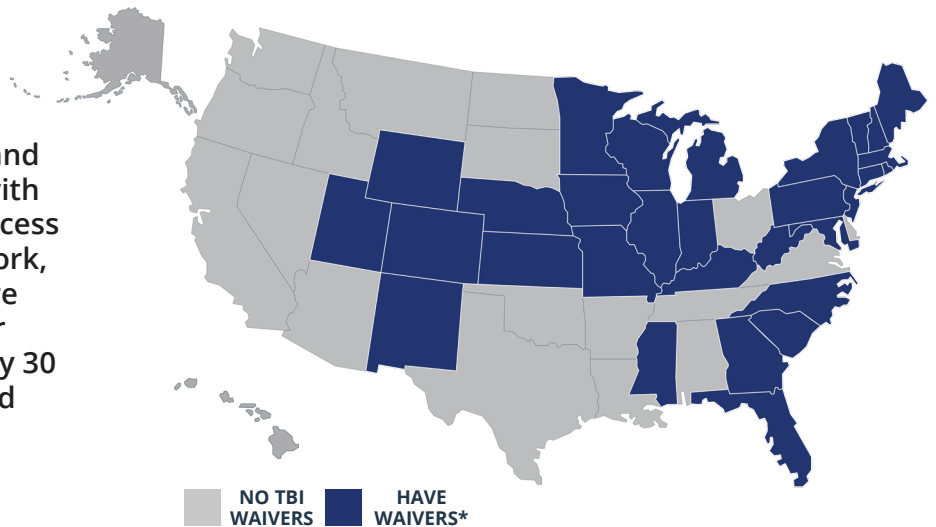


Currently, the program receives **\$1,000,895** in funding for a five-year grant from Administration for Community Living (ACL) to aid in expanding the statewide coordinated system of TBI services by building upon existing state infrastructure.



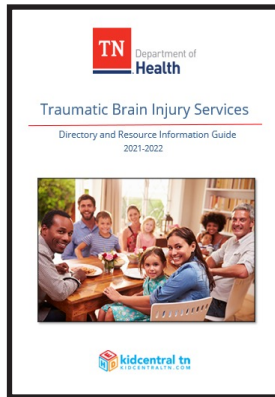
In FY22, the program was **AWARDED \$86,400** in funding via the American Rescue Plan Act of 2021 (ARPA) from ACL to expand the public health workforce within the disability networks. With funding, the program hired a Communication Specialist to aid in program awareness, which ends in 2024.

Currently, **NO WAIVERS ARE AVAILABLE** for persons with TBI in Tennessee. TBI waiver programs provide community-based services and supports. Waivers can aid persons with TBI live safely, independently and access funding from home, socialization, work, therapy, assisted living, personal care services, case management, or other needed medical costs. Approximately 30 states have funded and implemented waivers and other programs successfully.



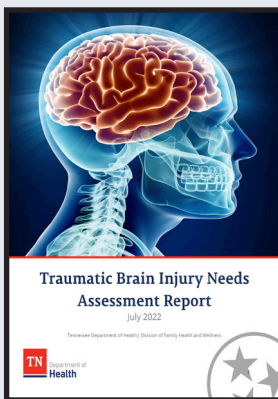
*States that have a Traumatic/Acquired Brain Injury (TBI/ABI) Medicaid HCBS Waiver program and/or other State options for LTSS Medicaid eligible individuals.

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Available Programs and Services

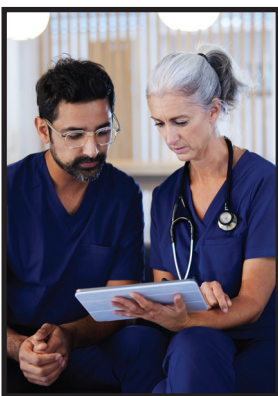
The TBI Coordinator continuously identifies available programs and services for persons with TBI. During FY23, a comprehensive resource directory, *Traumatic Brain Injury Services and Resource Information Guide*, was updated and distributed statewide. Resources include post-acute rehabilitation services, long-term care programs, respite services, and other important programs and services. The directory is available on the TBI Program website: tn.gov/health/TBI_Resource_Guide_FY23.



Gaps in Service

During FY23, the TBI Program and the TBI Advisory Council analyzed and had community discussion on the FY22 TBI Needs Assessment Report at: tn.gov/health/TBI_Needs_Assessment_Report_FY23. Discussions led to identifying key gaps in services which include the lack of:

- TBI Medicaid waiver
- lack of transportation
- lack of accessible/affordable housing
- lack on in-patient services
- decreased time spent with TBI Service Coordinators due to higher caseload demands



Surveillance Data: TBI Registry

The TBI Coordinator also continued to evaluate surveillance data regarding the quality of services provided, including outcome and impact of quality of life of persons with TBI. Currently, surveillance data in the TBI Registry does not capture the quality of service provided.

During FY23, the TBI Coordinator continued to investigate possible ways to improve evaluation to better understand the TBI Program's impact and outcomes. Technical assistance was provided to the TBI Program by the National Association of State Head Injury Administrators (NASHIA) and the Administration for Community Living (ACL) Traumatic Brain Injury Technical Assistance and Resource Center's (TARC) by researching and sharing how other state TBI Programs are evaluating their graduate-level public health programs. The TBI Program also explored internship options with Masters of Public Health Programs to aid in the development of a program evaluation plan and process.

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▼ TBI Awareness and Training

In FY23, the TBI Program, in collaboration with Brain Links, virtually hosted the 33rd Annual Brain Injury Survivor, Family and Caregiver Event. Topics included resilience, mindfulness, gratitude, de-escalation, and available resources. A total of 85 persons with brain injury, family members, caregivers, and service providers were in attendance.

Additionally, 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 brain injuries.



A total of **114 TRAININGS, PRESENTATIONS** and **AWARENESS EVENTS** occurred across the state with a total number of **8,201 ATTENDEES**

During FY23, contracted Brain Links staff revised training and outreach materials. All materials are available in English and Spanish at the Brain Links website: <https://www.tndisability.org/brain>.

During FY23, the Tennessee Brighter Futures (TBF) multi-agency collaborative was launched statewide. There are approximately 83 members from 64 organizations and state agencies across the state. The purpose of TBF is to share expert information and learn from each system to strengthen how the state can best screen, support, educate, and refer persons with brain injury. For more information visit: <https://www.tndisability.org/tennessee-brighter-futures>.

Since 2005, TDH has been a recipient of the Violence and Injury Prevention Grant funded by the Centers for Disease Control and Prevention (CDC). In 2018, TBI prevention was added as a focus. TBI is now an educational topic at each of the quarterly injury prevention stakeholder meetings.

The TBI Program, in collaboration with the TDH Injury Prevention Program, continues to distribute and promote the CDC Pediatric Mild Traumatic Brain Injury (mTBI) Guidelines.

In addition, the TBI Coordinator, along with contracted Brain Links staff, attended the 2022 National Association of State Head Injury Administrators (NASHIA) conference to learn about new information, resources, and services available.



▼ 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 TBI Program website: tn.gov/health/TBI.

Information is updated at least quarterly on available services, resources, and education across the state and nation.

The TBI Program also hosts a statewide TBI listserv where education, awareness, events, research, and information on brain injury is shared. In FY23, the program added 54 new individuals to the listserv.

To subscribe to the TBI Listserv please email Ashley.N.Bridgman@tn.gov.

TRAUMATIC BRAIN INJURY PROGRAM REPORT JULY 2022 - JUNE 2023



Statewide Compliance and Service Monitoring

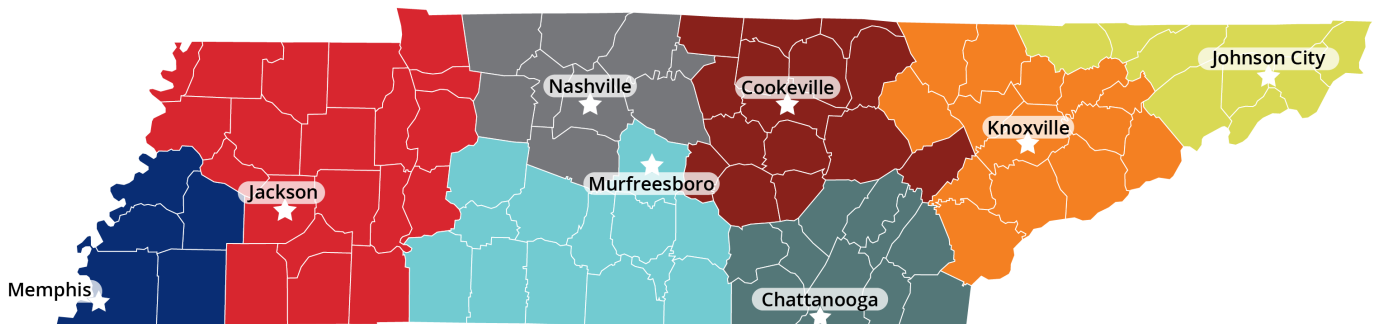
During FY23, all TBI Program site visits were conducted to ensure that contract scope of services were being adequately and appropriately provided. All program site visits were deemed satisfactory, with only minor program recommendations to contracted agencies and organizations to better serve persons with TBI, their families, caregivers, and service providers in Tennessee.

Case Management

The TBI Program has developed a case management system for persons with brain injury. In FY23, there were eight (8) Service Coordinators employed via contracts by various non-profit entities across the state. Some contracts are based in small brain injury or disability-related agencies, while others are in hospital and/or rehabilitation settings.

Service Coordinators across the state assist persons 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; developing a comprehensive plan of care; providing referrals to available resources and services; coordinating services for individual client advocacy; assisting in applying for and accessing services; overseeing local area support groups; and developing new programs and activities.

TBI TRAUMATIC BRAIN INJURY SERVICE COORDINATION COVERAGE



Carolyn Chambers
Regional One Health

Angela Pearson
Brain Injury Association of Tennessee

Rick Hall
Disability Rights Tennessee

Patty Cruze
Patricia Neal Rehab at Fort Sanders

WEST

MIDDLE

CENTRAL

EAST

Jimmie Lee Morris
West Tennessee Rehabilitation Center

Holland Camara
Disability Rights Tennessee

Lisa Morgan
Chattanooga Area Brain Injury Association

Fredda Roberts
Crumley House

TRAUMATIC BRAIN INJURY PROGRAM REPORT JULY 2022 - JUNE 2023

Case Management Continued




In FY23, Service Coordinators provided case management to approximately **402 NEW** persons with **BRAIN INJURIES**.



In FY23, Service Coordinators provided case management to approximately **683 RETURNING** persons with **BRAIN INJURIES**.

Age Breakdown for CASE MANAGEMENT FOR NEW PERSONS with Brain Injury in FY23:

 265 Males

 137 Females



61 CASES
22 years
and under



249 CASES
between
ages 23 - 59



92 CASES
60 years
and older



14
Veteran
Status

During FY23, Service Coordinators across the state held support groups in-person and virtually for persons with brain injury, family members, caregivers, and service providers.



A total of **112** in-person and virtual **SUPPORT GROUPS** were held with approximately **1,359 ATTENDEES**.



Service Coordinators provided **INFORMATION AND RESOURCE ASSISTANCE** to approximately **10,686 INDIVIDUALS**.



Service Coordinators **REFERRED 1,281 PEOPLE** to TBI and/or Caregiver Support Groups.

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Brain Injury Association of Tennessee (BIATN)

During FY23, the TBI Coordinator provided technical assistance to the BIATN Interim Executive Director, staff, and board members. The TBI Program has worked with BIATN to improve the organization website and develop an organizational plan. This plan included developing a TBI Service Coordination website referral system. Find it online at: <https://www.braininjurytenn.org/services/service-coordinators>.



During FY23, **THE REFERRAL SYSTEM CONNECTED 133 INDIVIDUALS** to TBI Service Coordinators.

This collaboration aims to improve the quality of life for persons with brain injuries, their families, caregivers, and healthcare professionals by providing critical information, education, support, prevention, and advocacy through community-based, state, and national resources.



*See the TBI Annual Surveillance Report (pages 1-13) for an analysis of registry data.

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 non-federal 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 an 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 mandated non-federal hospitals in the state are currently in compliance.



In 2022, of the **8,007 TBI PATIENTS** reported to the registry, **7,089** were **DISCHARGED** from the hospital **ALIVE** and the remaining **918** were **DECEASED**.



In FY23, **7,472 REGISTRY LETTERS** were sent to persons with brain injury in Tennessee.

The TBI Registry is designed to connect people with brain injuries to necessary services and resources. Tennesseans who are reported to the registry receive a letter and program brochure that aims to raise awareness about the services provided through the TBI Program.

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TBI TRUST FUND

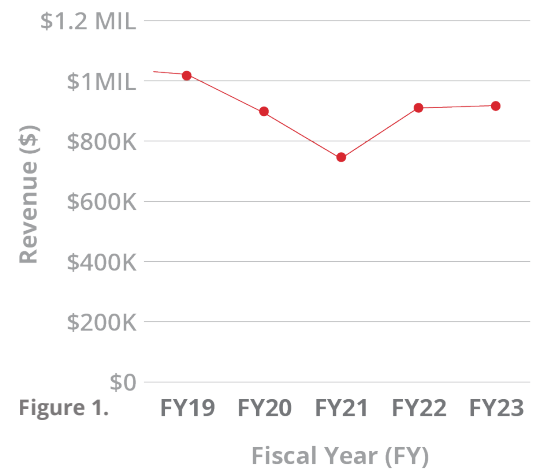
T.C.A. 68-55-401
Trust Fund Established

The TBI Trust Fund has been established and is funded through fines for 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 trust fund. The trust fund covers a significant portion of the program operations, including central office staff salaries and fully funds ten out of eleven service contracts. To meet requirements of the law, a small amount of federal funding is contracted out to provide education and training. As a central component of the TBI Program, these contracts provide much needed direct services to persons with brain injuries and their families.

Over the past 15 years, the trust fund has seen a steady decline; however, prior to FY20, it averaged approximately \$1 million in revenues each year. The COVID-19 pandemic was the key driver to the most significant budget reduction seen in recent years, as less driving time resulted in fewer traffic fines. In order to match the reduced operating budget, the TBI Program terminated two (2) service contracts and cut back on other programmatic spending.

From FY20 to FY23, revenues have only increased by 3% (Figure 1). Due to ongoing funding constraints, the TBI program is unable to increase capacity at the central office level. Additionally, the TBI service contractors have not received a funding increase since 2009.

TBI TRUST FUND TREND



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

In FY23, the TBI Program contracted with agencies and organization across the state via competitive and sole source contracts. Funding was awarded to provide personal care services, service coordination, recreation and respite services, and training and education. The TBI Program is contracted with the following agencies and organizations:

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

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YOUTH SPORTS-RELATED INJURIES

T.C.A. 68-55-502 & 503

School & Community-Based Youth Athletic Activity

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

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 head injury, including continuing to play after a concussion or head injury. Required materials are free of charge and available at the TDH Sports Concussion Law website: tn.gov/health/TN_Sports_Concussion_Law.

To provide needed resources on concussion, TDH has continued to collaborate with Vanderbilt University Medical Center and other professionals to annually review and

update the Tennessee Return to Learn/Return to Play: Concussion Management Guidelines. The guidelines are 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 and the Vanderbilt Youth Sports Health Center. 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, sudden cardiac arrest, injury prevention, and weather safety. More information on the Safe Stars Initiative can be found at: tn.gov/health/Safe_Stars_Initiative.



As of FY23, a total of **56 ORGANIZATIONS** have been recognized as a **GOLD STANDARD** for **SAFE STARS YOUTH SPORTS**

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

CONCLUSION AND RECOMMENDATIONS



In 2021, there were approximately 21,698 TBI-related emergency department visits and non-fatal hospitalizations and 1,734 TBI-related deaths in Tennessee. Traumatic brain injury contributes to a significant proportion of death and disability in the state of Tennessee. During FY23, the TBI Program provided services to approximately 30,426 persons with brain injury, their family members, caregivers, and/or service providers via case management, personal care services, respite care, and education and training.

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. In 2022, 8,007 patients were reported to the TBI Registry. Of those reported, 7,089 were discharged alive and the remaining 918 were deceased. The average length of hospital stay amongst all TBI Registry patients was 7.9 days. In 2022, 50% of TBI Registry patients with non-fatal injuries required further care and were discharged to rehabilitation, skilled nursing, or other long-term care facilities. The findings in this report not only emphasize the continued need for these TBI patient resources in Tennessee, but also highlight the opportunity and need to enhance TBI prevention efforts across the state.

Much has been accomplished, but injuries persist in Tennessee and resources and services are needed. During FY23, the TBI Advisory Council met and developed recommendations to aid in the improvement of the state TBI Program. Recommendations include:

- ✔ Continue to develop and cultivate partnerships to explore and apply for additional funding opportunities.
- ✔ Educate on need to increase the fine amounts for traffic violations that contribute to the TBI Trust Fund.
- ✔ Increase funding allocations for the TBI Program contracts dedicated to the TBI Service Coordination Program, personal care services, and respite care, aiming to provide improved support to persons with traumatic brain injury and their families in Tennessee.
- ✔ Increase number of funded TBI Service Coordinators statewide to effectively address the substantial demand of service coordination services throughout the state.

The TBI Program and Advisory Council extends their gratitude for the opportunity to improve the lives of Tennesseans with traumatic brain injury and their families.



Department of
Health

**TRAUMATIC BRAIN
INJURY PROGRAM**

**DIVISION OF FAMILY
HEALTH & WELLNESS**



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