Responding to Changing Travel Demands and Community Goals

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Victoria Transport Policy Institute

Presented to the

WILMAPCO Our Town Event

Newark

8 February 2023


Pandora
ONE WAY

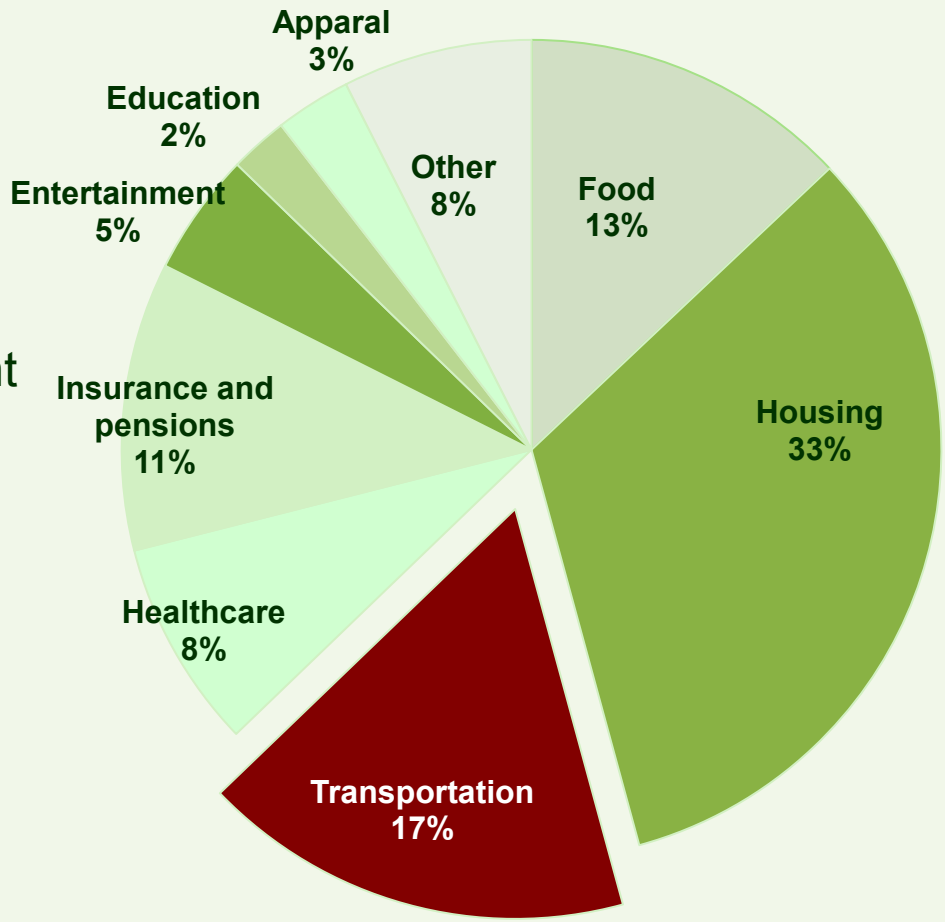

INN
Gladstone


FERNWOOD
INN
FERNWOOD INN
FERNWOOD INN
Fernwood St

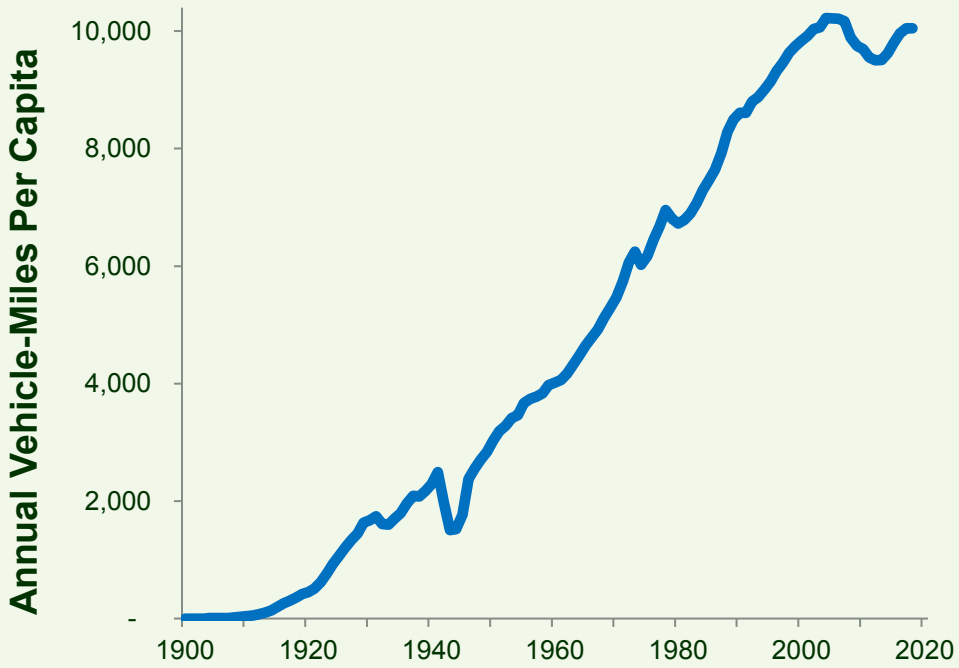
Transportation Impacts

Transportation affects people in many ways

- 60-90 minutes of our day (10-30% of uncommitted time)
- 15-25% of household budgets.
- Affects economic opportunities
- Housing affordability and development patterns (compact or sprawled)
- Affects health and safety
- Public realm and community livability.
- Affects local economic development.
- Public expenses
- External costs (public infrastructure, congestion, crash risk and pollution)



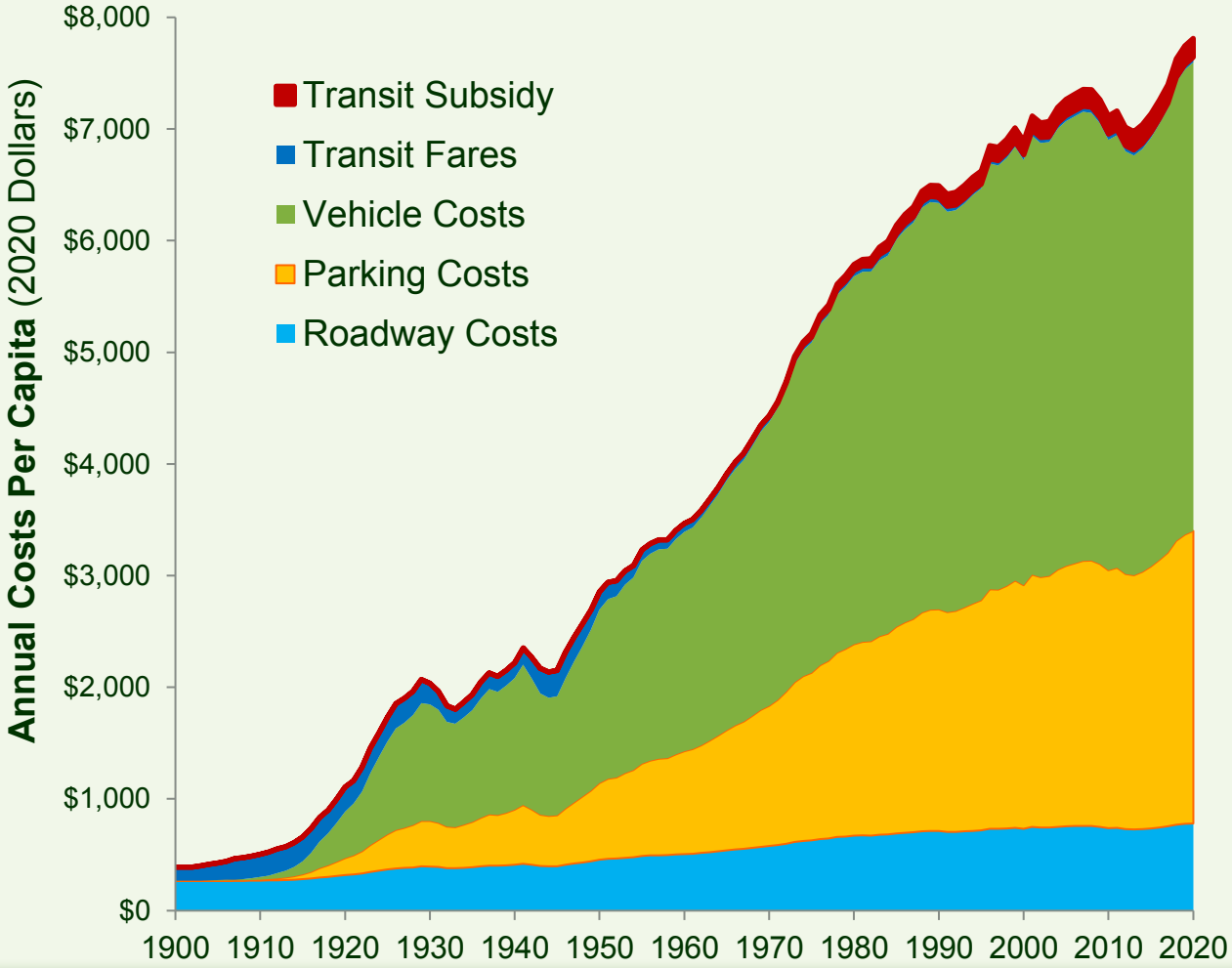
Changing Travel Demands



- Aging population
- High fuel prices
- Increasing poverty
- Affordability
- Increasing urbanization
- Changing consumer preferences
- Health and environmental concerns
- Resilience planning
- New technologies and modes

Previous Mobility Costs

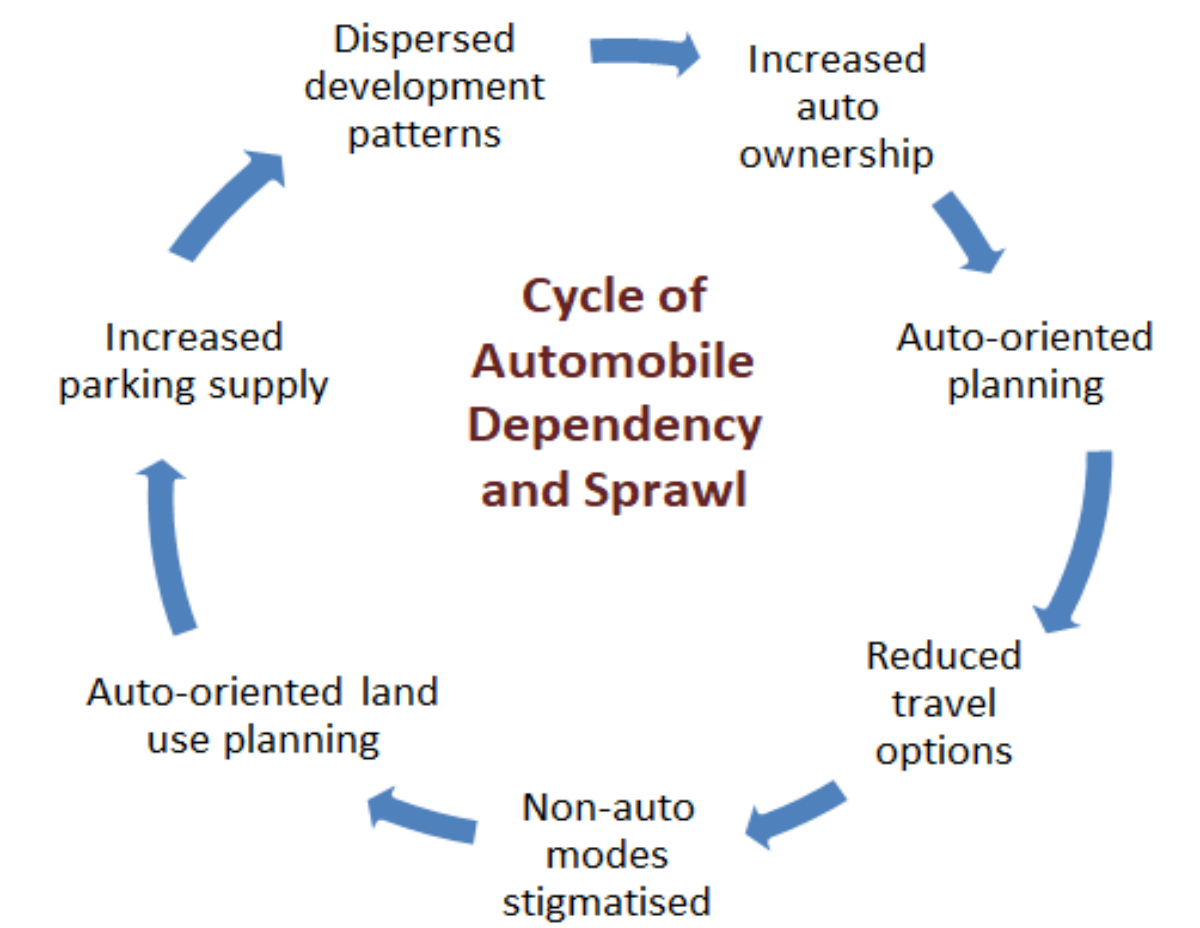
As automobile travel grew during the last 120 years, per capita vehicle, road and parking facility costs increased significantly.



A Century of Automobile Planning

During the last century, transportation planning focused on automobile demands to the detriment of other modes.

What comes next?



Mobility to Accessibility

Mobility (physical movement)

- Favors faster modes and longer trips
- Ignores land use impacts
- Supports highway expansion and sprawl

Accessibility (ability to reach desired services and activities)

- Favors multi-modalism. Recognizes the roles of non-motorized and public transport.
- Recognizes land use impacts on accessibility
- Supports comprehensive, integrated planning and smart growth development

Emerging Planning Goals

Older Goals	Emerging Goals
	Increase affordability (cost burdens on lower-income households).
	Improve disadvantaged people's economic opportunities.
	Create more attractive and vibrant streets.
	Support local economic development.
	Increase public safety, fitness and health.
Increase traffic speeds and reduce congestion delays.	Protect local environments (reduce air, noise and water pollution).
Increase parking convenience.	Encourage more compact development.
Reduce traffic accident rates.	???

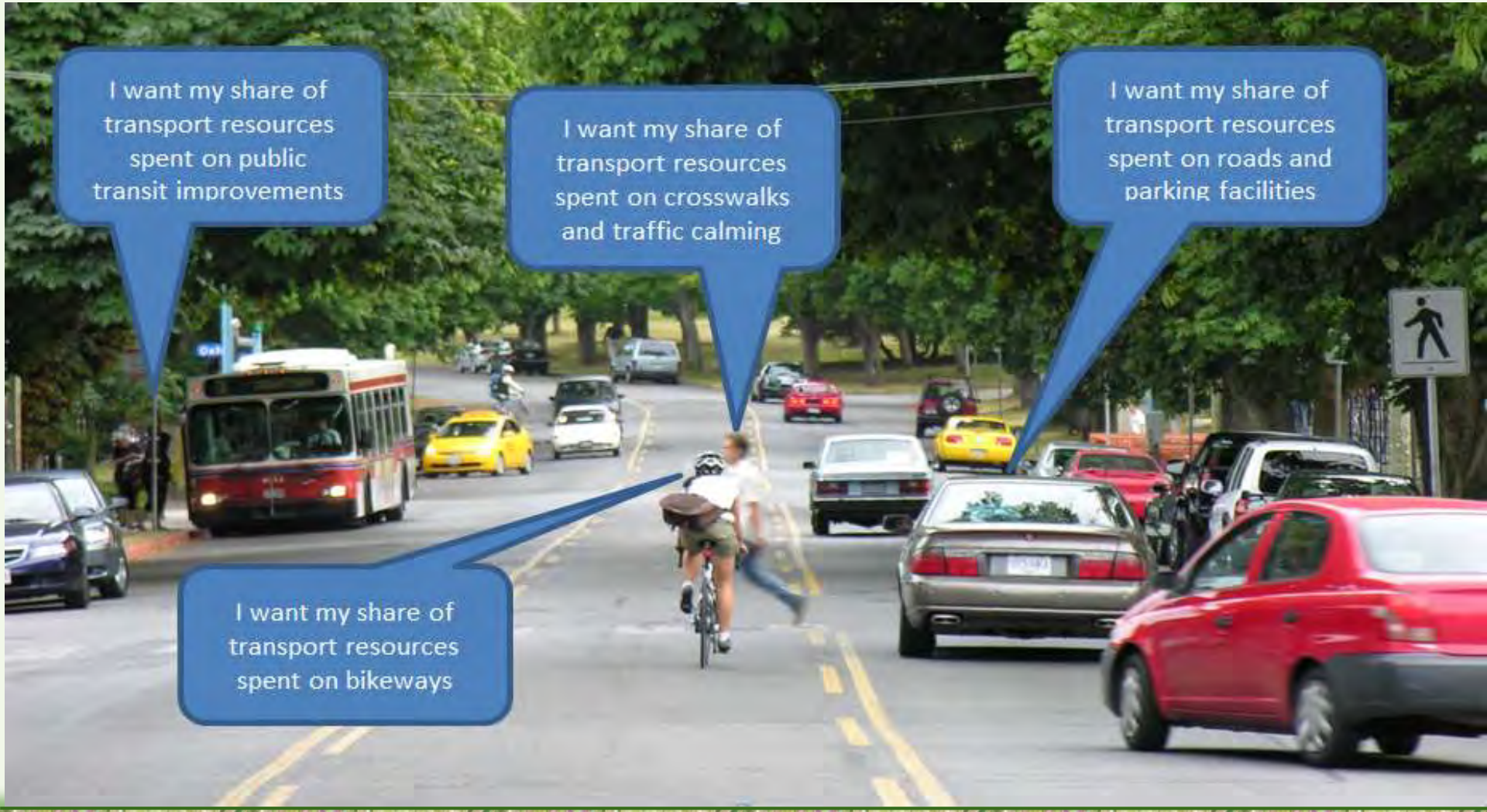
Transport Equity Analysis

Type	Description	Metrics
Horizontal Equity - Treats Everybody Equally		
Fair Share	Each person receives a fair share of public resources.	Per capita share of transportation resources (money, road space, etc.).
External costs	Travellers minimize and compensate for external costs.	Infrastructure costs, congestion, crash risk and pollution that travellers impose on other people.
Vertical Equity - Favors Disadvantaged Groups		
Inclusivity	Transportation systems provide basic mobility to disadvantaged groups.	Quality of travel for people with disabilities and other special needs. Disparities between groups.
Affordability	Lower-income households can afford basic mobility.	Transportation costs relative to incomes. Quality of affordable modes.
Social Justice	Policies address structural inequities.	Whether organizations address inequities such as racism and classism.

Transportation Equity Objectives

Horizontal Equity		Vertical Equity		
Fair Share	**External Costs**	**Inclusivity**	**Affordability**	**Social Justice**
• Everybody contributes to and receives comparable shares of public resources. • Serve non-drivers as well as drivers. • Affected people are involved in planning.	• Minimize external costs. • Favor resource-efficient modes that cause less congestion, risk and pollution. • Compensate for external costs.	• Accommodate people with disabilities and other special needs. • Basic access (ensure that everybody can reach essential services and activities).	• Favor affordable modes. • Provide discounts for lower-income users. • Provide affordable housing in high-accessibility neighborhoods.	• Protect and support disadvantaged groups (women, youths, minorities, low-income, etc.). • Affirmative action programs. • Correct for past injustices.

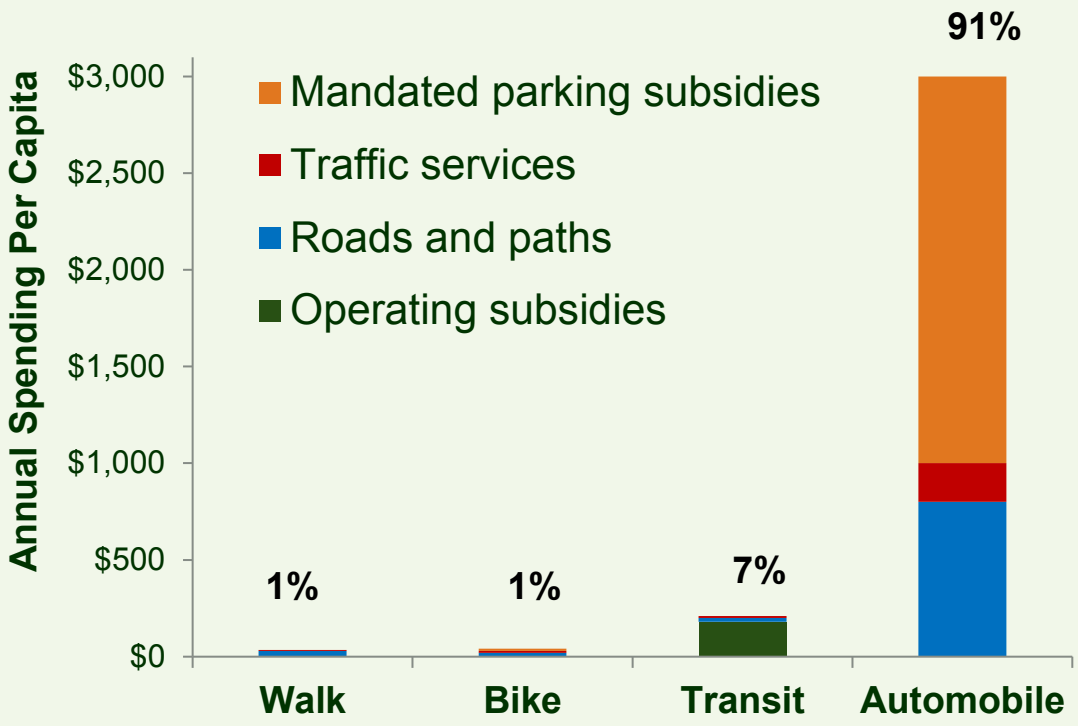
Fair Share Transportation Planning



Public Infrastructure Costs

Considering expenditures on roads and traffic services, government-mandated parking facilities, and transit operating subsidies, the majority of transportation funding is devoted to automobile transportation.

As a result, people who cannot, should not or prefer not to drive receive far less public investment than motorists.



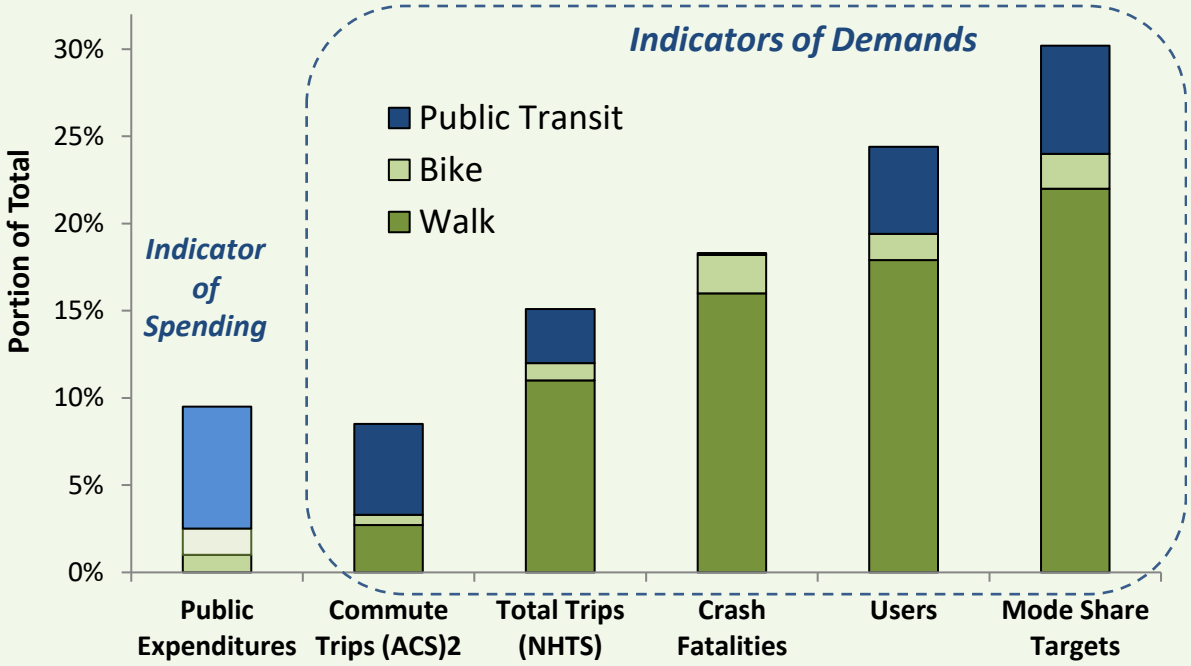
Investments Verses Demands

In a typical community non-auto travel represent less than 10% of infrastructure investments.

But

- 10-15% of current trips.
- 15-25% of traffic deaths.
- 25-35% of travellers.
- 20-40% of future targets.

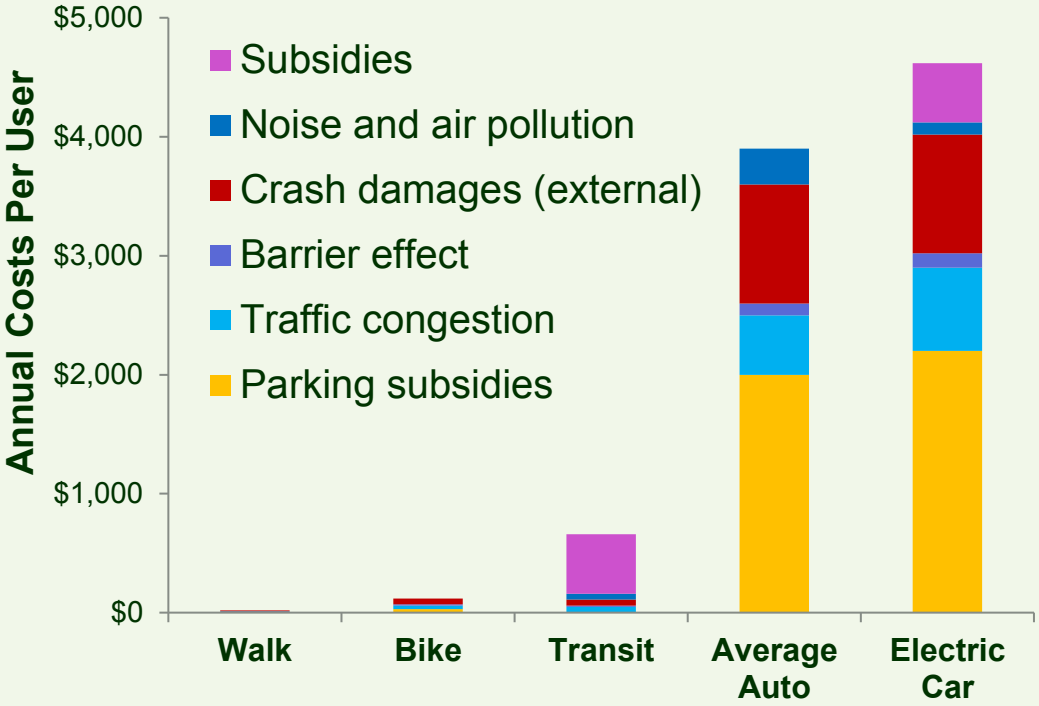
This is unfair and inefficient – if fails to respond to non-drivers' travel demands, creating automobile-dependent transport systems.



External Costs

Because they are large, fast and resource intensive, automobiles require more expensive facilities and impose more congestion, risk and pollution per passenger-mile than other modes.

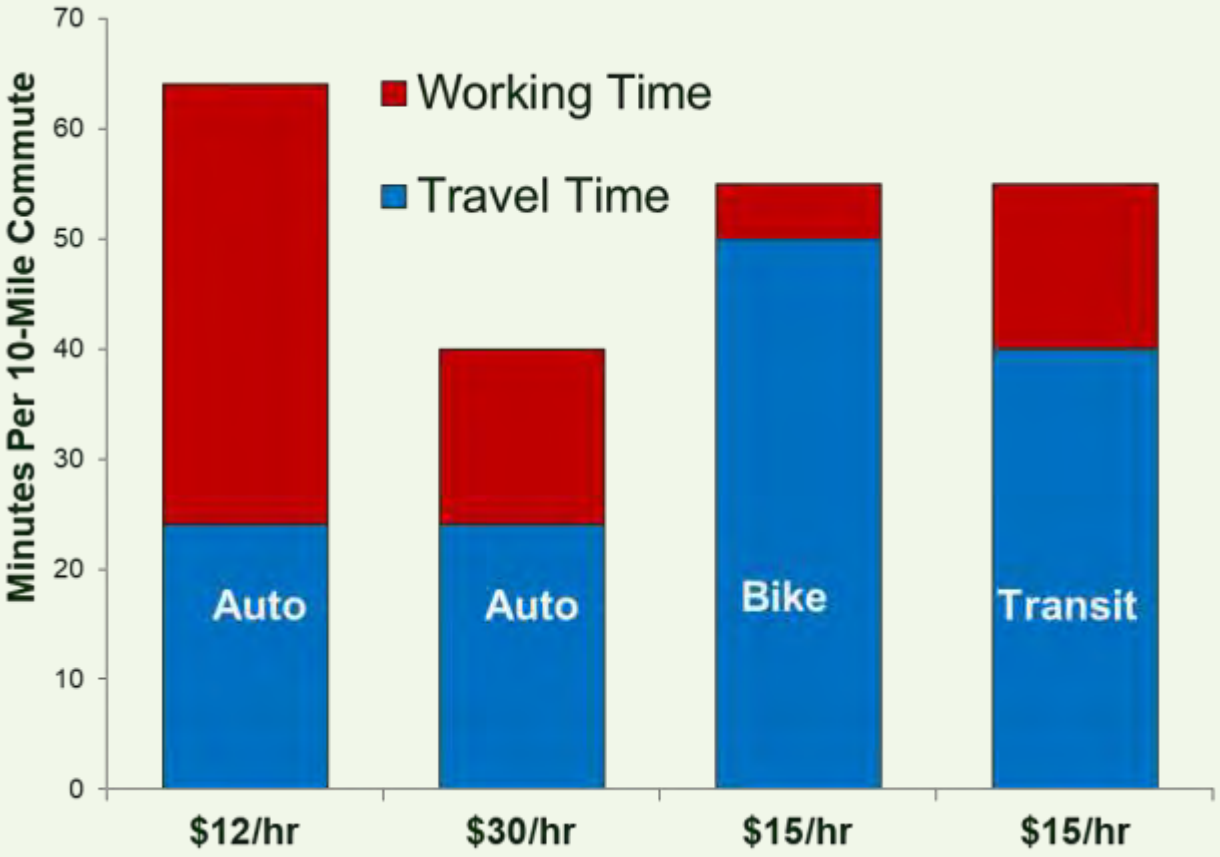
As a result, people who drive more than average impose net external costs on people who drive less than average. Since vehicle travel tends to increase with income, the external costs that automobiles impose on non-drivers tend to be regressive.



Effective Commute Speeds

Effective speeds, measures time spent travelling plus time spent working for money to pay travel expenses.

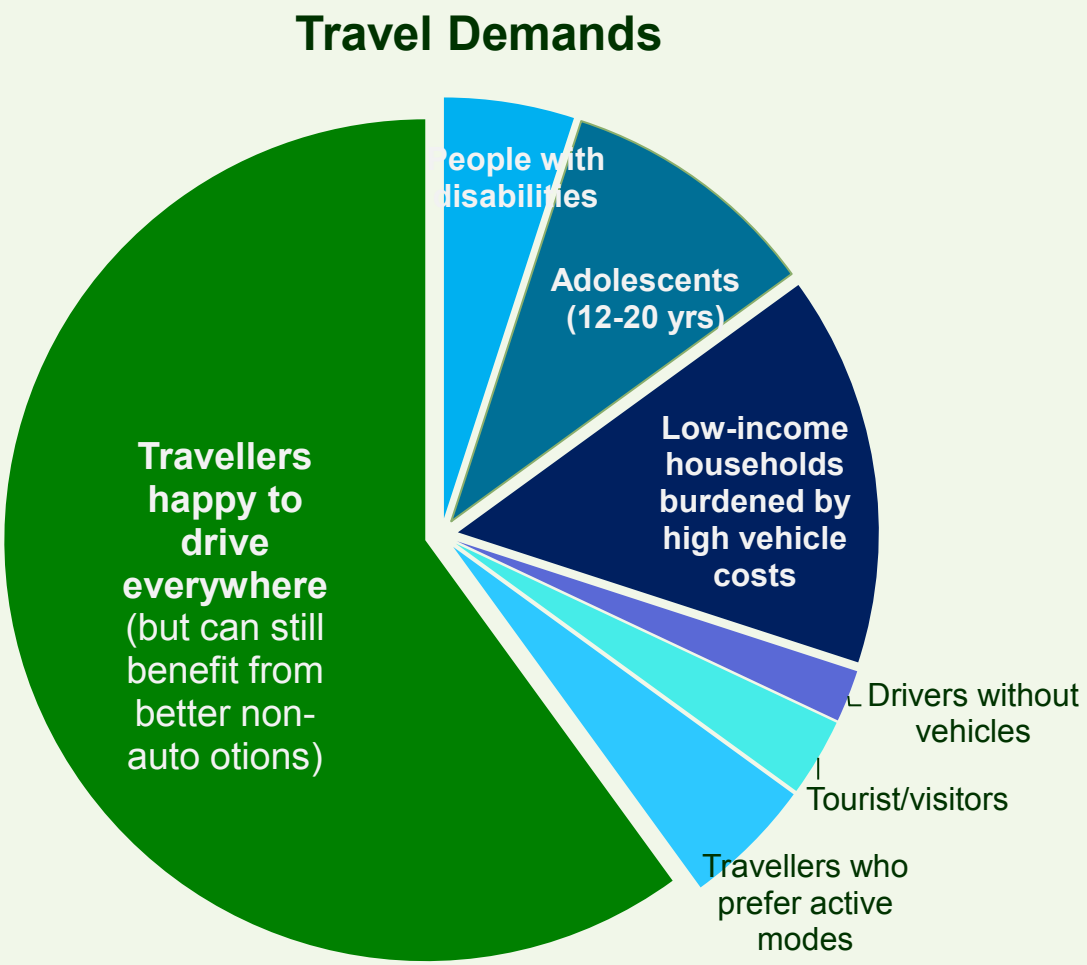
Many lower-wage motorists spend more time earning money to pay their travel expenses than they spend travelling. Bicycling and transit are generally faster than driving overall.



Inclusivity: Serving Non-Drivers

In a typical community 20-40% of residents cannot, should not or prefer not to drive for most trips.

Without suitable travel options non-drivers lack independent mobility, require chauffeuring, bear excessive costs, or move to another community that offers better mobility option.



Serving PwD

Many people with disabilities (PwDs) have mobility impairments plus low to moderate incomes. They can gain independence, opportunity and dignity, by living in a compact urban village with the following features:

- An accessible sidewalk network.
- Complete streets with low traffic speeds.
- 70 or higher Walk Score.
- Frequent public transit services with accessible buses, trains and stations.
- Affordable and accessible housing.

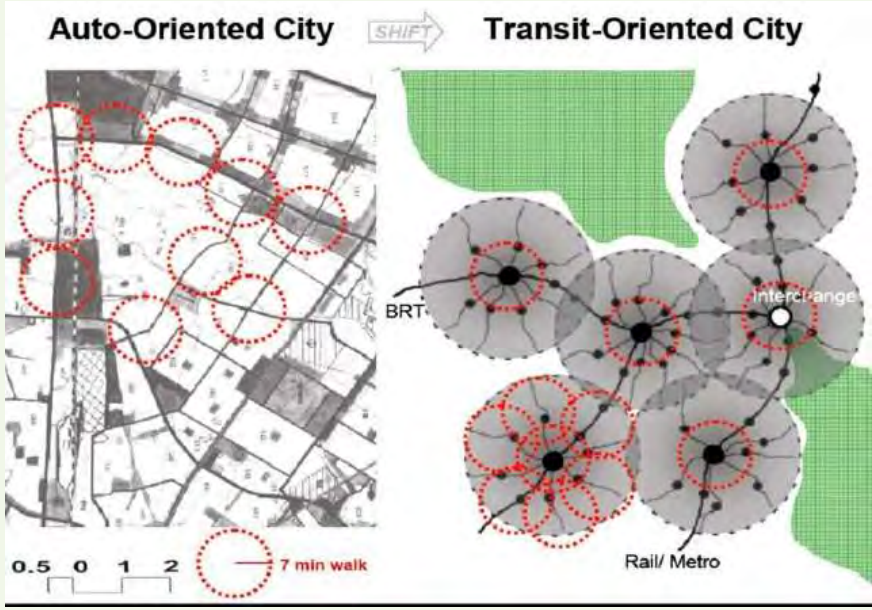
Few North American neighborhoods have these attributes.

Urban Villages for People with Disabilities

www.planetizen.com/blogs/117156-urban-villages-people-disabilities .

Non-Drivers' Accessibility

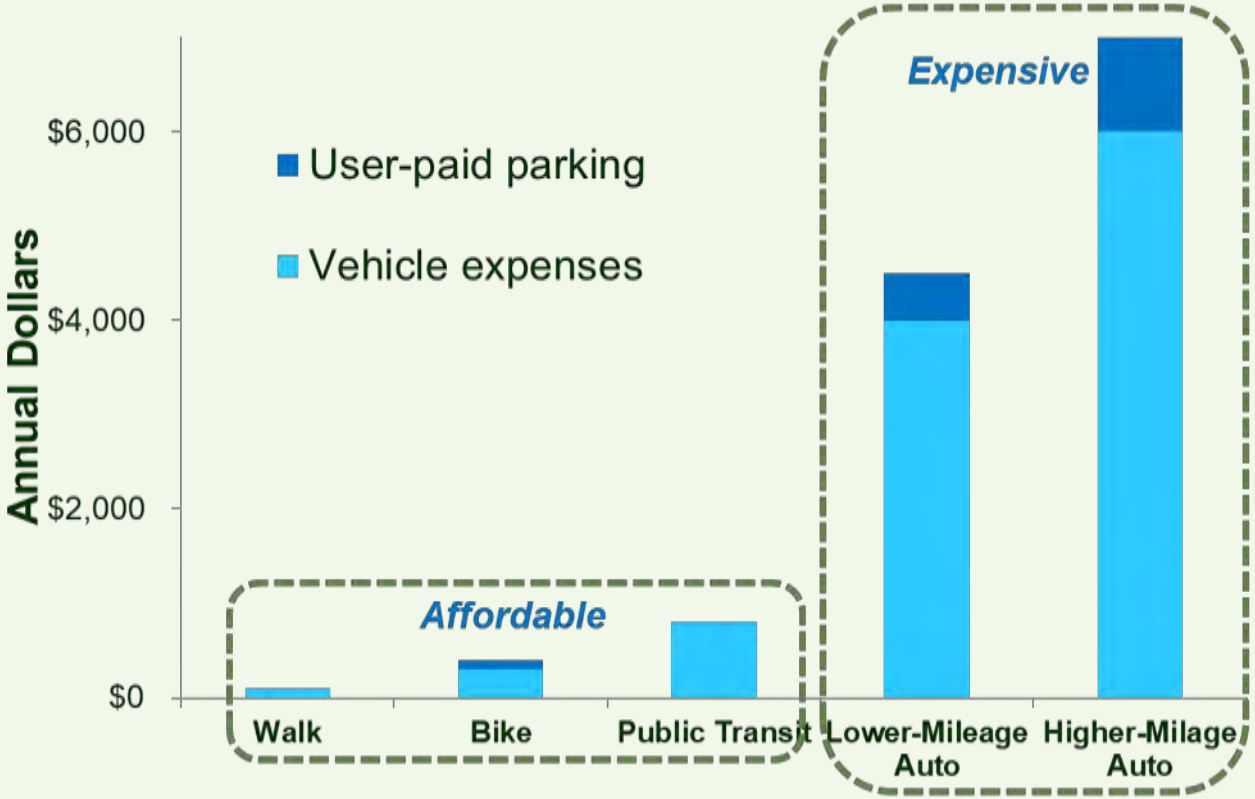
- Universal design (accommodate people with mobility impairments)
- Walking and bicycling conditions (sidewalks, crosswalks, bicycle facilities, traffic speeds, Walk Score).
- Public transit service quality (coverage, frequency, convenience, comfort, safety, affordability, connectivity).
- Neighborhood accessibility (services and activities available within 15-minutes without driving).
- Housing affordability in high-access neighborhoods.



Affordability

It is difficult to legally operate a vehicle for less than $4,000 annually, or $6,000 if it is driven high annual miles, and automobile travel sometimes imposes large unexpected costs due to mechanical failures, crashes or traffic violations which can cause household financial crises.

Equity requires improving and favoring affordable mobility and accessibility options.

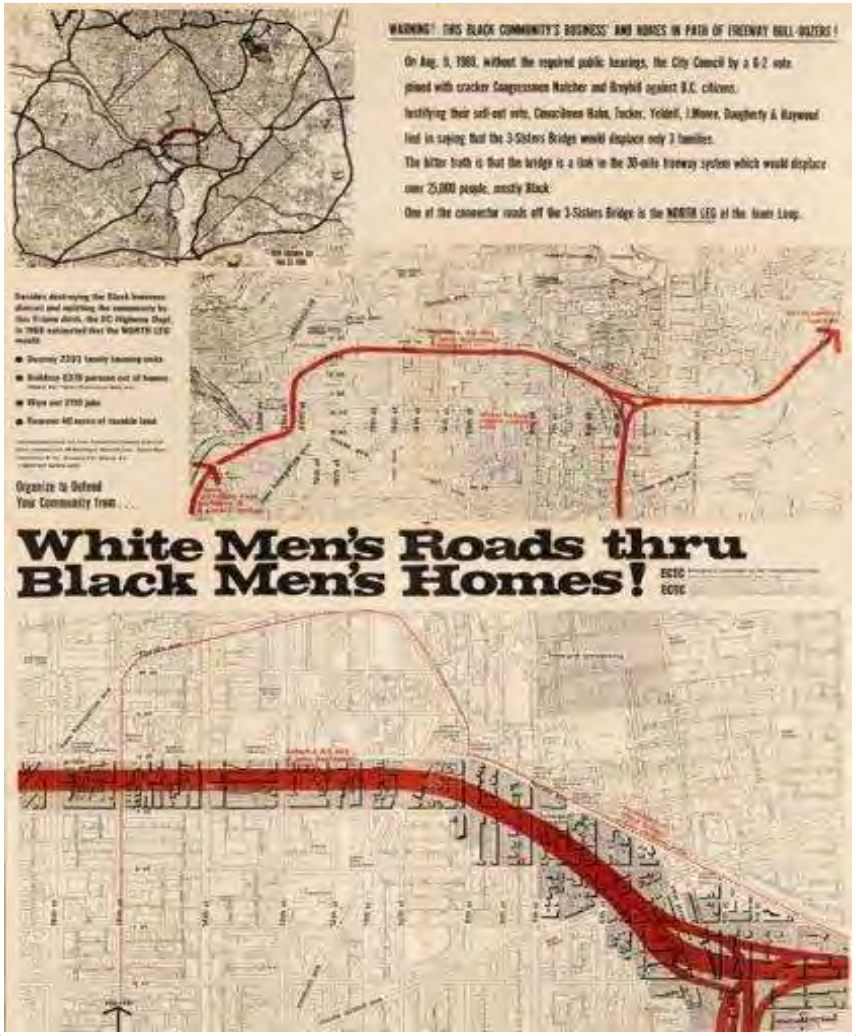


Social Justice

Social justice considers structural inequities such as racism, sexism, and classism.

It can be evaluated by measuring benefit and cost disparities between advantaged and disadvantaged groups.

During the Twentieth Century highways displaced many low-income, largely minority urban neighborhoods. This is an example of how incomplete and biased planning can lead to unfair and harmful outcomes.



Transport Equity Analysis Summary

Type	Description	Metrics	Research Needs
Horizontal – Fair Share	Each person receives a fair share of public resources.	Per capita share of public resources (money, road space, etc.).	More information on costs and expenditures by mode and user group. More data.
Horizontal – External costs	Travellers minimize and compensate for external costs.	Infrastructure costs, congestion, crash risk and pollution that travellers impose on other people.	More information on who imposes and bears external costs. Ways to internalize costs.
Vertical – Inclusivity	Transportation systems provide basic mobility to disadvantaged groups.	Quality of travel for people with disabilities and other special needs. Disparities between groups.	Demands for non-auto modes, particularly travel demands of disadvantaged groups.
Vertical – Affordability	Lower-income households can afford basic mobility.	Transportation costs relative to incomes. Quality of affordable modes.	Users' travel costs. Quality of affordable modes. Ways to improve affordable access.
Social Justice	Policies address structural inequities.	Whether organizations address inequities such as racism and classism.	Information on structural inequities and how to correct them. Categories and needs of disadvantaged groups.

Valuing Multi-Modalism

An efficient and equitable transportation system is diverse so users to choose the best mode for each trip:

- Walking and cycling for local errands
- High quality public transit when travelling on busy corridors
- Automobile travel when it is truly most efficient, considering all impacts

Current planning does a poor job of valuing this diversity.

"A developed country is not where the poor drive cars, it is where the rich use public transportation"

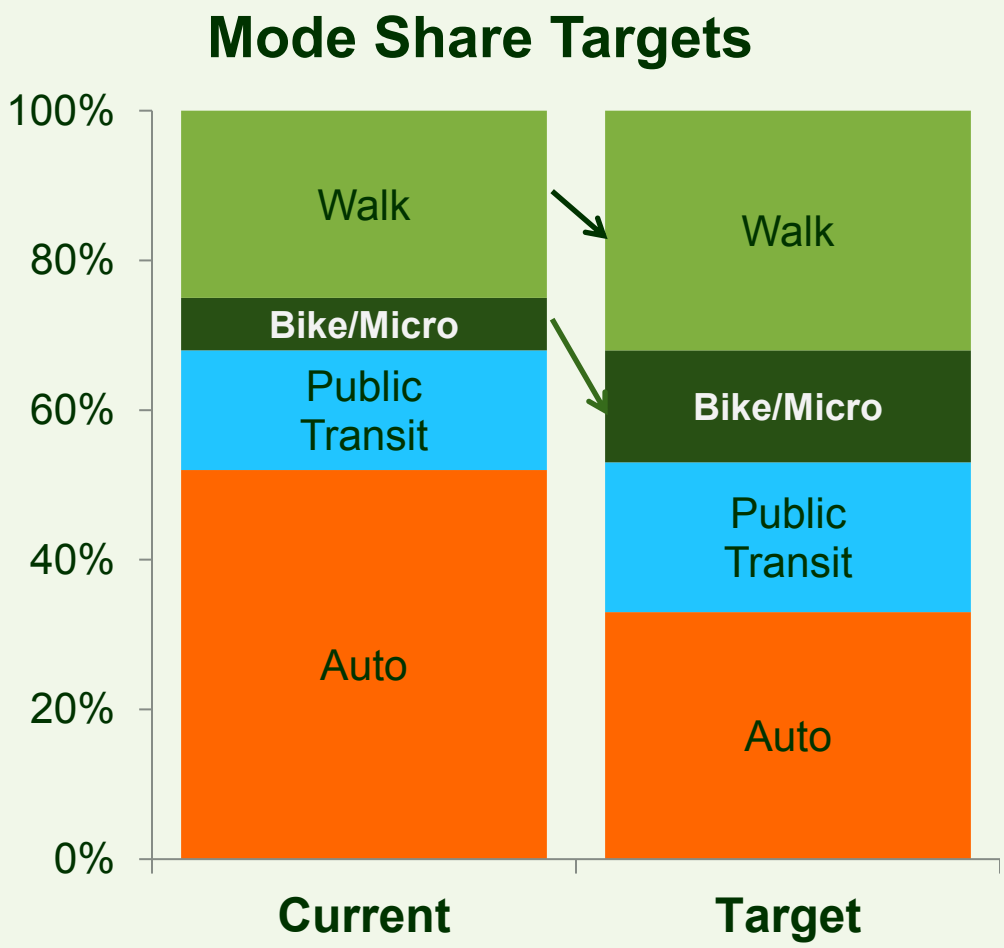
- Enrique Peñalosa, Bogota Mayor

Many Potential Benefits

Improved Travel Options ➔	More Non-Auto Travel ➔	Reduced Auto Travel ➔	More Compact Communities
• Improved user convenience and comfort • More independent mobility for non-drivers, which supports equity objectives • Option value • More attractive public realm • Higher property values • Increased safety and security	• User enjoyment • Improved public fitness and health • More local economic activity • Increased community cohesion (positive interactions among neighbors, improved security)	• Reduced traffic and parking congestion • Road and parking facility cost savings • Consumer savings • Reduced chauffeuring burdens • Reduced crashes • Energy conservation • Pollution reductions • Local economic development	• Improved accessibility, particularly for non-drivers • Transport cost savings • Reduced sprawl costs • Openspace preservation • More livable communities • Higher property values • Increased security

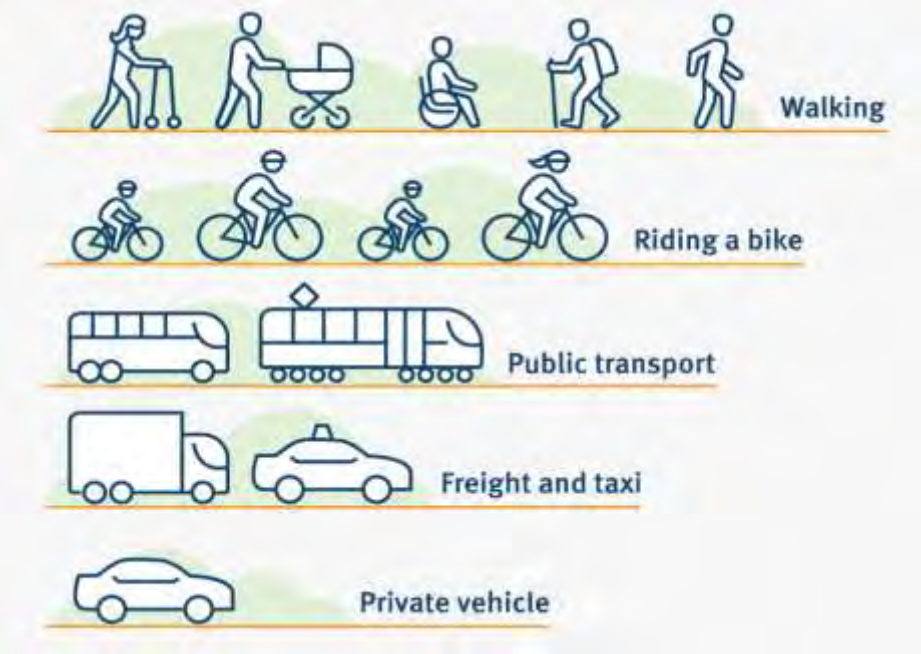
Mode Share Targets

- Studies estimate that improving bicycle and e-bike conditions could significantly increase non-auto mode shares.
- When all impacts are considered, non-auto improvements often have a high returns on investments.



Prioritizing Inclusive/Affordable Modes

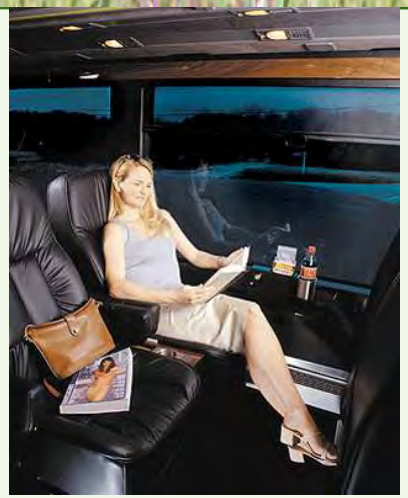
An equitable transportation hierarchy favors inclusive, affordable, low-external-cost modes such as walking, bicycling, micromodes (e-bikes) and public transportation over expensive, exclusive and higher-cost modes in planning and funding decisions.



Public Transit Improvements

What would make bus travel the high point of your day?

- Convenient navigation and payment apps
- Not crowded
- On-board wi-fi and fold-down tables at each seat
- Nicer vehicles, stops and stations
- Fare discounts and financial incentives
- Fun and sociable on-board activities



Complete Streets

A Complete Street is designed for all activities, abilities, and travel modes. Complete Streets provide safe and comfortable access for pedestrians, cyclists, transit users and motorists, and a livable environment for visitors, customers, employees and residents in the area.

Happily Poor

- What public policies help people be poor but happy?
  - Efficient public services for everybody
  - High quality affordable transport options (walking, cycling, public transport)
  - Affordable-accessible housing (affordable housing located in walkable urban neighborhoods)

Transportation Affordability

H+T Affordability Index
https://htaindex.cnt.org/

htaindex.cnt.org/total-driving-costs/

New data release: The H+T Index's October 2022 release is here. To learn more about the update, read our blog.

H+T Index | H+T Fact Sheets | Total Driving Costs | Comparison Maps | Data | About

CNT

Tour | [+] Share Map

Newark, Delaware, United St...

Municipality: Newark, DE

Gas costs are only a fraction of total driving costs.
The majority of costs are due to owning and maintaining cars.

Gas Price:
$4.50

Use the slider to see how gas prices affect total costs based on location.

Total Auto Costs

○ Annual ● Monthly

Annual Auto Ownership:	$11,688
Annual Gas Costs:	$3,436
Total:	$15,124

The Regional Typical Household in this location would own 1.76 cars and drive them 16,490 miles per year.

Total Driving Costs Budget: $10,851/yr

139%

Transportation costs are considered affordable if they

Household: ● Regional Typical ○ Regional Moderate ○ National Typical

Income: $72,343 Commuters: 1.19 workers Household Size: 2.60 People

Total Annual Driving Costs

< $7,920 | $7,920-8,880 | $8,880-9,840 | $9,840-10,800 | $10,800-11,760 | $11,760-12,720 | $12,720-13,680

H+T Affordability

htaindex.cnt.org/compare-affordability/

New data release: The H+T Index's October 2022 release is here. To learn more about the update, read our blog

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H+T® Two Views of Affordability

Tour | [+] Share Map

Newark, Delaware, United ...

You may enter an address, city, county or zip

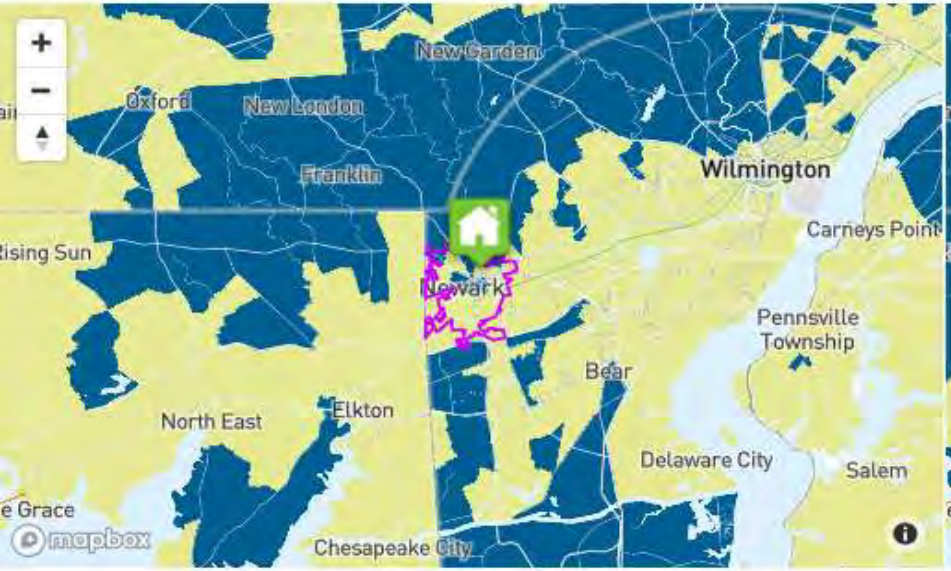
Municipality: Newark, DE

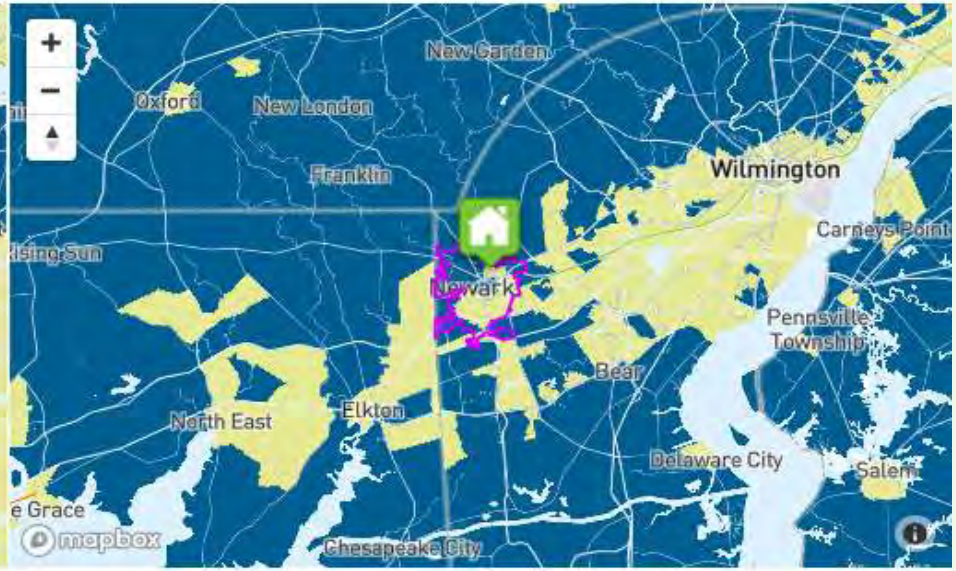
Regional Typical | Regional Moderate | National Typical

Income: $72,343 Commuters: 1.19 workers Household Size: 2.60 people

Block Groups: 14 Households: 9,757

Map Detail: Low (2-Color) High (8-Color)





Housing Costs % Income 26% | Fact Sheet

Range: 18 - 40

Housing + Transportation Costs % Income 45% | Fact Sheet

Range: 34 - 60

Commute Duration Dashboard

Race

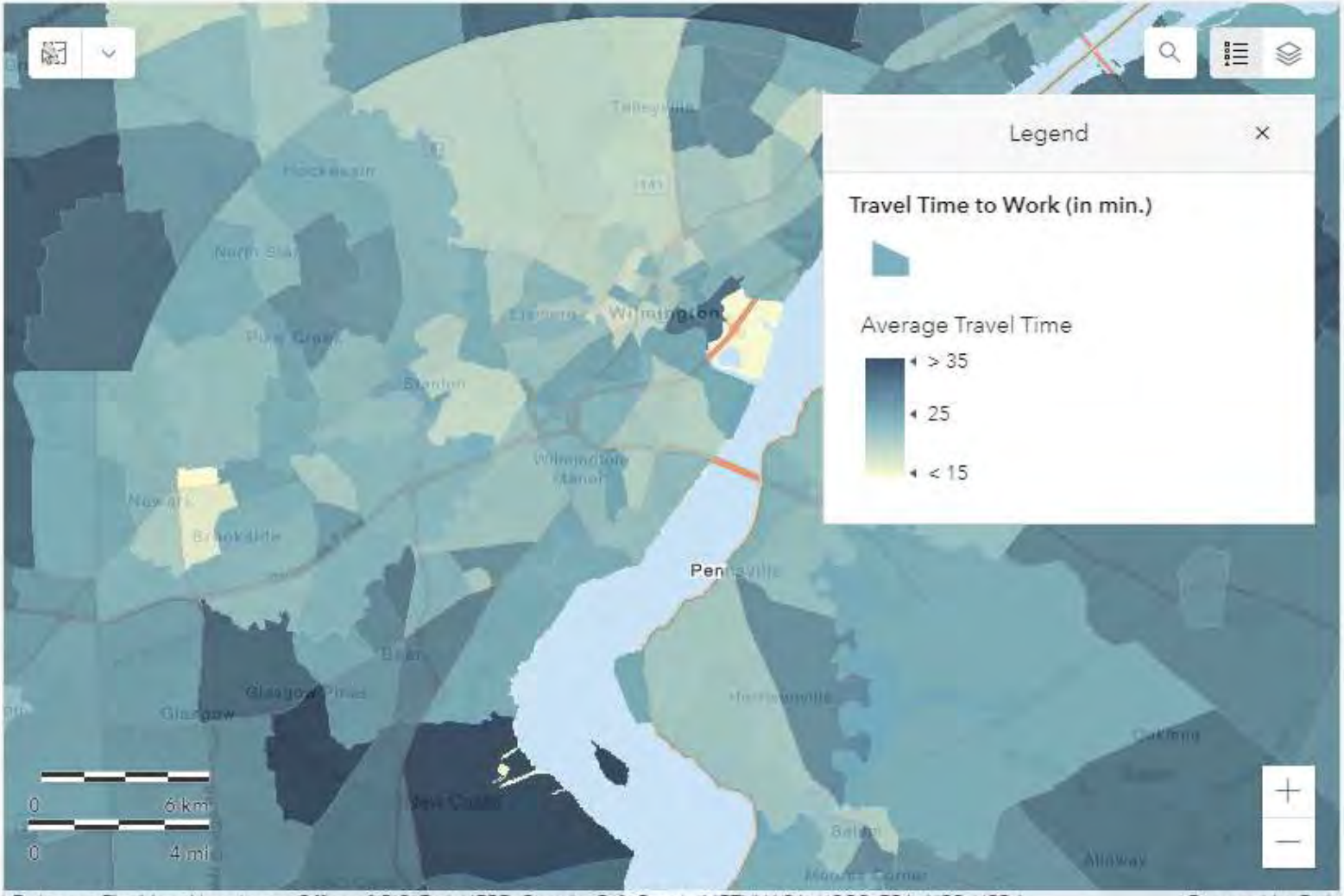
- White 70.2%
- African American 12.27%
- Asian 5.35%
- American Indian or Native Alaskan 0.82%
- Native Hawaiian and Other 0.18%

Ethnicity

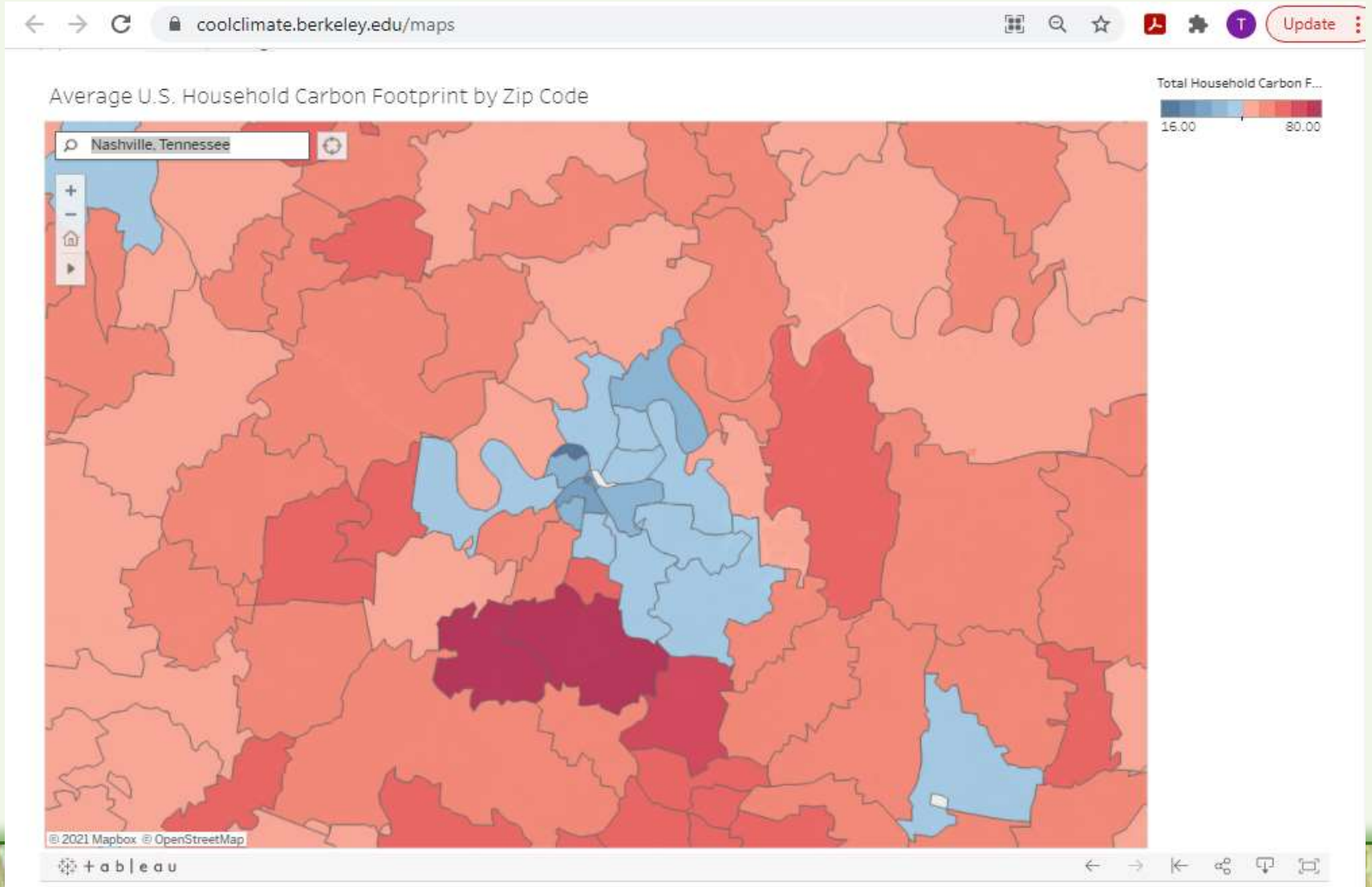
- Not Hispanic or Latino: 82%
- Hispanic or Latino 18%

Educational Attainment

- Less than High School 12.05%
- High School 27.48%
- Some College 30.84%
- Bachelor's degree 18.76%



Climate Emissions (Cool Climate)



Transit Access to Jobs

Home Access to Jobs and Workers Via Transit Open in Map Viewer Modify Map Sign In

Details | Basemap | Share Print Measure newark delaware

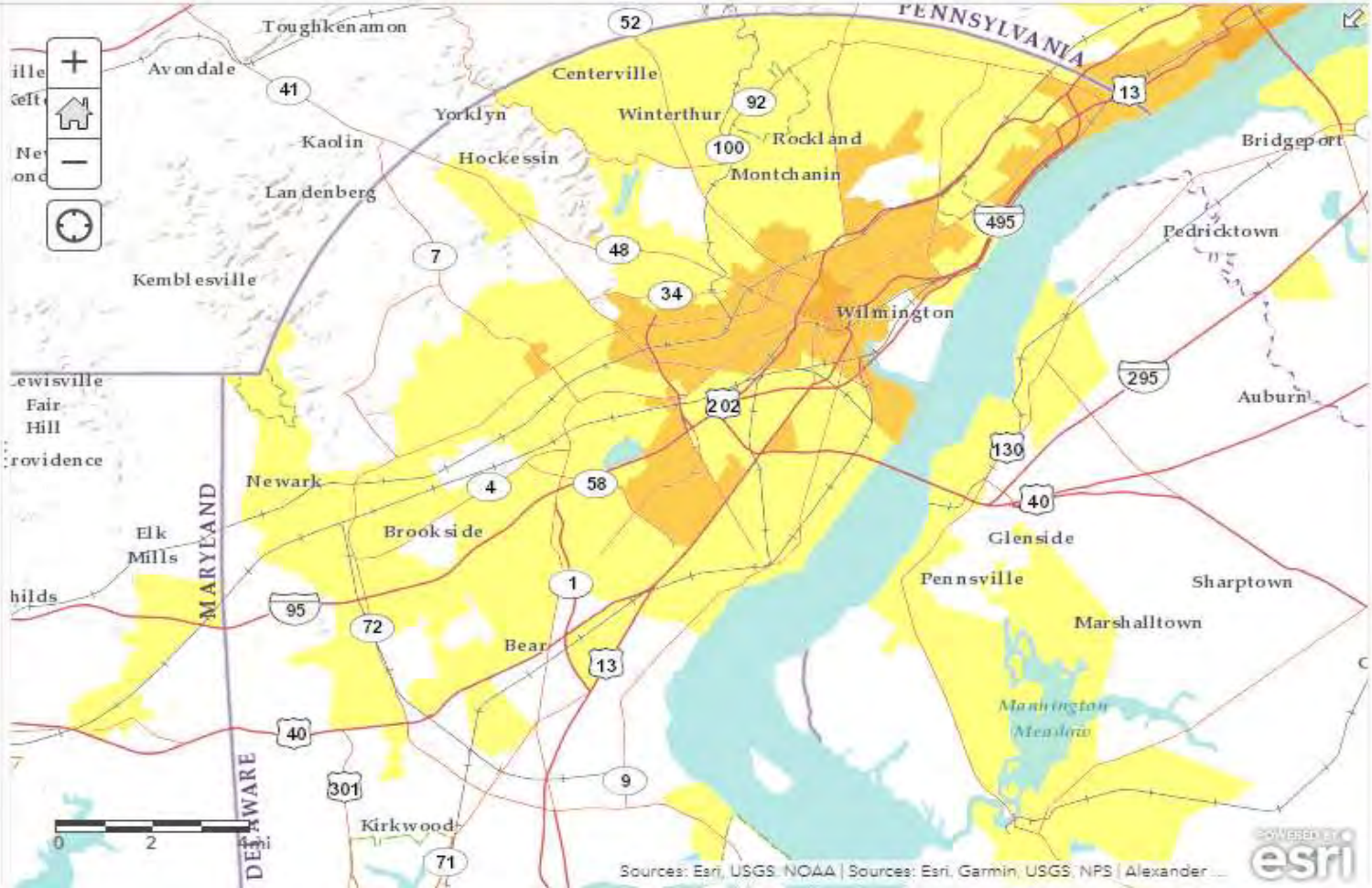
Legend

Access to Jobs and Workers via Transit

% of population accessible by transit

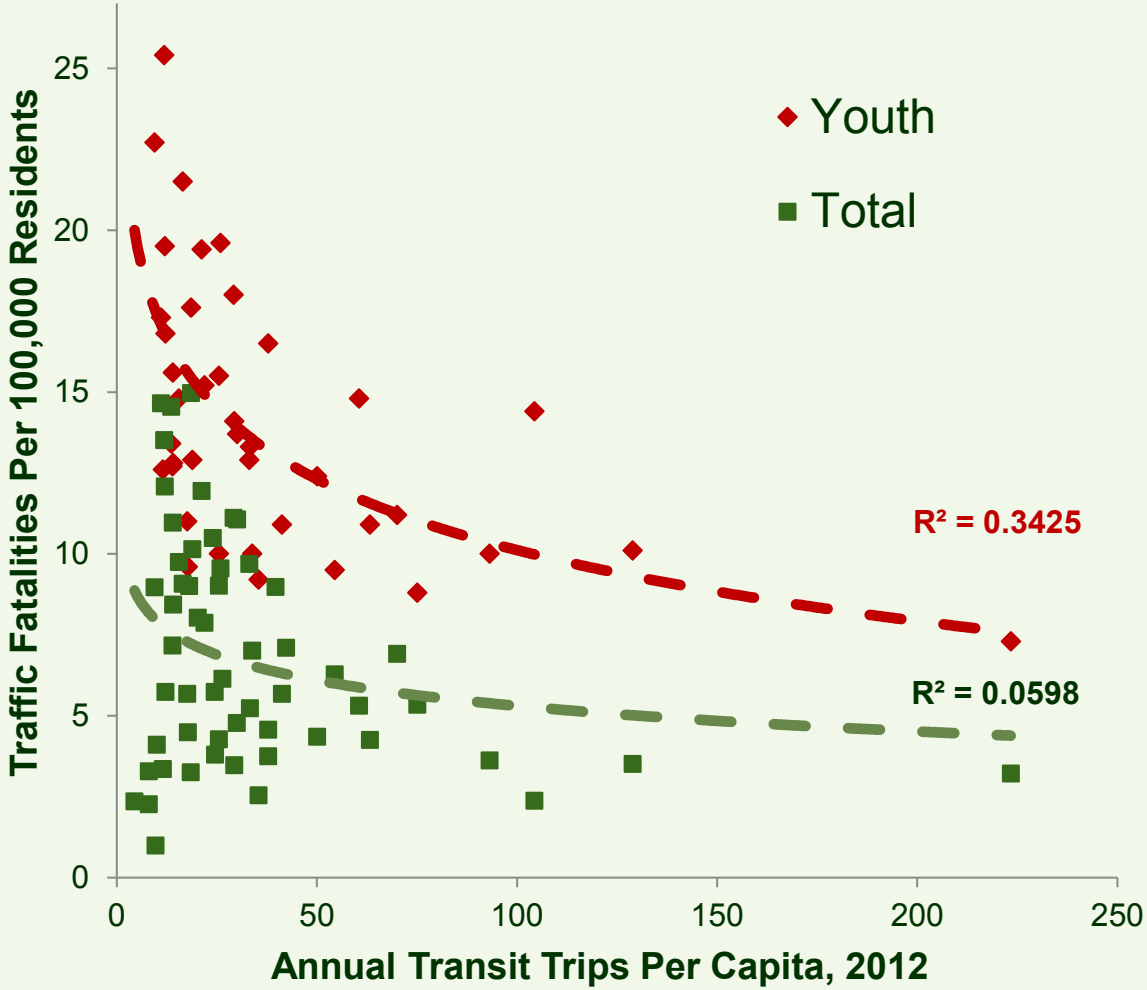
Pct_Pop_byTr

- less than 2.5%
- 2.5% - 5%
- 5% - 10%
- 10% - 20%
- 20% - 30%
- 30% - 50%
- greater than 50%



Help Trust Center Legal
Contact Esri Report Abuse
Contact Us

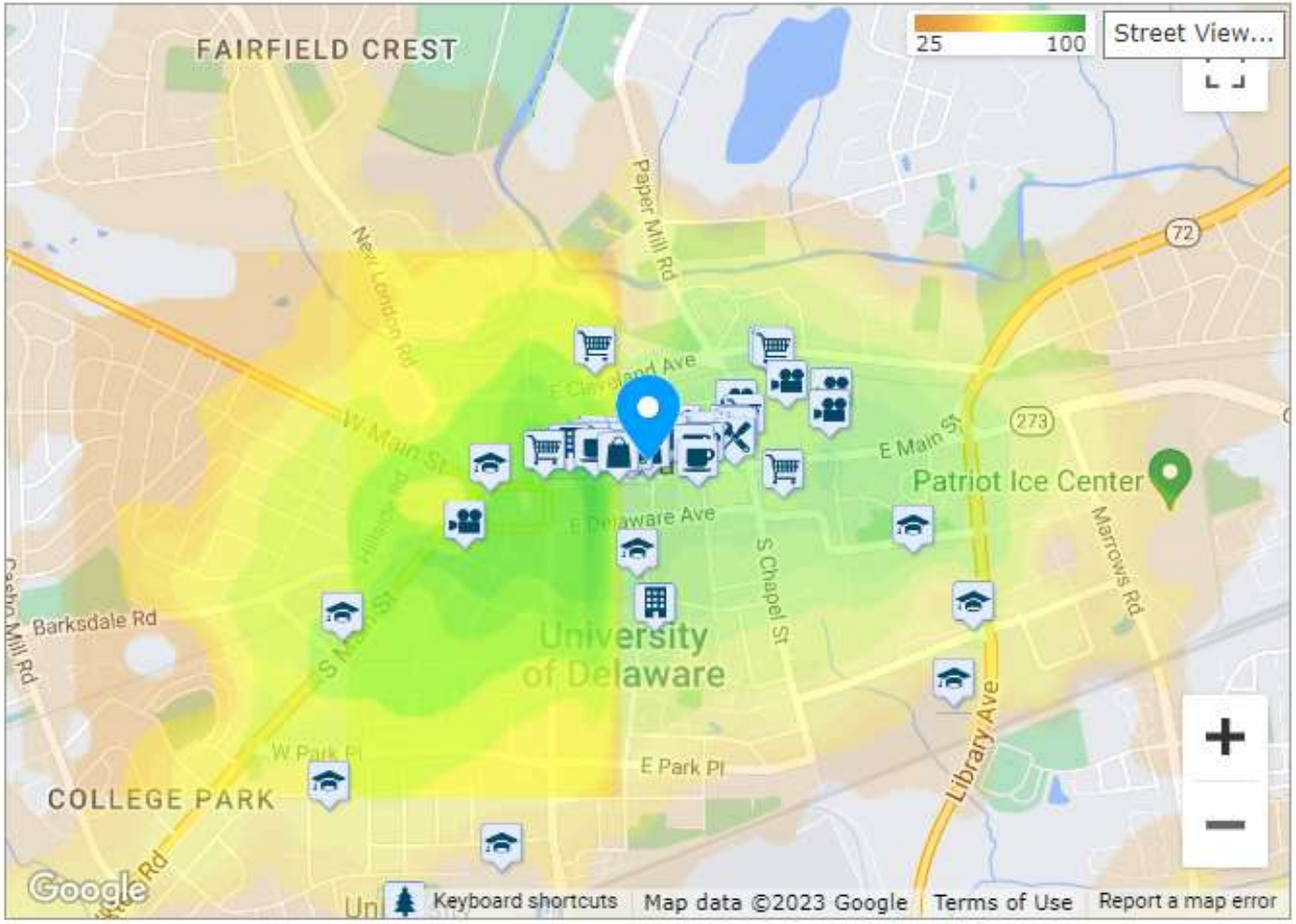
Traffic Fatalities



Both total and youth fatality rates decline with increased transit ridership. Transit-oriented cities have about half the average Youth and Total traffic fatality rates as more automobile-oriented cities.

Youths (15-25 years old) have about twice the traffic fatality rates as the total population average.

Walkscore


FAIRFIELD CREST
25
100
Street View...
Paper Mill Rd
New London Rd
72
E Cleveland Ave
W Main St
E Main St
273
Patriot Ice Center
E Delaware Ave
S Chapel St
Marrows Rd
Barksdale Rd
University of Delaware
Library Ave
W Park Pl
E Park Pl
COLLEGE PARK
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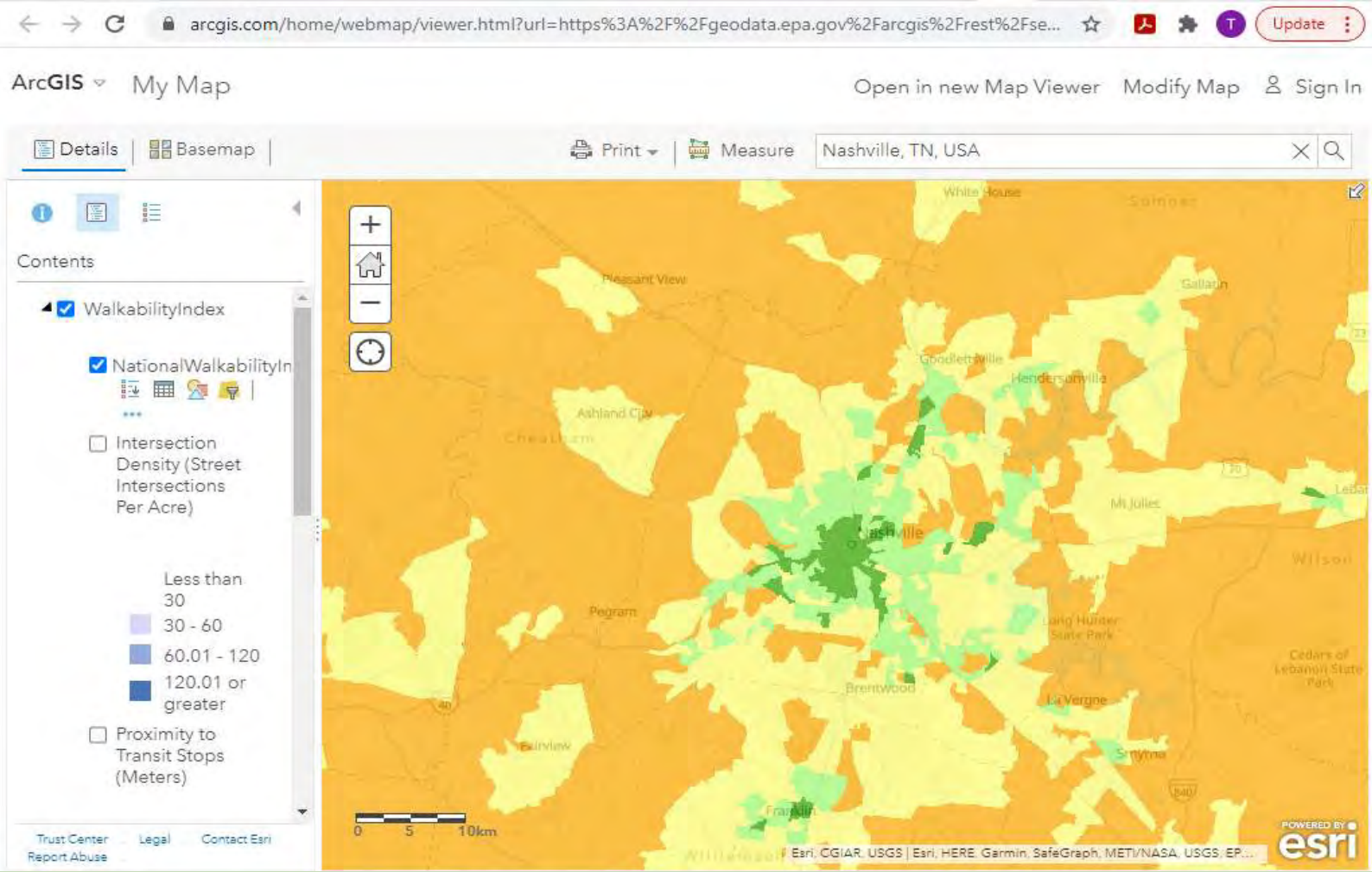
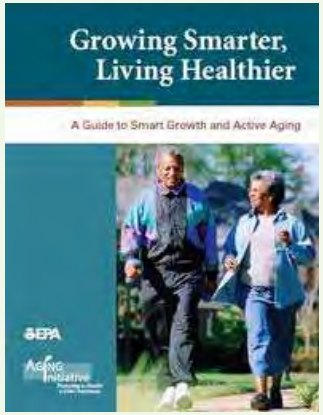
Walkability Index

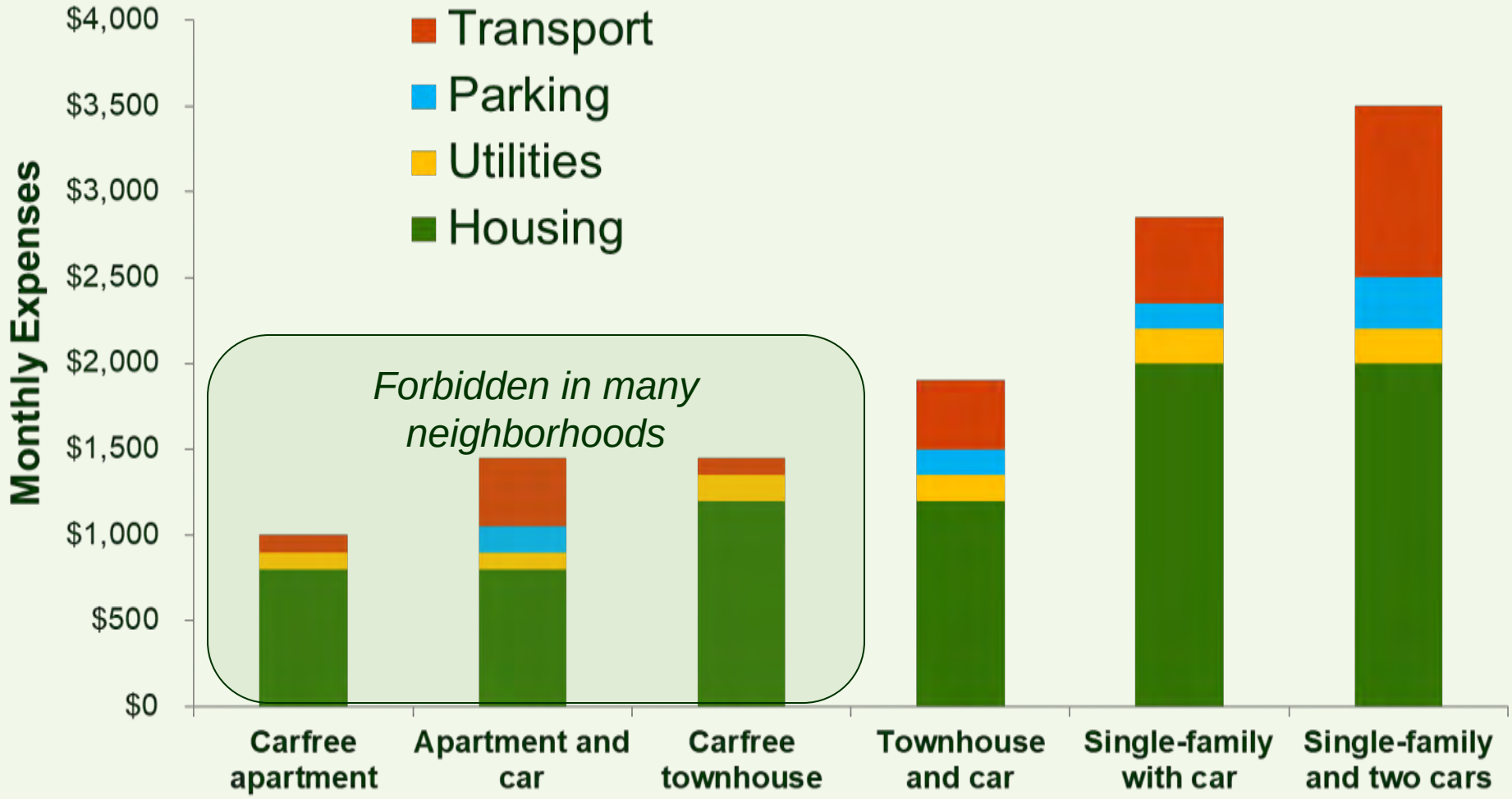


Smart Growth

- Compact (higher density)
- Mixed use
- Diverse housing types
- Connected roads
- Multi-modal
- Good walking and cycling conditions
- Good public transit services
- Efficient parking management
- Emphasis on the public realm (public places where people interact)



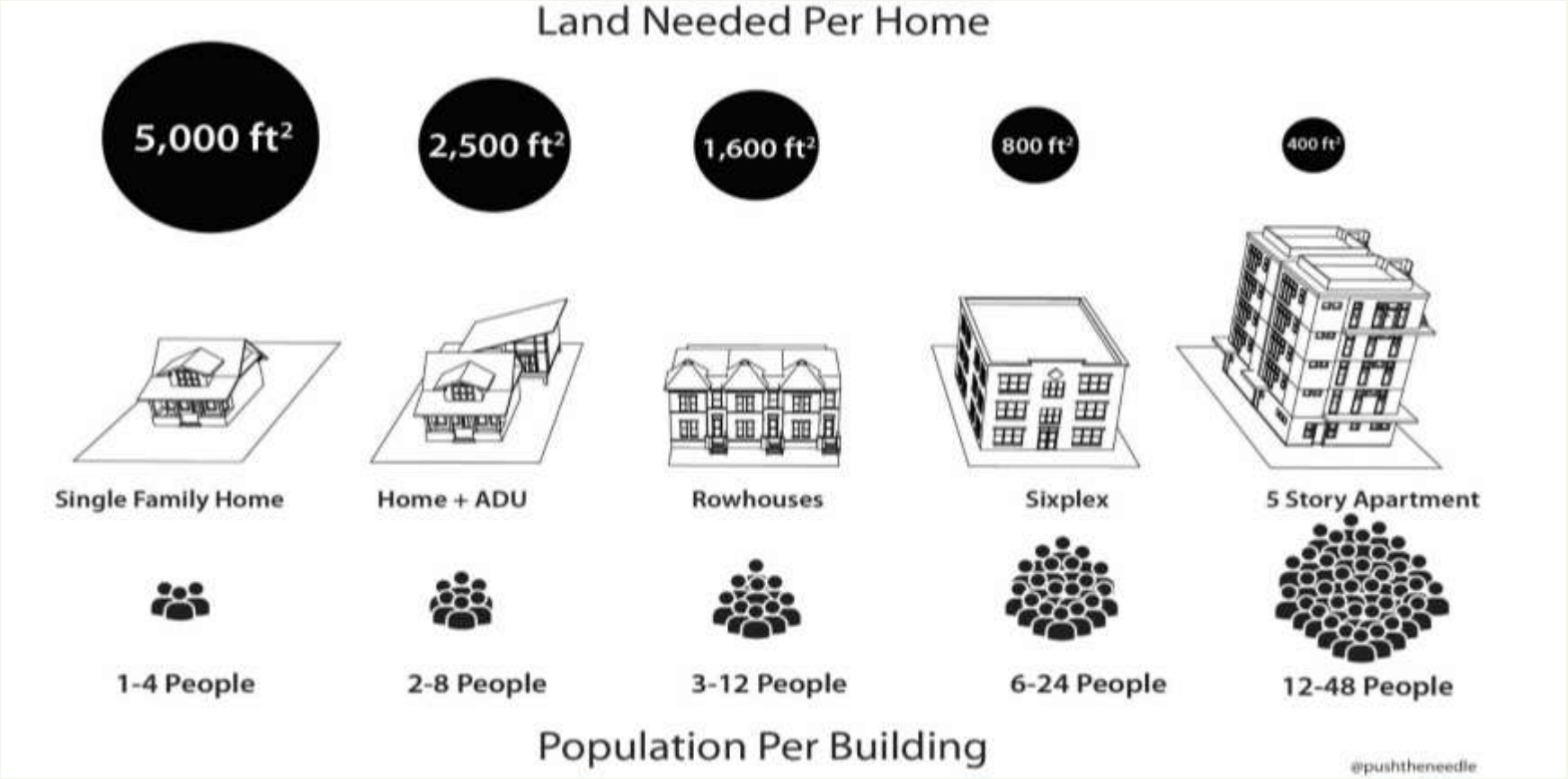
Housing and Transport Costs



Missing Middle Housing

The most affordable housing types include townhouses, multi-plexes and low-rise apartments, called missing middle housing since they are denser than single-family housing but less dense than high-rise, and so are suitable for urban neighborhoods.

Residents Per Parcel



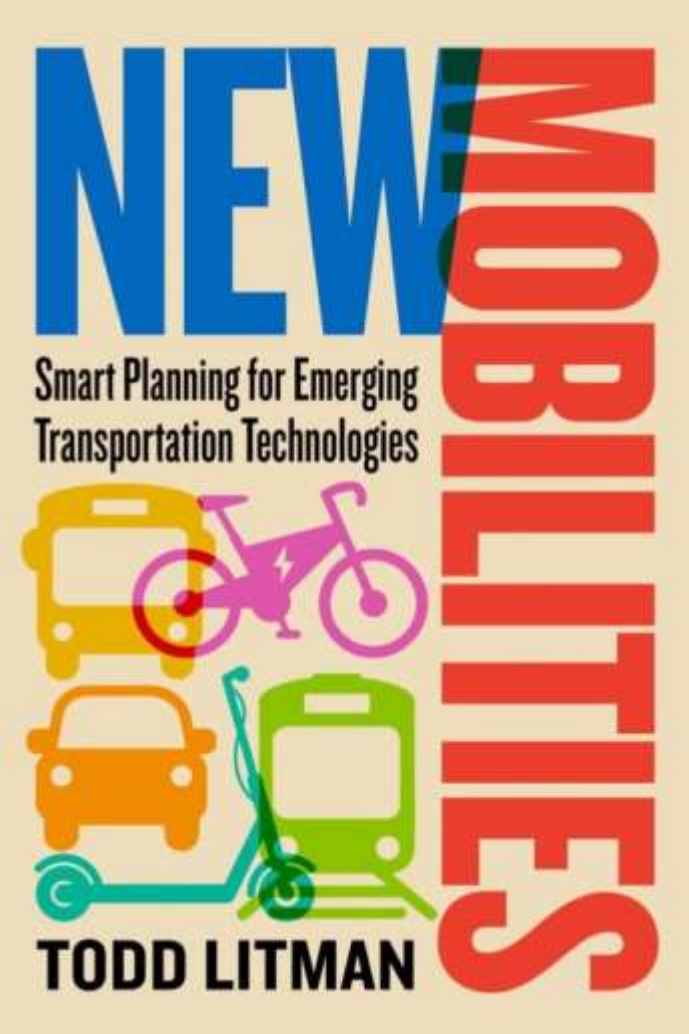
Ryan DiRaimo (2021), *Seattle Has the Space*, The Urbanist (www.theurbanist.org); at www.theurbanist.org/2021/03/25/seattle-has-the-space.

Support Affordable Infill

Support policy changes that significantly increase affordable infill in walkable urban neighborhoods:

- Increase allowable densities and heights.
- Reform project approval and fee structures to reduce development costs and risks.
- Reduce fees and approval requirements for smaller and moderate-priced developments.
- Reduce or eliminate parking minimum.
- Support land use policies that incentivize consolidation of smaller parcels.

New Mobilities



New Mobilities: Smart Planning for Emerging Transportation Technologies

New Mobilities have tantalizing potential. They allow people to scoot, ride, and fly like never before. They can provide large and diverse benefits. However, they can also impose significant costs on users and communities.

Decision-makers need detailed information on their impacts.

Island Press 30% Discount Code: ***WEBINAR***

New Mobility Innovations

Active & Micro Modes

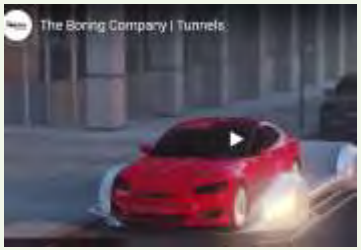
Bike- and Carsharing

Ridehailing

Electric Autonomous Cars

Transit Improvements

Aviation Innovations



Tunnel Roads

Pneumatic Tube Transport

Mobility as a Service

Telework

Mobility Prioritization

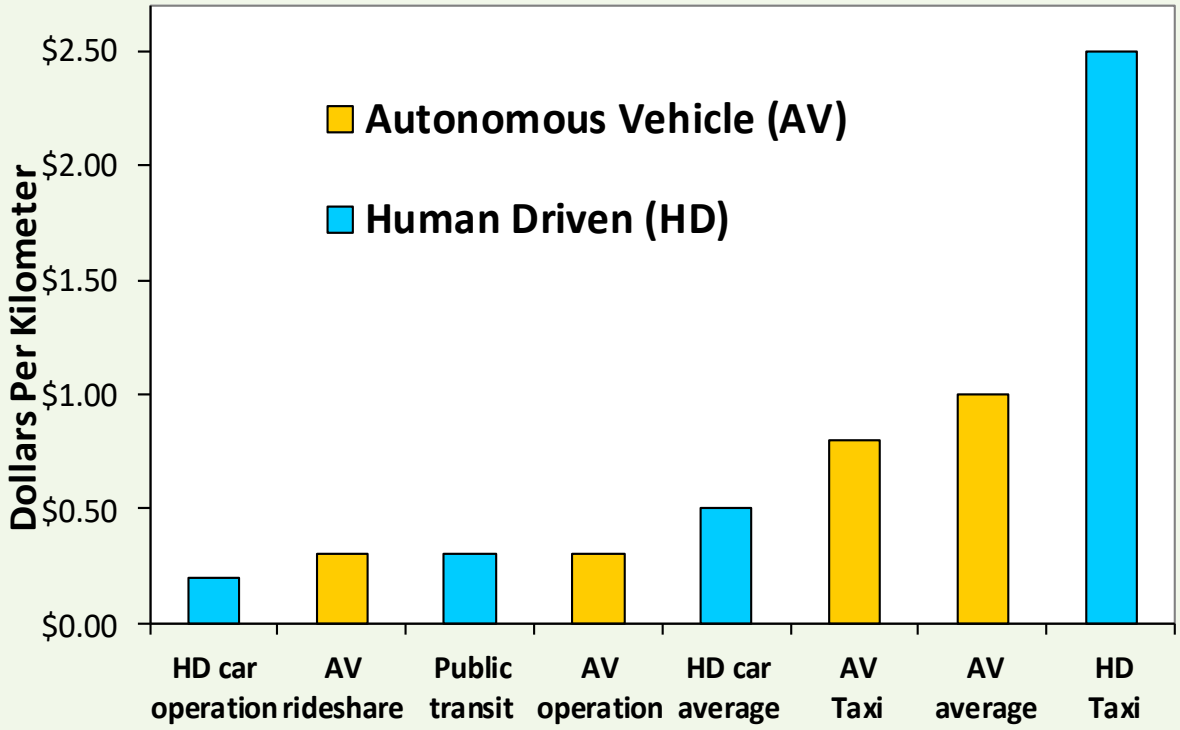
Logistics Management

Autonomous Vehicle User Benefits

- Less stress.
- Cost savings compared with paid human drivers.
- More productivity during travel.
- Independent mobility for non-drivers.

Typical Operating Costs

Autonomous vehicle travel will probably cost somewhat less than current human-operated taxis or ride-hailing services (Uber and Lyft), but more than current automobile travel.



Safety Impacts

Advocates predict that, because human error contributes to 90% of all traffic crashes, autonomous vehicles will reduce crashes by 90%.

This overlooks additional risks these technologies introduce.

Hardware and software failures. Complex electronic systems can fail. Self-driving vehicles will certainly have errors that cause crashes; the question is how frequently.

Malicious hacking. Self-driving technologies can be manipulated for amusement or crime.

Increased risk-taking. When travellers feel safer they tend to take additional risks, for example, reduced seatbelt use and less caution by other road users.

Platooning risks. Many potential benefits, such as reduced congestion and pollution emissions, require platooning. This can introduce new risks.

Increased total vehicle travel. Autonomous driving may increase total vehicle travel and therefore crashes.

Traffic Congestion Impacts

Autonomous driving may increase traffic congestion:

- Increases total vehicle travel.
- It is often cheaper to drive on public roads than pay for urban parking.
- May reduce public transit services.

Bus

Human-Driven Cars

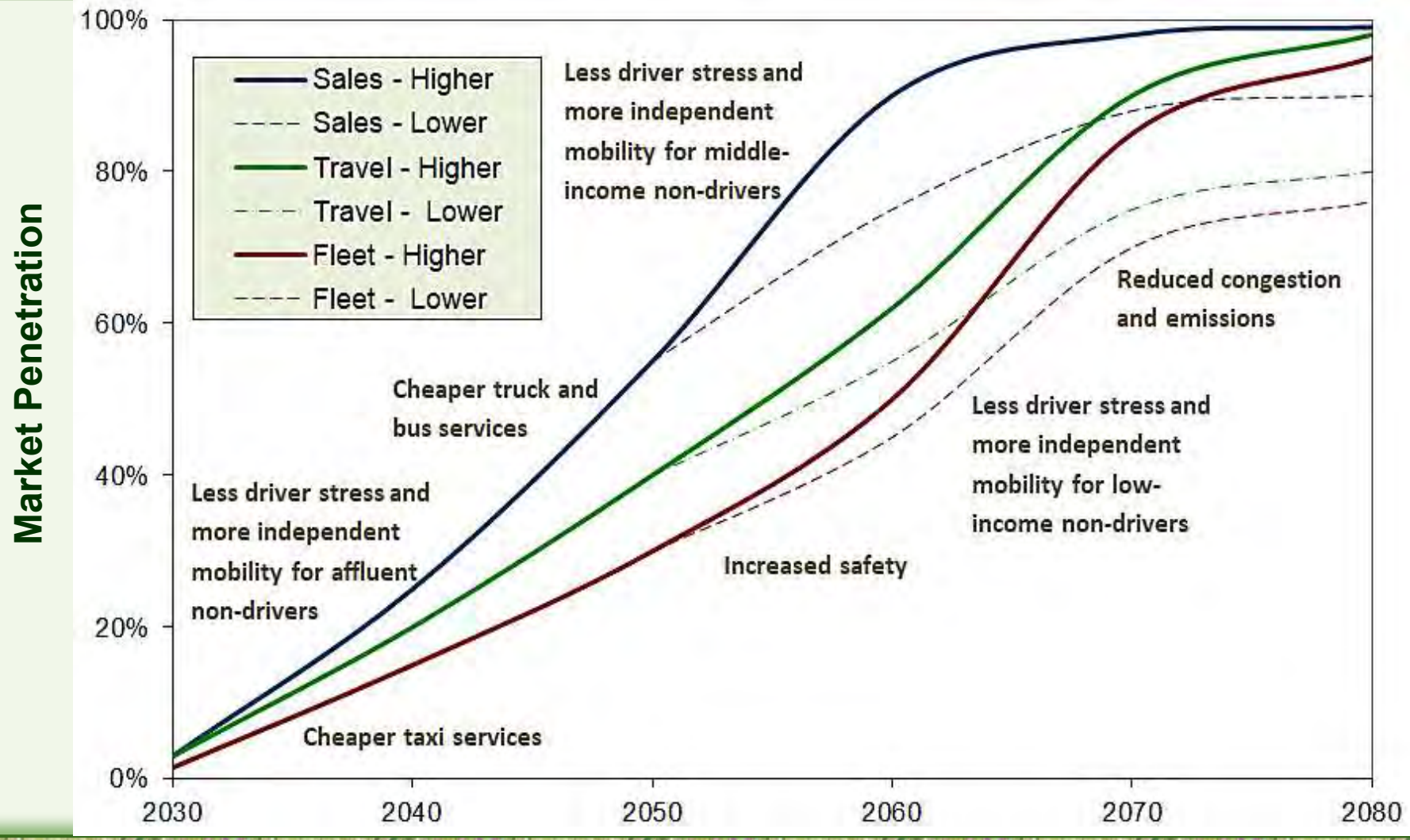
Self-Driving Cars

Example – Dedicated Lanes

Many potential benefits of autonomous vehicles depend on them having dedicated lanes where they can platoon (several vehicles driving close together at relatively high speeds).

- At what point should highway agencies dedicate lanes to autonomous vehicles?
- What should users pay for this privilege? How should this be enforced?
- Who is liable if a platoon has a multi-vehicle crash?
- What is most efficient and fair?

Projected AV Benefits



Questions for Communities

- What are their costs and benefits?
- Who is impacted?
- What is fair?
- Who should bear their costs and risks?
- How should we integrate them into our transportation system?
- *Which should be mandated, encouraged, regulated, restricted, or forbidden?*

Policy Recommendations

- Test and regulate new technologies for safety and efficiency.
- Critically evaluate all impacts, including indirect and long-term effects.
- Support active and micromodes for local trips and high quality public transit on major travel corridors.
- Reduce parking requirements to take advantage of shared vehicles.
- Plan and price to favor efficient modes and prevent induced vehicle travel and sprawl.

Seattle's New Mobility Playbook

- Evaluates various New Mobilities including vehicle sharing, ridehailing, MaaS, and electric and autonomous vehicles.
- Critically examines how they are likely to support or contradict Seattle's strategic goals.
- Identifies specific municipal policies to ensure that new mobilities support the city's goals.
- Is a great example for other communities.

Not So Fast: Better Speed Valuation for Transport Planning"

"Evaluating Active Mode Emission Reduction Potentials"

"Autonomous Vehicle Implementation Predictions"

"Are Vehicle Travel Reduction Targets Justified?"

"Fair Share Transportation Planning"

"Evaluating Transportation Equity"

"Transportation Affordability "

"Online TDM Encyclopedia"

and more...

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