

Article: A composite index for assessing accessibility in urban areas: A case study in Central Athens, Greece

Citation:

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LLM Used: Free ChatGPT3.5

Question: Can you provide a summary of the following excerpt? (Excerpt provided was parameters of the index.)

Answer:

This excerpt outlines the methodology employed in a survey aimed at identifying barriers to movement within the city of Kallithea, Greece, and estimating the time individuals are willing to spend to access specific land uses using different modes of transportation. Here's a breakdown of the key components:

1. **Survey Design:** The survey was conducted online due to COVID-19 restrictions and was distributed through social media channels, specifically Facebook groups with approximately 10,000 members. The response rate couldn't be estimated precisely due to the unknown population of users who accessed the survey link.
2. **Survey Structure:** The questionnaire consisted of two parts, with a screening question directing respondents to the relevant section based on their mobility needs. The first part targeted individuals without disabilities and comprised questions on travel modes, vehicle ownership, trip duration, travel satisfaction, public transport usage, bike usage, pedestrian experiences, and related issues.
3. **Mobility Needs Assessment:** The second part was tailored for respondents with disabilities, focusing on their travel modes, availability of driving licenses, vehicle accessibility, routing preferences, public transport usage, trip purposes, issues faced while using public transport, satisfaction with mobility aids, importance ratings of travel-related issues, and sociodemographic characteristics.
4. **Common Section:** Both parts concluded with questions assessing the importance of improving pedestrian crosswalks, sidewalks, public transport stops, and bikeways in their district, followed by inquiries about sociodemographic information such as home country, gender, age, education level, and professional status.

Overall, the survey aimed to gather comprehensive data on mobility patterns, accessibility barriers, and preferences among residents and visitors in Kallithea, Greece, to inform urban planning and transportation policies.

A general comment about using the free version of ChatGPT: You cannot upload the pdf or any url for the LLM to analyze. You need to copy and past excerpts of the article. If you provide the authors and title of the article, it will make generalized assumptions about the content. However, the way the responses are

output, it appears as if the LLM is making “intelligent” remarks on the article, and this is not ideal. Because of the limitations, the main findings, such as any formulations, must be summarized by hand, which is what I have done below.

“Usefulness” for this course:

- Provides an infrastructure accessibility index based off of the mode of transportation.
 - There are four modes: sidewalk, crosswalk, bikeway, and public transportation stops.
- In the index formulation, weights of each infrastructure type is based off user priority. The calculation of these weights is below.
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$$w_k = \frac{(n-r_k+1)}{\sum_{k=1}^4 (n-r_k+1)} (k$$

=(1) sidewalk, (2) crosswalk, (3) bikeway,
and (4) public transport stops)

Where r_k is the rank of the k^{th} infrastructure type.

- The definition of the road accessibility index is below:
The road section accessibility index ($I_{i,j}$) captures all available infrastructure types in a road section i ($i=1\dots n$) for road j ($j=1\dots m$) and is estimated by Eq. (1).

$$I_{i,j} = \sum_{k=1}^4 I_{i,j}^k \times w_k (k$$

=(1) sidewalk, (2) crosswalk, (3) bikeway,
and (4) public transport stops)

(1)

- The average value of $I(i,j)$ for all road sections provides the IAI(j) for each road j . A road section is defined as the segment between two parallel roads.
- Results:
Each IAI provides a score between 0 and 100 with 0 meeting no preference and therefore inaccessible and 100 meeting every preference and therefore has “excellent accessibility.” Scores above 50 are considered “satisfactory accessibility”.
- In general, we are not considering user preference to the same level as this journal. However, we are considering (or trying to consider) the modes of transportation listed here. One thought I had was altering this to include only public transportation stops and the weights can now represent walking time and number of connections made. There can be predefined thresholds for walking time/distance and weights can be assigned to the thresholds. Similarly, we can do the same for number of stops. Ideally, we would then aim to maximize the accessibility score of the individual.