

**広島大学IDEC
モビリティ・都市政策研究室
Mobilities and Urban Policy Lab
IDEC, Hiroshima University**

<http://home.hiroshima-u.ac.jp/~zjy/>

**Junyi ZHANG, Prof. Dr. Eng.
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Major research topics in my lab

Urban Policy Mobilities	Transport	Land use	Housing	Resource & Energy	Environment	Social welfare
Residential mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Job mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Household structure mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resource mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Leisure/Tourism mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transport mobility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fields: Developed and developing countries

Methodology: Interdisciplinary

Major research topics in my lab

Some new research examples are:

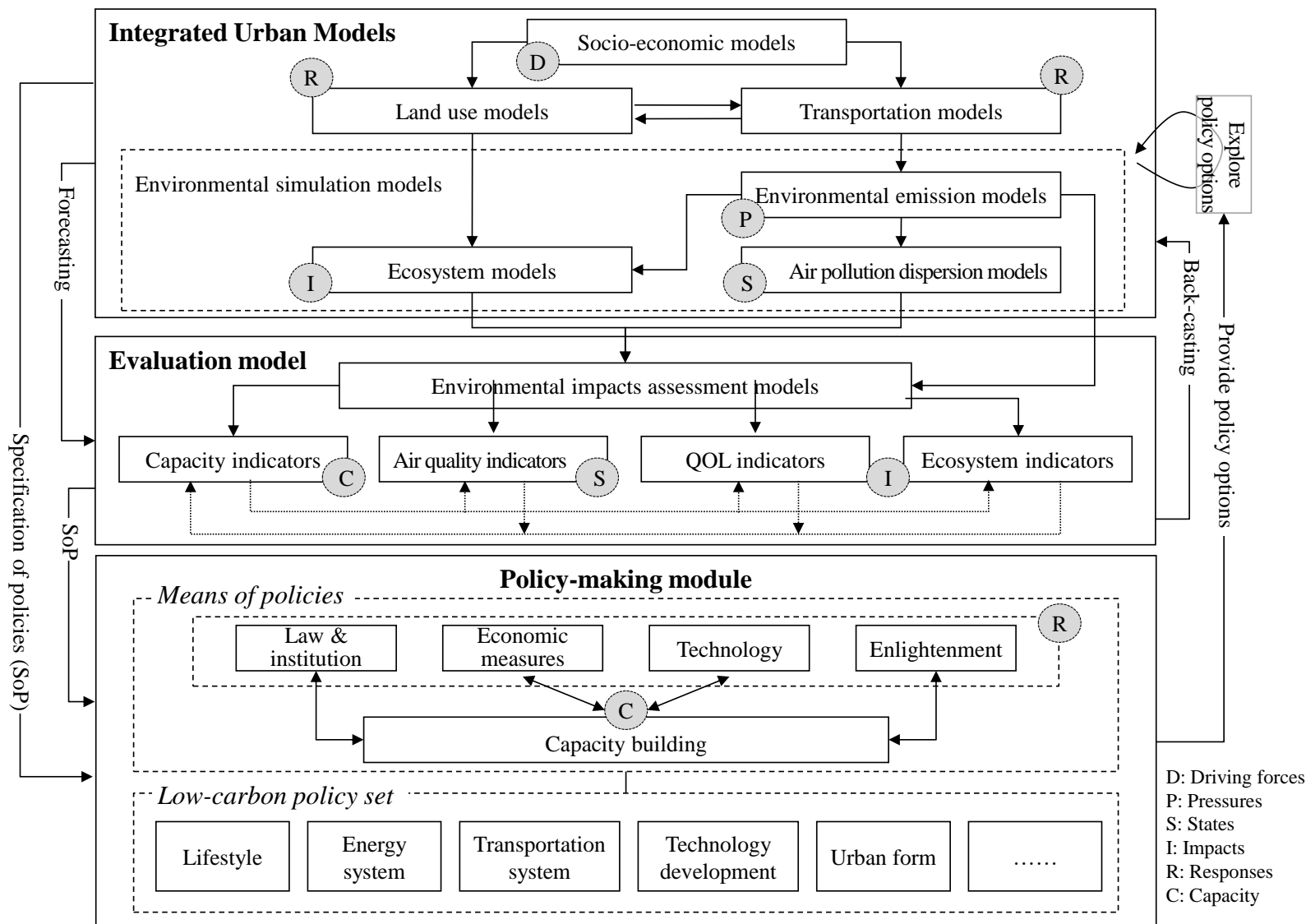
(1) Mobilities

- Integrated behavioral studies: migration, travel, driving, residential, energy consumption, health, and tourism behaviors, etc.
- Mobilities of different population groups (young people, the elderly, women and children, talent workers, etc.) and QOL

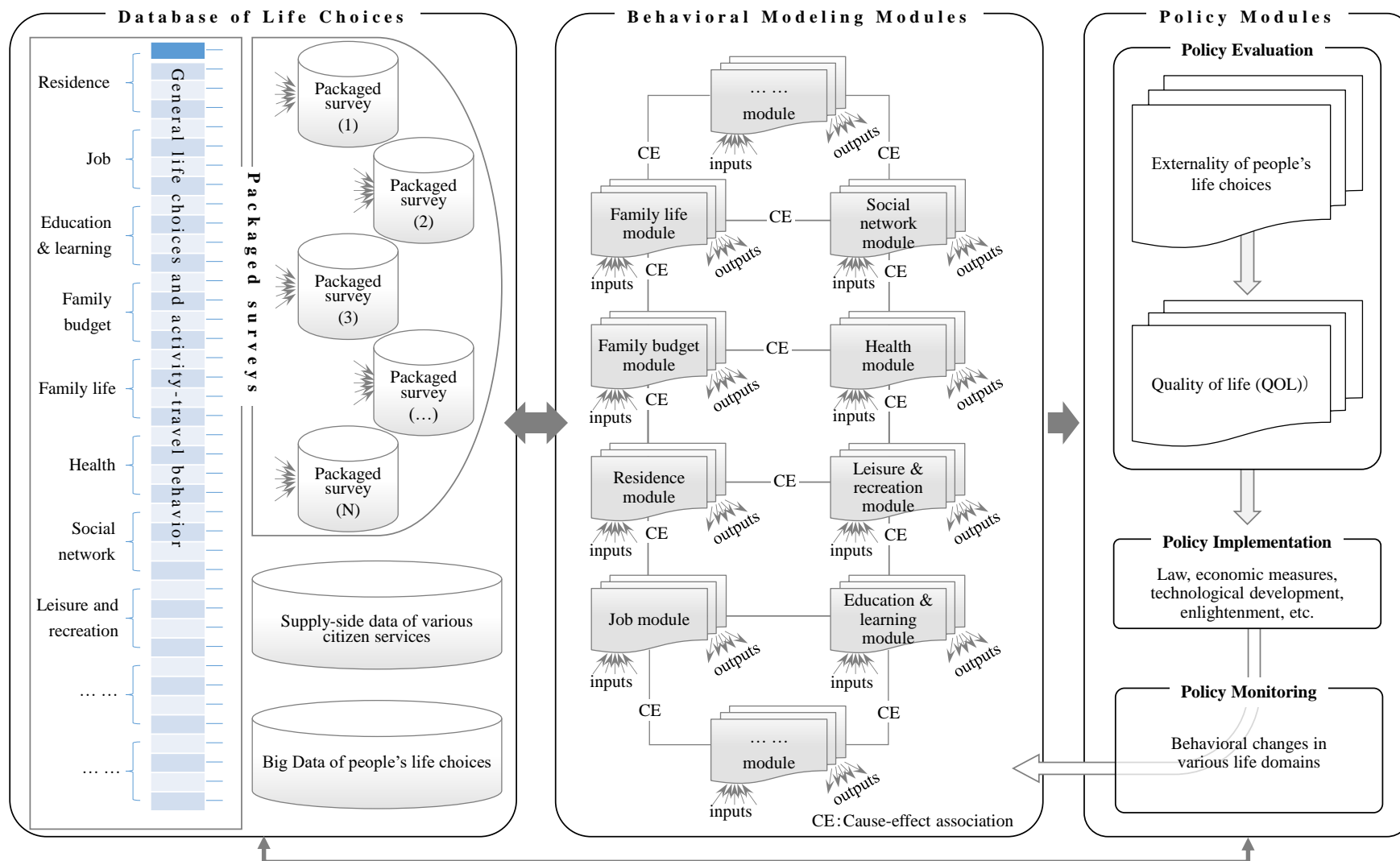
(2) Urban policy

- Cross-sectoral transportation policy
- Life-oriented policies for local city revitalization
- How will smartphone apps change people's lives?
- Policies encouraging behavioral change: Energy-saving, health, safety
- Climate changes adaptive urban planning
- Culture-centered urban management and city image formation
- Effective use of regional resources for regional revitalization, etc.

System Approach



Life-oriented behavior analysis system



Life-oriented Behavioral Research for Urban Policy

Junyi Zhang (Jan 2017, Springer)

<http://www.springer.com/jp/book/9784431564706>

Chapter 1 Life-oriented Approach

Chapter 2 Empirical Evidence of Behavioral Interdependencies across Life Choices

Chapter 3 Lifestyles and Life Choices

Chapter 4 The Car-dependent Life

Chapter 5 Household Energy

Consumption Behavior

Chapter 6 ICT-dependent Life and Its Impacts on Mobility

Chapter 7 Health-related Life Choices

Chapter 8 Life-oriented Tourism Behavior Research

Chapter 9 Influence of Land Use and Transport Policies on Women's Labor Participation and Life Choices

Chapter 10 Mobility of the Elderly

Chapter 11 Risky Behaviors in Life: A Focus on Young People

Chapter 12 Adaptation of Behavior to Overcome Natural Disasters

Chapter 13 Mobility Biographies and Mobility Socialisation – New Approaches to an Old Research Field

Chapter 14 Biographical Interactions over the Life Course: Car Ownership, Residential Choice, Household Structure, and Employment/Education

Chapter 15 Household Time Use Behavior Analysis: A Case Study of Multidimensional Timing Decisions

Chapter 16 Models of Behavioral Change and Adaptation

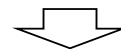
Chapter 17 Behavioral Changes in Migration Associated with Jobs, Residences, and Family Life

Chapter 18 Future Perspectives of the Life-oriented Approach

市民生活行動学

日本土木学会
2015年3月出版

第1章 序論



Part 1 関連し合う生活行動

第2章
居住からみた
生活行動

第3章
交通からみた
生活行動

第4章
買物からみた
生活行動

第5章
世帯エネルギー
消費行動

第6章
健康保持増進の
ための生活行動

第7章
観光からみた
生活行動

第8章
時間利用からみた
生活行動

第9章 生活行動と統計

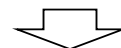
Part 2 社会環境の 変化と生活行動

第10章
自動車依存型生活行動

第11章
情報通信技術と生活行動

第12章
女性の社会進出と子育てに
関わる生活行動

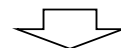
第13章
高齢者のモビリティと
生活行動



Part 3 市民生活行動変容

第14章
行動変容理論と市民生活行動

第15章
モビリティ・マネジメントと市民生活行動

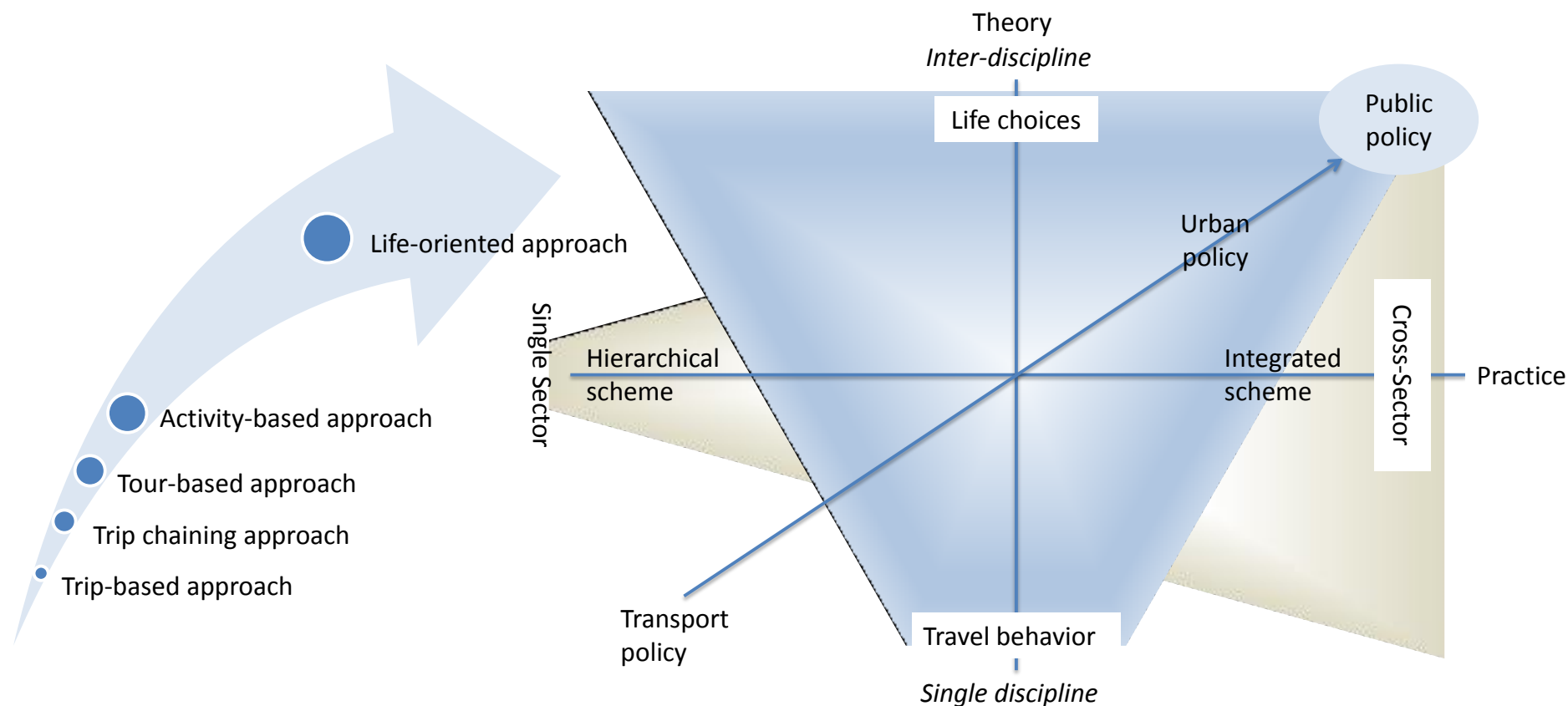


Part 4 市民生活行動学の未来

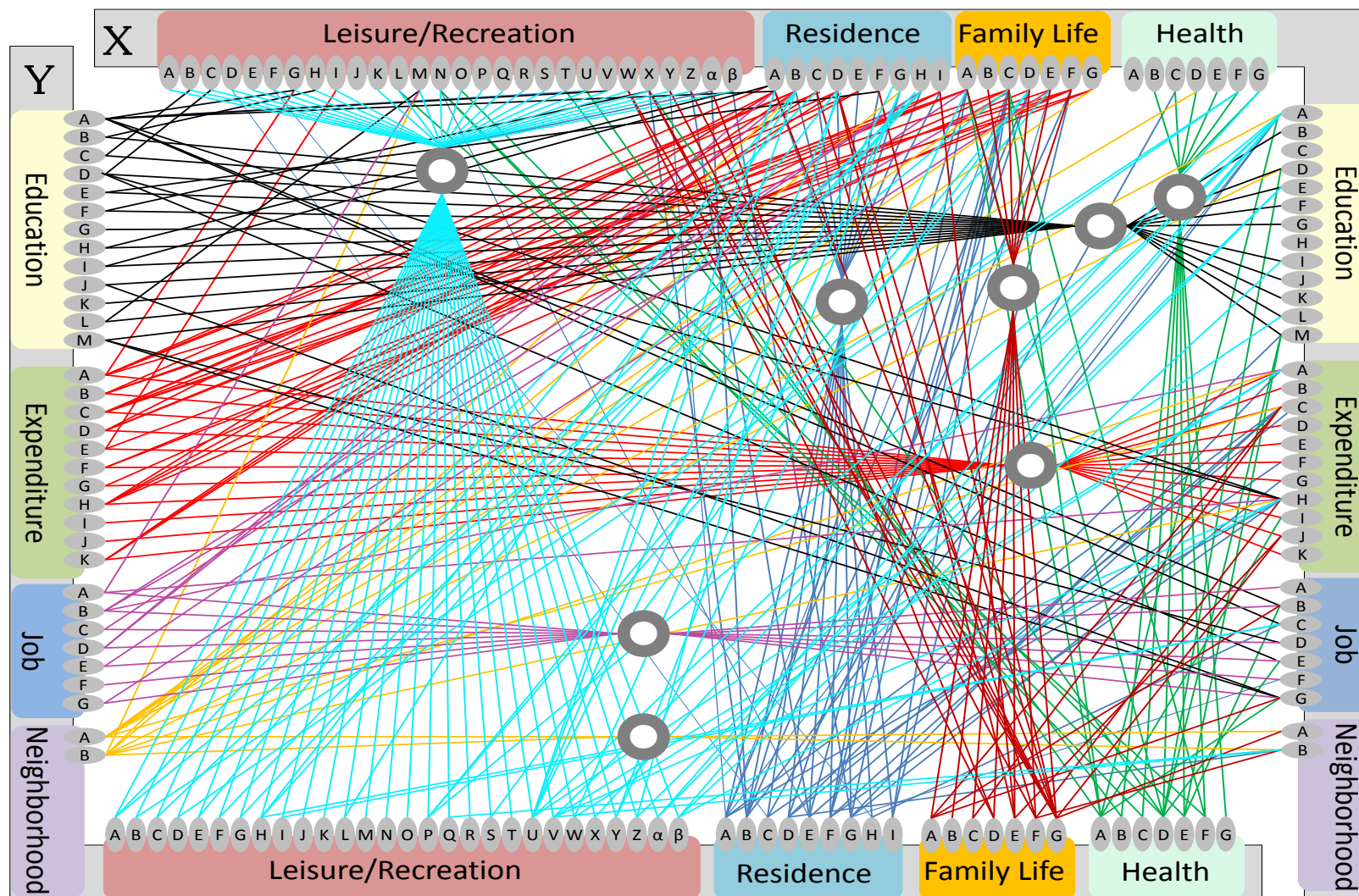
第16章 市民生活行動調査の提案と実証分析

第17章 市民生活行動学という学問の未来

Life-oriented approach: Historical Perspective



Life-oriented approach: Empirical evidence

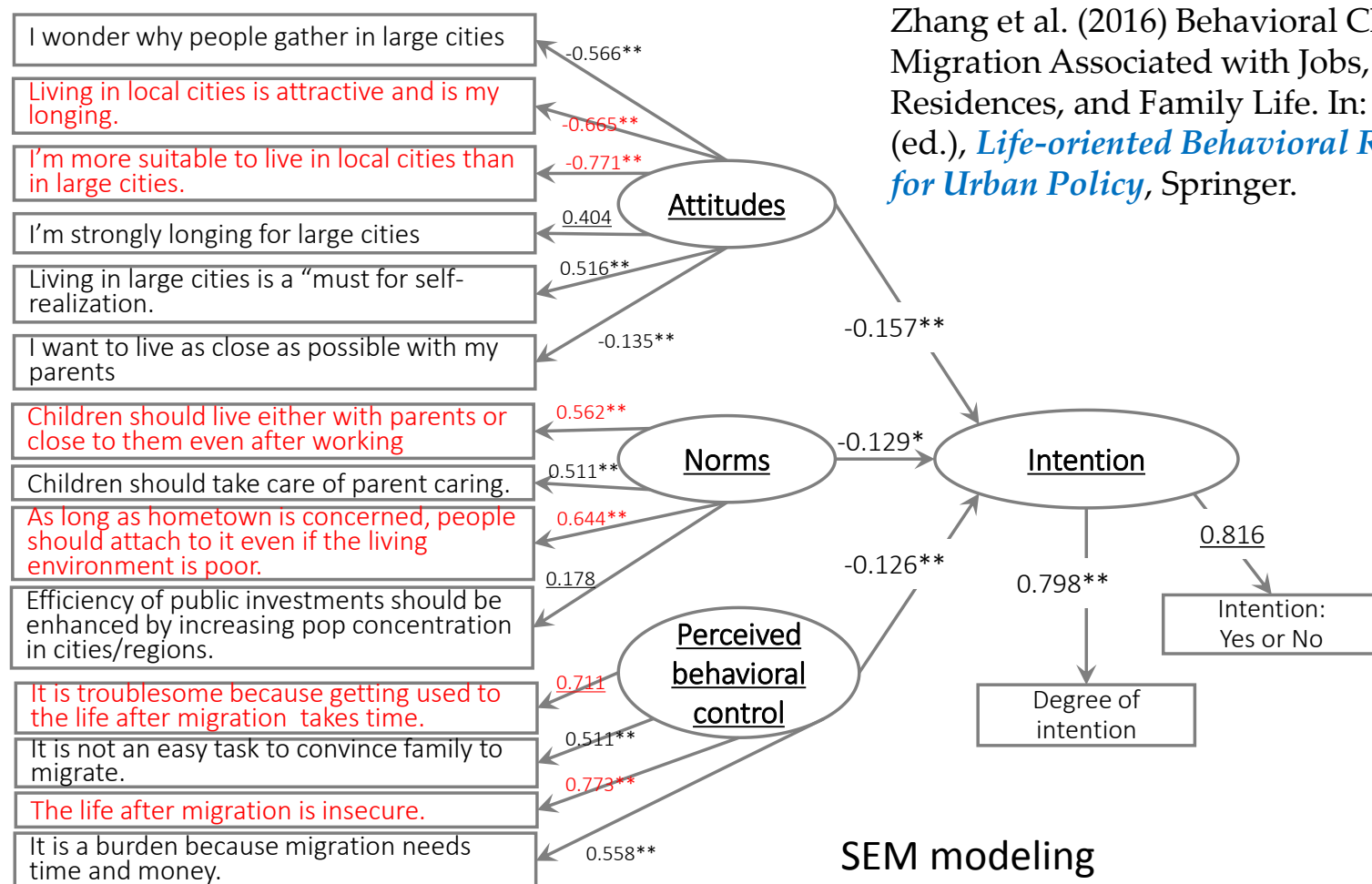


Life-oriented approach

Some applications

Life-oriented Approach: Migration

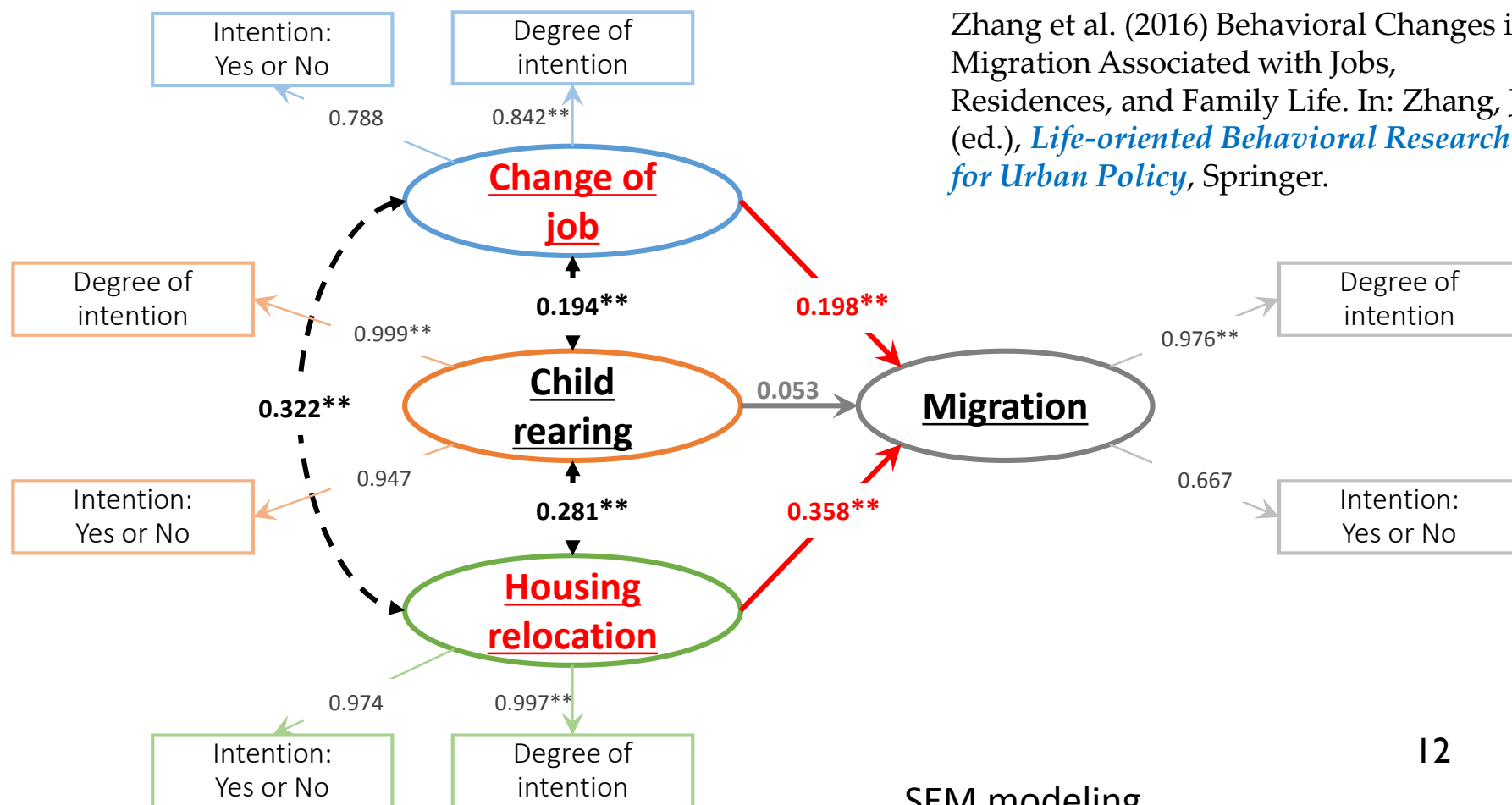
Survey about migration and life choices in Tokyo, 2015



Life-oriented Approach: Migration

Survey about migration and life choices in Tokyo, 2015

Zhang et al. (2016) Behavioral Changes in Migration Associated with Jobs, Residences, and Family Life. In: Zhang, J. (ed.), *Life-oriented Behavioral Research for Urban Policy*, Springer.

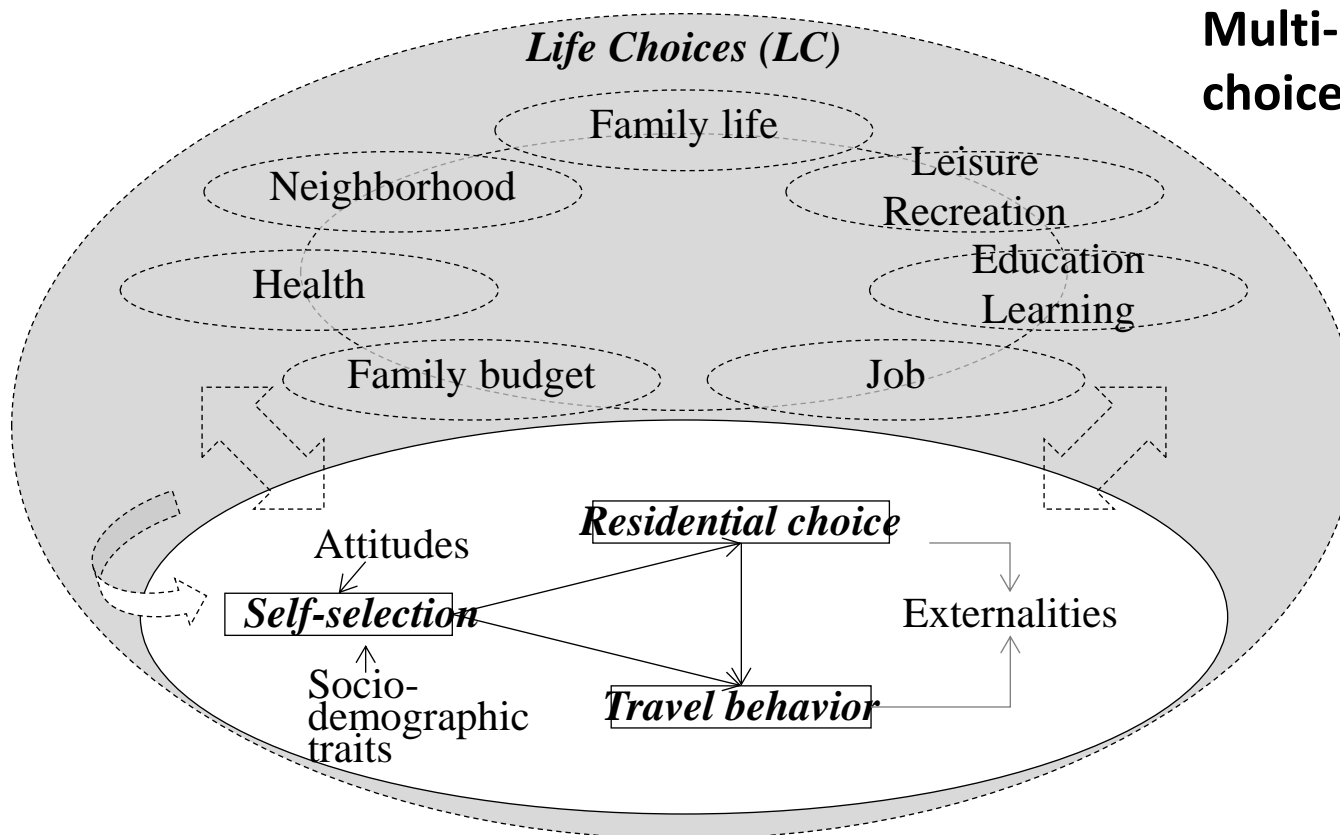


Data mining approach



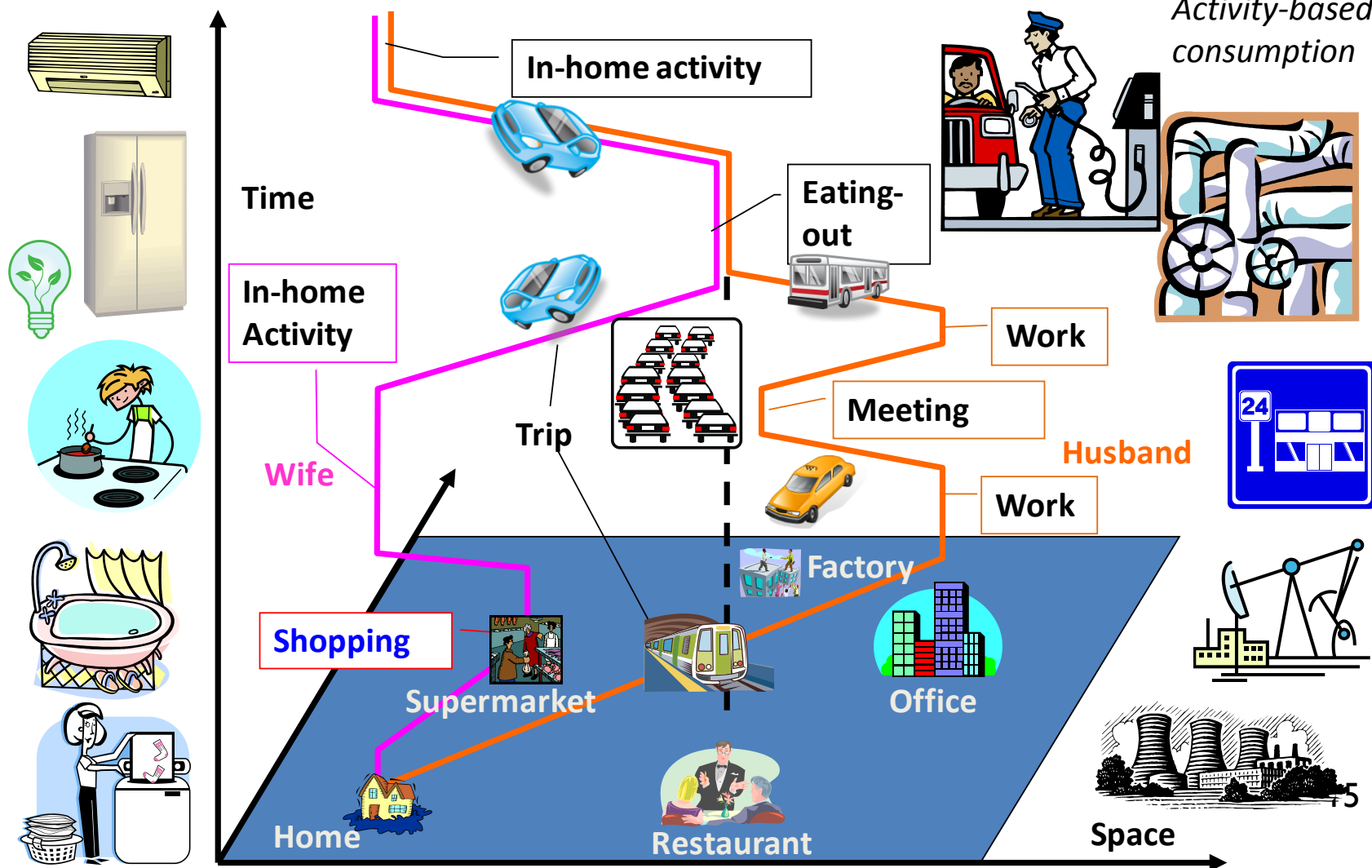
Life-oriented Approach: Residential self-selection

**Multi-equation
choice modeling**

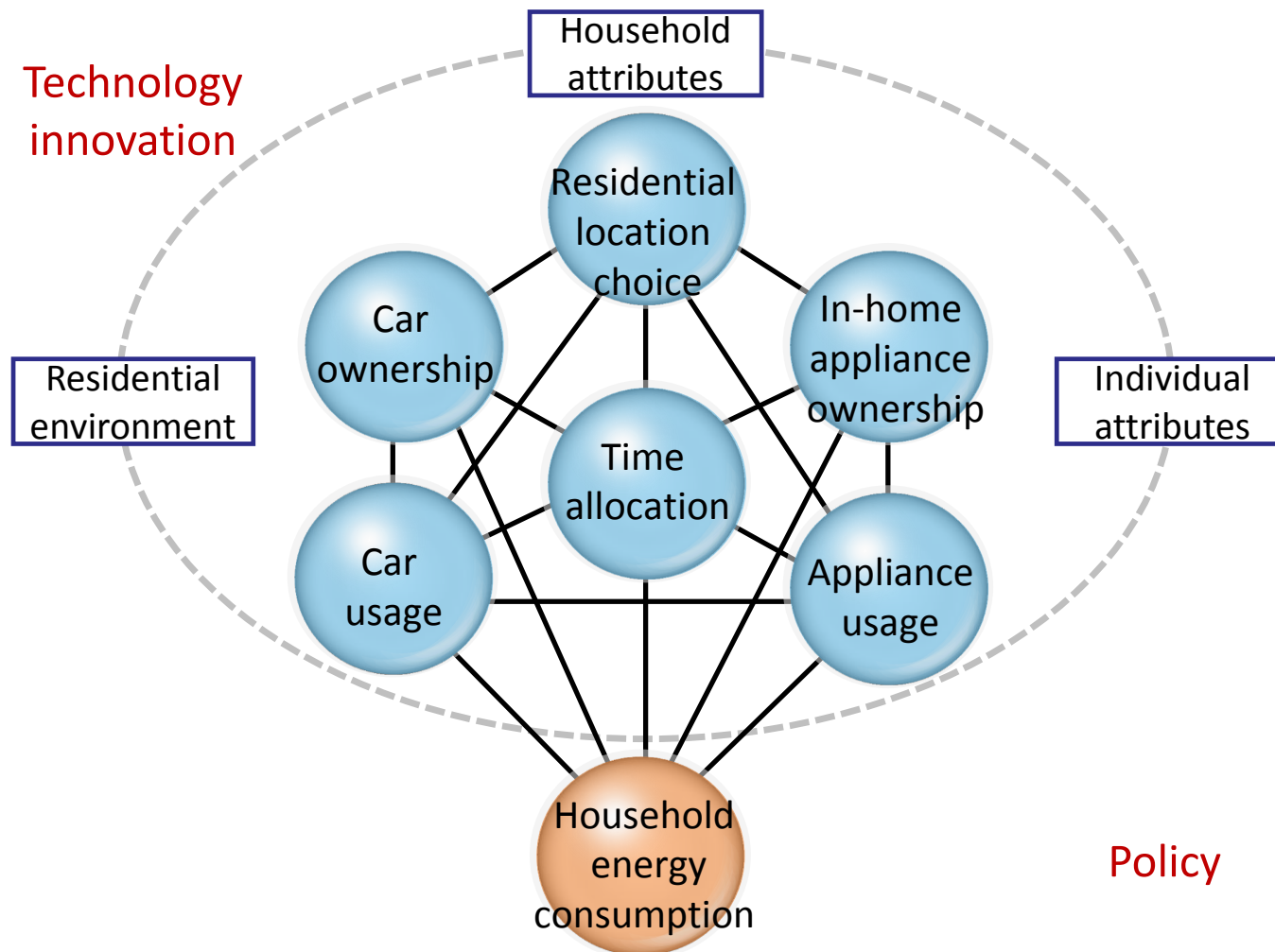


Junyi ZHANG (2014) Revisiting the residential self-selection issues: A life-oriented approach. *Journal of Land Use and Transport*, 7 (3), 29-45.

*Activity-based
consumption*

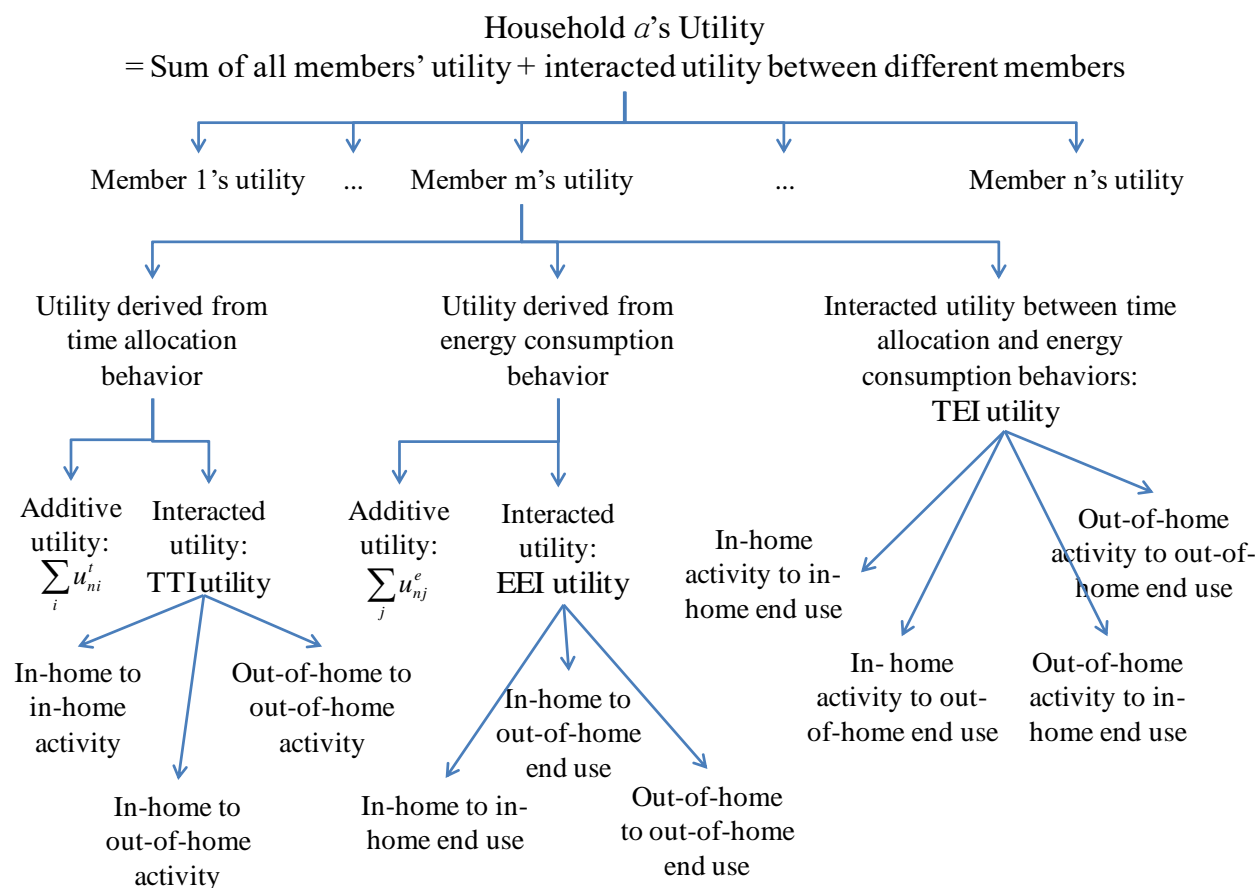


Life-oriented Approach: Household energy consumption behavior

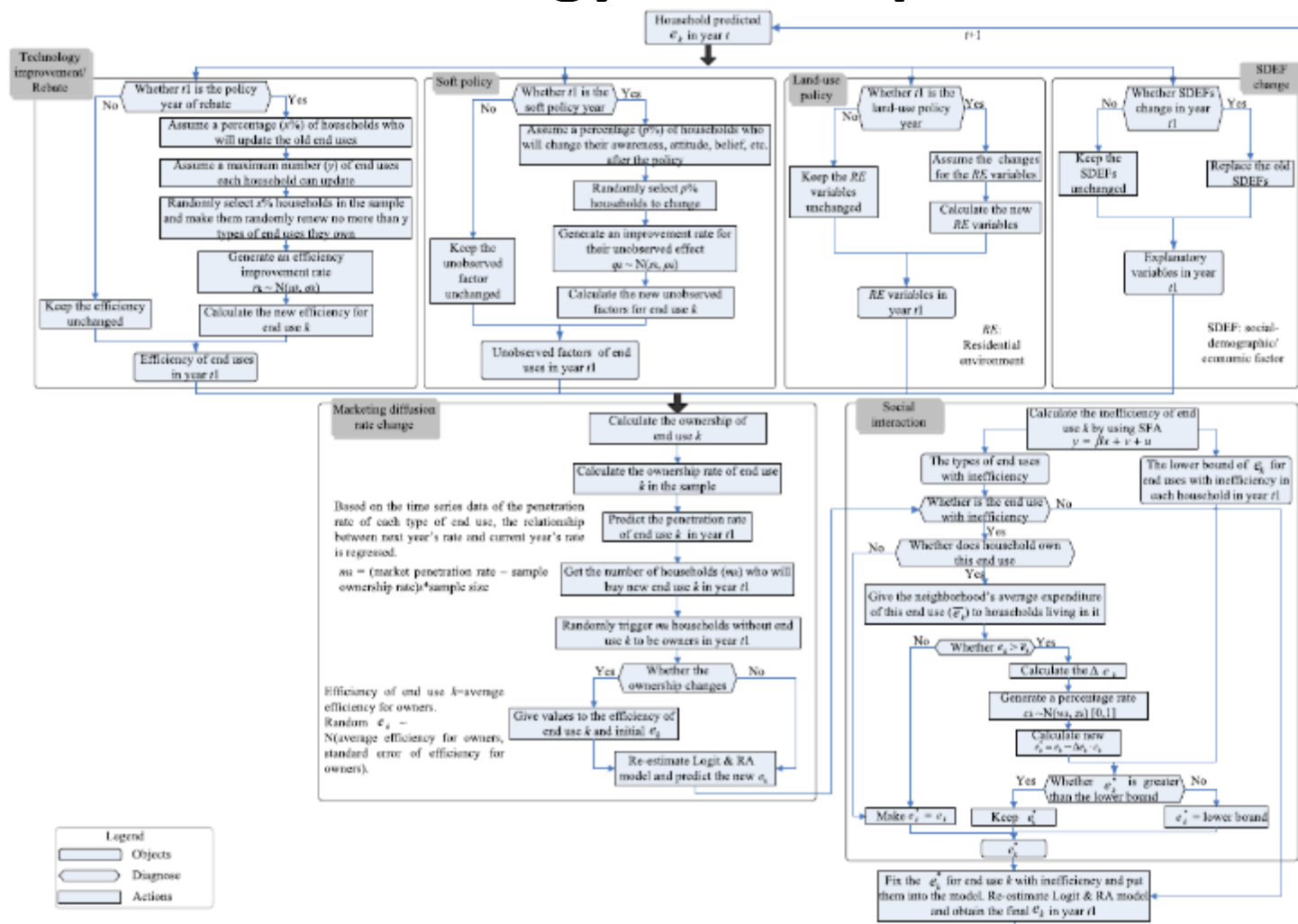


Life-oriented Approach: Household energy consumption behavior

Biying YU, Junyi ZHANG, Akimasa FUJIWARA (2013) A household time use and energy consumption model with multiple behavioral interactions and zero-consumption, *Environment and Planning B: Planning and Design*, 40 (2), 330-349.



Life-oriented Approach: Household energy consumption behavior

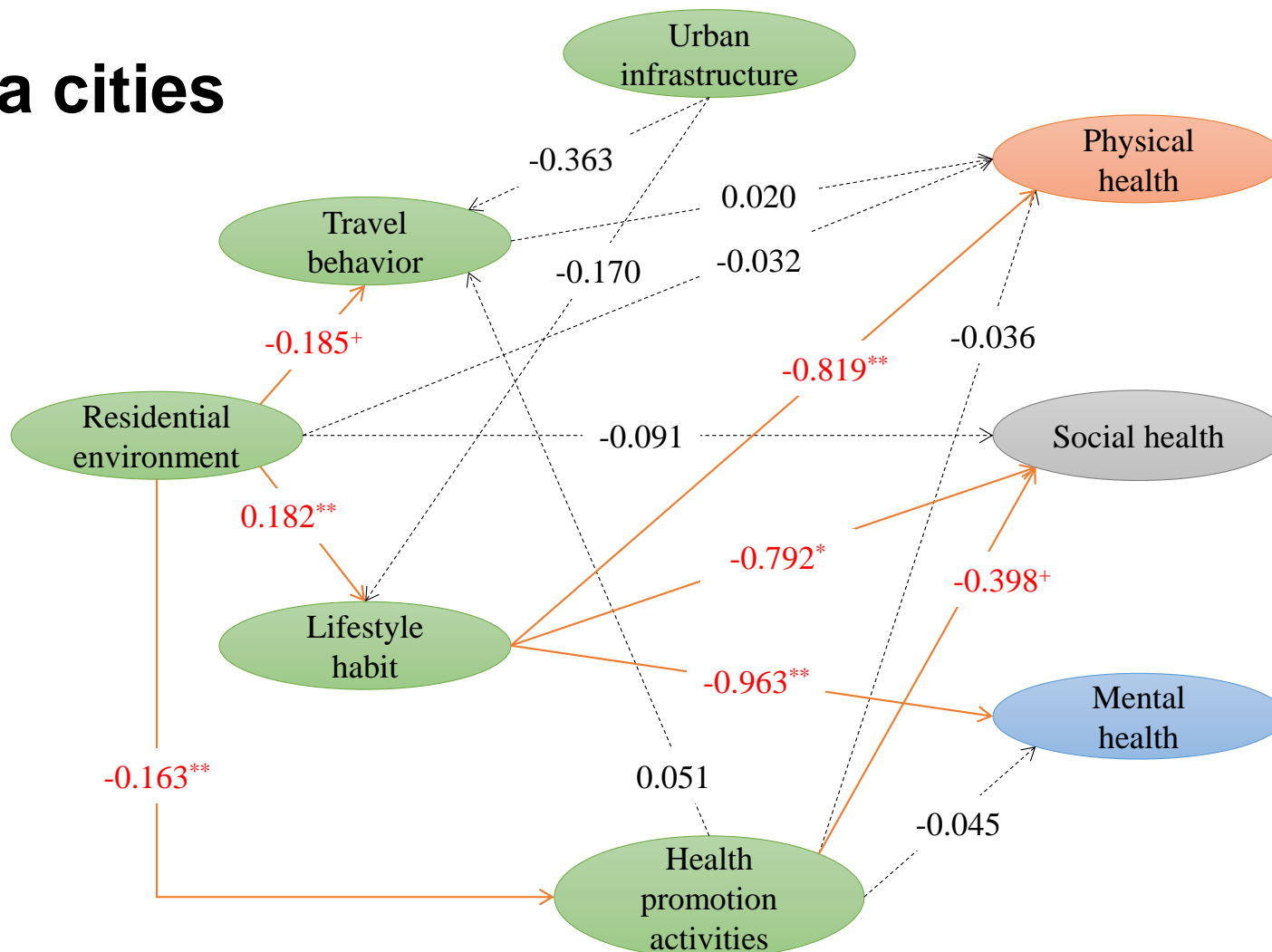


R. Yu et al. / Energy 91 (2015) 491–506

Fig. 4. Flowchart of DAEDMS.

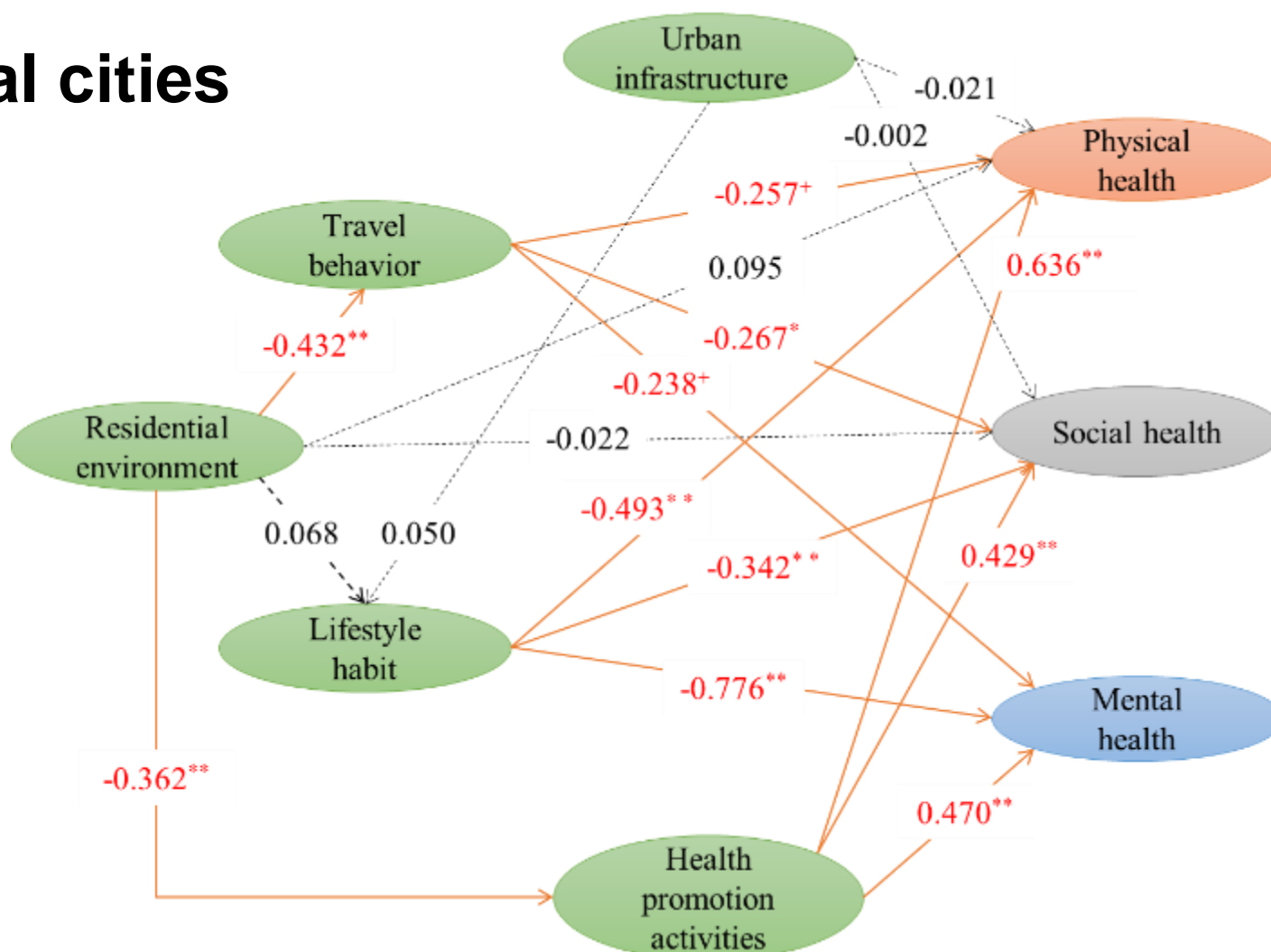
Life-oriented Approach: Health behavior

Mega cities



Life-oriented Approach: Health behavior

Local cities



Life-oriented Approach: Health behavior

David Perez Barbosa, Junyi ZHANG, Hajime Seya (2016)
Effects of the Residential Environment on Health in Japan
Linked with Travel Behavior. *International Journal of Environmental Research and Public Health*, 13, 190;
doi:10.3390/ijerph13020190

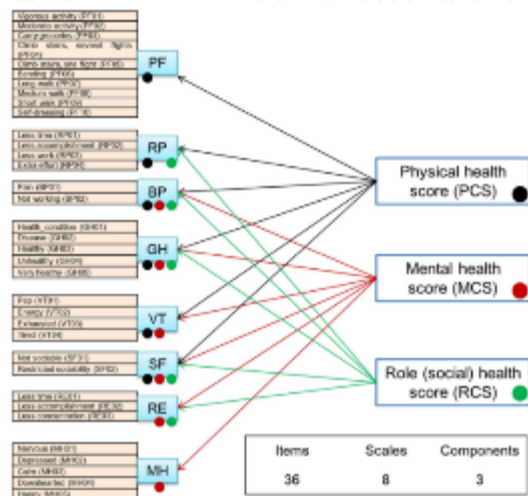
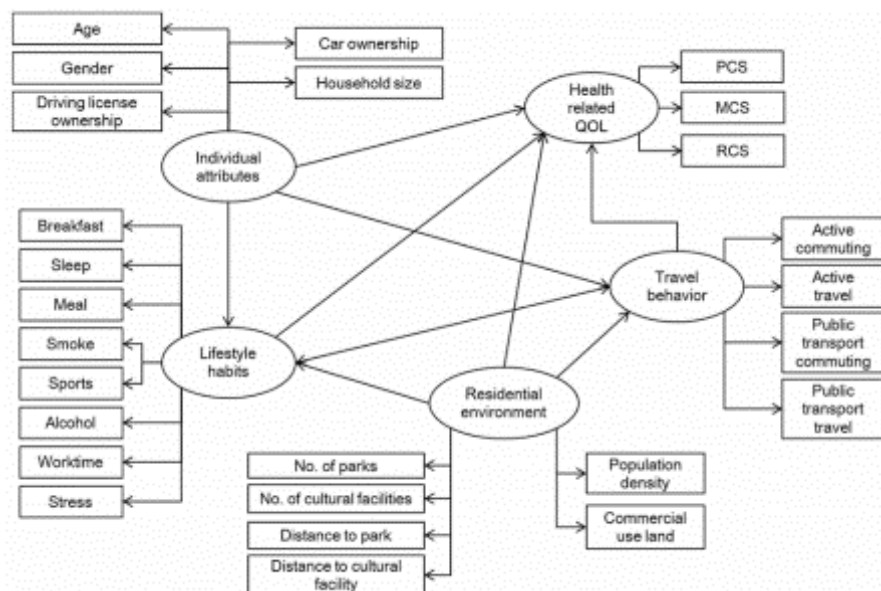
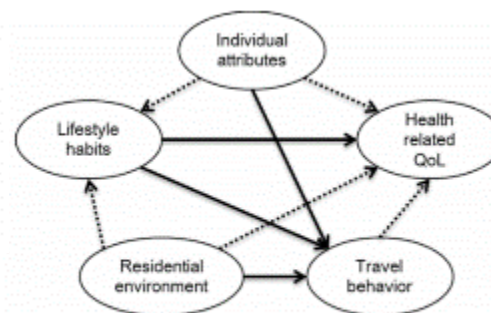
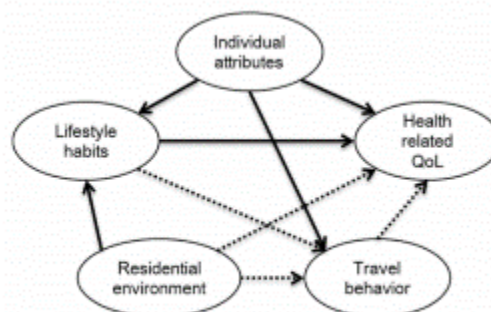


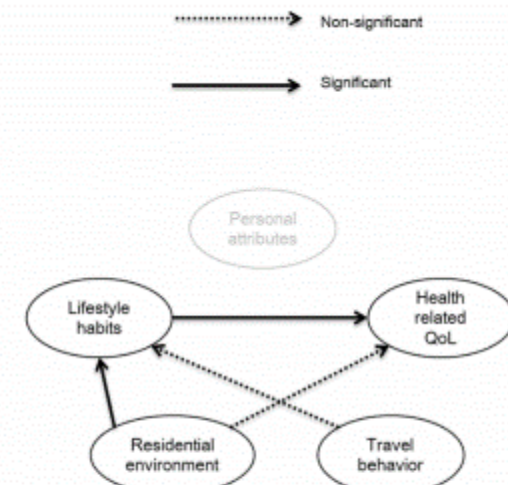
Figure 1. Scales and components in the SF-36 model.



Cluster 1



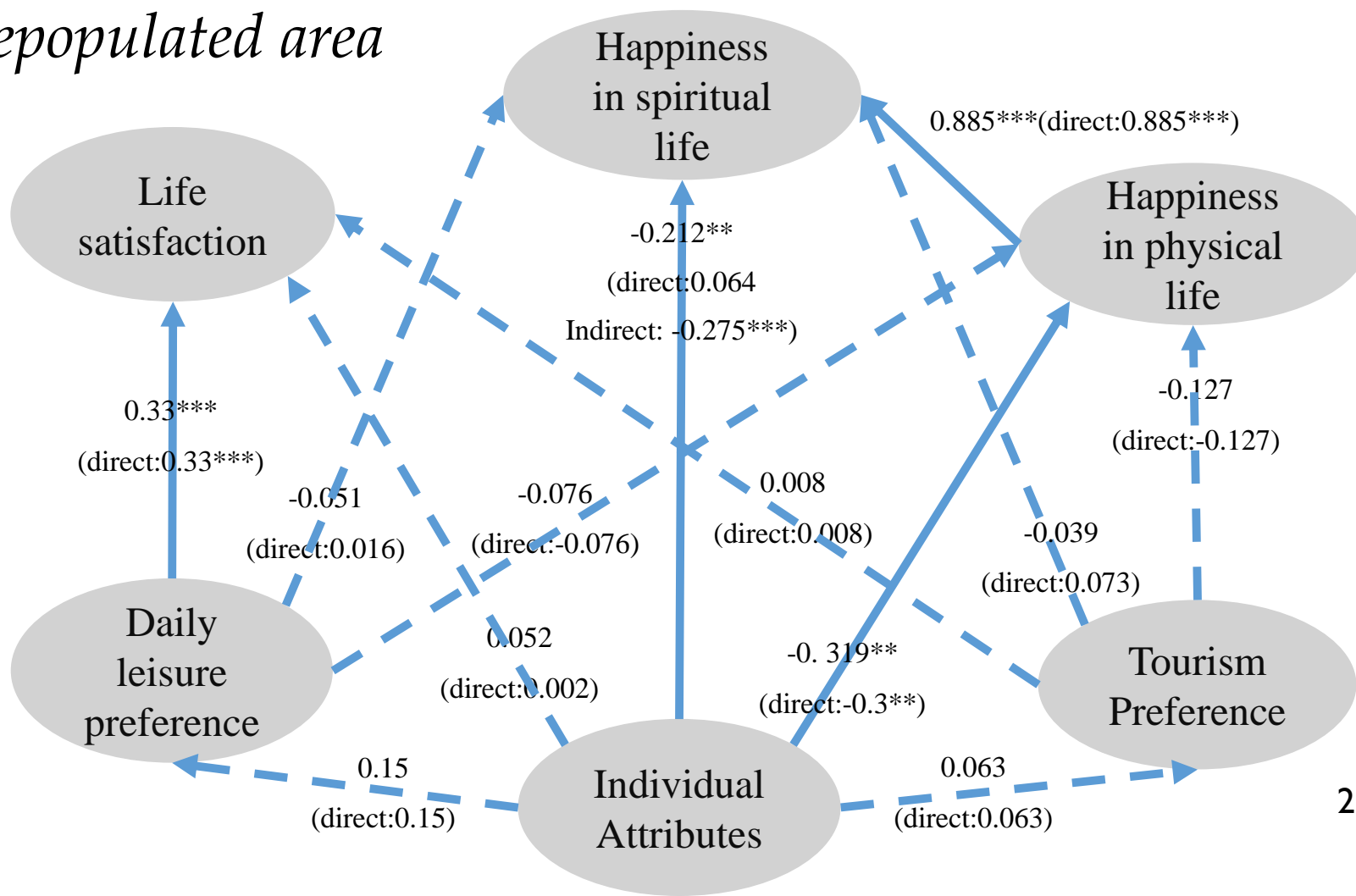
Cluster 3



Cluster 2

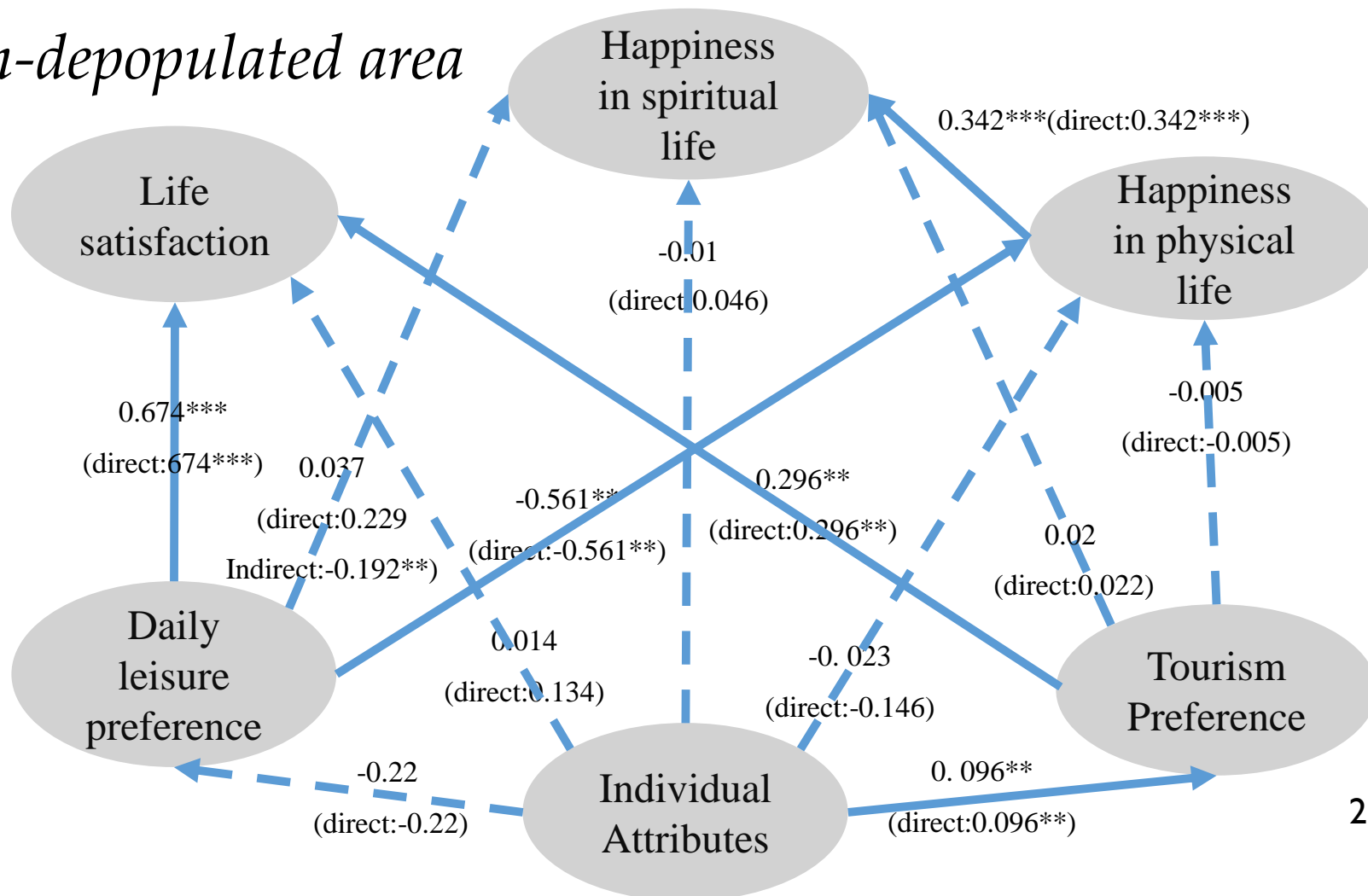
Life-oriented Approach: Tourism & QOL

Depopulated area



Life-oriented Approach: Tourism & QOL

Non-depopulated area



Life-oriented Approach: Tourism & QOL

*General
tourist
behavior
modeling*

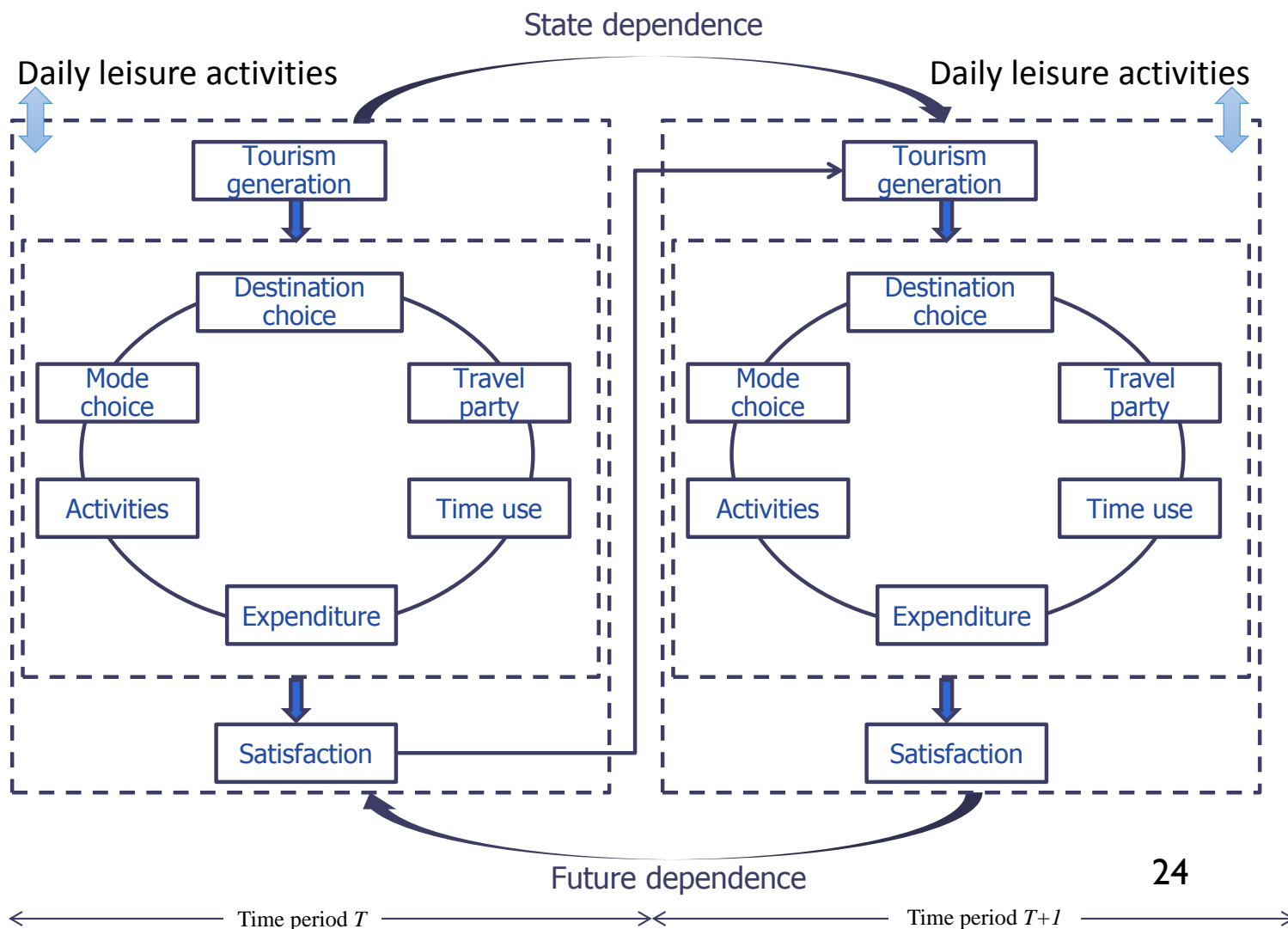
*Tourism
Management*

*Annals of Tourism
Research*

*Journal of
Sustainable
Tourism*

*Asia Pacific
Journal of Tourism
Research*

*Transportation
Research Record*

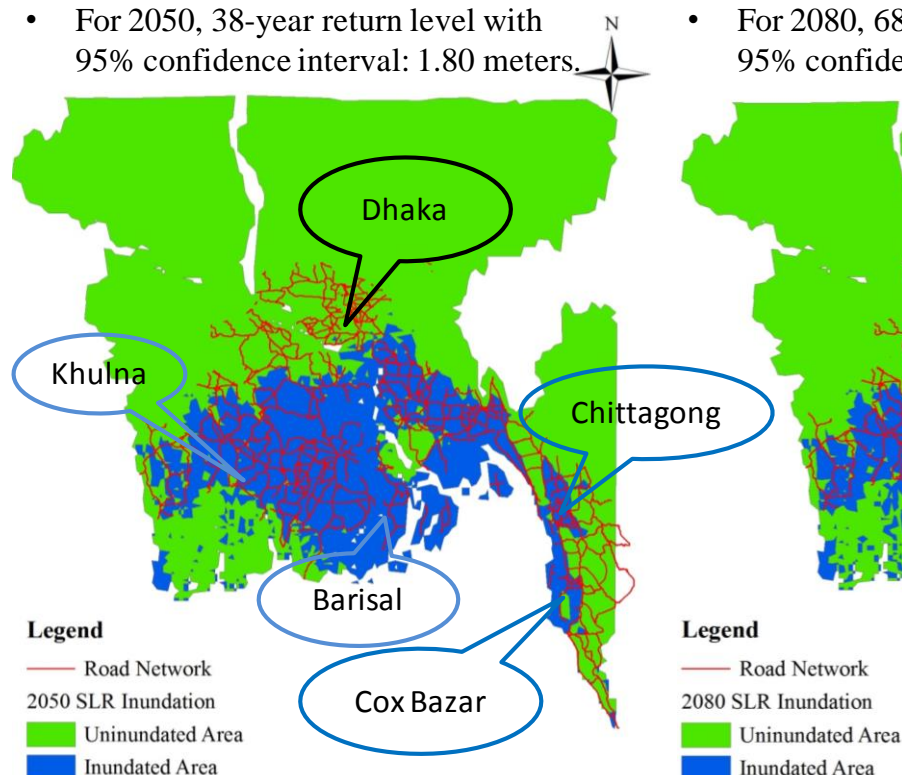


Life-oriented Approach:

Adaptation behavior against climate change disasters

- For 2050, 38-year return level with 95% confidence interval: 1.80 meters.

- For 2080, 68-year return level with 95% confidence interval: 2.0 meters.



General life choices
Tourism

Natural Hazards

Climate Change

Sustainability

Journal of Transportation Engineering

Transportation Research Record

Journal of Transport Geography

Before-disasters adaptive behavior
During-disasters adaptive behavior
After-disasters adaptive behavior

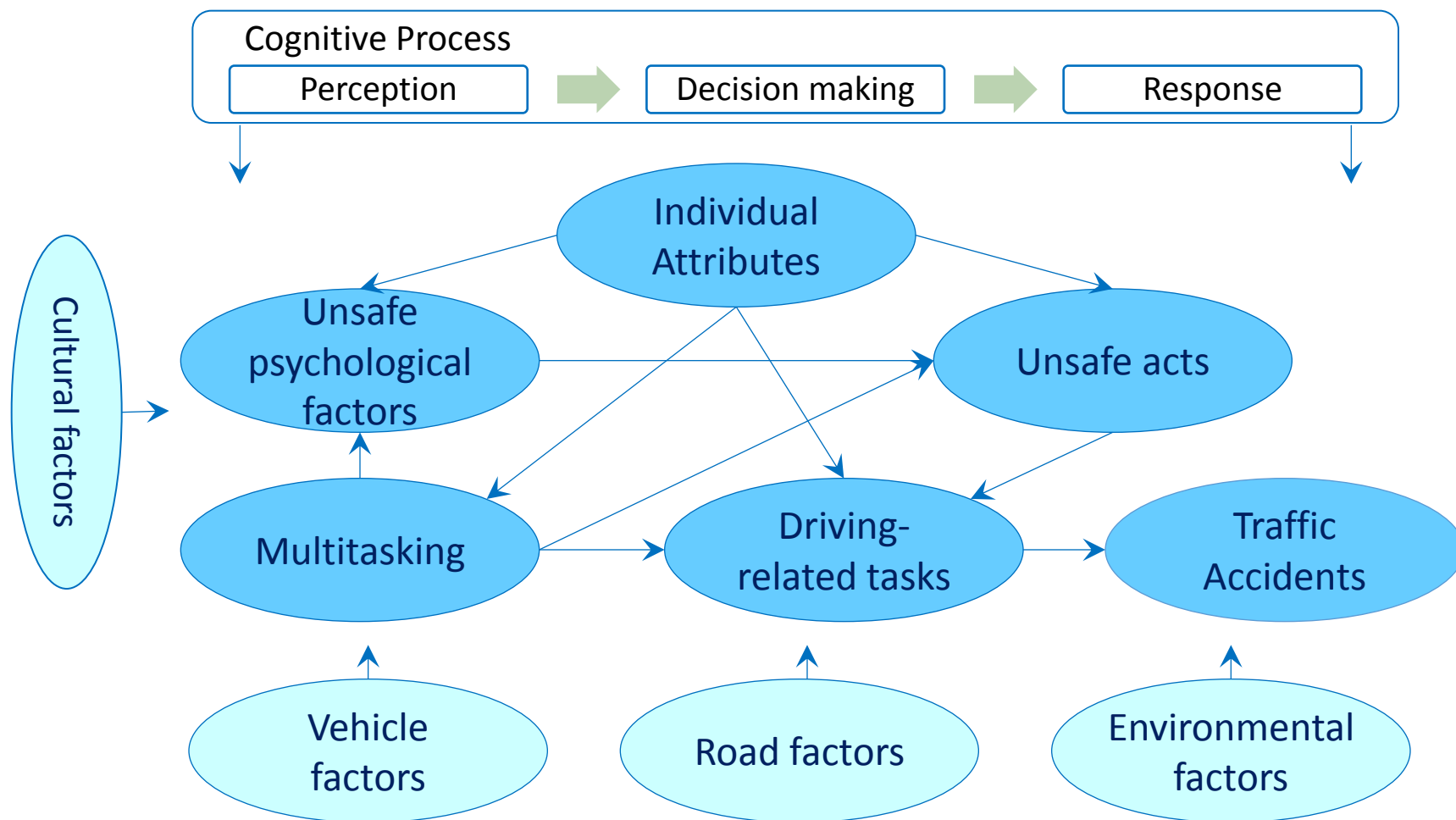
SLR impacts on road infrastructure of the costal areas

Scenarios	Affected Road Segments	Total Length (Km)	Total Study Area Road Length (Km)	Percentage (%)
1.8 m (2050)	1935	4745.02	7828.47	60.61
2.0 m (2080)	2007	4920.97	7828.47	62.86

SLR impacts on road infrastructure of the whole country

Scenarios	Affected Road Segments	Total Length (Km)	Total National Road Length (Km)	Percentage (%)
1.8 m (2050)	1935	4745.02	20205.96	23.48
2.0 m (2080)	2007	4920.97	20205.96	24.35

Life-oriented Approach: Risky behavior (Driving safety)



Life-oriented Approach: Risky behavior (Driving safety)

Development of GPS-enabled
Smartphone App “Safety Supporter”



Three-month
actual driving
experiment

Scenario-based
experiment

100 drivers

*Best Scientific Award:
the 21th ITS World
Congress*

Life-oriented Approach: Risky behavior (Driving safety)

➤ Sample size: **353 trips**

(from 13 individuals: all male drivers; 33-59 years old (average: 41))

Number of
multitasking
Types (0-7)



Multitasking behavior
during driving

Affective experience
during driving

1: top bad mood
2: top low mood
3: top pleasant mood
4: top good mood

Driving
speed

Acceleration
/deceleration

Driving
smoothness



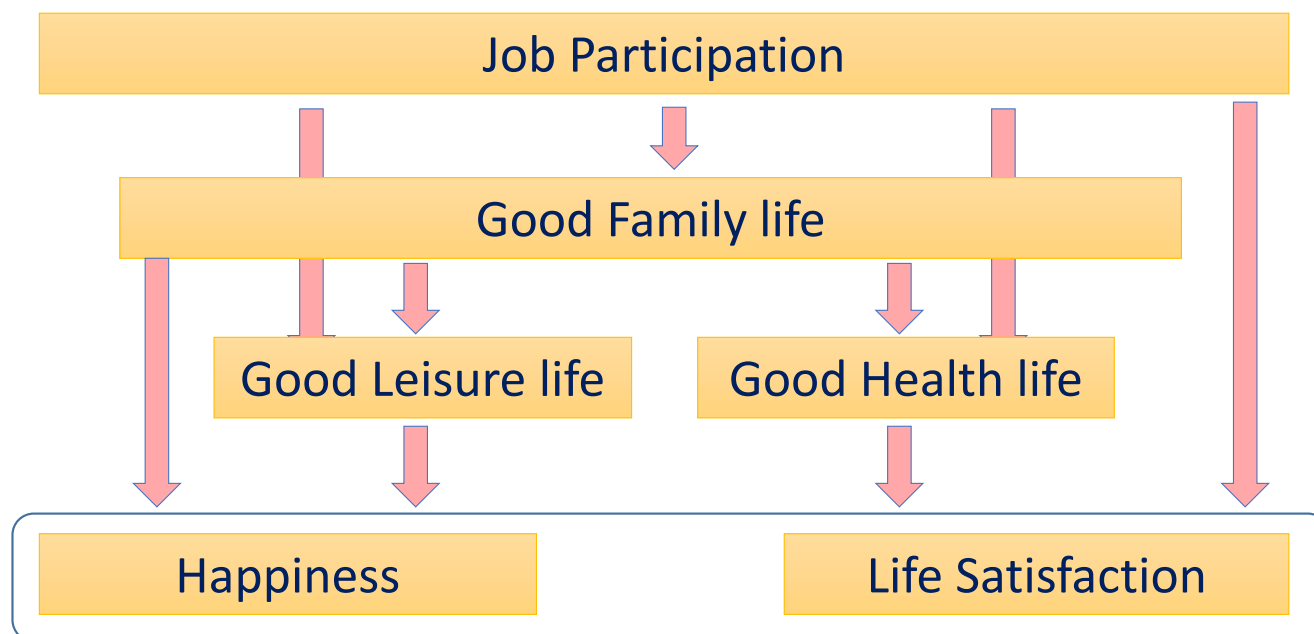
Violation rates

Interrelated Dependent Variables

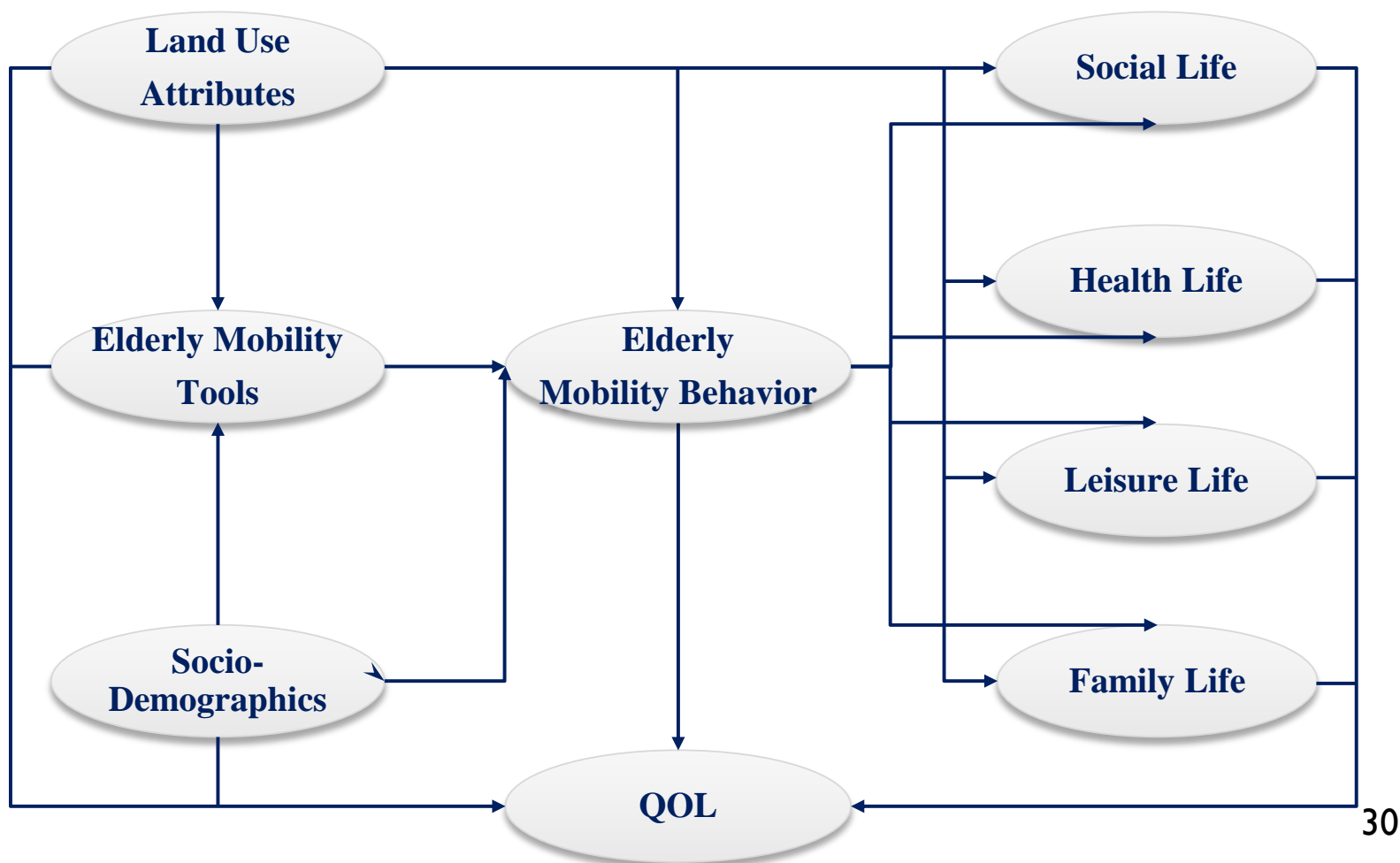
Life-oriented Approach:

Women's Labor Participation, Other Life Choices, and QOL

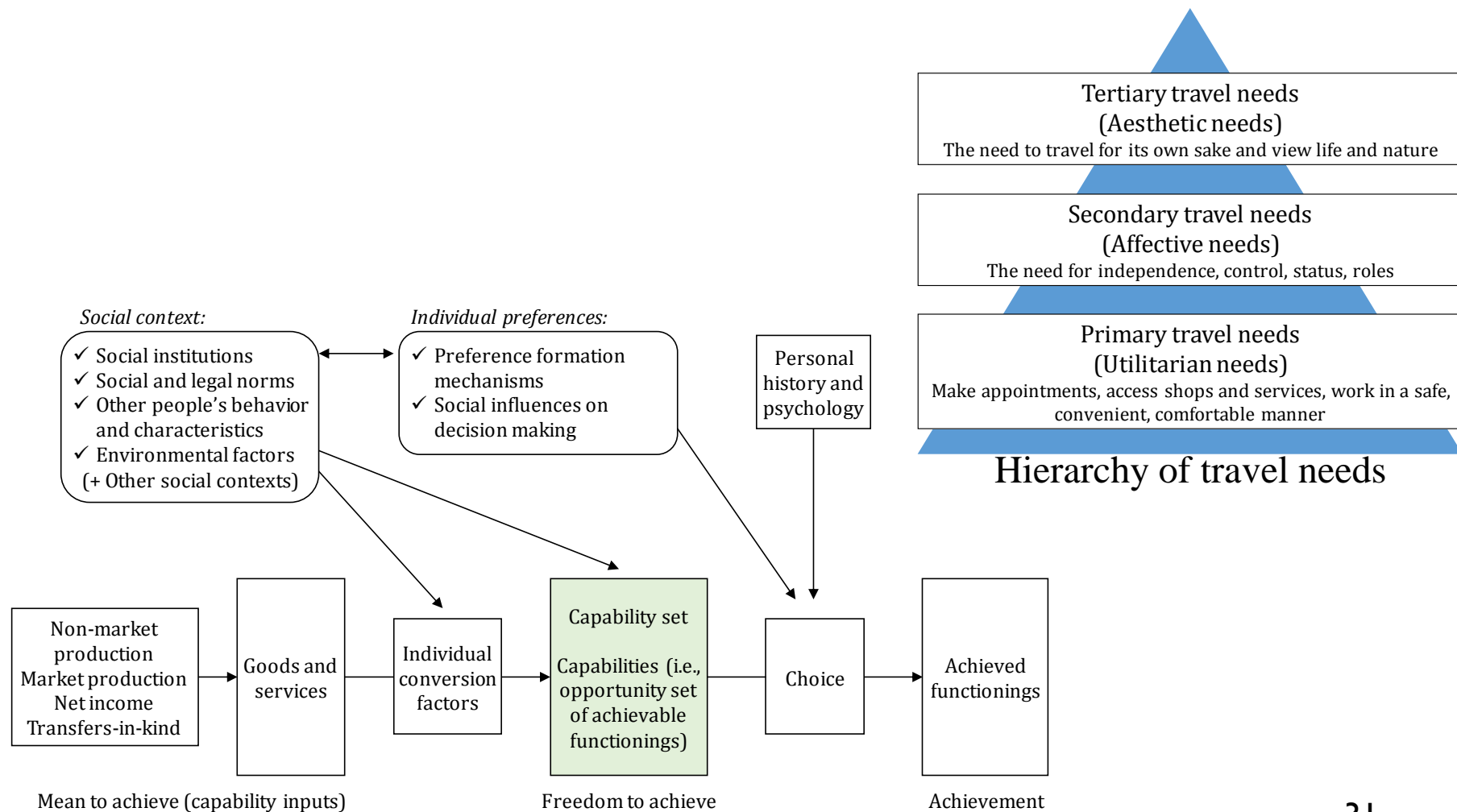
- Identify the barriers on women's job participation, especially the influence of land use and transport attributes;
- Clarify the factors on women's good quality of family life, leisure life, health life and their QOL as a whole;
- Provide cross-sectoral policies implications into women's job participation and QOL promotion, simultaneously balance women's work-life.



Life-oriented Approach: The elderly mobility



Life-oriented Approach: The elderly mobility



Conceptual illustration of the capability approach

Life-oriented Approach: Social Exclusion

General definition of social exclusion (education–transport / job–migration)

Physical exclusion: whereby physical and psychological difficulties exclude certain groups of people from using the transport systems. In occasions, the physical nature of the transport systems may create physical and psychological barriers to access by people with impaired mobility, hearing or sight. Aspects as vehicle design, lack of disabled facilities or lack of timetable information, might inhibit the accessibility of transport services for many groups of people such as small children, people with impaired mobility, hearing or visually impaired people, etc.

Geographical exclusion: where a person lives can prevent them from accessing transport services. It refers principally to situations associated to peripherality, poor transport provision and therefore the resulting inaccessibility, since dispersed locations may limit the ability to carry out activities in the immediate area.

Exclusion from facilities: because of time, income or mode constraints, people cannot access to good shopping, schools, health care or leisure services.

Economic exclusion: the high monetary costs of travel can prevent or limit access to facilities or employment opportunities and thus impact on incomes.

Time-based exclusion: other demands on time, such as combined work, household and child-care duties, reduces the time available for travel (often referred to as time-poverty in the literature), or the time for travel reduces the time available for other duties.

Fear-based exclusion: some people may feel fear and worry when travelling in public spaces, and those fears for personal safety preclude the use of public spaces and/or transport services, reflected in feelings of fear, worry, terror, awareness or concern.;

Space exclusion: this category of exclusion applies when security or space-management strategies discourage socially excluded individuals from using public transport spaces by preventing certain groups from access to public and quasi-public transport spaces, e.g. gated communities or first class waiting rooms at stations.

Q & A

Junyi ZHANG

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Recent focuses

- Book: Transport and Energy Research: A Behavioral Perspective
 - Editor: Junyi Zhang; Publisher: Elsevier; Planned publication date: 2019
- Special issues at SCI/SSCI journals
 - Journal (1): Transportation (IF=2.633)
 - Special Issue: Young People's Life Choices and Travel Behavior
 - Guest editors: Junyi Zhang and Ying Jiang (University of Washington)
 - Deadline of full paper submission: August 30, 2018 (tentative)
 - Journal (2): Sustainable Cities and Society (IF=1.968)
 - Special Issue: Smart Technologies and Urban Life: A Behavioral and Social Perspective
 - Guest editors: Junyi Zhang and Shenjing He (The University of Hong Kong)
 - Deadline of full paper submission: August 30, 2018 (tentative)
 - Journal: Cities (IF=2.797) (under review, not sure at this moment)
 - Special Issue: Internal Migration and Urban Policies: A Life-oriented Behavioral Research
 - Guest editor: Junyi Zhang
 - Deadline of full paper submission: August 30, 2018 (tentative)
- To prepare for the International Choice Modeling Conference 2019 (August 19-21, 2019)
 - <http://www.icmconference.org.uk/>
 - To design the conference concept based on the life-oriented approach.