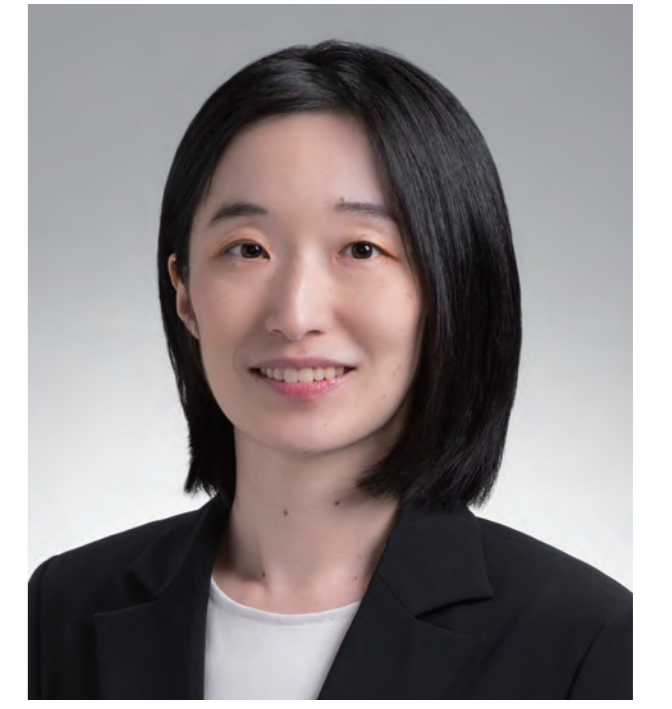


TORIUMI LAB.

Design of Road Functions for Safety and Comfort



Department of Human and Social Systems
 Harmonic Mobility Research Center, Urban Surface Street Managements for Smart Mobility

Road Functional Design

<https://www.transport.iis.u-tokyo.ac.jp/?lang=en&shown=5>

DESIGNING SELF-EXPLAINING ROADS

for achieving safe and comfortable transport

Roads, including highways and streets, are shared by diverse users such as pedestrians, cyclists, private cars, buses, trucks, each traveling at different speeds with varying sizes, and differing desired directions. In certain situations, each user must restrict its movements to accommodate others. Self-explaining roads guide their users to understand what to focus on and how to behave, through their geometric design and traffic operations. This encourages spontaneous behavior that promotes the safety and comfort of everyone.

What to explain?

Where to explain?

Road Network Planning Theory

To meet the diverse needs of users, it is important to prioritize different road functions for each road and balance them across a network. We study how to determine road functions.

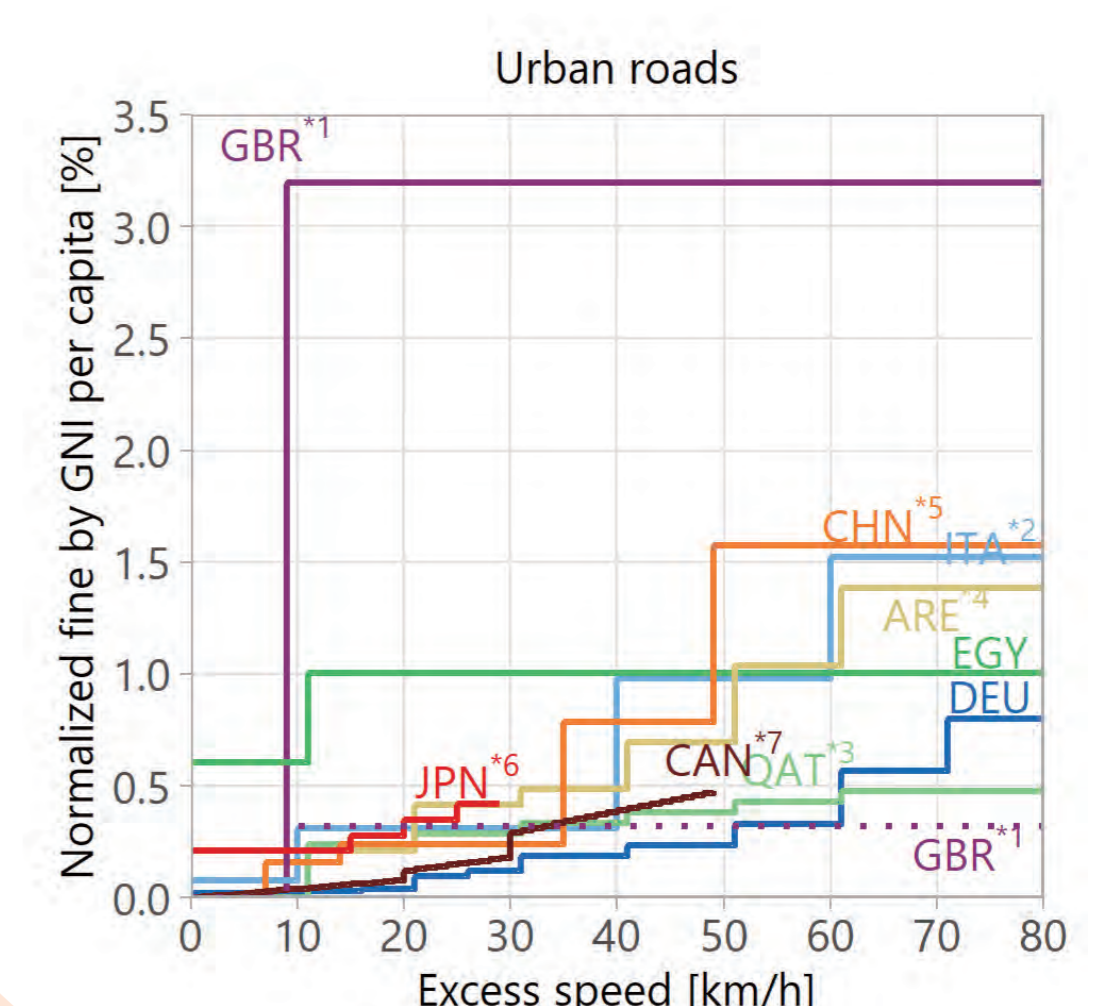
Type	Traffic functions for Automobiles			Pedestrian Network	
	Thru mov.	Land-access	Stopping	Priority	Space Separation/Sharing
A _U	High	Full access control for both intersections and land-access	Minimal (emergency etc.)	Automobiles (urban expwys)	Separation Different routes
B _U	Travel speed	Partial access control for both intersections and land-access	Restricted	Mutual consideration	Grade separation Lane separation
C _U		Partial access control for land-access	Allowed with dedicated spaces		Lane separation + At-grade intersection
D _U	Low	Allowed with care of walking environment	Allowed with care of pedestrians' boarding and alighting	Pedestrians	Sharing
E _U		Partial access control to enhance walking environment	Restricted		Shared space (boarding and alighting of pedestrians to/from automobiles)
F _U		Minimum land-access			Dedicated pedestrian zones Limited car-entry

Trade-off between different functions and different users



Traffic Safety Culture

People's behavior is influenced not only by road design and operation but also by factors such as legislation, enforcement, driving license system, traffic education, history, economy, culture and climate. We aim to understanding this concept of "traffic safety culture".



How to explain?

User Behavior Analysis for Road Design and Operation

By understanding how road geometric design and traffic operation influence on people's driving and walking behavior, we propose designs that encourage safer practice.



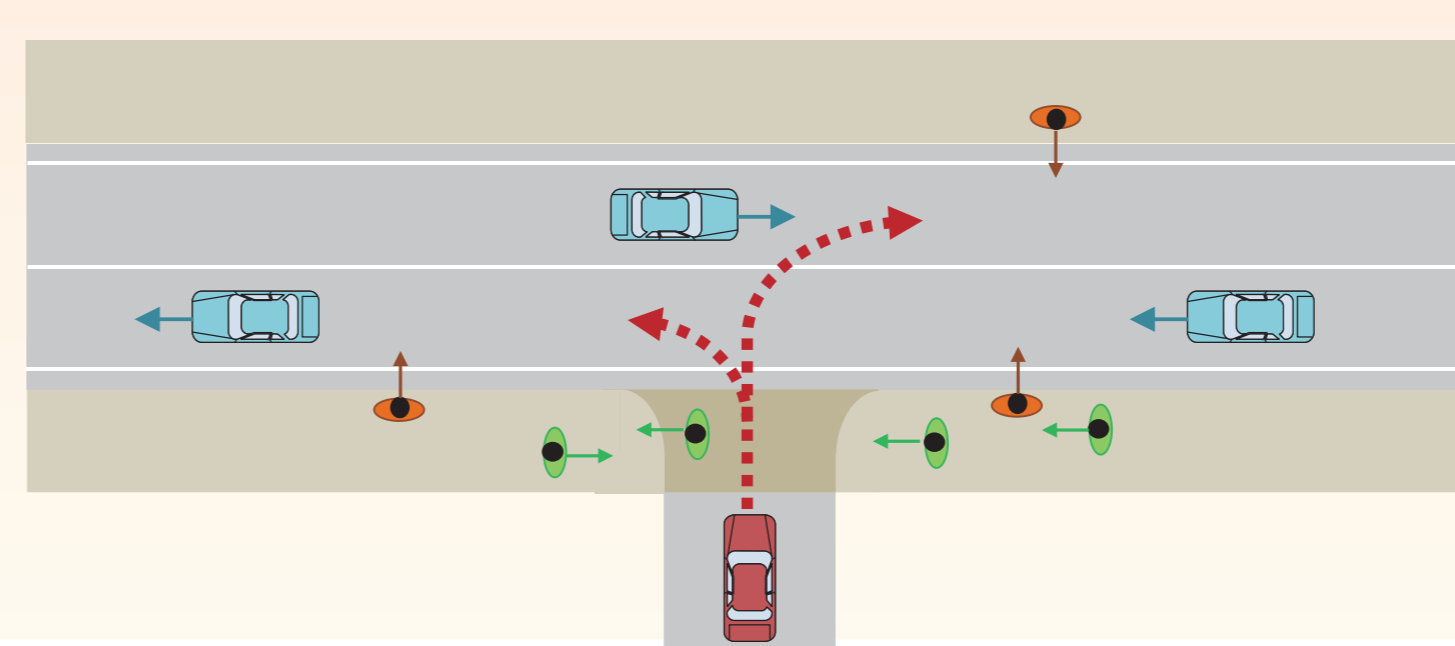
Hierarchical street planning for pedestrians and cars



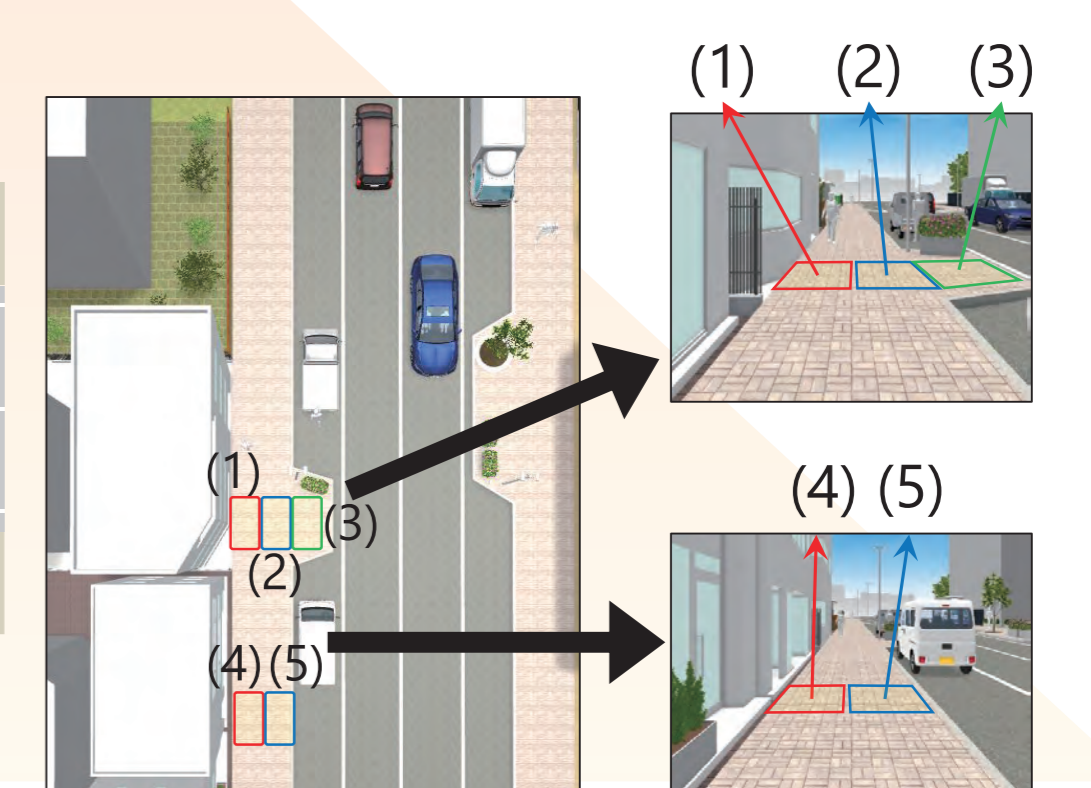
Field experiment comparing geometric designs around a bus stop



Field experiment of "bulb-out" at midblock crosswalk



Evaluation of Interaction between land-access and pedestrians



Selection of pedestrian pausing space

