

Mental Health After Injury: How Neighborhoods Impact Recovery

Bryce Hruska, Maria L. Pacella-LaBarbara, Ivan E. Castro, Richard L. George, Douglas L. Delahanty

Each year in the United States, there are over 90 million injury-related emergency department visits,¹ resulting in \$4.2 trillion of costs related to medical care, loss of work, and reduced quality of life (e.g., reduced satisfaction with relationships, financial security, leisure activities).^{2,3} Poor mental health following injury plays a major role. Nearly a quarter of injury survivors are diagnosed with a new mental health disorder, such as posttraumatic stress disorder (PTSD), anxiety, or depression within the first year of injury.⁴

Mental health complications contribute more significantly to long-term injury-related disability than physical complications,⁵ with PTSD being particularly challenging for long-term recovery.⁶ To date, research on post-injury mental health has primarily focused on its relationship to age, gender, and trauma history.⁷ In contrast, the neighborhood impact on injury recovery has been undervalued, despite evidence that the residential environment plays an important role in the development of many mental health disorders.⁸

This brief summarizes the results of our [recently published study](#)⁹ which examines several aspects of neighborhood context and their relationship with PTSD symptom severity in injury survivors. The neighborhood dimensions we assessed include racial segregation, socioeconomic (SES) conditions, and racialized economic segregation.

Neighborhood Context Predicts PTSD Symptom Severity

Given the significance of mental health following injury, it is important to identify risk factors that can facilitate early intervention and prevent long-term consequences. It is also important to consider the

KEY FINDINGS

- At 2-weeks post-injury, survivors living in neighborhoods with higher racial segregation reported PTSD symptom severity levels that were 14.1% higher than survivors living in neighborhoods with lower segregation. These differences persisted 6-weeks post-injury.
- Survivors living in poorer neighborhood socioeconomic (SES) and neighborhoods with higher racialized economic segregation had higher PTSD symptom severity 6-weeks post-injury.
- The incorporation of collaborative healthcare into community health centers may be an effective way to ensure that injury survivors residing in neighborhoods that increase risk for mental health distress receive the care that they need following injury.

full range of symptoms that a survivor may experience following injury and not simply those symptoms that are severe enough to warrant a diagnosis. Consequently, we considered how PTSD symptom severity, which represents symptoms along a continuum, was predicted by neighborhood factors.

At 2-weeks post-injury, survivors living in neighborhoods with higher segregation between Black and White residents reported PTSD symptom severity levels that were 14.1% higher than survivors living in neighborhoods with lower segregation (See Figure 1). Similar results were observed after 6 weeks. Survivors living in communities with lower overall SES levels also reported higher PTSD symptom severity 6-weeks following injury. Additionally, injury survivors living in communities with greater segregation between poorer Black residents and more affluent White residents (racialized economic segregation) experienced higher symptom levels 6-weeks after injury. Symptom severity measured across all three neighborhood dimensions 6 weeks post-injury are shown in Figure 2. A similar pattern of findings was present 3-months post-injury.

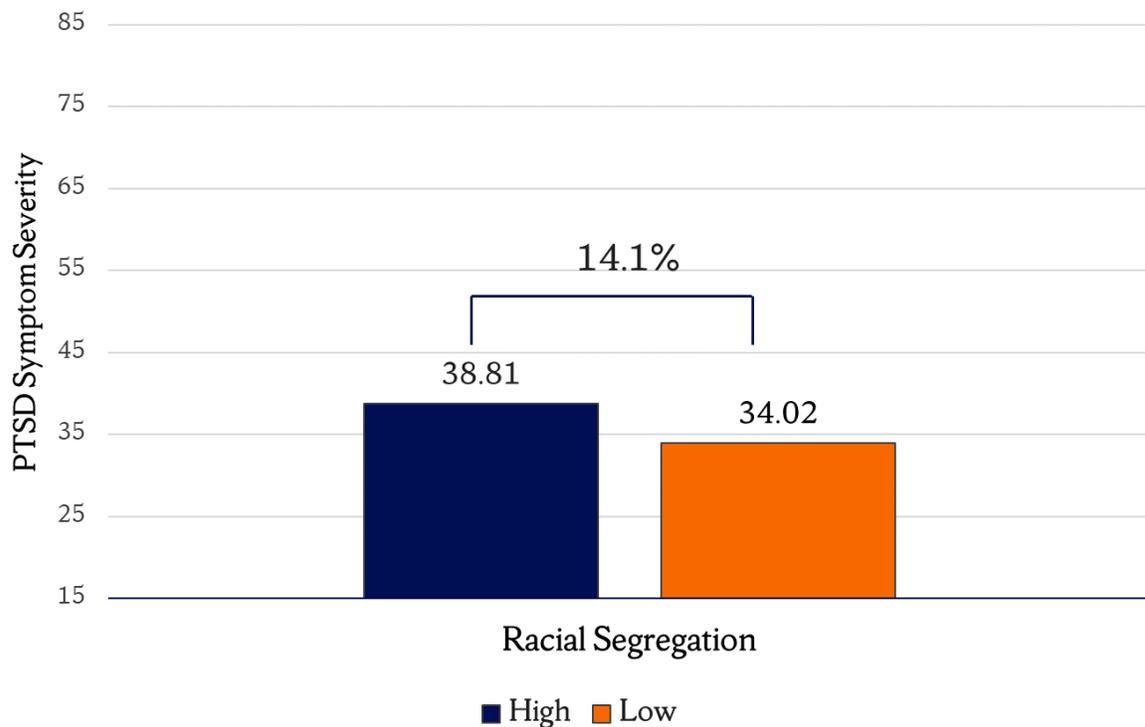


Figure 1. PTSD Symptom Severity 2-Weeks Post-Injury According to Neighborhood Racial Segregation

Note. Data were collected in 2012-2013 and estimates were derived from our [recently published study](#).⁹ High = neighborhoods with racial segregation levels $\geq 75^{\text{th}}$ percentile, Low = neighborhoods with racial segregation levels $\leq 25^{\text{th}}$ percentile.

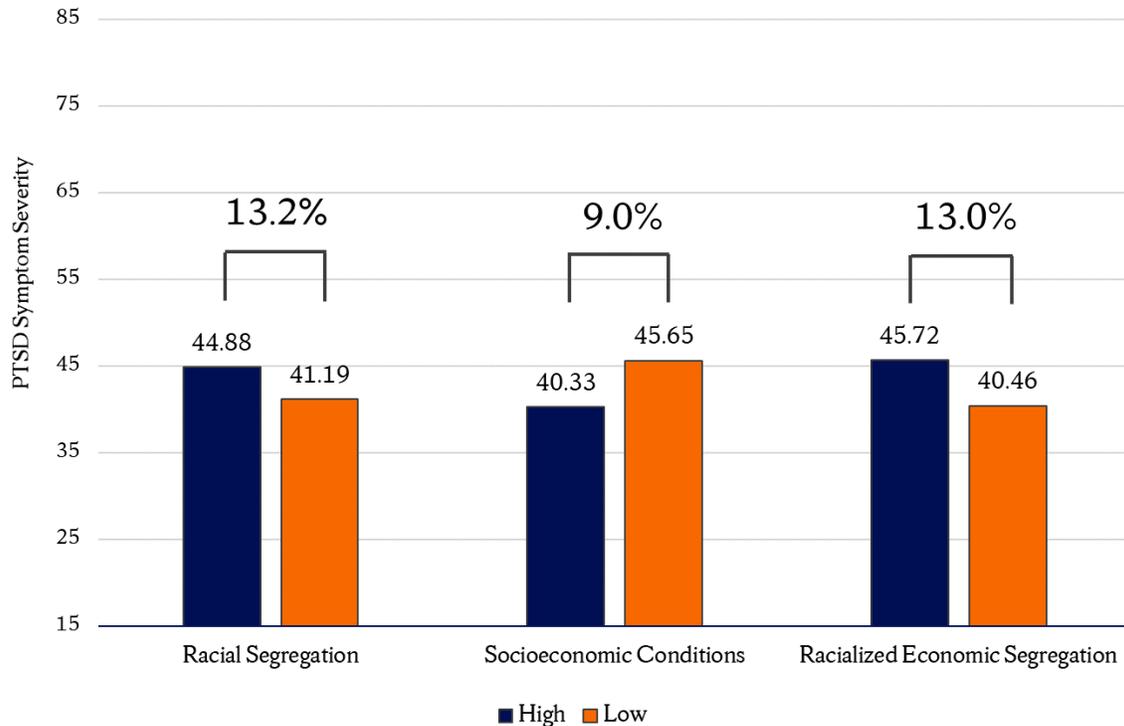


Figure 2. PTSD Symptom Severity 6-Weeks Post-Injury According to Neighborhood Racial Segregation, Socioeconomic Conditions, and Racialized Economic Segregation

Note. Data were collected in 2012-2013 and estimates were derived from our [recently published study](#).⁹ High = neighborhoods with socioeconomic conditions, racial segregation, racialized economic segregation levels $\geq 75^{\text{th}}$ percentile, Low = neighborhoods with socioeconomic conditions, racial segregation, racialized economic segregation levels $\leq 25^{\text{th}}$ percentile.

Facilitating Mental Health Recovery Following Injury

Collectively, these results suggest that the neighborhoods where injury survivors live at the time of injury can increase the risk for elevated PTSD symptom severity. A stepped care model of mental health intervention following injury represents the current best practice for injury survivors. This model involves repeatedly screening people in the weeks and months following injury and delivering resources according to the level of distress being experienced. Those survivors who continue to experience distress at later points in time receive an escalation of services. Our results suggest that neighborhood factors, such as economic conditions and residential segregation, might be important additions to stepped care, by providing an indication of who is most likely to experience mental health complications as a function of their residential environment.

Furthermore, given that neighborhoods with higher levels of residential segregation and lower socioeconomic conditions have less accessible healthcare,^{10,11} our findings support the incorporation of collaborative healthcare delivery models into injury survivor treatment practices. Under these models, physical and mental health care services are provided in the same healthcare facility and coordinated by an integrated healthcare team. This eliminates the need to schedule multiple appointments at different healthcare providers, which can serve as a barrier to treatment receipt. Furthermore, it results in more comprehensive care that treats all aspects of health by facilitating treatment planning between physical

and mental healthcare providers. Community health centers, which traditionally serve lower income residents in rural and urban areas,¹² represent the ideal setting where efforts should be focused on the incorporation of collaborative healthcare for injury survivors in the weeks and months following injury.

Data and Methods

Injury survivors admitted to a Midwestern Level-1 trauma center were approached and recruited during a medical follow up at an outpatient clinic two weeks after their injury. Participants completed an instrument assessing PTSD symptom severity at this initial clinic visit and again at 6 weeks and at 3 months following injury. Neighborhood socioeconomic conditions were assessed using the Neighborhood Deprivation Index.¹³ Racial segregation was assessed using the Index of Concentration at the Extremes-Race.¹⁴ Racialized economic segregation was assessed using the Index of Concentration at the Extremes-Income Race.¹⁴ For further details, please see our [recently published study](#).⁹

References

1. National Center for Health Statistics. (2022). *Accidents or Unintentional Injuries*. <https://www.cdc.gov/nchs/fastats/accidental-injury.htm>.
2. Peterson, C., Xu, L., & Barnett, S. B. L. (2021). Average lost work productivity due to non-fatal injuries by type in the USA. *Injury Prevention*, 27(2), 111-117.
3. Moergeli, H., Wittmann, L., & Schnyder, U. (2012). Quality of life after traumatic injury: A latent trajectory modeling approach. *Psychotherapy and Psychosomatics*, 81(5), 305-311.
4. Bryant, R. A., O'Donnell, M. L., Creamer, M., McFarlane, A. C., Clark, C. R., & Silove, D. (2010). The psychiatric sequelae of traumatic injury. *American Journal of Psychiatry*, 167(3), 312-320.
5. O'Donnell, M. L., Varker, T., Holmes, A. C., Ellen, S., Wade, D., Creamer, M., Silove, D., McFarlane, A., Bryant, R. A., & Forbes, D. (2013). Disability after injury: The cumulative burden of physical and mental health. *The Journal of Clinical Psychiatry*, 74(02), e137-e143.
6. Schweininger, S., Forbes, D., Creamer, M., McFarlane, A. C., Silove, D., Bryant, R. A., & O'Donnell, M. L. (2015). The temporal relationship between mental health and disability after injury: Mental health and disability after injury. *Depression and Anxiety*, 32(1), 64-71.
7. Heron-Delaney, M., Kenardy, J., Charlton, E., & Matsuoka, Y. (2013). A systematic review of predictors of posttraumatic stress disorder (PTSD) for adult road traffic crash survivors. *Injury*, 44(11), 1413-1422.
8. Hill, T. D., & Maimon, D. (2013). Neighborhood context and mental health, *Handbook of the Sociology of Mental Health*, 479-501.
9. Hruska, B., Pacella-LaBarbara, M. L., Castro, I. E., George, R. L., & Delahanty, D. L. (2022). Incorporating community-level risk factors into traumatic stress research: Adopting a public health lens. *Journal of Anxiety Disorders*, 86, 102529.
10. Gaskin, D. J., Dinwiddie, G. Y., Chan, K. S., & McCleary, R. (2012). Residential segregation and disparities in health care services utilization. *Medical Care Research and Review*, 69(2), 158-175.
11. Kirby, J. B., & Kaneda, T. (2005). Neighborhood socioeconomic disadvantage and access to health care. *Journal of Health and Social Behavior*, 46(1), 15-31.
12. Paradise, J., Rosenbaum, S., Markus, A., Sharac, J., Tran, C., Reynolds, D. (2017). Community health centers: Recent growth and the role of the ACA - Issue Brief. KFF. <https://www.kff.org/report-section/community-health-centers-recent-growth-and-the-role-of-the-aca-issue-brief/>
13. Messer, L. C., Laraia, B. A., Kaufman, J. S., Eyster, J., Holzman, C., Culhane, J., Elo, I., Burke, J. G., & O'Campo, P. (2006). The development of a standardized neighborhood deprivation index. *Journal of Urban Health*, 83(6), 1041-1062.
14. Krieger, N., Waterman, P. D., Spasojevic, J., Li, W., Maduro, G., & Van Wye, G. (2016). Public health monitoring of privilege and deprivation with the index of concentration at the extremes. *American Journal of Public Health*, 106(2), 256-263.

Acknowledgments

The author thanks Lauren Mussig, Alexandra Punch, and Shannon Monnat for edits on a previous version of this brief.

About the Authors

Bryce Hruska (bjhruska@syr.edu) is an Assistant Professor in the Department of Public Health in the David B. Falk College of Sport and Human Dynamics at Syracuse University and a Lerner Center Faculty Research Affiliate. **Maria Pacella-LaBarbara** is a Research Assistant Professor in the Department of Emergency Medicine at the University of Pittsburgh and a core faculty member of the CHallenges in Managing and Preventing Pain (CHAMPP) research center. **Ivan E. Castro** is a Business Intelligence Lead at innoVet Health and supports data analytics services at the VA's Veterans Health Information Exchange. **Richard L. George** is Chief of the Division of Trauma in the Department of Surgery, Trauma Medical Director, and Surgical ICU Medical Director at Summa Health System- Akron Campus. **Douglas L. Delahanty** is a Professor of Psychological Sciences and interim Vice President for Research and Sponsored Programs at Kent State University.

The mission of the SU Lerner Center for Public Health Promotion is to improve population and community health through research, education, and outreach focused on the social, spatial, and structural determinants of physical, mental, and behavioral health and health disparities.

426 Eggers Hall | Syracuse | New York | 13244
syracuse.edu | lernercenter.syr.edu

To access all our briefs, visit: <https://surface.syr.edu/lerner/>