
June | 2016



**Nebraska's TBI
Implementation
Partnership Grant**

Annual Evaluation Report
JUNE 2015 – MAY 2016



Shaping the Future of Brain Injury

Nebraska Brain Injury Advisory Council

Dear Reader:

Traumatic brain injury (TBI) is a serious public health problem in the United States. The Centers for Disease Control (CDC) reports approximately 1.7 million people sustain a TBI annually, and each year TBI contributes to a substantial number of deaths and cases of permanent disability. A TBI is caused by a bump, blow, or jolt to the head or a penetrating head injury that disrupts the normal function of the brain. Most TBIs are mild and their effects diminish over time, but even a mild TBI can result in permanent cognitive, physical, and behavioral changes. Individuals experiencing moderate to severe injuries may require life-long supports for housing, work, and community living.

Many Nebraskans impacted by TBI still struggle to access appropriate services to meet their needs. Nebraska Vocational Rehabilitation (VR) and the Brain Injury Advisory Council remain committed to building a comprehensive, multidisciplinary, easily accessible system of care for individuals experiencing brain injury and to ensuring awareness and training for partners in the system.

Nebraska VR serves as lead agency for a U.S. Department of Health and Human Services TBI Implementation Partnership Grant which provides funding for states to build infrastructure and create systems change to better serve their citizens with brain injuries. The Brain Injury Advisory Council advises Nebraska VR, the Department of Education, Special Education, and the Department of Health and Human Services (DHHS) in implementing grant objectives and goals under the Nebraska State Plan for Systematic Services for Individuals with Brain Injuries.

State Plan goals for 2013-2018 are to:

- * Increase awareness and knowledge about brain injury
- * Increase access to community resources for individuals with brain injury
- * Increase funding for services
- * Promote individualized services for people with brain injury

For more information about the Nebraska State Plan for Systematic Services for Individuals with Brain Injuries, please visit the Brain Injury Advisory Council's website at www.braininjury.ne.gov.

This report summarizes grant-funded project outcomes for FY 2015-2016. Nebraska VR and the Brain Injury Advisory Council look forward to working with our partners and stakeholders to build better futures for Nebraskans with brain injury and their families.

Sincerely,



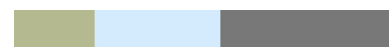
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TBI Grant Project Director

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Table of Contents

Executive Summary	1
Project Purpose	3
Grant Objectives.....	3
Dissemination of Information	4
Information and Referral.....	6
Resource Facilitation Case Management	7
Resource Facilitation Community Outreach.....	12
TBI Trainings	13
TBI Screenings	20
PARTNER Tool.....	23
Cost of TBI Analysis	26
Surveillance Data.....	29
Appendix	33

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Executive Summary

The purpose of Nebraska's TBI grant project (funded by the U.S. Department of Health and Human Services) is to increase access to rehabilitation and other services for individuals with Traumatic Brain Injury (TBI) and their families by implementing activities related to each of the following components: 1) Information and Referral Services; 2) Professional Workforce Development Trainings; 3) Screening for TBI; and 4) Resource Facilitation. Activities from year 2 (June 2015-May 2016) are summarized below.

Dissemination of Information

- 11,712 letters were delivered to individuals on the TBI Registry.
- 12,177 hits to the Nebraska Brain Injury Advisory Council Website (this number also includes hits to the Assistive Technology Partnerships of Nebraska).
- Numerous materials distributed at the Annual Brain Injury Conference.
- 10 information campaigns conducted through Constant Contact with 231 to 243 recipients for each campaign.

Information and Referral

- 377 TBI-related calls from 131 individuals were fielded by the Brain Injury Alliance of Nebraska.
- 40 information and referral services were provided to individuals (some duplication) by Disability Rights Nebraska.
- 27 information and referral services were provided to individuals by Hotline for Disabilities.

Resource Facilitation Case Management

- Designed program in Year 1.
- Provided information/intake and referral services to 18 individuals, some of whom will move into case management.
- Provided case management services to 14 individuals, 11 of whose cases still remain open.

Resource Facilitation Community Outreach

- 209 outreach activities were conducted by Resource Facilitators, with an estimated reach of 3,870 individuals.

TBI Trainings

- A total of 222 individuals received training from one of five TBI trainings that were offered.
- Training participants from all five trainings gave positive feedback, indicating an increase in knowledge in areas such as TBI prevention, causes, and/or recovery; ways to identify a TBI; and ways to serve individuals with a TBI; among other areas.

TBI Screenings

- A total of 558 elderly adults in rural Nebraska were screened by AAA coordinators, 86 of whom had a positive screen for brain injury. Of the 86 with positive screens for a brain injury, 75 were previously undiagnosed with a brain injury.

PARTNER Tool

- The PARTNER Tool was repeated in 2015 to measure the collaboration of key stakeholders and partners around TBI in Nebraska.
- The levels of perceived trust, value, power/influence, and other indicators remained consistently strong from 2014 to 2015, indicating the continuation of collaborative strength.

Cost of TBI Analysis

- Using a CDC tool known as WISQARS, the estimated medical and work loss costs due to TBIs in Nebraska in 2013 was determined to be over \$800 million. Note that many of these costs are sustained over multiple years, especially work loss costs.
- The 15-19 and 20-24 year-old age groups had the highest costs due to TBI in the state, due to the high numbers of injuries and the high average work loss costs for these age groups.

Surveillance Data

- Deaths, hospitalizations, emergency department visits, and TBI Registry data continue to be monitored.
- The rate of deaths due to TBI has remained relatively stable, while the rates of hospitalizations and emergency department visits due to TBI have increased substantially since 2000.
- Survivors of a TBI are placed on a registry. From January 2015 through September 2015 there were 9,733 new cases in the TBI registry. There were on average 1,081 new cases of TBI per month during this nine-month period.

NEBRASKA'S TBI IMPLEMENTATION PARTNERSHIP GRANT

YEAR 2 EVALUATION REPORT

(June 1, 2015 through May 31, 2016)

June 2016

Project Purpose

The purpose of Nebraska's TBI grant project (funded by the U.S. Department of Health and Human Services) is to increase access to rehabilitation and other services for individuals with Traumatic Brain Injury (TBI) and their families by providing information and referral, professional training, TBI screening and resource facilitation services. The \$1,000,000 four-year grant was awarded to Nebraska VR in June of 2014.

The target population identified for the project's strategies is children, youth (including student athletes at risk for concussion) and the elderly who experience TBI or are at risk for TBI. Keri Bennett, with Nebraska VR is the project director.

Grant Objectives

The TBI implementation grant project focuses on five core areas which provides the basis for the grant objectives:

1. Enhance and expand existing **information and referral services** to reach children, youth and elderly with TBI, their family members and the professionals, service providers, and agency staff who serve them, providing educational resources and referral to appropriate services and supports as requested.
2. **Provide training** to key professionals, service providers and agency staff serving children, youth and the elderly on the potential long-term cognitive, physical, emotional and behavioral effects of TBI (including concussion or mild TBI), and resulting implications for housing, work, and community living.
3. Teach professionals, service providers and agency staff serving children, youth and the elderly to implement simple methods to **screen individuals for TBI** at the point of program eligibility and service needs planning.
4. Develop a sustainable model to **implement resource facilitation** for the children, youth, and elderly with TBI and their family members who require assistance in navigating complex service systems to meet their needs and achieve their goals.
5. Develop a plan and identify potential long-term funding sources for **sustaining key TBI service infrastructure elements** beyond grant funding, with a focus on the targeted populations of children, youth, and the elderly with TBI.

Dissemination of Information

The dissemination of information conducted by the NE VR TBI program is organized under three main headings: Nebraska Brain Injury Registry Letters, Nebraska Brain Injury Advisory Council Website, and Materials Distributed at the Brain Injury Conference. Figure 1 contains a summary of the information disseminated under each of these three areas.

Figure 1	Dissemination of Information Summary: June 1, 2015 – May 31, 2016
<p>Nebraska Brain Injury Registry Letters</p>	<ul style="list-style-type: none"> ➤ Registry letters mailed: 12,868 ➤ Letters returned undeliverable: 1,156 ➤ Total registry letters delivered: <u>11,712</u>
<p>Nebraska Brain Injury Advisory Council Website*</p>	<ul style="list-style-type: none"> ➤ 12,177 website hits ➤ 6,389 unique visitors <p>(see full summary below)</p>
<p>Materials Distributed at Brain Injury Conference (March 31 and April 1, 2016)</p>	<ul style="list-style-type: none"> ➤ Lash Brain Injury Tip Cards - 240 ➤ Online TBI Training Course post cards - 50 ➤ Provider Training Manuals - 25 ➤ Screening brochure/tools - 25 ➤ Registry brochures - 25 ➤ CDC Senior Fall Prevention brochures - 150 ➤ The Cost of TBI - 25 ➤ BI Registry Reports - 20 ➤ BIRSST Team Contact list - 10 ➤ Council applications – resulted in a new BI Advisory Council member from North Platte.
<p>Constant Contact Statistics</p>	<ul style="list-style-type: none"> ➤ Conducted 10 distinct information campaigns through Constant Contact during the grant year. ➤ There were between 231 and 243 recipients for each Constant Contact campaign that was sent out.

*It appears that analytics for the Brain Injury Advisory Council website have been lumped in with analytics from the Assistive Technology Partnership of Nebraska. At this point, there is nothing that can be done to separate analytics from the two sites.

Changes to the Nebraska Brain Injury Registry Letter

The registry letter and brochure were redesigned in order to expand the information and make them more user friendly. A perforated symptom checklist was added to the brochure. It is designed to be completed and discussed with a physician. Resources and training for health care professionals and a link to the Affordable Health Care Act are now listed. A logo for Partners for Brain Injury was designed to depict the registry partnership of Nebraska Department of Health and Human Services, the Brain Injury Advisory Council, and the Brain Injury Alliance of Nebraska. Materials were translated and printed in Spanish with other languages available upon request. Brochures were distributed at the annual brain injury conference, to Nebraska VR staff, brain injury support groups, and others. A total of 11,712 letters were delivered during the grant year (June 1, 2015 through May 31, 2016) to individuals who entered the brain injury registry.



Nebraska Brain Injury Advisory Council Website Analytics

Analytics for the Nebraska Brain Injury Advisory Council Website are limited due to the fact that that analytics from the Assistive Technology Partnership of Nebraska have been combined, and are unable to be separated at this time. Nevertheless, key highlights (for both sites combined) include 12,177 hits from 6,389 unique visitors (Figure 2).

Figure 2	Analytics for the Nebraska Brain Injury Advisory Website* (June 1, 2015 – May 31, 2016)
	Website hits: ➤ 12,177
	Unique visitors ➤ 6,389
	New users: ➤ 6,041 (49.6%)
	Average session duration: ➤ 3:28
	Average number of pages per session: ➤ 2.8
	Bounce rate (Percentage who navigate away after viewing only one page): ➤ 49.3%
	Channels (how visitors came to the site): <ul style="list-style-type: none"> ➤ Direct: 42.6% ➤ Organic search: 34.4% ➤ Referral: 21.5% ➤ Social media: 1.4%

*It appears that analytics for the Brain Injury Advisory Council website have been lumped in with analytics from the Assistive Technology Partnership of Nebraska. At this time, there is nothing that can be done to separate analytics from the two sites.

Information and Referral

Information and referral services for survivors of TBI are conducted by three organizations: The Brain Injury Alliance of Nebraska (BIA), Disability Rights Nebraska, and Hotline for Disabilities. Between these three organizations, 404 information and referral services were conducted during the grant year (note that duplication occurs – some individuals receive multiple information and referral services) (Figure 3).

Figure 3	Information and Referral Summary: June 1, 2015 – May 31, 2016	
Brain Injury Alliance (BIA) Resource Facilitation Information and Referral (formerly known as TBI Ombudsperson)	<ul style="list-style-type: none"> ➤ Received 377 calls related to TBI from 131 individuals (survivors, family members, professionals, and others) ➤ 289 (76.7%) of all calls resulted in a linkage to a resource 	
Disability Rights Nebraska	<ul style="list-style-type: none"> ➤ Conducted 40 information and referral services for individuals with a TBI (some duplication occurs). 	
Hotline for Disabilities	<ul style="list-style-type: none"> ➤ Conducted 27 information and referral services for individuals with a TBI. 	
Total	<ul style="list-style-type: none"> ➤ 404 information and referral services were conducted in this grant year 	

Resource Facilitation Case Management

Resource Facilitation Case Management conducted by the Brain Injury Alliance of Nebraska (BIA) involves close, potentially long-term, one-on-one interaction between a brain injury survivor and a resource facilitator. The Resource Facilitator assists the survivor in navigating resources in their community, evaluating progress with the survivor and family/caregivers, and setting and achieving goals. At this time, resource facilitation services are open to all survivors of brain injury in the Lincoln and Omaha areas. At the beginning of Year 1, there were two Resource Facilitators (one serving the Lincoln area, the other serving the Omaha area). The individual serving the Lincoln area resigned from her position mid-way through the year. Moving into Year 2, two new Resource Facilitators have been hired to serve Lincoln and Omaha. The individual formerly serving Omaha will move into a new role focusing more on managerial duties and community outreach efforts, while still staying involved as a Resource Facilitator. In addition, Gina Simanek continues to coordinate all statewide information and referral activities for the BIA (her work is documented in the section directly above). Gina answers the bulk of the calls coming into the BIA and provides referrals to the resource facilitators when the situation calls for it.

In Year 1, after getting the program of Resource Facilitation Case Management designed, the two Resource Facilitators provided information/intake and referral services to 18 individuals (some of whom will eventually move into case management), and case management services to 14 individuals (11 of whom still have open cases at the time of this report) (Figure 4).

Figure 4	Resource Facilitation: Year 1 Summary
Information/Intake and Referral:	➤ <u>18</u> (some of these will move into case management)
Case Management	➤ <u>14</u> (11 cases remain open at this time)

Client Demographics

Figures 5 through 9 present demographic information of case management clients.

Figure 5	Age of Case Management Clients (n=12)								
0-12	13-18	19-26	27-40	41-50	51-64	65-74	75+	Average	Missing/Unknown
1	0	3	2	2	1	3	0	41.7	2

Figure 4. Type of Injury for Case Management Clients (n=14)

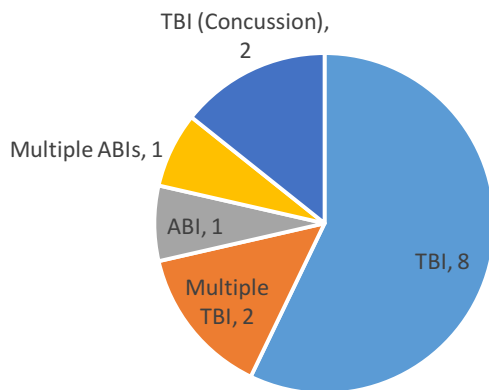


Figure 7	Cause of Injury to Case Management Clients (n=14)	
	Car accidents/struck by a car	3
	Car accidents and assault	1
	Fall	2
	Gunshot wound	2
	Arterial Vascular Malformation (AVM)	1
	Bomb blast	1
	Surgeries	1
	Meningitis/Encephalitis	1
	Accidents/incidents (unspecific)	2

Figure 8. Living Arrangement of Case Management Clients (n=14)

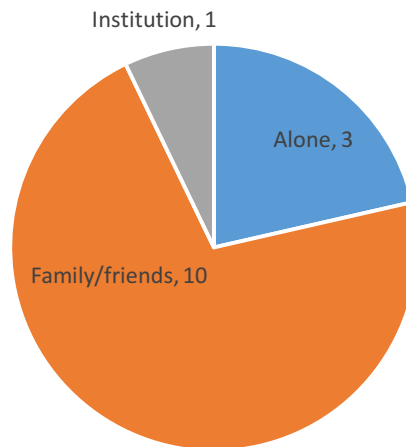


Figure 9	Additional Demographics of Case Management Clients (n=14)
	<ul style="list-style-type: none"> ➤ Gender: Male – 8, Female – 6 ➤ Veterans: 3 ➤ Employment status <ul style="list-style-type: none"> ○ Currently employed: 1 ○ Currently unemployed: 4 ○ Retired/disability/not applicable: 9 ➤ Location <ul style="list-style-type: none"> ○ Lincoln/Lancaster County: 4 ○ Omaha Metro Area: 10

Client Needs

Data on client needs has been provided for 14 case management clients. Below is a summary of the needs identified by these clients. On average each case management client has had 6.7 distinct needs (Figure 10).

Figure 10	Case Management Client Needs (n=14)
Housing assistance	7
Neurobehavioral needs	7
Education and employment	7
Social support	7
Transportation	5
In-home/ADLs assistance	5

Medical specialist (rehab doctors, neurologist, psych)	5
Coping	5
Concussion/MTBI evaluations	4
Mental health services	4
Legal services	4
Other	4
Food	3
Financial assistance/information	3
Sleep	3
Aging after BI	3
Alternative therapies	2
Vision	2
Fatigue	2
Substance abuse	2
Violence/anger management	2
Clothing	1
Insurance	1
Coma/disorders of consciousness (DOC)	1
Seizures	1
BI Research	1
Statistics	1
Pediatric/school support	1
Assistive technology	1
Average number of needs per client	6.7

The Mayo-Portland Adaptability Inventory

The Mayo-Portland Adaptability Inventory (“short version”) is a tool used to ascertain needs of individuals who have suffered a brain injury. The tool measures self-care, residence, transportation, employment, and other basic needs. This tool is being used as a pre-post assessment with case management clients. The hope is that improvement will be seen in some areas after working with a Resource Facilitator. To date, eight “pre” Mayo-Portland Adaptability Inventories have been collected. No post-data have been collected yet.

The “short-version” of the Mayo-Portland includes eight inventory items with a minimum score of 0 and maximum of 30. The lower the score on the Mayo-Portland, the greater the independence, and the lesser interference from injuries, for an individual with a TBI. The average, healthy adult, would likely have a score of zero or near zero.

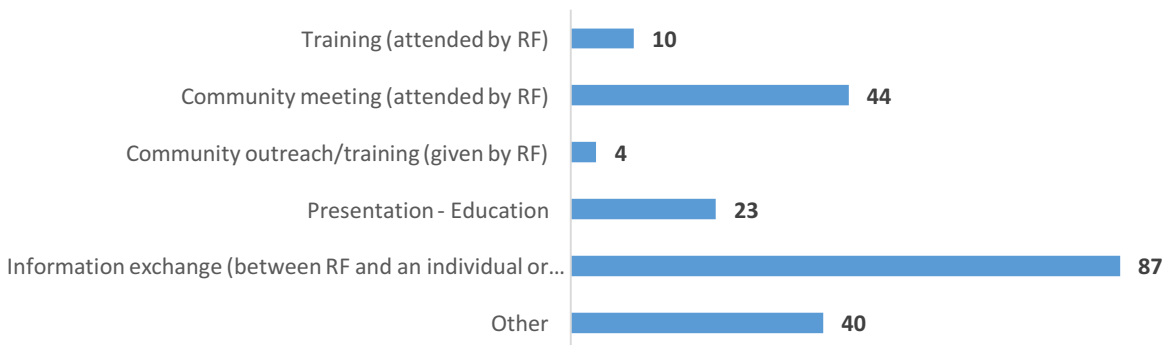
Figure 11 presents the range of Mayo-Portland pre-scores. The average pre-score for the eight individuals who have participated in the inventory is 17.3, substantiating the variety of individual needs of the current case management profile.

Figure 11	Mayo-Portland Adaptability Inventory Scores (n=8)						
	0-5	6-10	11-15	16-20	21-25	26-30	Average
Pre	0	1	2	3	2	0	17.3

Resource Facilitation Community Outreach

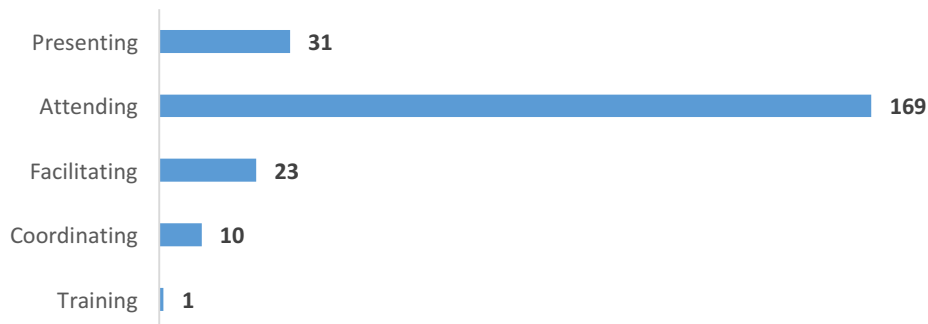
In addition to offering information and referral services and case management, the Brain Injury Alliance of Nebraska (BIA), also conducts community outreach to promote and raise awareness for the Resource Facilitation program. During this grant year (June 2015 through May 2016), **the BIA conducted 209 outreach activities with an estimated reach of 3,870 individuals.** Further information about the nature of these community outreach activities is contained below in Figures 12 and 13.

Figure 12. Resource Facilitation Community Outreach Activity (June '15 - May '16)



Other includes hosting booths, interviews, special events, event planning, orientation, networking, and other activities

Figure 13. BIA Member's Role in Community Outreach Activities (June '15 - May '16)



TBI Trainings

A total of five TBI trainings were offered this grant year to a broad array of professionals, individuals, and family members. These trainings focused on various topics related to TBI such as TBI prevention, causes and recovery; services for survivors of a TBI; and how to assist TBI survivors; among numerous other topics. The dates and participants of these five trainings are detailed below in Figure 14.

Figure 14		TBI Trainings: Dates and Participants		
	Date(s)	Participant Description	Number of Participants	
Online TBI Modules	Ongoing	Various professionals and family members serving individuals with TBI	25 (unique) Intro training: 14 Pediatric training: 5 Adult training: 12 Substance training: 4	
Brain Injury Regional School Support Teams (BIRSST) Symposium	February 2016	Primarily school-based professionals (school nurses, athletic directors, athletic trainers, counselors, psychologists, etc.), as well as a handful of community-based service providers	76	
Ollie Webb Center TBI Training	March 2016	Direct support staff (job coaches, DD professionals, educators, etc.) and management	14	
Get Schooled in Concussions (BIRSST-sponsored)	April 2016	School staff, including athletic trainers, counselors, nurses, principals, and others	36	
Nebraska Association of Service Providers (NASP) TBI Trainings (four identical trainings)	May 2016	Direct support staff, licensed mental health counselors, nursing staff, social workers, and numerous other service provider types	71	
Total	-	-	222	

Additional Training Activities

Challenging Behavior and Executive Function

Six BIRSST members and the Brain Injury Advisory Council's Special Education representative attended training on "Challenging Behavior and Executive Function" in Colorado, and are sharing what they learned by developing 20-30 minute training modules for Nebraska's BIRSST members and classroom teachers."

Collaboration with DHHS Injury Prevention on Healthcare Provider Training Modules

Nebraska VR has supported the work of the DHHS Injury Prevention Program and its partners to create online modules for healthcare professionals on the topic of concussions. The DHHS Injury Prevention Program has devised a total of nine modules dealing with various aspects of concussions, including identification, recovery, compliance with state law, and other areas, focusing primarily on the youth population and sports-related concussions. Nebraska VR supported the work of Modules 4, 5, and 6. These three modules were completed during this grant year and are scheduled to be offered to healthcare professionals in the coming year.

Post-Training Evaluation Survey Results

Post-training evaluation survey results are displayed in Figures 15 through 21 below for all five trainings conducted in this grant year. In general, grant-funded trainings use a standard post-training evaluation survey. However, due to the nature and objectives of some trainings, certain items on the standardized survey are not used with every training. The figures below show the results from each survey item on the standardized survey by training. If a training is left off from a figure, this is because the survey item was not applicable to that training. See the appendix for a version of the standard post-training evaluation survey.

The post-training evaluation surveys had very positive results. Examples of some of the many positive highlights from the combined total of all trainings include 96.7% of training participants reporting that their knowledge of TBI prevention, causes, and/or recovery increased as a result of the training (Figure 15), 99.4% reporting that their knowledge of ways they can identify individuals that have a TBI and meet their needs increased as a result of the training (Figure 18), and 98.5% reported being satisfied or very satisfied with the training (Figure 21).

Figure 15. Knowledge of TBI prevention, causes, and/or recovery increased as a result of training

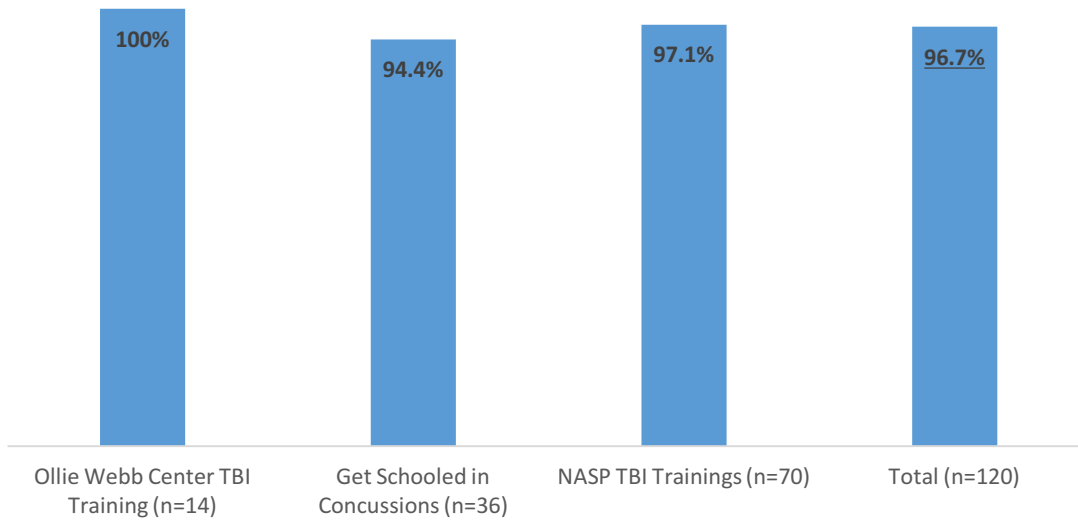


Figure 16. Knowledge of ways a TBI can be detected increased as a result of the training

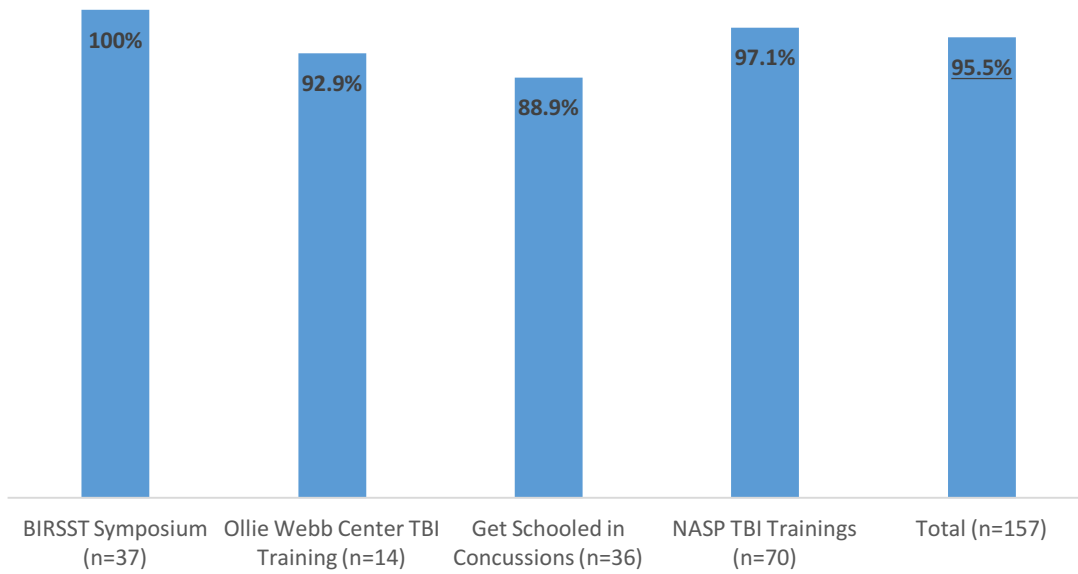


Figure 17. Knowledge of services and/or providers that may be able to help with recovery after TBI increased as a result of the training

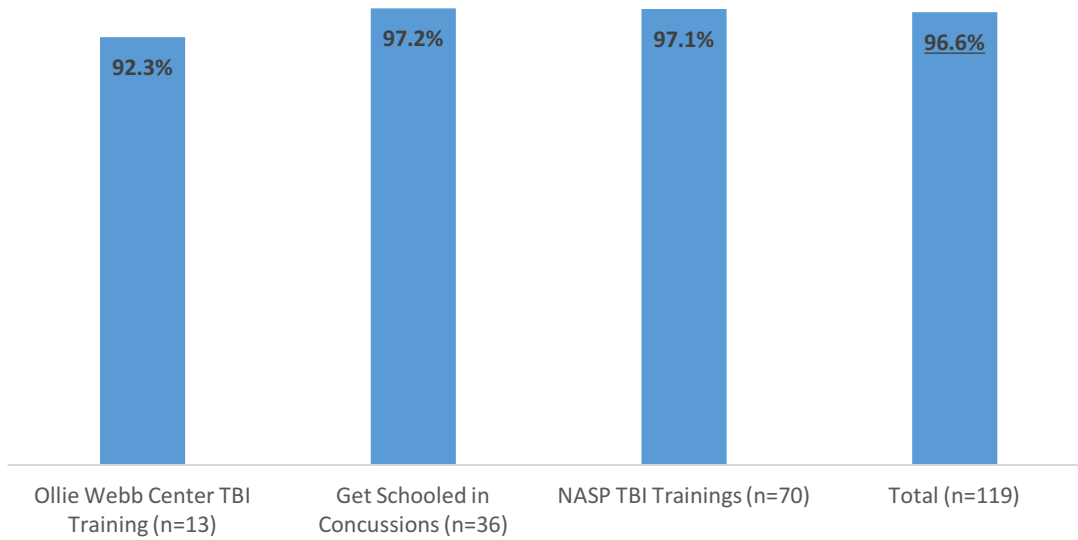


Figure 18. Knowledge of ways they can identify individuals that have a TBI and meet their needs relative to their practice, and/or refer elsewhere increased as a result of the training

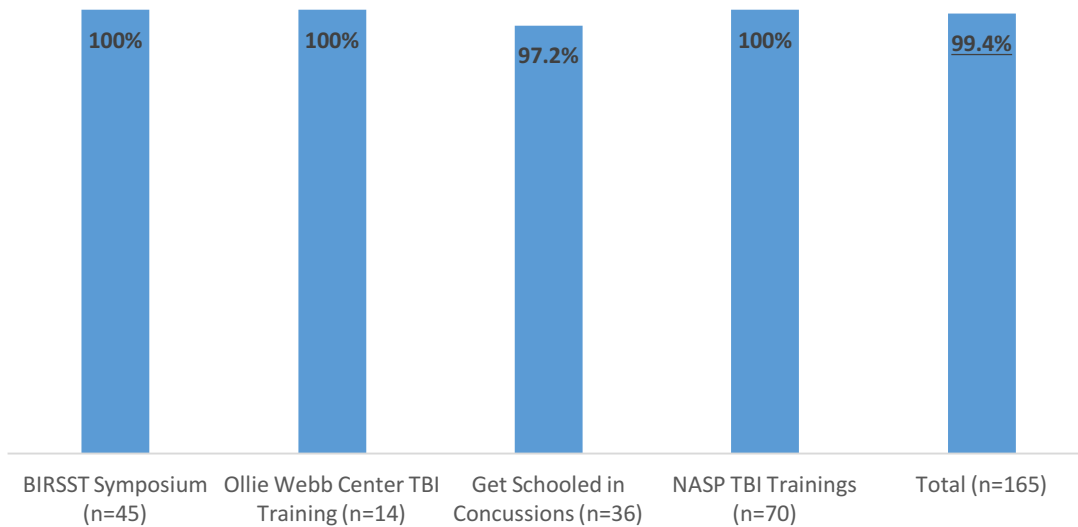


Figure 19. As a result of this training, they anticipate being more able to assist individuals with TBI and their families in accessing the services they need

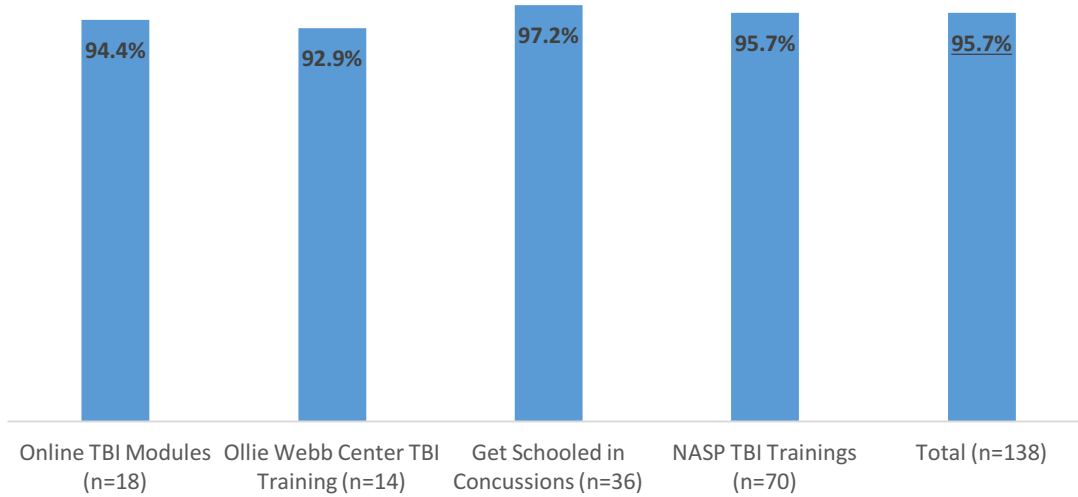
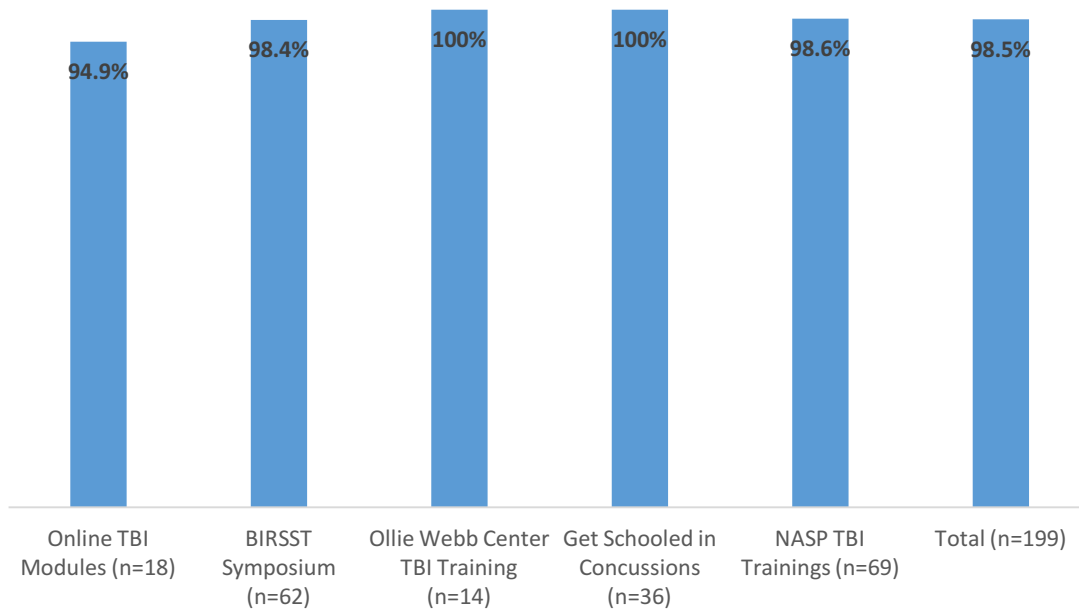


Figure 20	Among those anticipating that they will be more able to assist individuals with TBI, etc. (see Figure 19 directly above), reported ways in which they will be better able to serve them			
	Ollie Webb Center TBI Training (n=13)	Get Schooled in Concussions (n=35)	NASP TBI Trainings (n=67)	Total (n=115)
I have information to provide to individuals/families about TBI	69.2%	85.7%	83.6%	82.6%
I have information to provide to individuals/families about local resources/services	53.8%	48.6%	80.6%	67.8%
I can more easily recognize symptoms of TBI	69.2%	51.4%	71.6%	65.2%
I can better interact with individuals with TBI in the course of my work	76.9%	68.6%	74.6%	73.0%
I know what to do when I encounter an individual with TBI in my work	69.2%	57.1%	68.7%	65.2%

Figure 21. Satisfied or very satisfied with the training*



Nebraska Association of Service Providers (NASP) TBI Project

The NASP TBI Trainings (included in the above post-training evaluation survey results) were part of a larger project directed towards community-based providers who serve individuals with brain injury. This project is described in more detail below.

Purpose: The purpose of the project was to build capacity among developmental disability service providers to serve individuals with brain injury. Capacity includes awareness of need, knowledge of funding streams, training on service provision, and advocacy for Medicaid waiver support.

Activities Completed: Activities completed included a stakeholders meeting to analyze awareness and need, collection and summary of data, development and execution of four trainings, and meetings leading to recommendations regarding Medicaid waiver redesign to better serve individuals with brain injury.

Outcomes: Outcomes included completion of informational memos for members of the Nebraska Association of Service Providers, a summary of recommendations for Medicaid waiver redesign, completion of training statewide, and the development of a resource toolkit for developmental disability service providers.

Conclusions: Several conclusions can be drawn from this project. First, there is a disconnect between the need or demand for services for individuals with brain injury and agencies that can provide services and the opportunities for funding for the services. Second, relationships must be developed between

service coordinators for the Aged and Disabled Waiver, resource coordinators, and developmental disability service providers. Third, developmental disability service providers have some, but not all, of the capacities and skill sets needed to serve individuals with brain injury.

Next Steps: To respond to lessons learned, several next steps are suggested. First, to better understand the disconnect between the demand for services and funding and service providers, more data analysis should be completed. Developmental disability service providers could be provided with capacity building funding to develop relationships and set up the systems needed to become Aged and Disabled Waiver providers. Second, pilot projects could be developed to direct individuals with brain injury identified by resource coordinators to targeted disability service providers. Third, individualized staff development could be developed to fill the organizational gaps for disability service providers to serve individuals with brain injury. Additional training could be provided. Finally, additional work to identify community based services available under the Aged and Disabled Waiver could provide more community based supports for individuals with brain injury.

TBI Screenings

Screening and Identification of Elderly Individuals with Brain Injury through the Area Agency on Aging in Rural Nebraska

Purpose

The screening project focused on the need for routine brain injury (BI) screenings for a high-risk age group, those 65 years and over. The researchers utilized a screening tool with elderly individuals in a rural location. Data was collected from service coordinators employed by the Area Agency on Aging at three locations in rural Nebraska: North Platte, Scottsbluff, and Kearney. The researchers provided education about brain injury and measured the effectiveness of the education with a true/false pre- and post-survey; trained the service coordinators to administer a specific brain injury screening tool (the OSU-TBI, see the Appendix for the tool); interviewed a focus group of service coordinators about the effectiveness of the training and their feelings of preparedness in using the screening tool. The service coordinators then administered the screening tool and the researchers acquired data regarding the number of positive brain injury screens attained by them. Finally, the researchers conducted a follow-up interview with service coordinators approximately 3-4 months after the educational/training session regarding information about their perceptions, preparedness, and use of the screening tool with clients.

Participants

There were two groups of participants for this study. Group A consisted of 24 service coordinators employed by an Area Agency on Aging at three locations. These participants were recruited for this project because of their employment responsibilities that included evaluating elderly individuals for healthcare services. Group B consisted of clients seeking services through the Area Agency on Aging (N=558, 43% male). They were screened for brain injury by Group A with the OSU TBI-ID screening tool and their results were entered into a de-identified database.

Results: Service Coordinators (Group A)

Preliminary analysis of the pre-post tests indicated that Group A participants (N= 24) increased their knowledge of brain injury in the areas of recovery process, BI sequelae, and disorders of consciousness. The researchers asked Group A follow-up questions regarding: 1) educational session on brain injury; 2) previous training session on use of screening tool; 3) screening process with clients with the brain injury screening tool.

The following themes emerged from the interviews. Caseworkers... 1) learned more about their clients through the screening process; 2) stated adjustments they would make to the screening form for ease of administration and data collection; 3) described the helpfulness of education and training sessions on brain injury and screening tool; 4) described their lack of prior training on brain injury and positive effects of this training; 5) expressed enthusiasm for the screening tool's fit with their existing

screening/intake procedures; and 6) expressed a desire to know about treatment options and referral process to speech language pathologists to provide more complete services for clients.

Results: Screening Data (Group B)

A total of 558 elderly adults were screened by the AAA service coordinators. Of these, 86 (15%) had a positive screen for brain injury (BI) (Figure 22).

Figure 22	Brain Injury (BI) Screening Results		
	Total Number Screened	Have Injuries Potentially Causing a BI	Positive Screen for BI
Number	558	201	86
Percentage of Total	-	36%	15%

Among those with positive screens, the vast majority (87%) had been previously undiagnosed with BI (Figure 23).

Figure 23	Undiagnosed Brain Injuries (BI) (among those with positive screens)	
	Positive Screen for BI	Previously Undiagnosed with BI
Number	86	75
Percentage	-	87%

Among those with positive screens, 22% had two brain injuries and 15% had three or more brain injuries (Figure 24).

Figure 24	Number of Brain Injuries (among those with positive screens) (n=86)		
	1 injury	2 injuries	3 or more injuries
	63%	22%	15%

Among those with positive screens, 36% were age 65 or over at the time when the brain injury occurred (Figure 25).

Figure 25	Age at Time of Brain Injury (among those with positive screens) (n=86)				
0-4	5-14	15-24	25-44	45-64	65 +
5%	10%	19%	19%	12%	36%

Among those with positive screens, the majority (75%) were identified as having a mild brain injury (Figure 26).

Figure 26	Severity of Brain Injury (among those with positive screens) (n=86)		
Mild	Moderate	Severe	
75%	20%	5%	

The majority (66%) of those with a positive screen reported at least some loss of consciousness (Figure 27).

Figure 27	Loss of Consciousness (among those with positive screens) (n=86)		
No Loss of Consciousness	Loss of Consciousness for Less Than 30 Minutes	Loss of Consciousness for 30 Minutes to 24 Hours	Loss of Consciousness for More Than 24 Hours
34%	41%	20%	5%

Early Childhood Brain Injury Screenings

Three Early Childhood Planning Region Teams began using the SAFE Child Screen for Birth through 2 years (developed under a previous TBI grant) with children being screened for Individuals with Disabilities Act (IDEA) Part C (birth through age-2) services from May 15 through August 15th and are documenting the number of screens administered and the number of positive screens. This data will be reported after August 15, 2016 and will be included in next year's Annual TBI Grant report. The completed screen form will be placed in each child's educational file regardless of the outcome of the screen.

All SAFE Child screen forms (Birth – 2 Years; Ages 3 - Kindergarten; Grades 1 – 5 and SAFE Student – Middle and High School) have been translated to Spanish and Vietnamese along with the Parent Brochures for families of screened children aged 0 through high school.”

PARTNER Tool

One of the aims of the TBI project is to increase the collaboration among the key stakeholders or partners. Partnerships are an important element for reaching the outcomes of the project. As a measure of the level of collaboration and effectiveness of the partnerships, the PARTNER tool was selected to be administered to key partners every year as part of the grant evaluation. The PARTNER tool has been conducted twice (December 2014 and December 2015) with 13 project partners. Following are some key highlights from both years of administration. In general, it can be concluded that the strength of the collaboration has remained consistent across 2014 and 2015 (Figure 28).

Figure 28		PARTNER Tool Summary	
		2014	2015
Collaboration has been successful or very successful at reaching its goals		7 out of 10 (3 no responses)	10 out of 13
Top three aspects contributing to the success of the collaboration		<ol style="list-style-type: none"> 1. Having a shared mission, goals 1. (tied) Exchanging info/knowledge 3. Bring together diverse stakeholders 	<ol style="list-style-type: none"> 1. Exchanging info/knowledge 2. Bringing together diverse stakeholders 2. (tied) Informal relationships created
Top three member contributions to the collaboration		<ol style="list-style-type: none"> 1. Info/feedback 1. (tied) Community connections 3. Paid staff 	<ol style="list-style-type: none"> 1. Info/feedback 2. Community connections 2. (tied) Advocacy
Top three outcomes of the collaborative work		<ol style="list-style-type: none"> 1. Public awareness 2. Improved communication 2. (tied) Increased professional TBI knowledge 	<ol style="list-style-type: none"> 1. Improved communication 1. (tied) Public awareness 1. (tied) Improved resource sharing
Density score (percentage of ties in the network in relation to the total number of possible ties)		65%	63%
Degree centralization score (the lower the score the more similar the members are in terms of their connections to others – i.e., more decentralized)		41%	44%
Trust score (100% occurs when all members trust others at the highest level)		85%	84%
Value (Scale: 1-4)	Overall Value Score	3.28	3.33
	Power/influence value measure	3.14	3.34
	Level of involvement value measure	3.45	3.30
	Resource contribution value measure	3.24	3.35
Trust (Scale: 1-4)	Overall Trust Score	3.57	3.55
	Reliability trust measure	3.70	3.66
	In support of mission trust measure	3.43	3.42
	Open to discussion trust measure	3.58	3.58

Network Maps from the PARTNER Tool

Figures 29 and 30 show the network maps from the 2014 and 2015 PARTNER Tool administrations. Each line represents a network between two different organizations collaborating around the issue of TBI. More lines indicate more collaboration. There are three levels of collaboration:

- **Cooperative Activities:** involves exchanging information, attending meetings together, and offering resources to partners. Example: Informs other programs of RFA release.
- **Coordinated Activities:** includes cooperative activities in addition to intentional efforts to enhance each other's capacity for the mutual benefit of programs. Example: Separate granting programs utilizing shared administrative processes and forms for application review and selection.
- **Integrated Activities:** in addition to cooperative and coordinated activities, this is the act of using commonalities to create a unified center of knowledge and programming that supports work in related content areas. Example: Developing and utilizing shared priorities for funding effective prevention strategies. Funding pools may be combined.

Figure 29. 2014 Network Map

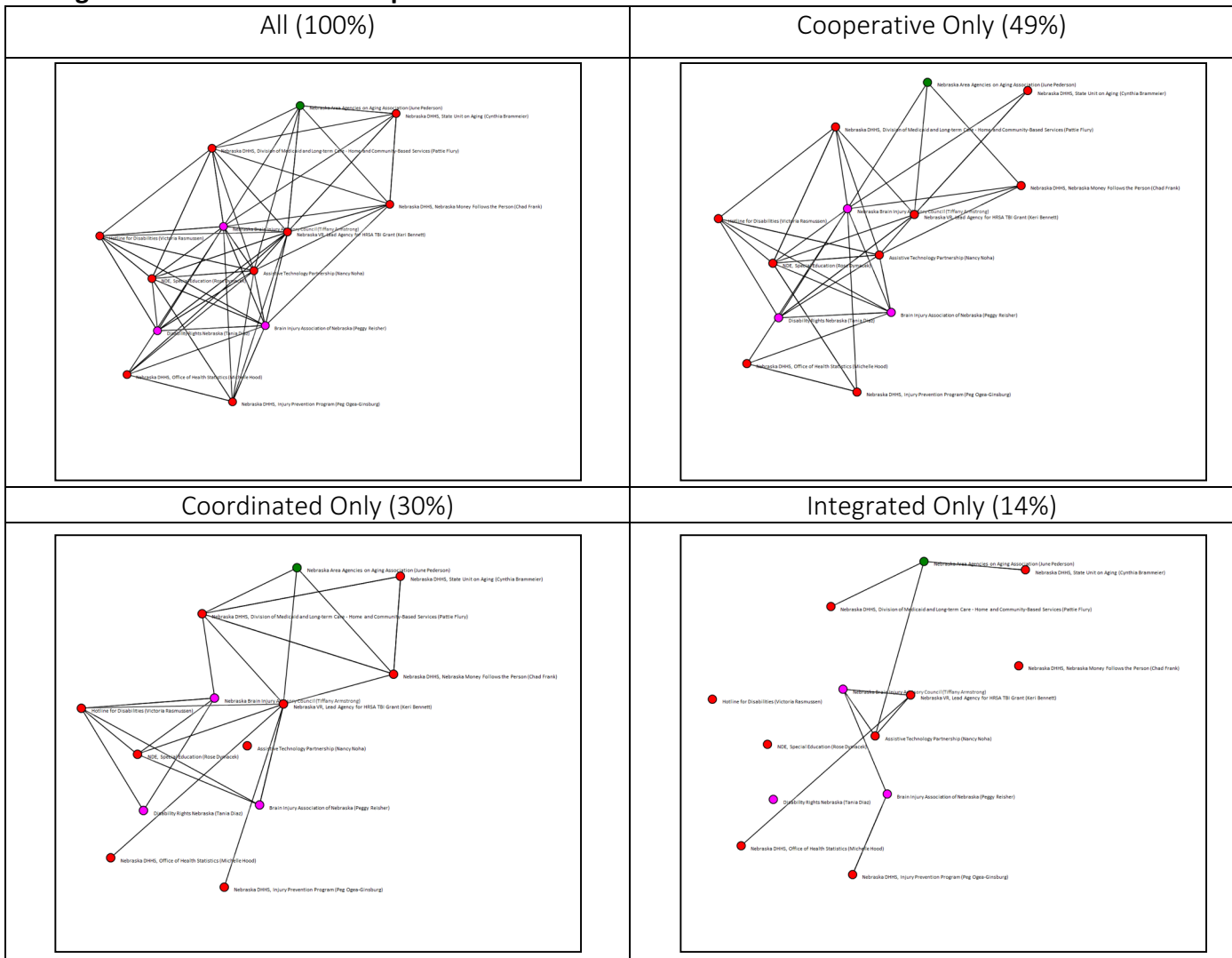
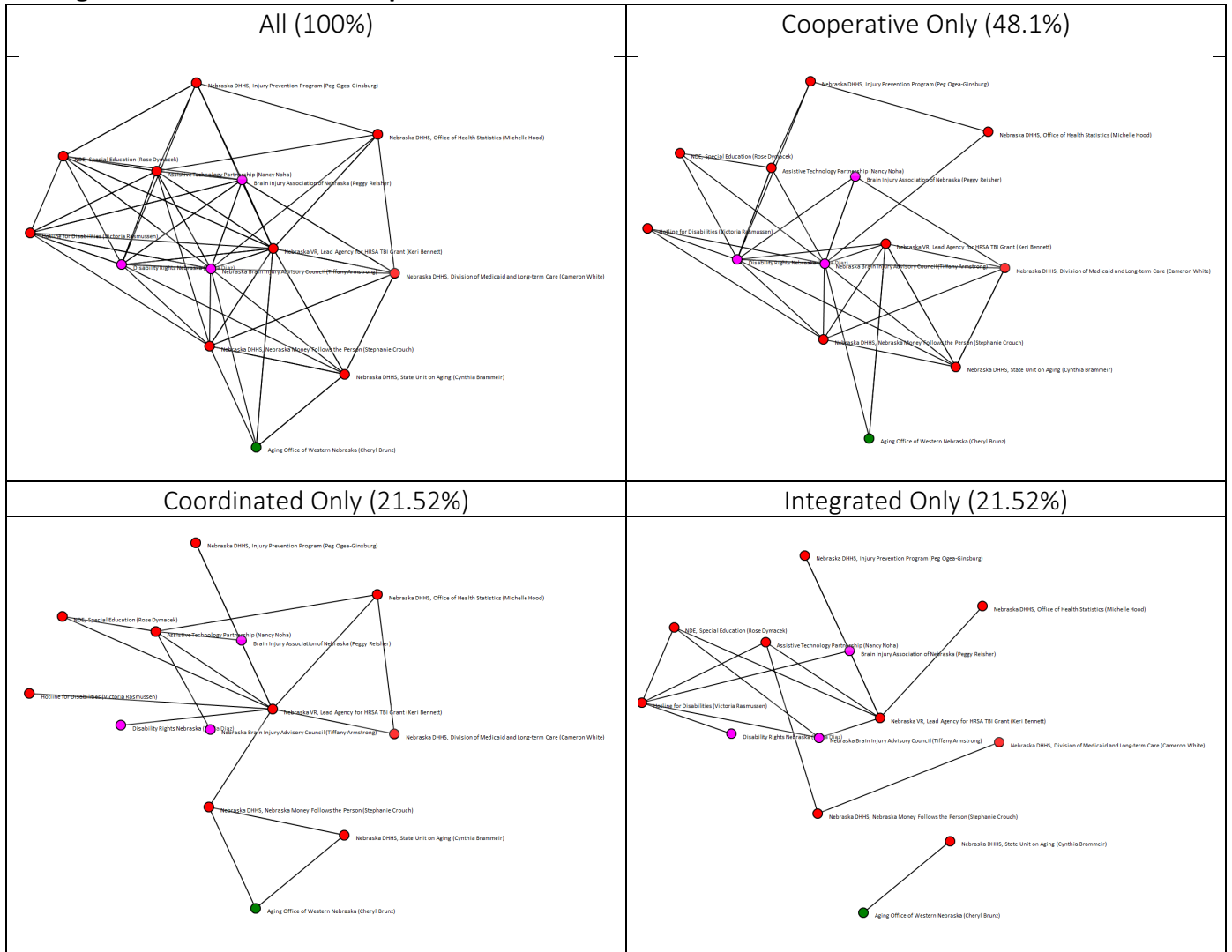


Figure 30. 2015 Network Map



Cost of TBI Analysis

The Web-based Injury Statistics Query and Reporting System (WISQARS) is a project of the Centers for Disease Control and Prevention (CDC). WISQARS provides valuable information on the topic of injury in the United States in the form of data reports and query systems. The Cost of Injury Reports application was used in this to determine the costs (both medical and work loss) associated with traumatic brain injury (TBI) in Nebraska in 2013. The Cost of Injury Reports Application provides an average estimated cost for a TBI by age and gender.

The data in this section represent the costs for TBIs that were sustained in 2013. The costs presented in this report should not be understood as being accrued entirely in 2013. Both medical and work loss costs associated with TBI may extend throughout an individual's lifetime. In the tragic incidence of a death due to TBI, the average work loss costs can extend beyond a million dollars. Furthermore, work loss costs are calculated as the amount of work lost by an individual who sustained a TBI. The work loss costs do not include the work loss acquired by parents and caregivers of TBI survivors. For more information, see the full report, available by contacting Keri Bennett (keri.bennett@nebraska.gov).

Figure 31 presents the total number of emergency department visits, hospitalizations, and deaths due to TBI in Nebraska in 2013. Based on age and gender breakdowns of these data, a total cost (including both medical and work loss costs) of TBIs in Nebraska occurring in 2013 was determined to be over \$800 million. Totals costs are also broken down by gender and age in subsequent tables in this section (Figures 31 through 36).

Figure 31	Emergency department visits, hospitalizations, and deaths due to TBI in Nebraska (2013)		
	ED Visits	Hospitalizations	Deaths
	10,672	1,701	344

(Source: Nebraska TBI Registry and Nebraska Vital Statistics, 2013)

Figure 32	The total estimated cost of TBI by emergency department visits, hospitalizations, and deaths in Nebraska (2013)			
	ED Visits	Hospitalizations	Deaths	Total
Medical Costs	\$52,112,808	\$144,396,731	\$3,991,653	\$200,501,192
Work Loss Costs	\$42,440,973	\$313,433,021	\$245,735,663	\$601,609,657
Total Costs	\$94,553,781	\$457,829,752	\$249,727,316	\$802,110,849

(Source: Nebraska TBI Registry, 2013; Nebraska Vital Statistics, 2013; and WISQARS Cost of Injury Reports, 2013)

Figure 33	The total estimated cost of TBI by gender in Nebraska (2013)			
	Male	Female	Unknown	Total
Medical Costs	\$124,003,990	\$76,483,303	\$13,899	\$200,501,192
Work Loss Costs	\$468,023,686	\$133,570,610	\$15,361	\$601,609,657
Total Costs	\$592,027,676	\$210,053,913	\$29,260	\$802,110,849

(Source: Nebraska TBI Registry, 2013; Nebraska Vital Statistics, 2013; and WISQARS Cost of Injury Reports, 2013)

Figure 34	The total estimated cost of TBI by emergency department visits, hospitalizations, and deaths in Nebraska (2013)			
	ED Visits	Hospitalizations	Deaths	Total
Medical Costs	\$52,112,808	\$144,396,731	\$3,991,653	\$200,501,192
Work Loss Costs	\$42,440,973	\$313,433,021	\$245,735,663	\$601,609,657
Total Costs	\$94,553,781	\$457,829,752	\$249,727,316	\$802,110,849

(Source: Nebraska TBI Registry, 2013; Nebraska Vital Statistics, 2013; and WISQARS Cost of Injury Reports, 2013)

Figure 35	The total estimated cost of TBI by gender in Nebraska (2013)			
	Male	Female	Unknown	Total
Medical Costs	\$124,003,990	\$76,483,303	\$13,899	\$200,501,192
Work Loss Costs	\$468,023,686	\$133,570,610	\$15,361	\$601,609,657
Total Costs	\$592,027,676	\$210,053,913	\$29,260	\$802,110,849

(Source: Nebraska TBI Registry, 2013; Nebraska Vital Statistics, 2013; and WISQARS Cost of Injury Reports, 2013)

Figure 36	The total estimated cost of TBI by age in Nebraska (2013)		
	Medical Costs	Work Loss Costs	Total Costs
0 to 4	\$8,608,985	\$19,376,743	\$27,985,728
5 to 9	\$4,483,412	\$9,261,424	\$13,744,836
10 to 14	\$5,175,412	\$12,008,411	\$17,183,823
15 to 19	\$12,888,350	\$55,776,947	\$68,665,297
20 to 24	\$14,718,566	\$80,781,016	\$95,499,582
25 to 29	\$11,265,844	\$62,743,240	\$74,009,084
30 to 34	\$11,028,560	\$63,354,373	\$74,382,933
35 to 39	\$6,548,191	\$32,560,928	\$39,109,119
40 to 44	\$7,941,884	\$43,168,884	\$51,110,768
45 to 49	\$9,960,390	\$47,408,984	\$57,369,374
50 to 54	\$10,796,746	\$57,731,808	\$68,528,554
55 to 59	\$10,511,581	\$28,160,101	\$38,671,682
60 to 64	\$10,878,622	\$24,011,898	\$34,890,520
65 to 69	\$11,760,112	\$21,151,736	\$32,911,848

	Medical Costs	Work Loss Costs	Total Costs
70 to 74	\$9,881,674	\$7,949,955	\$17,831,629
75 to 79	\$15,179,508	\$11,298,109	\$26,477,617
80 to 84	\$14,386,541	\$9,660,148	\$24,046,689
85 and over	\$24,486,814	\$15,204,952	\$39,691,766
Total	\$200,501,192	\$601,609,657	\$802,110,849

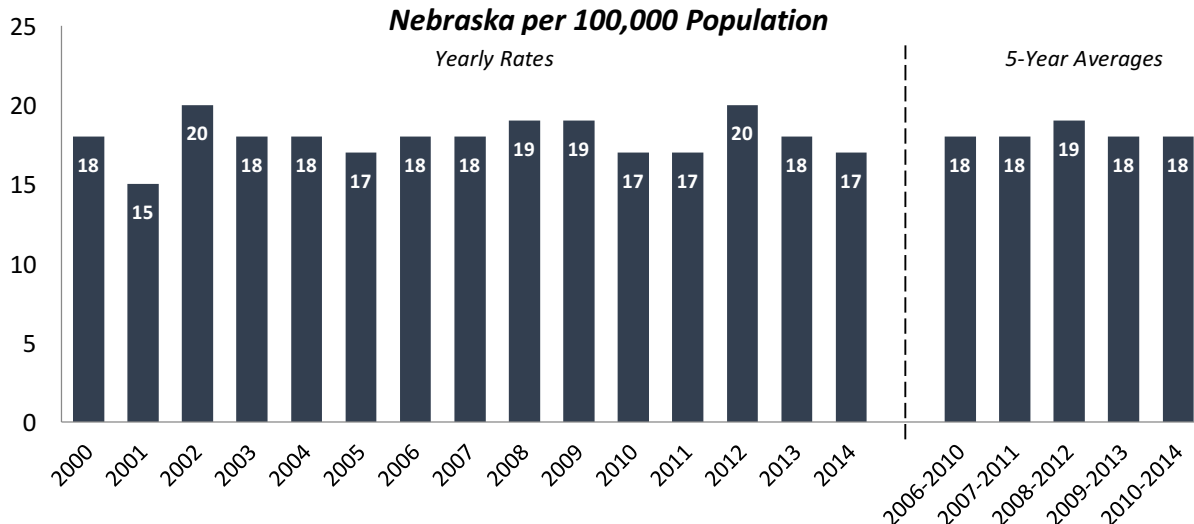
(Source: Nebraska TBI Registry, 2013; and WISQARS Cost of Injury Reports, 2013)

Surveillance Data

Deaths, Hospitalizations, and Emergency Department Visits

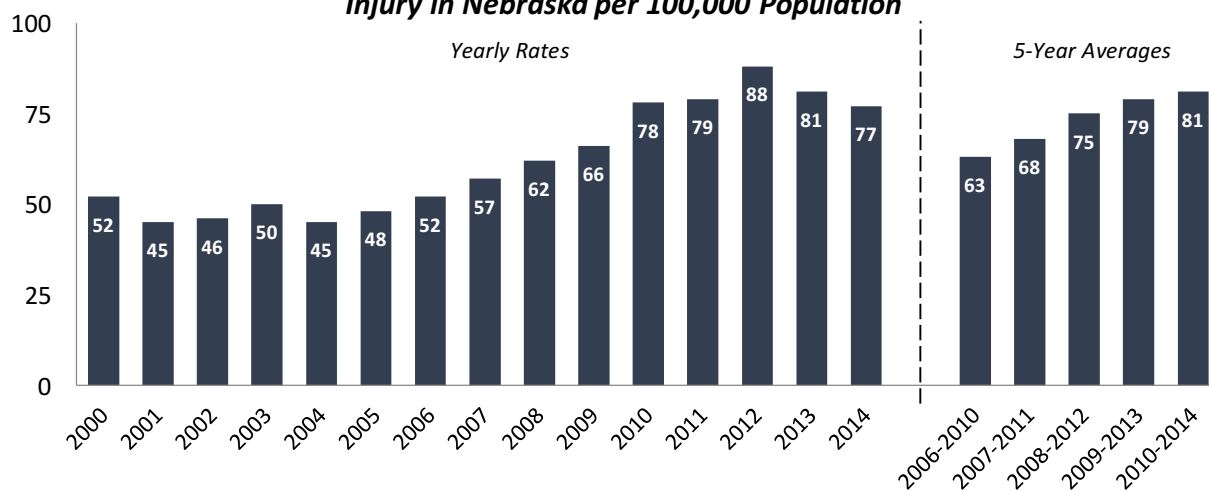
Figures 37 through 39 present rates of death, hospitalization, and emergency department visits due to TBI from 2000 through 2014. The rate of deaths due to TBI has remained relatively stable, while the rates of hospitalizations and emergency department visits due to TBI have increased substantially since 2000. A significant contributor to these increases in hospitalizations and emergency department visits may be due to the increased awareness of concussions.

Figure 37. Age Adjusted Death Rate Due to Traumatic Brain Injury in Nebraska per 100,000 Population



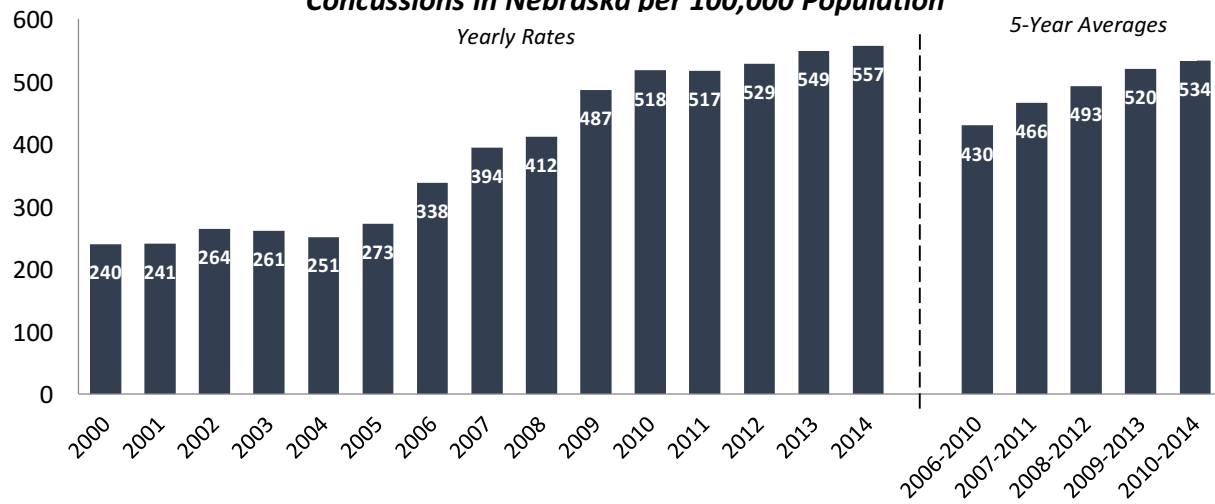
(Source: Nebraska Death Certificates, 2000-2014)

Figure 38. Age Adjusted Hospitalization Rate Due to Traumatic Brain Injury in Nebraska per 100,000 Population



(Source: Nebraska Hospital Discharge - E-Code, 2000-2014)

Figure 39. Age Adjusted Emergency Department Visit Rate Due to Concussions in Nebraska per 100,000 Population



(Source: Nebraska Hospital Discharge - E-Code, 2000-2014)

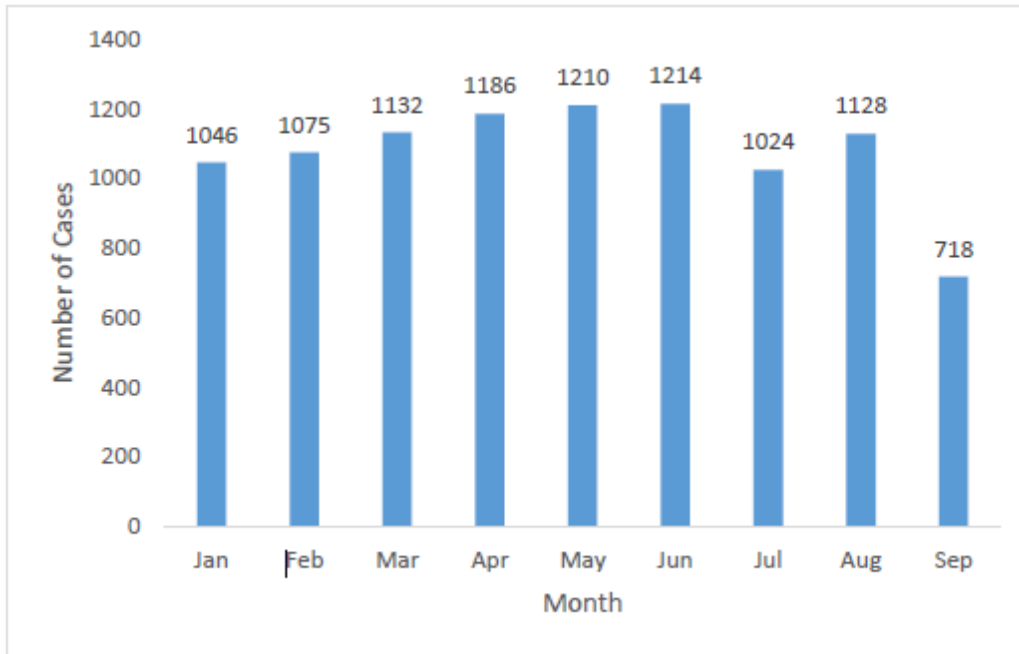
TBI Registry

Survivors of a TBI are placed on a registry. TBI Registry data are shown below in Figures 40 through 43. From January 2015 through September 2015 there were 9,733 new cases in the TBI registry. There were on average 1,081 new cases of TBI per month during this nine-month period. Note that these data only cover a partial year and are preliminary.

Those age 15 – 19 were the most common age group in the TBI registry during this time period, accounting for 1,092 cases. Among those under the age of 45, TBIs are more prevalent among males. However, among those age 45 and over TBIs are more prevalent among females. The leading cause of TBI during this nine-month time period was falls, accounting for 47% of all TBIs.

Note that the full calendar year 2015 data are not yet finalized. Changes are occurring to the way data are collected due to hospitals switching from the ICD-9 to the ICD-10 coding system.

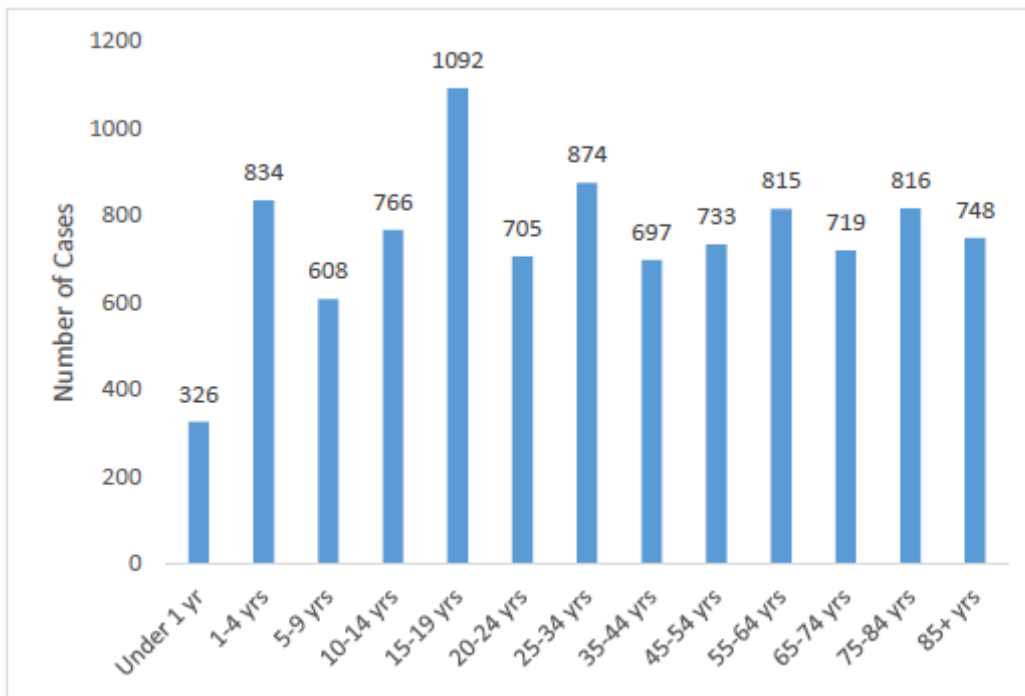
Figure 40. Reported cases in the TBI Registry by month, Jan. 2005 – Sept. 2015*



*Counts for the month of September are preliminary

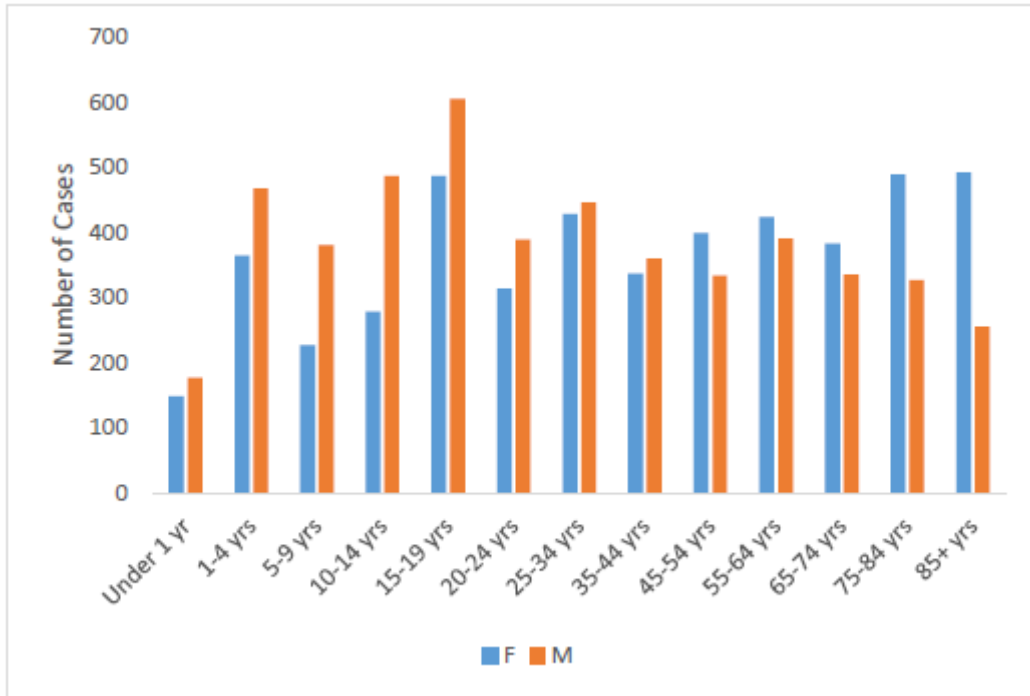
(Source: Nebraska TBI Registry, 2015)

Figure 41. TBI Registry Cases Distributed by Patient Age-Group, Jan. 2015 – Sept. 2015



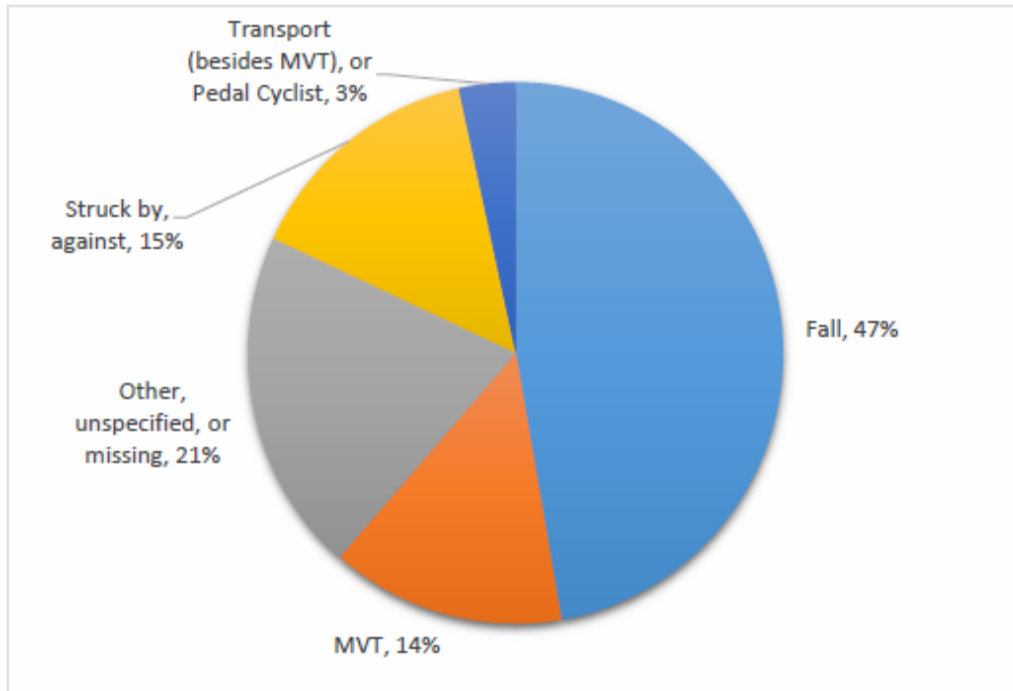
(Source: Nebraska TBI Registry, 2015)

Figure 42. Number of TBI Registry Cases Distributed by Age and Gender, Jan. 2015 – Sept. 2015



(Source: Nebraska TBI Registry, 2015)

Figure 43. TBI Registry Leading Causes of Injury by Percent of Cases, Jan. 2015 – Sept. 2015



(Source: Nebraska TBI Registry, 2015)

Appendix

TBI Grant – Training QUESTIONS

Training Evaluation

Date: _____

Profession: _____

Did your knowledge in the following areas increase as a result of this training event?

1. TBI prevention, causes and/or recovery Yes No
2. Ways a TBI can be detected (screening tools, or warning signs that should prompt a referral for screening) Yes No
3. Services and/or provider that may be able to help with recovery after TBI Yes No
4. Ways that I, in my professional role, can identify individuals that may have TBI, meet their needs relative to my practice, and/or refer these students elsewhere for needed services Yes No
5. As a result of today's training, do you anticipate being more able to assist individuals with TBI and their families in accessing the services they need?
 Yes No
6. If you answered "Yes" to question #5, in what ways do you think you will be better able to serve this population? Please check all that apply.
 - I have information to provide to individuals/families about TBI
 - I have information to provide to individuals/families about local resources/services
 - I can more easily recognize symptoms of TBI
 - I can better interact with individuals with TBI in the course of my work
 - I know what to do when I encounter an individual with TBI in my work
7. How satisfied are you with today's training?
 Very satisfied Satisfied Neither satisfied nor dissatisfied Dissatisfied Very dissatisfied

OPTIONAL:

8. How confident do you feel in using the materials and methods provided at today's training to train someone else?
 Very confident Confident Neutral Not confident Not confident at all
 9. After today's training, how confident do you feel in assisting individuals with TBI?
 Very confident Confident Neutral Not confident Not confident at all
-

Ohio State University TBI Identification Method — Interview Form

Step 1

Ask questions 1-5 below. Record the cause of each reported injury and any details provided spontaneously in the chart at the bottom of this page. You do not need to ask further about loss of consciousness or other injury details during this step.

I am going to ask you about injuries to your head or neck that you may have had anytime in your life.

1. In your lifetime, have you ever been hospitalized or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about.

No Yes—Record cause in chart

2. In your lifetime, have you ever injured your head or neck in a car accident or from crashing some other moving vehicle like a bicycle, motorcycle or ATV?

No Yes—Record cause in chart

3. In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock)? Have you ever injured your head or neck playing sports or on the playground?

No Yes—Record cause in chart

4. In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, or from being shaken violently? Have you ever been shot in the head?

No Yes—Record cause in chart

5. In your lifetime, have you ever been nearby when an explosion or a blast occurred? If you served in the military, think about any combat- or training-related incidents.

No Yes—Record cause in chart

Interviewer instruction:

If the answers to any of the above questions are "yes," go to Step 2. If the answers to all of the above questions are "no," then proceed to Step 3.

Step 2

Interviewer instruction: If the answer is "yes" to any of the questions in Step 1, ask the following additional questions about each reported injury and add details to the chart below.

Were you knocked out or did you lose consciousness (LOC)?

If yes, how long?

If no, were you dazed or did you have a gap in your memory from the injury?

How old were you?

Step 3

Interviewer instruction: Ask the following questions to help identify a history that may include multiple mild TBIs and complete the chart below.

Have you ever had a period of time in which you experienced multiple, repeated impacts to your head (e.g. history of abuse, contact sports, military duty)?

If yes, what was the typical or usual effect—were you knocked out (Loss of Consciousness - LOC)?

If no, were you dazed or did you have a gap in your memory from the injury?

What was the most severe effect from one of the times you had an impact to the head?

How old were you when these repeated injuries began? Ended?

Step 1 Cause	Step 2 Loss of consciousness (LOC)/knocked out				Dazed/Mem Gap		Age
	No LOC	< 30 min	30 min-24 hrs	> 24 hrs	Yes	No	

If more injuries with LOC: How many? _____ Longest knocked out? _____ How many ≥ 30 mins.? _____ Youngest age? _____

Step 3 Cause of repeated injury	Typical Effect		Most Severe Effect				Age	
	Dazed/ memory gap, no LOC	LOC	Dazed/ memory gap, no LOC	LOC < 30 min	LOC 30 min - 24 hrs.	LOC > 24 hrs.	Began	Ended

Adapted with permission from the Ohio State University TBI Identification Method (Corrigan, J.D., Bogner, J.A. (2007). Initial reliability and validity of the OSU TBI Identification Method. *J Head Trauma Rehabil*, 22(6):318-329. © Reserved 2007, The Ohio Valley Center for Brain Injury Prevention and Rehabilitation

