

Data-driven Research on Physical Street Designs, Multisensory Stimuli, and Perceived Walking Experiences: A Case Study in Central and Kwun Tong Business Area

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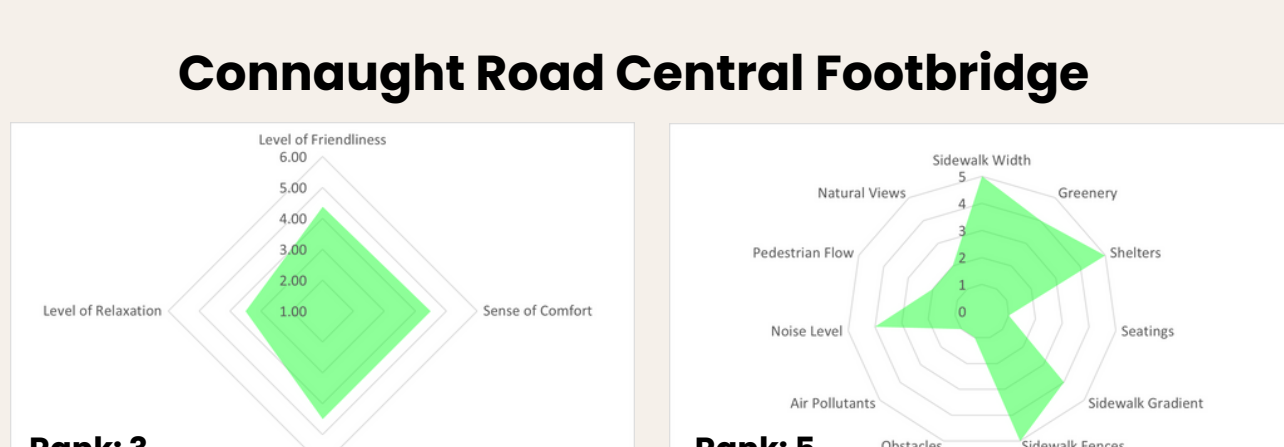
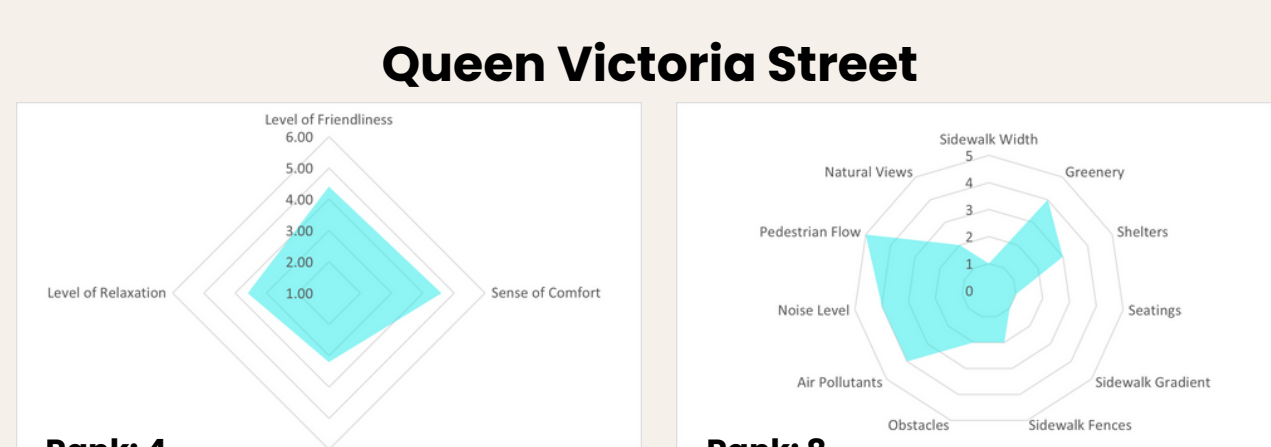
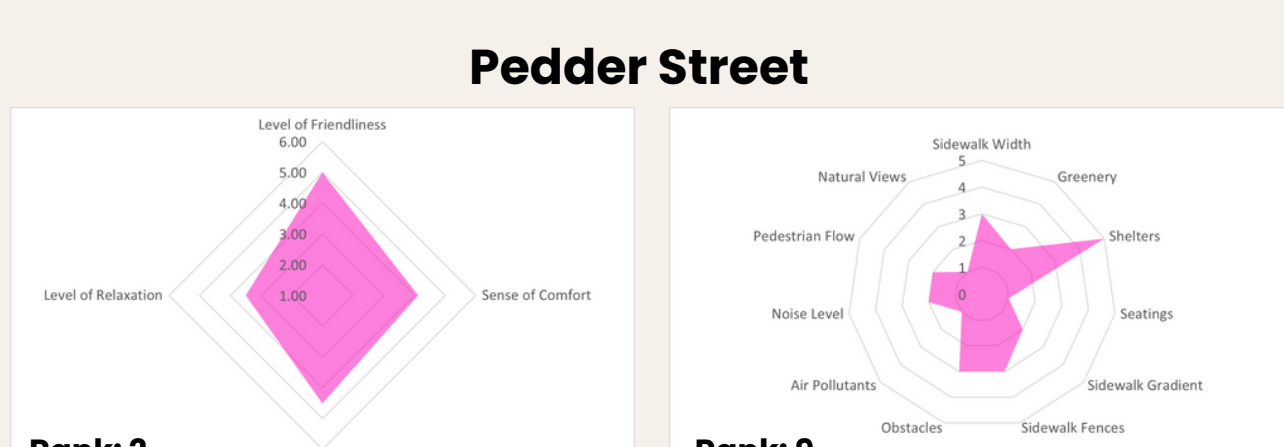
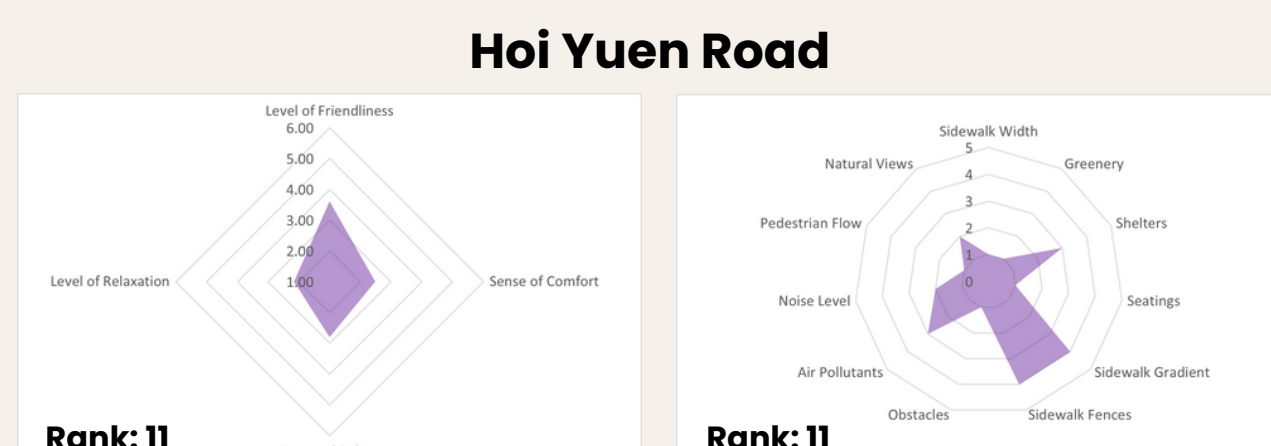
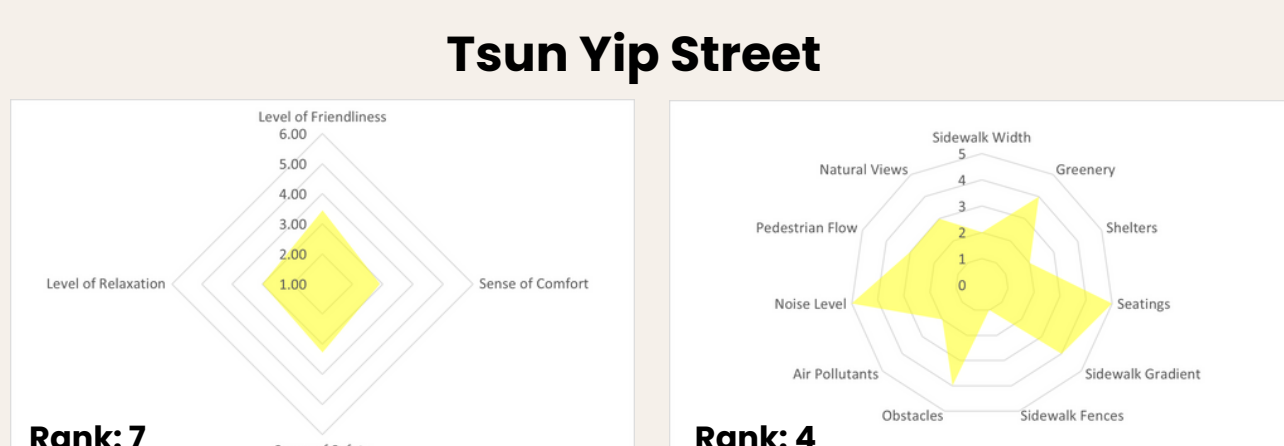
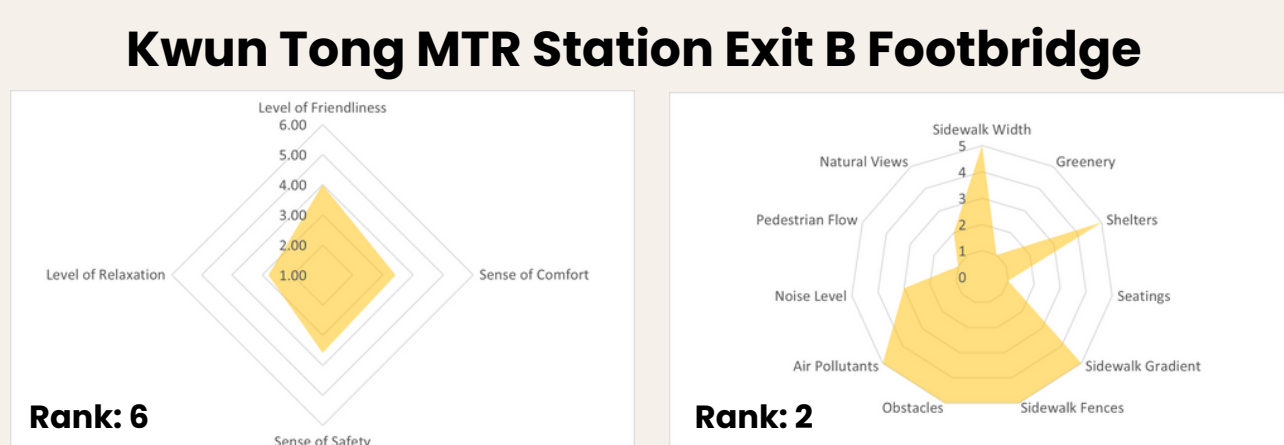
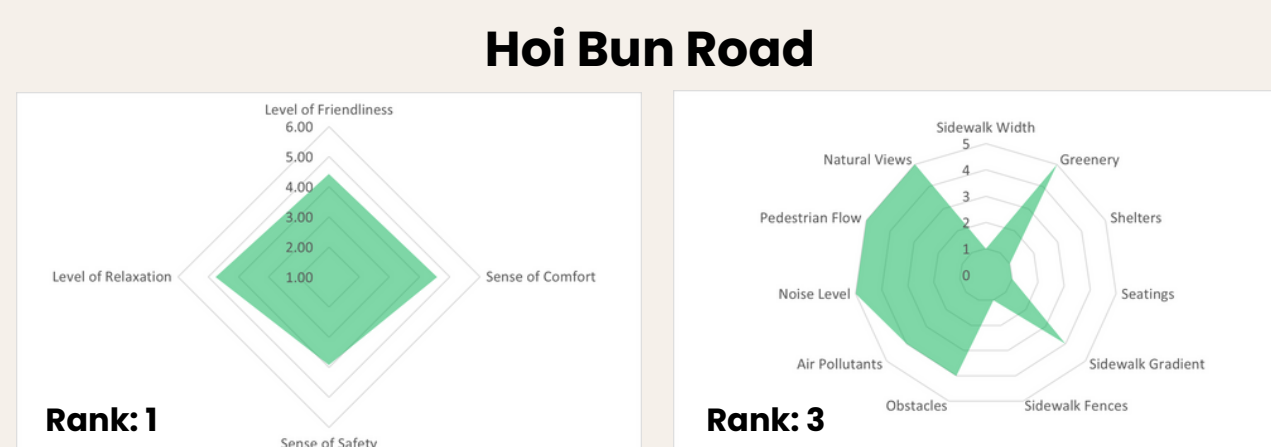
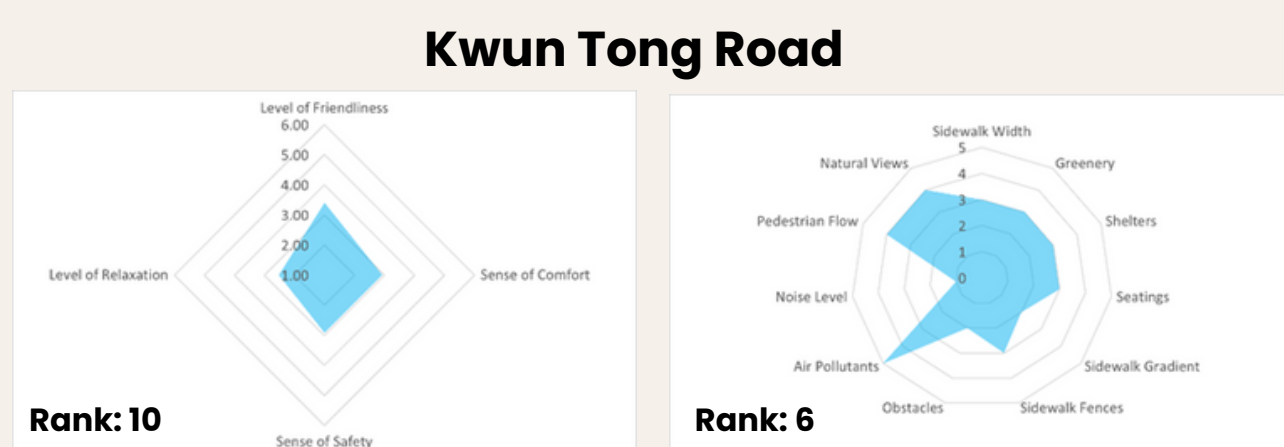
Research Background

- Walking is an integral part of daily activities and one of the most common and convenient active transport modes
- Different physical characteristics of the walking environment affect people's perceptions while walking.

Research Objectives

- To quantitatively measure the quality and characteristics of the selected street segments by data-driven analyses
- To explore how the perceived walking experiences of pedestrians are affected by physical street designs and multisensory stimuli
- To recommend design guidelines and spatial planning direction in terms of pedestrian planning to enhance the walking environment

Key Findings



Implications

- Understanding the discrepancies between pedestrian's subjective perceptions and objective measures is important for designing a pedestrian-friendly walking environments.

Research Significance

Academic Significance

- Providing a novel way to conceptualize street space and objectively measure environmental factors

Policy-making Significance

- Provoking comprehensive insights into the pedestrian planning framework

Social Significance

- Identifying critical street segments which are necessary to improve

Operational Definition

Perceived Walking Experiences

Level of Friendliness

- Feeling friendly and familiarity in the walking environment

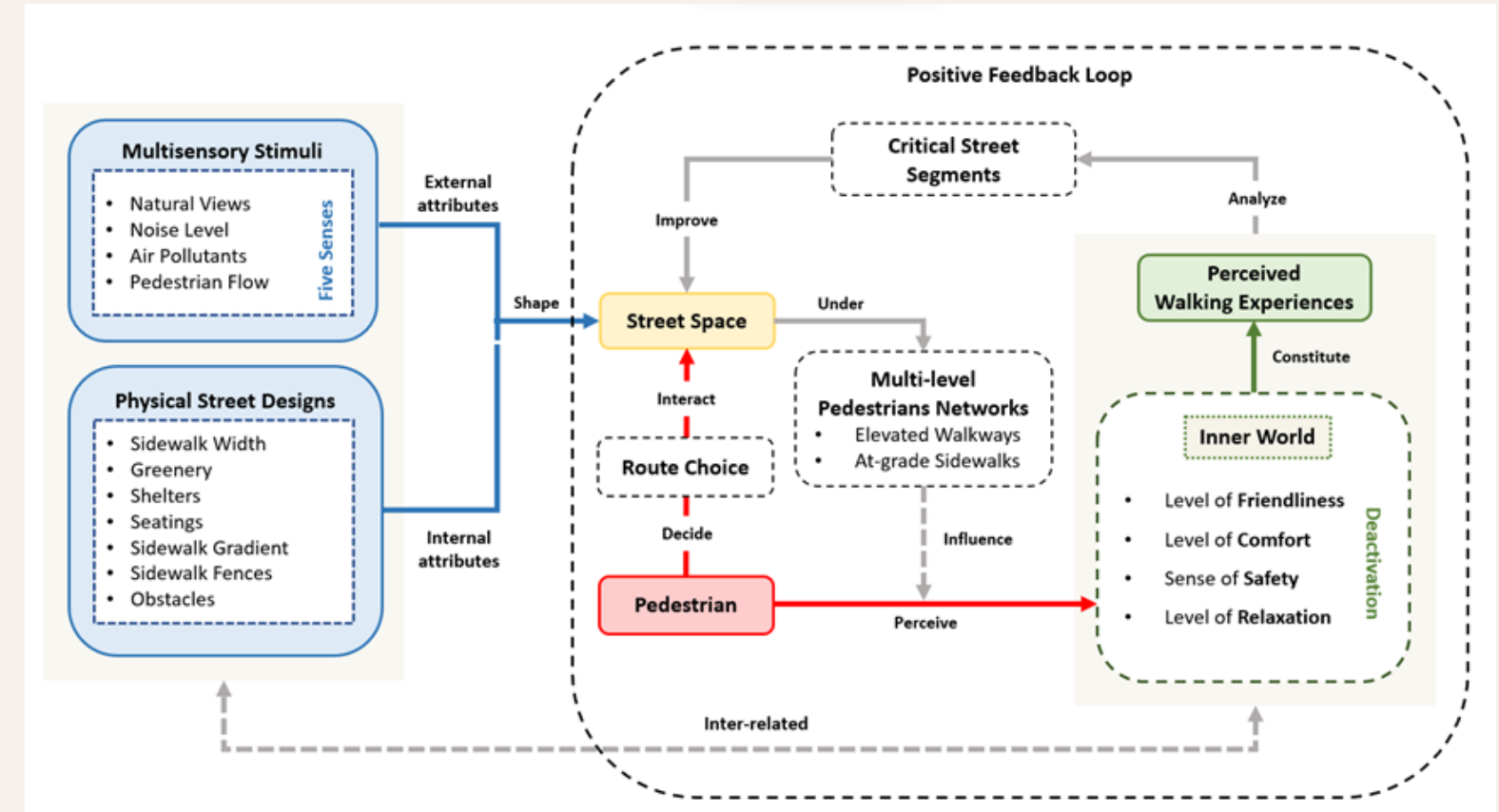
Sense of Comfort

- Feeling ease, convenience, and contentment

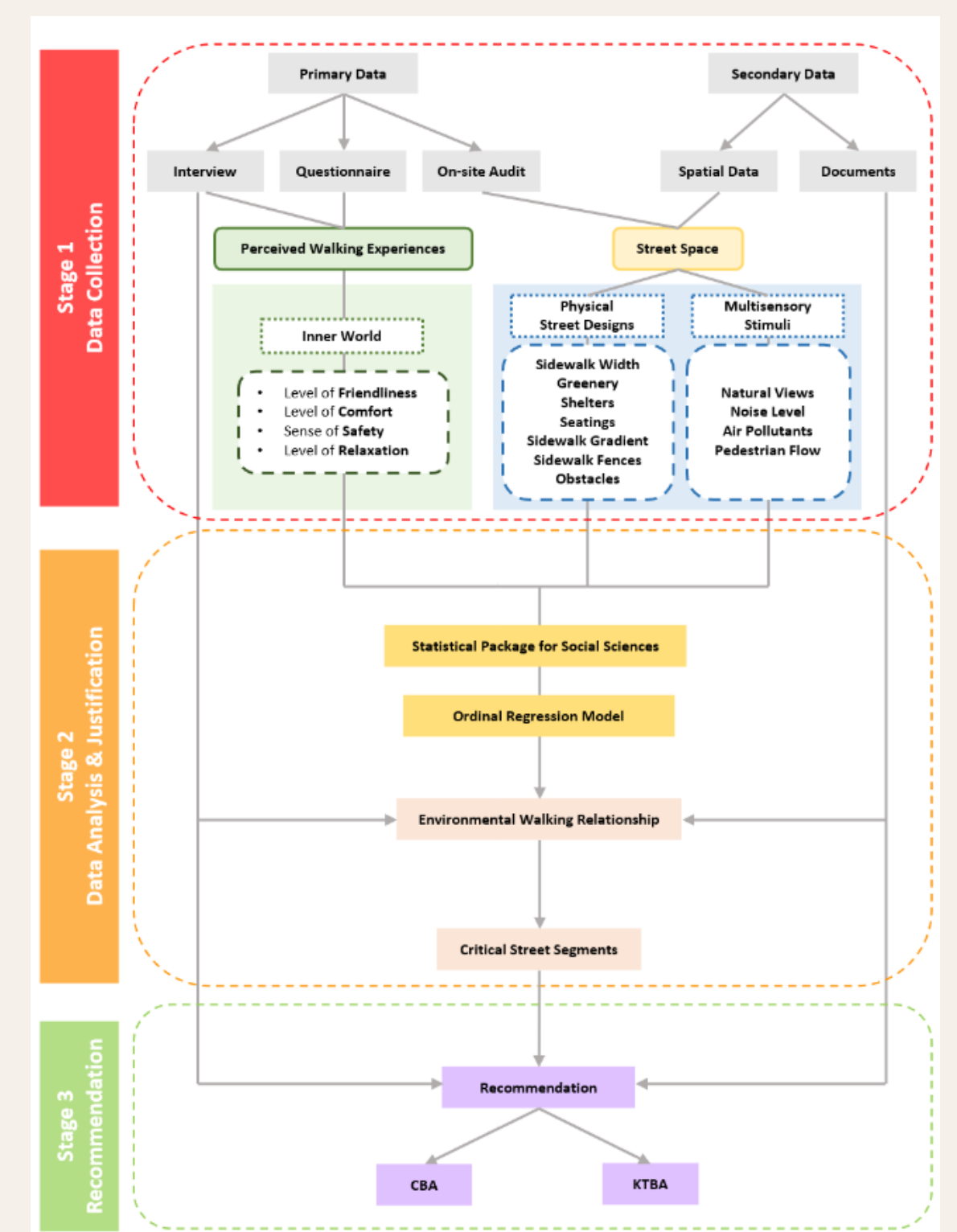
Sense of Safety

- Feeling calm and safe, not feeling threaten

Conceptual Framework



Research Framework



Key Findings

- Noise level is a crucial factor in determining the perceived sense of comfort, level of relaxation, and sense of comfort.
- Perceived walking experiences are also affected by the presence of shelters, greenery, sidewalk width, as well as pedestrian flow.
- Multisensory stimuli have the most significant impact on pedestrians' perception.
- Higher quality walking environments and more positive walking experiences were found on elevated walkways, compared to at-grade level.
- Without considering Hoi Bun Road, the overall performance of walking environments in KTBA would be worse and poorer than that in CBA.
- Hoi Yuen Road and Des Voeux Road Central are identified as critical street segments which are necessary to improve

- Air quality in Des Voeux Road Central and Pedder Street should be improved.
- Noise level in Kwun Tong Road, Des Voeux Road Central, and Connaught Road Central should be mitigated.
- A minimum width of 4.5 meters for the "through zone" should be provided in all street segments