Method to assess the accessibility of essential amenities in Tripura, North East India

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Ease of access to a service or an amenity is measured by its accessibility level. In urban/rural areas, the key parameter used to measure accessibility is road connectivity. This is usually measured by the distance and/or time from the origin to the location of various amenities providing health, education, banking, shopping and other services. In addition to distance/time, for hilly regions like Tripura, North East India, road safety also plays a major role in accessibility to various amenities. This study first measures the level of amenities within a village and represents this with a score, viz. self-sufficient score (3S score). This score is further upgraded considering the amenities available outside that village but in nearby larger villages/cities. Unsignalized intersections being the most dangerous locations in hilly regions, the level of road safety has been measured based on road geometry information, i.e. the number of intersections, sharpness of the road curve coupled with altitude of the roads between the subject village and amenities in other villages/cities. This is known as the safety score of intersections. The value of the upgraded 3S score coupled with the safety score for intersections is considered in ranking the villages for their access to various amenities. The villages with minimum scores have been identified for further decision-making process.

Keywords: Accessibility level, essential amenities, hilly regions, road connectivity, self-sufficient score.

connected, with roughly seven million people left disconnected.

India has an essentially rural-oriented economy, and the Government of India (GoI) has been systematically planning to provide all its villages and habitations with good road connectivity. However, presently, road connectivity in North East India is poor. Tripura, one of the states in NE India, has limited road network connectivity among its villages/towns. Road connectivity for any area/region is typically measured based on how other regions are connected to it and at what distance; assured road safety is also considered. Safety on the roads of Tripura is more challenging due to the hilly terrain. According to a report by GoI, there were 557 road accidents in Tripura in 2015 and 655 in 2019 (ref. 2). Also, during 2015, the accident severity (road accident deaths per 100 accidents) reported for Tripura was 32 and for the year 2019 it is reported to be 41.2. The increasing risk of commuting on Tripura roads is a major concern as, on the one hand, GoI is focusing on better road connectivity, while on the other, safety is a more important concern.

Studies focusing on road connectivity aspects are usually limited to accessibility measured in terms of distance and road construction cost. This study focuses on including road safety as a function of measuring road connectivity and, therefore, accessibility.

Literature review