

Transportation Security Index

TSI-3

Transportation insecurity is a condition in which a person is unable to get from place to place in a safe or timely manner due to an absence of resources necessary for transportation (e.g. money for bus fare or car repairs, health for walking, friends with cars who can provide rides).

The validated 3-question Transportation Security Index (TSI-3) measures an individual's experience with transportation insecurity using 3 questions that tap into 3 unique symptoms of transportation insecurity as observed in qualitative research. It identifies 2 categories of transportation insecurity. To administer, all 3 questions should be asked and answered in the order detailed below.

Questions? Contact the research team at transportation-insecurity@umich.edu.

Optional Introductory Question

Designed to prime respondents to consider the full range of transportation options. TSI results are not impacted if not administered.

How often do you use each of the following to get from place to place? If the type of transportation is not available to you, please select "Not available to me."

Statements in rows

- Walking
- Biking
- Riding a motorcycle or moped
- Your own personal vehicle (e.g., car, truck, SUV)
- Borrowing the personal vehicle of a friend, family member, neighbor, coworker, or acquaintance
- Getting a ride from a friend, family member, neighbor, coworker, or acquaintance (including carpooling)
- Taking a taxi service or rideshare (e.g., Uber, Lyft)
- Using a rental car or car sharing service (e.g., Zipcar, Car2go)
- Taking the bus
- Taking the train or subway
- Using paratransit (that is, specialized, door-to-door transport service for people with disabilities)

Statements in columns

- Daily
- A few times a week
- A few times a month
- A few times a year
- Never
- Not available to me

TSI-3

1. To get to the places they need to go, people might walk, bike, take a bus, train or taxi, drive a car, or get a ride. In the past 30 days, how often did you skip going somewhere because of a problem with transportation?

Often **Sometimes** **Never**

2. In the past 30 days, how often were you **not** able to leave the house when you wanted to because of a problem with transportation?

Often **Sometimes** **Never**

3. In the past 30 days, how often did problems with transportation affect your relationships with others?

Often **Sometimes** **Never**

How to score the TSI-3

Looking at responses to the main questionnaire, assign each “never” response a score of 0, each “sometimes” response a score of 1, and each “often” response a score of 2.

For those interested in using the TSI-3 as a continuous variable, sum the scores to arrive at the respondent’s continuous transportation insecurity score.

For those interested in using the TSI-3 as a categorical variable, to assign a respondent to a transportation insecurity category, use the following scheme:

- **Sum score 0-1:** No Insecurity/Secure
- **Sum score 2-6:** Transportation Insecure

CITATIONS AND ATTRIBUTIONS

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If you are interested in commercial use or in building upon or modifying the TSI, please contact transportation-insecurity@umich.edu.

CITATIONS

Murphy, Alexandra K., Jamie Griffin, and Alix Gould-Werth. 2025. "Development and validation of a 3-item Transportation Security Index for social risk screening assessments and research into the many pathways through which transportation impacts health." *AJE Advances: Research in Epidemiology*, 1(3): 1-10.

For more information, visit: transportation-insecurity.umich.edu