



# Livability Metrics

## Why and How to Apply More Comprehensive Transportation Evaluation

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*Victoria Transport Policy Institute*

**Moving Towards a Sustainable California**

Exploring Livability, Accessibility & Prosperity

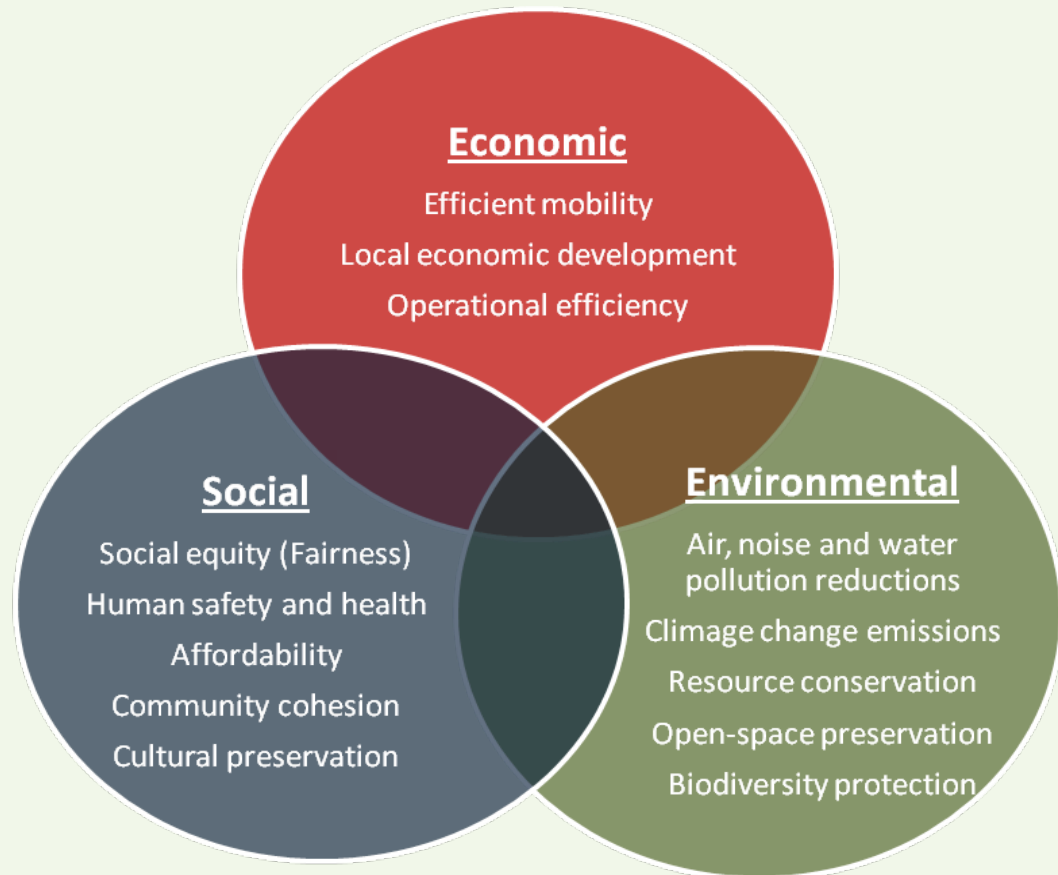
*Berkeley, CA*

9 August 2016

# *Sustainable Planning*

*Sustainability* emphasizes the integrated nature of human activities and therefore the need to coordinate planning among different sectors, jurisdictions and groups.

*Livability* is the subset of sustainability impacts that are directly experienced by community residents, including local air and noise pollution, affordability and accessibility.



# *Livability Versus Sustainability*

## Livability Objectives

Local economic development  
Affordability  
Equity / Fairness  
Human safety, security and health  
Community development  
Cultural heritage preservation  
Air, noise and water pollution prevention  
Openspace preservation  
Climate change mitigation

## Other Sustainability Objectives

National and regional economic productivity  
Resource efficiency  
Operational efficiency  
Climate change prevention  
Biodiversity protection

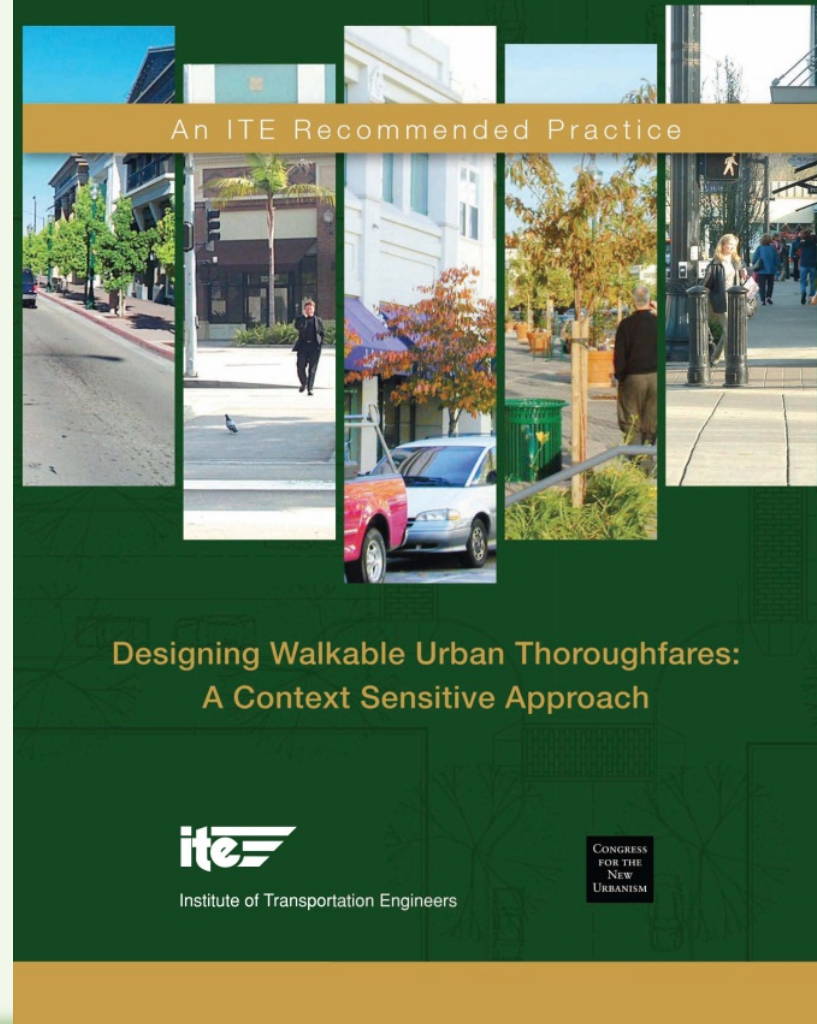
# *Paradigm Shift*

	Old Paradigm	New Paradigm
Definition of <i>Transportation</i>	<i>Mobility</i> (physical travel)	<i>Accessibility</i> (people's overall ability to reach services and activities)
Transport planning goals	Maximize travel speeds and minimize user costs	Optimize transport system efficiency and equity
Modes considered	Mainly automobile	Multi-modal: Walking, cycling, public transport, and automobile
Performance indicators	Vehicle traffic speeds, roadway Level-of-Service (LOS), distance-based crash and emission rates	Quality of transport options. Multi-modal LOS. Land use accessibility. Quality of accessibility for disadvantaged groups. Various costs to users and society.
Favored transport improvement strategies	Road and parking facility expansion.	Improve transport options. TDM. More accessible land development.
Health impacts considered	Per-kilometer traffic crash and pollution emission rates	Per capita crash, emission and physical activity rates, and basic access



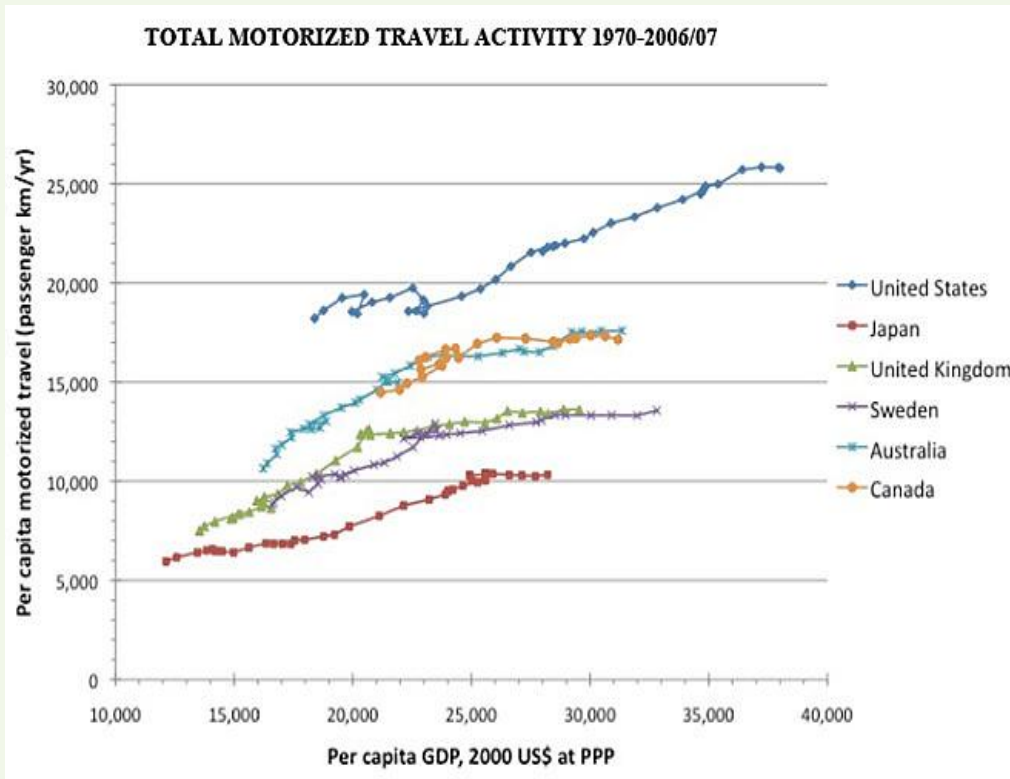
# *Innovative Transport Planning*

- Smart growth/New Urbanism
- Context oriented planning
- Complete streets
- Streetscaping
- Road diets
- Traffic calming
- Transportation Demand Management (TDM)
- Transit-Oriented development
- Parking management



# *Trends Supporting Multi-Modalism*

## Annual Vehicle Travel



*Starting about the year 2000, per capita vehicle travel started to peak (Schipper and Millard Ball 2011)*

- Motor vehicle saturation.
- Aging population.
- Rising fuel prices.
- Increased urbanization.
- Increased traffic and parking congestion.
- Rising roadway construction costs and declining economic return from roadway expansion.
- Environmental concerns.
- Health concerns.
- Changing preferences.

# *Valuing Multi-Modalism*

An efficient and equitable transportation system is diverse and has suitable incentives for users to choose the best mode for each trip, considering all impacts (benefits and costs).

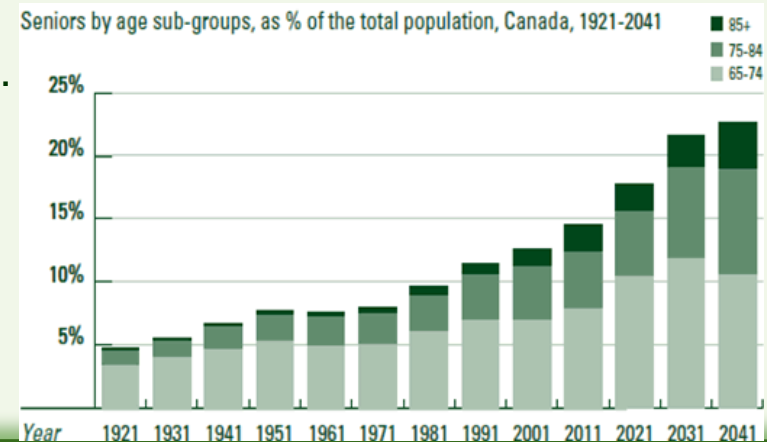
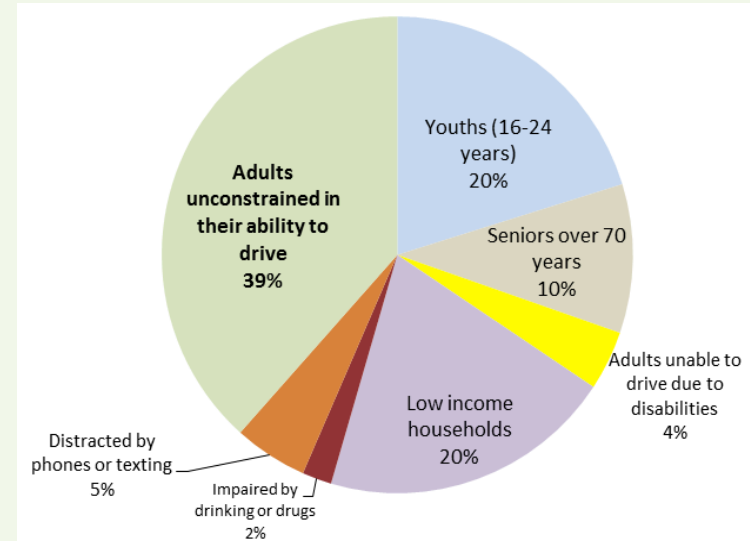
A developed country  
is not a place where  
the poor have cars.  
It's where the rich  
use public transport.  
- Gustavo Petro, Mayor of Bogota





# *Who Benefits?*

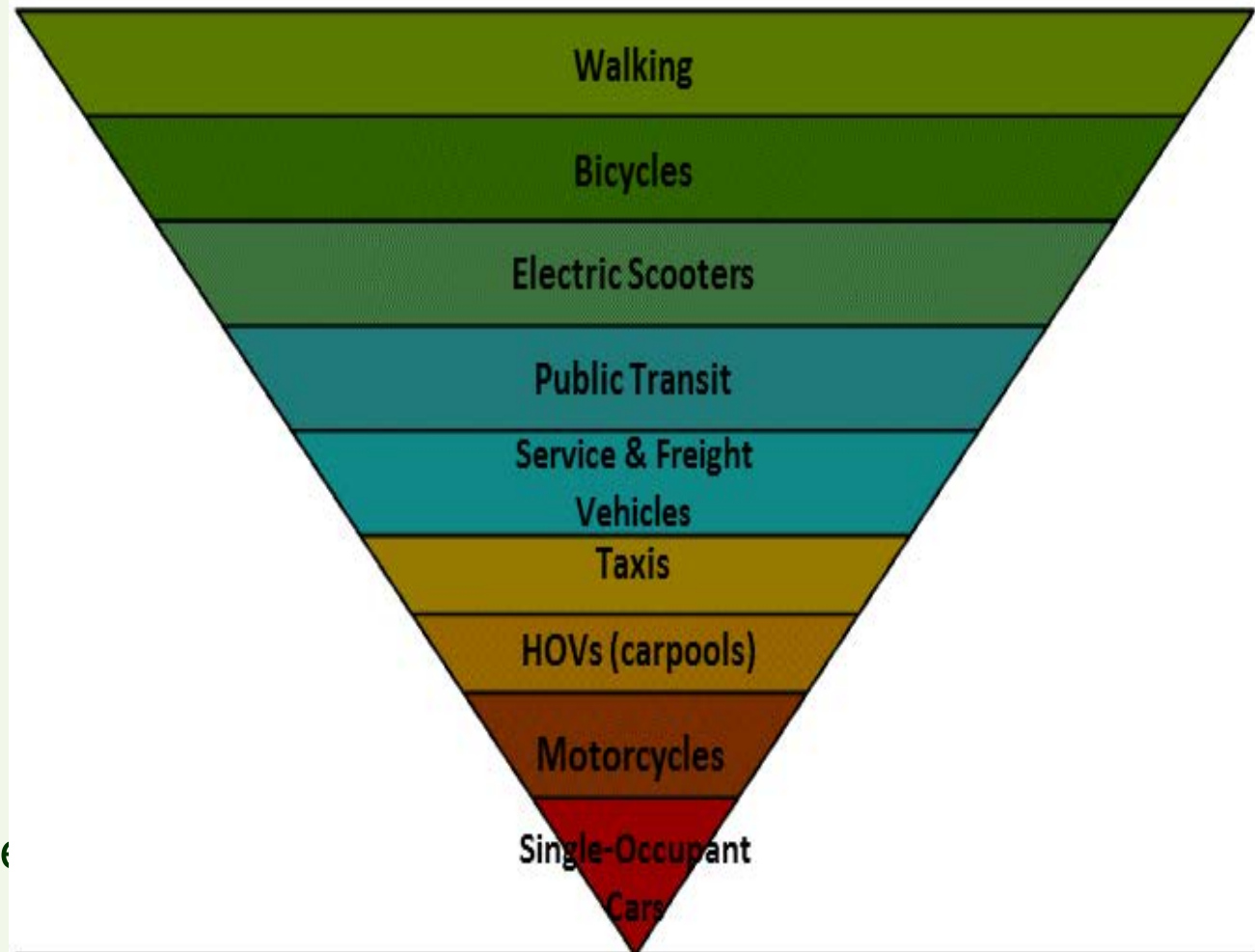
- Youths 10-20 (10-30% of population).
- Seniors over 70 who do not or should not drive (5-15% of total population and increasing).
- Adults unable to drive due to disability (3-5%).
- Lower income households burdened by vehicle expenses.
- Law-abiding drinkers.
- People who walk or bike for enjoyment and health.
- Pets that want to be walked for enjoyment and health.
- Residents who don't want vehicle pollution.
- Drivers who want to avoid chauffeuring burdens.
- Motorists who want convenient parking.





# *Sustainable Transport Hierarchy*

1. Walking
2. Cycling
3. Public Transit
4. Service & Freight
5. Taxi and carsharing
6. HOV
7. Private Automobile



# Universal Design

# Sage Traveling

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## Istanbul Disabled Access Review

 Disabled access in Istanbul is the result of the long history of the city, the topography, and the current building codes. People have been living in this location for over 2500 years, and many streets and buildings date back several centuries long before there were building codes for [disabled access in Istanbul](#).

### Istanbul Disabled Access – Best Aspects

**Accessible tram runs through center of town** – There is an inexpensive tram line (shown in the image on the right) that runs through the Old Town that can be beneficial to disabled tourists. The tram goes up some hills that wheelchair tourists will not have to push up. It runs near the Blue Mosque, Hagia Sophia, Basilica Cistern, and Grand Bazaar

**An unspoiled gem** – Istanbul is truly an underappreciated destination for many tourists from western countries. Many people visit Europe by traveling to the big cities in the west

Istanbul	Sage Accessibility Rating
Cobblestone smoothness	2
Cobblestone abundance	3
Flatness (lack of hills)	2
Proximity of sights to each other	2
Accessible Public Transportation	3
English spoken	3
Overall Accessibility	2
Quality of sights/town	5
Quantity of sights	3

[View Rating Explanation](#)



## Sage Rating System

1. Suitable for people who can walk up a flight of stairs
2. Suitable for slow walkers or wheelchair users who can get up a few steps
3. Suitable for wheelchair users with full use of upper body (paraplegics)
4. Suitable for wheelchair users with limited arm/hand use
5. Suitable for wheelchair users with no arm/hand use (quadriplegics)

# *Performance Indicators*

Performance indicators are like the score in a game. They define what must be accomplished to succeed.

## Old

- Roadway level-of-service (LOS)
- Traffic speeds and delay
- Accidents and emissions measured per mile
- Cost to government of facilities and services



## New

- Quality of access options (ability to reach desired services and activities) by user type
- Total costs to users, businesses and users (for vehicles, fuel, insurance, parking, roads, transit services, etc.)
- Affordability (costs to lower-income people)
- Quality of mobility for non-drivers
- Accidents and emissions measured per capita
- Average daily minutes engaged in active transport
- Land use impacts
- User satisfaction



# *Comprehensive Multi-Modal Planning*

- Evaluation and planning based on *accessibility* instead of *mobility*.
- Consider all modes
- Consider all impacts and objectives
- Least-cost funding (invest in the most cost effective solution, considering all impacts and objectives)



# *Healthy Community Performance Indicators*

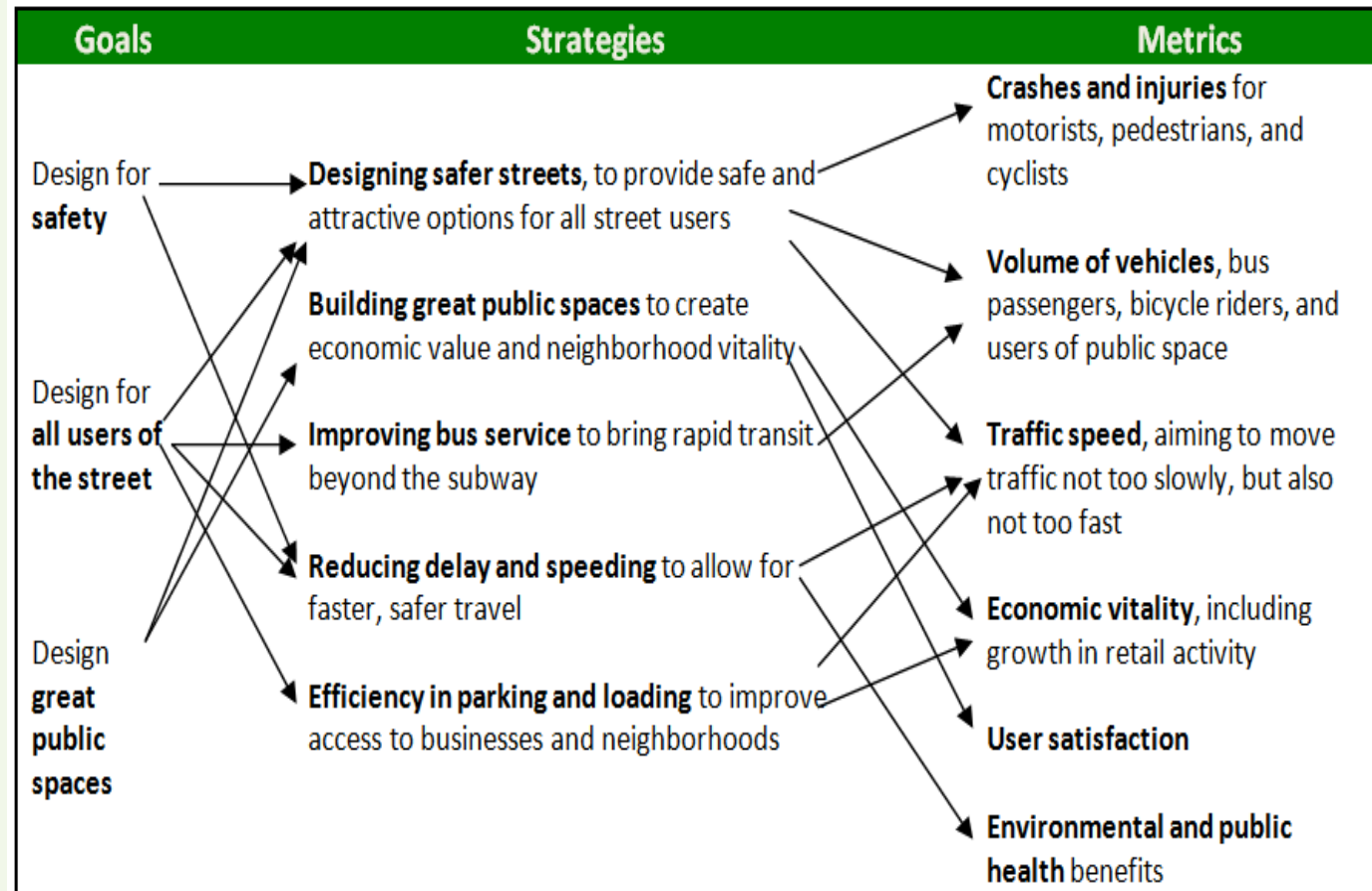
- Per capita *traffic casualties* (injuries and deaths)
- Average daily minutes spent walking and cycling
- Portion of population that achieves physical activity targets
- *Basic mobility* (people's ability to access essential services and activities)
- Availability and quality of affordable travel modes (walking, cycling, transit, etc.)
- Portion of lower-income household budgets devoted to transport and housing
- Availability of affordable-accessible housing
- *Universal design* (accommodation of travelers with mobility impairments)
- Portion of residents exposed to excessive air and noise pollution
- Consideration of health objectives in community planning process
- Others?

# *Alternative Mode Benefit Categories*

Improved Transport Options	Increased Use of Alt. Modes	Reduced Automobile Travel	Smart Growth Development
<ul style="list-style-type: none"><li>• Improved user convenience and comfort</li><li>• Improved travel options, particularly for non-drivers</li><li>• Improved local property values</li></ul>	<ul style="list-style-type: none"><li>• User cost savings</li><li>• User enjoyment</li><li>• Economic development benefits from increased access to education and employment</li><li>• Increased public fitness and health</li></ul>	<ul style="list-style-type: none"><li>• Reduced traffic and parking congestion</li><li>• Road and parking cost savings</li><li>• Consumer cost savings</li><li>• Reduced crash risk to others</li><li>• Air and noise pollution reductions</li><li>• Energy conservation</li><li>• Economic development benefits</li></ul>	<ul style="list-style-type: none"><li>• More livable communities</li><li>• Reduced land consumption, heritage and openspace preservation, and public service cost savings</li><li>• Improved accessibility, particularly for non-drivers</li><li>• Reduced vehicle ownership</li></ul>




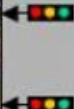




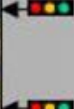












# NY Street Performance Metrics



# Multi-Modal LOS

New indicators can be used to evaluate multiple modes.

This is critical for creating more efficient and diverse transportation systems.

Level of Service	Automobile	Bicycle	Pedestrian	Bus
A/B	 			 >4 buses/hour
C/D	 			 2 to 4 buses/hour
E/F	 			 ≤ 1 bus/hour
				

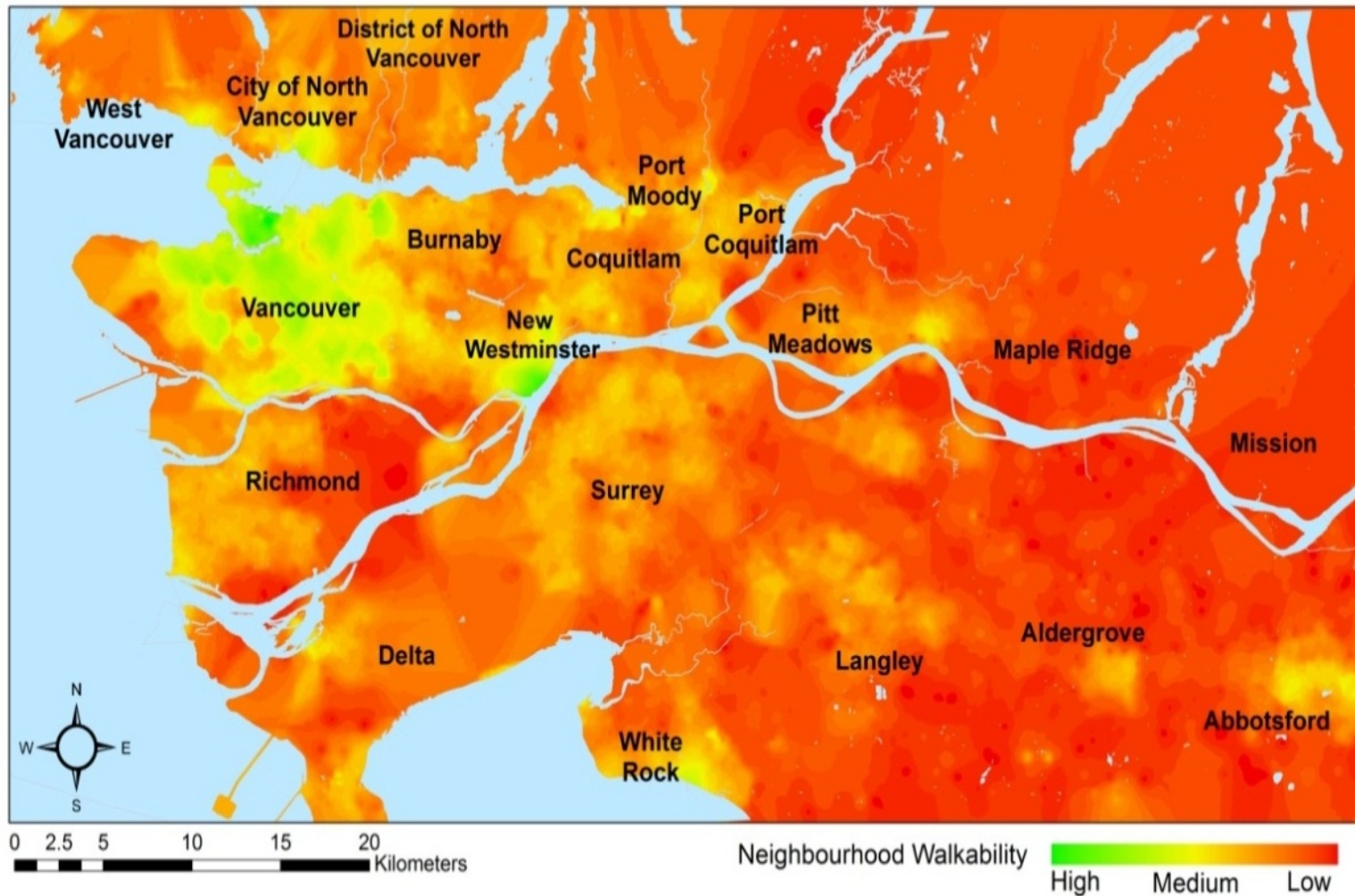
Source: FDOT Quality/Level of Service Handbook



# *Walkable Communities*

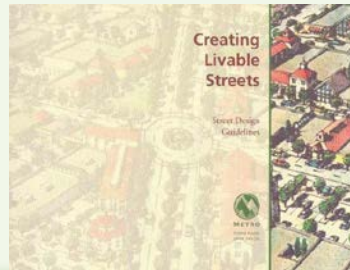
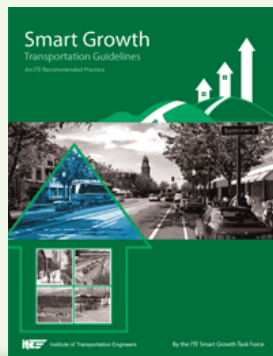
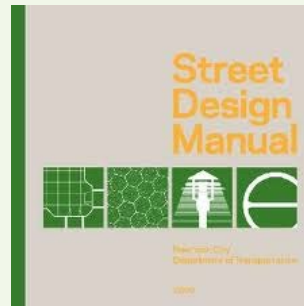
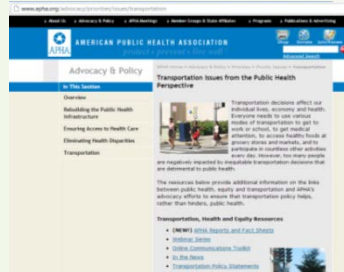
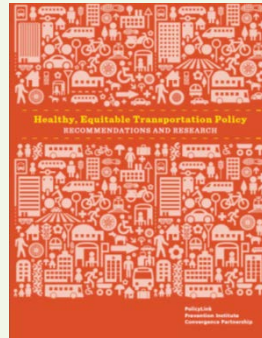
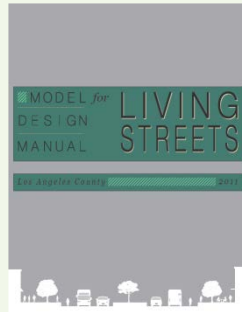
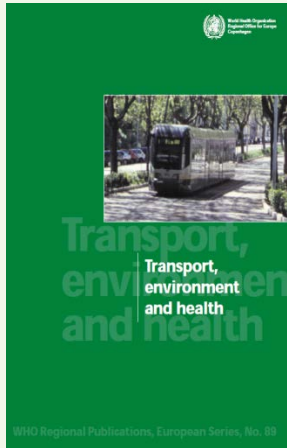
## Walkability

- Improves public fitness and health
- Improves mobility options for non-drivers
- Transport cost savings and affordability
- Increases community livability





# *Supported by Professional Organizations*



International City/County Management Association

Institute of Transportation Engineers

American Planning Association

- American Public Health Assoc.
- Center for Disease Control
- Federal, state, regional and local planning agencies
- World Health Organization
- National Governor's Association
- And much more...



**“Well Measured: Developing Indicators for Sustainable and Livable Transport Planning”**

**“Sustainability and Livability: Summary of Definitions, Goals, Objectives and Performance Indicators”**

**“Safe Travels: Evaluating Mobility Management Traffic Safety Benefits”**

**“Toward More Comprehensive and Multi-modal Transport Evaluation”**

**“Measuring Transportation: Traffic, Mobility and Accessibility”**

**“Community Cohesion As A Transport Planning Objective”**

**“Understanding Smart Growth Savings”**

**“Evaluating Transportation Equity”**

**“Online TDM Encyclopedia”**

**and more...**

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