Pedestrian Crossing Behavior at Mid-block

交差点間中間部における歩行者横断挙動分析

Tr ffic ENGINEERING GROUP

東京大学 生産技術研究所 大口研究室（交通制御工学）・ Muhammad Abdullah
http://www.transport.iis.u-tokyo.ac.jp/

ITS Center THE UNIVERSITY OF TOKYO 次世代モビリティ研究センター

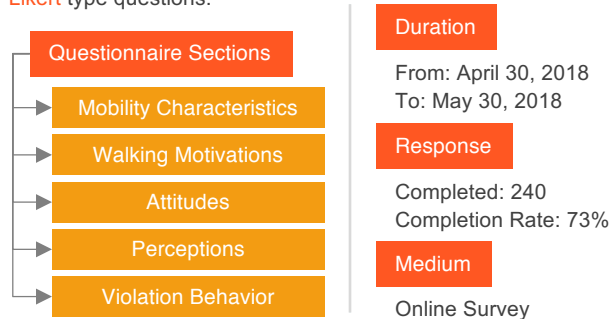## Introduction

Road and traffic factors explain only a portion of pedestrian crossing behavior. Underlying human factors should also be studied to explore the crossing behavior especially at mid-block locations. For this purpose, a questionnaire survey was conducted to explore crossing behavior at mid-block locations.
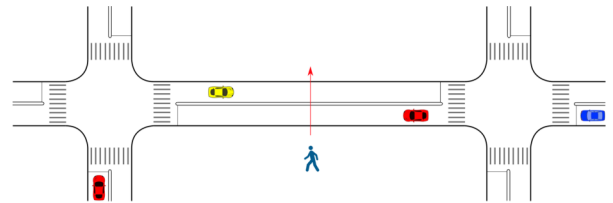
Questionnaire Design and Distribution

The questionnaire was designed after extensive literature review and it consisted of five sections. Each section was designed so as to measure unobservable human factors through 5-point Likert type questions.

Questionnaire Sections
- Mobility Characteristics
- Walking Motivations
- Attitudes
- Perceptions
- Violation Behavior

Duration
From: April 30, 2018
To: May 30, 2018

Response
Completed: 240
Completion Rate: 73%

Medium
Online Survey

Demographics of Respondents

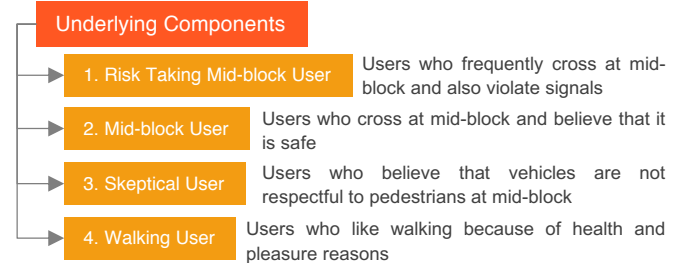Gender ratio, age groups and region of the respondents are shown below:

Female 39%
Male 61%

Principal Component Analysis (PCA)

Categorical principal component analysis (CATPCA) was conducted to reduce the multidimensional data and obtain underlying uncorrelated components.

Model Summary

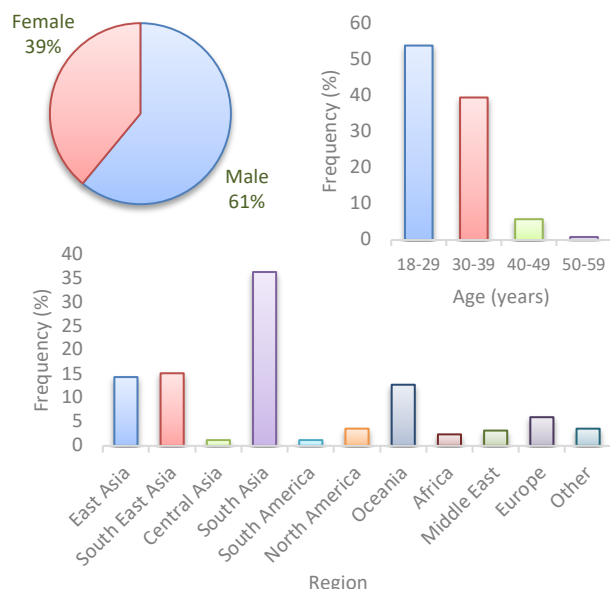| Dimension	Cronbach's Alpha	Variance Accounted For Total (Eigenvalue)	% of Variance
1	.858	5.728	22.030
2	.704	3.091	11.888
3	.618	2.463	9.472
4	.486	1.876	7.215
5	.393	1.608	6.184
Total	.970[a]	14.765	56.788

a. Total Cronbach's Alpha is based on the total Eigenvalue.

First four components of the five-dimensional solution were selected explaining 51% of the total variance. Variables with loadings more than 0.4 were selected.

Underlying Components

1. Risk Taking Mid-block User	Users who frequently cross at mid-block and also violate signals
2. Mid-block User	Users who cross at mid-block and believe that it is safe
3. Skeptical User	Users who believe that vehicles are not respectful to pedestrians at mid-block
4. Walking User	Users who like walking because of health and pleasure reasons

Conclusions

A questionnaire survey was conducted to explore unobservable human factors that affect pedestrian crossing behavior at mid-block locations. 5-point Likert type questions were asked about various aspects of pedestrian behavior. A through descriptive analysis of the data was carried out. Finally, categorical principal component analysis (CATPCA) was conducted on the data to explore the underlying dimensions in the data.
Four components were selected from a 5 component solution which explained 51% of the total variance.