

Research In Focus: A Weekly Digest of New Research from the NIDILRR Community

Return to Driving May Be an Important Goal for Improving Quality of Life for People with Moderate to Severe Traumatic Brain Injury

A study funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR).

A traumatic brain injury (TBI) is lasting brain damage from an external force, such as a fall or car accident. A TBI can be classified as mild, moderate, or severe based on several factors including how long a person is unconscious, if they experience a coma, or if they have memory loss. People with moderate to severe TBI may have long-term effects as a result, which may limit their ability to participate fully in their community. For example, the ability to return to driving a vehicle can be a challenge for people after a moderate to severe TBI.

Return to driving is a common recovery goal for this population as it can lead to increased community participation, employment, and improved quality of life. Prior research suggests that between 40% and 70% of people with TBI return to driving. Factors such as education, employment, race, and injury severity have been shown to impact return to driving. However, little is known whether additional factors such as age and other personal characteristics may also impact returning to driving, or how long it takes for people to get back on the road after the TBI.

In a recent NIDILRR-funded study, researchers sought to examine the effects of age, injury severity, and other personal characteristics on, as well as the timing of, returning to driving after TBI. They also wanted to see whether returning to driving would have an impact on emotional well-being, quality of life, and community participation.

Researchers from TBI Model System Centers in Alabama, Colorado, Michigan, Minnesota, New Jersey, Pennsylvania, Virginia, and Washington surveyed 706 people with TBI who were enrolled in the TBI Model Systems National Database. All were at least 16 years old, were able to drive prior to their injury, and met the criteria for moderate to severe TBI. The participants completed regularly scheduled follow-up interviews about their health and recovery post-TBI as part of the National Database data collection, and were offered to complete the survey about driving between May 2018 and May 2019. They answered questions about whether and when they returned to driving, factors behind their decision to return to or stop driving, any personal or external limitations which made it difficult to drive again, their current driving activities, and safety issues they've encountered in their return to driving.

The researchers analyzed responses to the survey along with information gathered in the follow-up interviews. The researchers also looked at information about each participant from the National Database including age, time since injury, whether they had seizures in the previous year, and severity of the TBI. Finally, the researchers compared the study sample to a nationwide sample of US drivers.

The researchers found that:

- Over three quarters of the participants had returned to driving. The rate of return to driving was highest in the first 2 years after injury.
- Participants who returned to driving and continued to drive (active drivers) had higher levels of community participation and satisfaction with life, and lower levels of depression than those who were not driving at the time of the interview.
- Participants who returned to driving were more likely to have more education, higher household income, and be employed. Specifically:
 - Participants who had at least some college education were twice as likely to return to driving as those who had not completed high school.
 - Participants in the highest income bracket were 4 times more likely to return to driving.
 - Employed participants were 5 times more likely to return to driving.
- White participants were twice as likely to return to driving compared to Black participants, regardless of whether they resided in urban or rural areas.
- Participants who reported having seizures were less likely to return to driving.
- Those with more severe TBI were less likely to return to driving.

The researchers did not find that the percentage of participants returning to driving decreased by age. In each age group, they found the percentage of those returning to driving was similar, with the exception of those over 70 years old where the drop off in percentage was observed. However, a lower percentage of participants were driving compared to their peers in the national sample.

The authors noted that the percentage of the participants that had returned to driving was larger compared to prior studies of people with TBI on the topic. But when the researchers excluded a portion of those who had returned to driving but who had since stopped driving, the results were more consistent with those prior studies. The authors also noted, as with prior research, injury severity, race, and education level had an impact on return to driving. This study also identified household income as another factor that significantly impacted return to driving. Considering the high cost of purchasing and maintaining a vehicle, those with higher income may be more able to afford a standard or adapted vehicle. A significant percentage of participants in this study returned to driving, and those who were active drivers reported more participation, greater life satisfaction, and lower depression. The authors suggested that future research may be beneficial for examining barriers to driving, driving patterns, safety, and access to a vehicle. Rehabilitation providers, including driver rehabilitation specialists, may want to prioritize assessments and training to return to driving early in the recovery process following TBI.

To Learn More

The [Model Systems Knowledge Translation Center](#) provides evidence-based information resources developed with researchers at the TBI Model System Centers including:

- [Driving after TBI](#)
- [Seizures after TBI](#)

The American Occupational Therapy Association has information on [Driving & Community Mobility](#), including a database to find driving rehabilitation specialists nearby.

To Learn More About this Study

Novack, T.A., et al. (2021) Return to driving after moderate-to-severe traumatic brain injury: A Traumatic Brain Injury Model System study. Archives of Physical Medicine and Rehabilitation, 102, 1568-1575. This article is available from the NARIC collection under Accession Number J87019.

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