Estimating Pedestrian Traffic Volumes

NATMEC Improving Traffic Data Collection, Analysis, and Use
TRB June 2010

Maryam Moshiri, EIT
Jeannette Montufar, P.Eng.
University of Manitoba

Purpose

- To investigate practices in pedestrian traffic monitoring in urban areas

Background and Need

- Pedestrian exposure rates
- Prioritization of infrastructure improvements
- Develop prediction models
- Guide design of pedestrian infrastructure
- Warrants for pedestrian crosswalks
- Track change of pedestrian activity
- Raise priority of pedestrian issues

Methodology

- Based on an environmental scan
- Literature review of over 35 documents spanning 25 years
- Comprehensive jurisdictional survey of Canadian jurisdictions
  - Telephone → 14 jurisdictions
  - Email questionnaire→ 250 jurisdictions
  - Approximately 25% response rate in each

Key Findings

- Pedestrian traffic monitoring
- Counting practices
- Expansion practices
- Use of advanced technologies
- Pedestrian traffic modelling

Pedestrian Traffic Monitoring

- No standard practice exists for pedestrian traffic monitoring
- Only one of the surveyed jurisdictions
- Pedestrian counts conducted based on need
- Large variations in terms of pedestrian counting

Information management principles

- Responsiveness to need
- Truth-in-data
- Consistent practice
- Base data integrity
- Data interoperability
- Future flexibility

Counting Practices

- Location
  - Residential
  - Fringe
  - Business district
  - Commercial retail
  - Mix residential/commercial
- Time of day
- Day of week
- Duration of count

Expansion Practices

- Land use type
- Temporal variations
  - Time of day
  - Day of week
  - Month/seasonality
- Weather

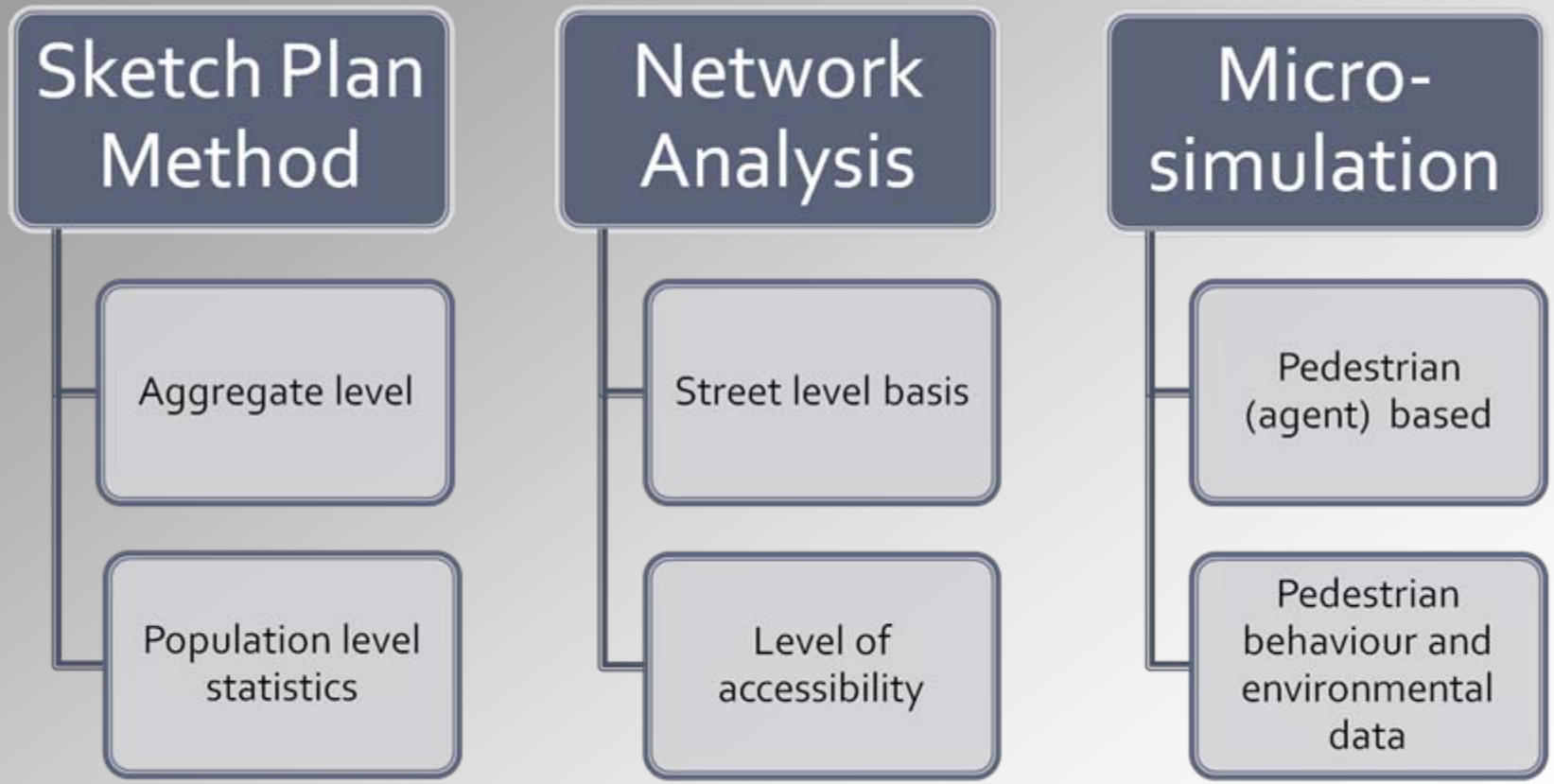
Use of Advanced Technologies

- Most counts are done manually
- Some jurisdictions use infrared, microwave, or video technologies for pedestrian counting
- Not much research has been conducted to test the accuracy of these technologies
- Winnipeg is currently testing sensitivity of three automated detection devices in different weather conditions

Pedestrian Traffic Modelling

- Extensive documentation of pedestrian travel modelling - different from pedestrian traffic monitoring
  - Sketch plan method
  - Network analysis
  - Micro-simulation

Pedestrian Traffic Modelling



Concluding Remarks

- Pedestrian traffic monitoring is critical for engineering analysis and design
- There is a need for a standard method to monitor pedestrian traffic in urban areas
  - Selection process of key locations
  - Count durations
  - Adjustment factors to expand short term counts
  - Should follow information management principles
- Technologies for pedestrian counting exist
- Sources of useful information exist

THANK YOU