



PLANNING CONNECTIONS

How Transportation Planning Can Make Us Healthy

Ria Hutabarat Lo

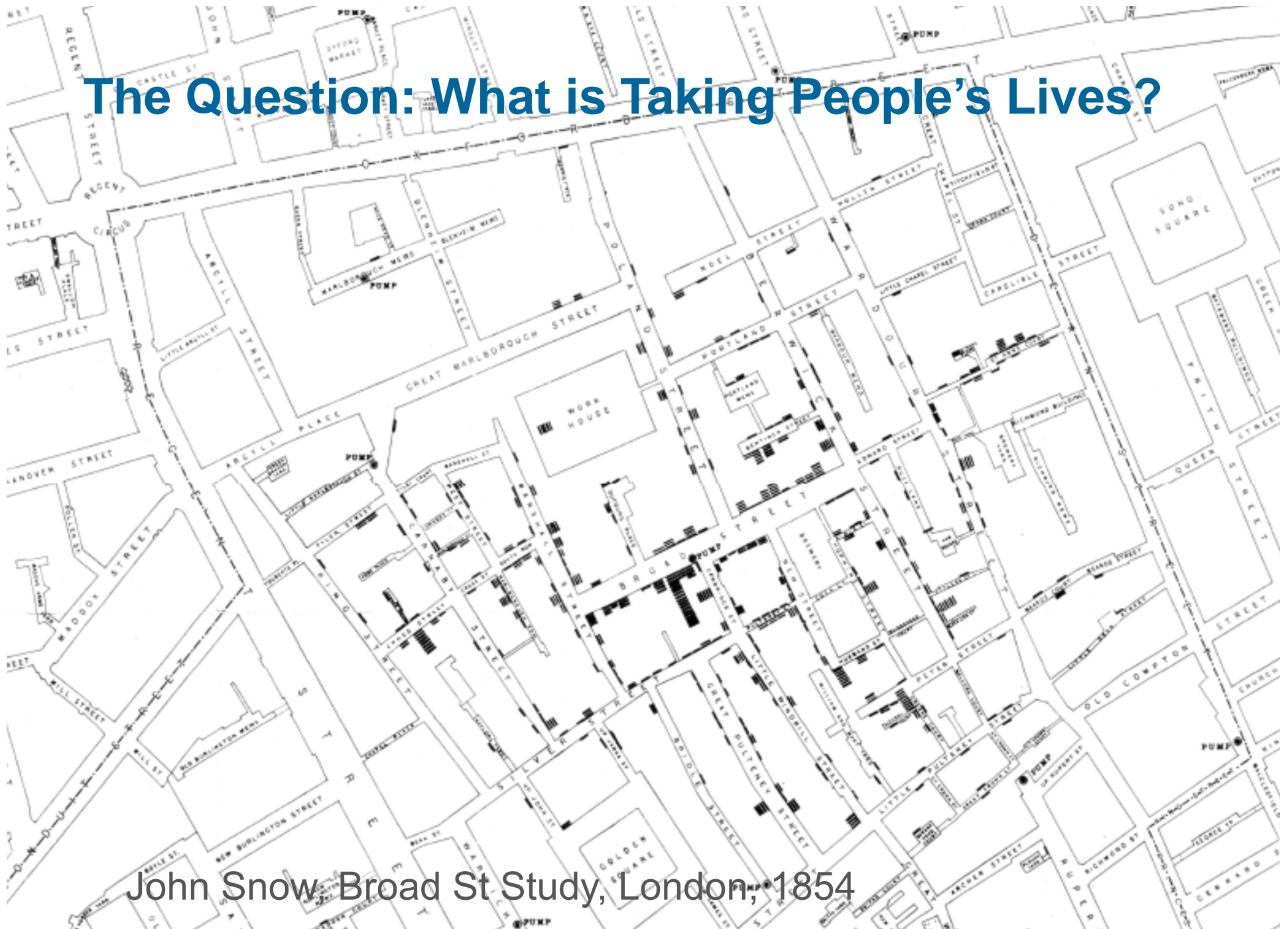
March 17, 2014



Question: Why Do We Have Cities?

How Are Our Disciplines Connected?

The Question: What is Taking People's Lives?



John Snow Broad St Study, London, 1854

The Results: Connecting Health & Planning

- Germ theory / contingent contagion
- Control of infectious disease
- Sanitation as the most important medical advance since 1840 (BMJ)
 - Access to public clean water supplies
 - City-wide gravity flow sewers
 - Centralized sewage treatment
- Building standards
 - Indoor plumbing

The Results: Connecting Health & Planning

- Rational planning method
- Centralization of planning
- Topographic mapping
- Sanitary engineering
- Hydrology & hydraulics
- Raised streetbeds, paving & guttering
- Roadway engineering
- Code enforcement
- Housing & yard design & orientation

How did Transportation Planning Evolve?

Planning Legacy (Traffic Engineering 101)

- The first traffic engineers were sanitation engineers
- Using engineering to inform traffic planning
 - City-wide surveys
 - Fluid dynamics → vehicle flow
 - Gravity models → travel demand
- Acceleration & institutionalization in the post-war era
 - Prediction
 - Planning design standards
 - Performance standards

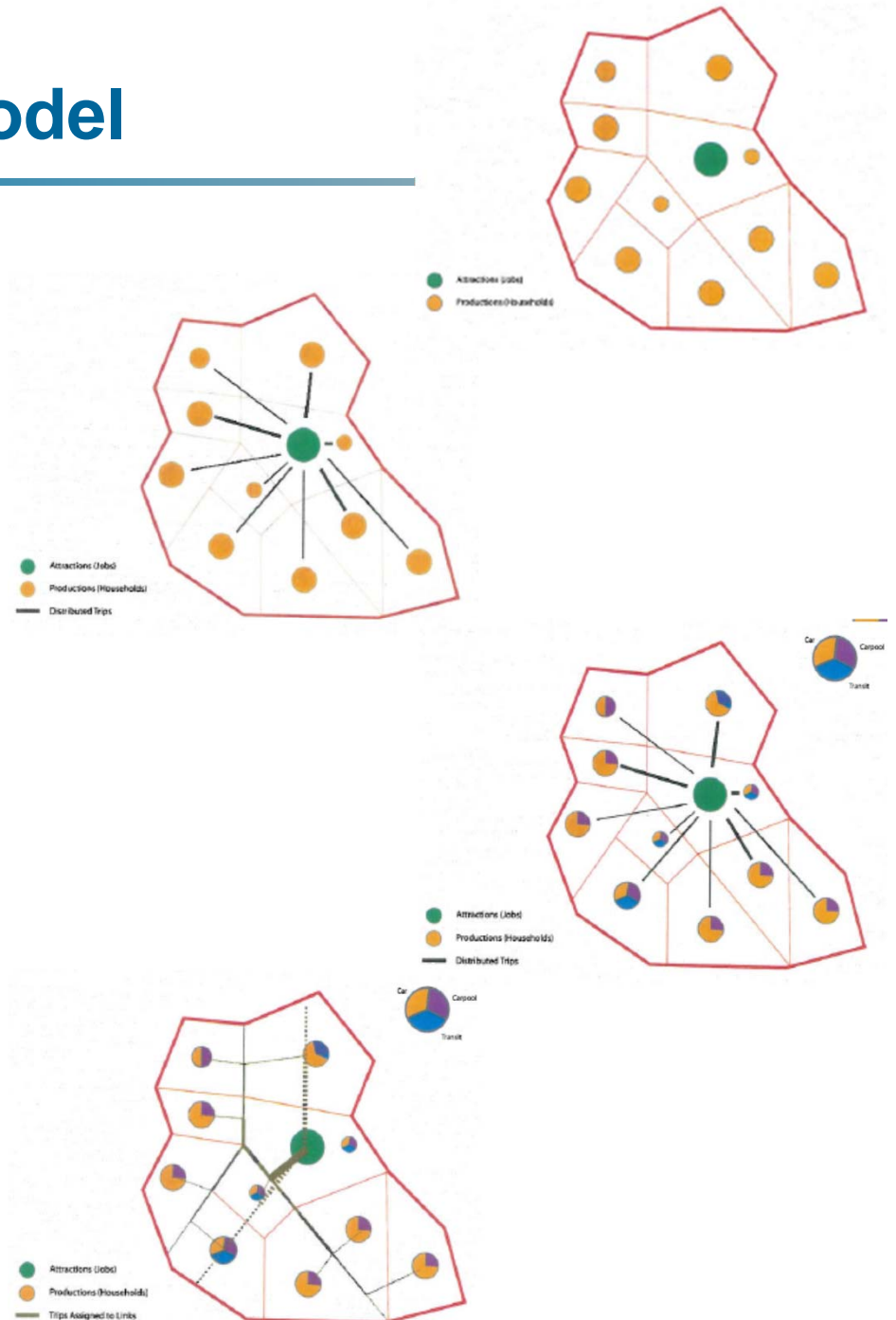
Prediction: Four-Step Model

**1. Trip Generation
(pop & jobs by zone)**

**2. Trip Distribution
(gravity model)**

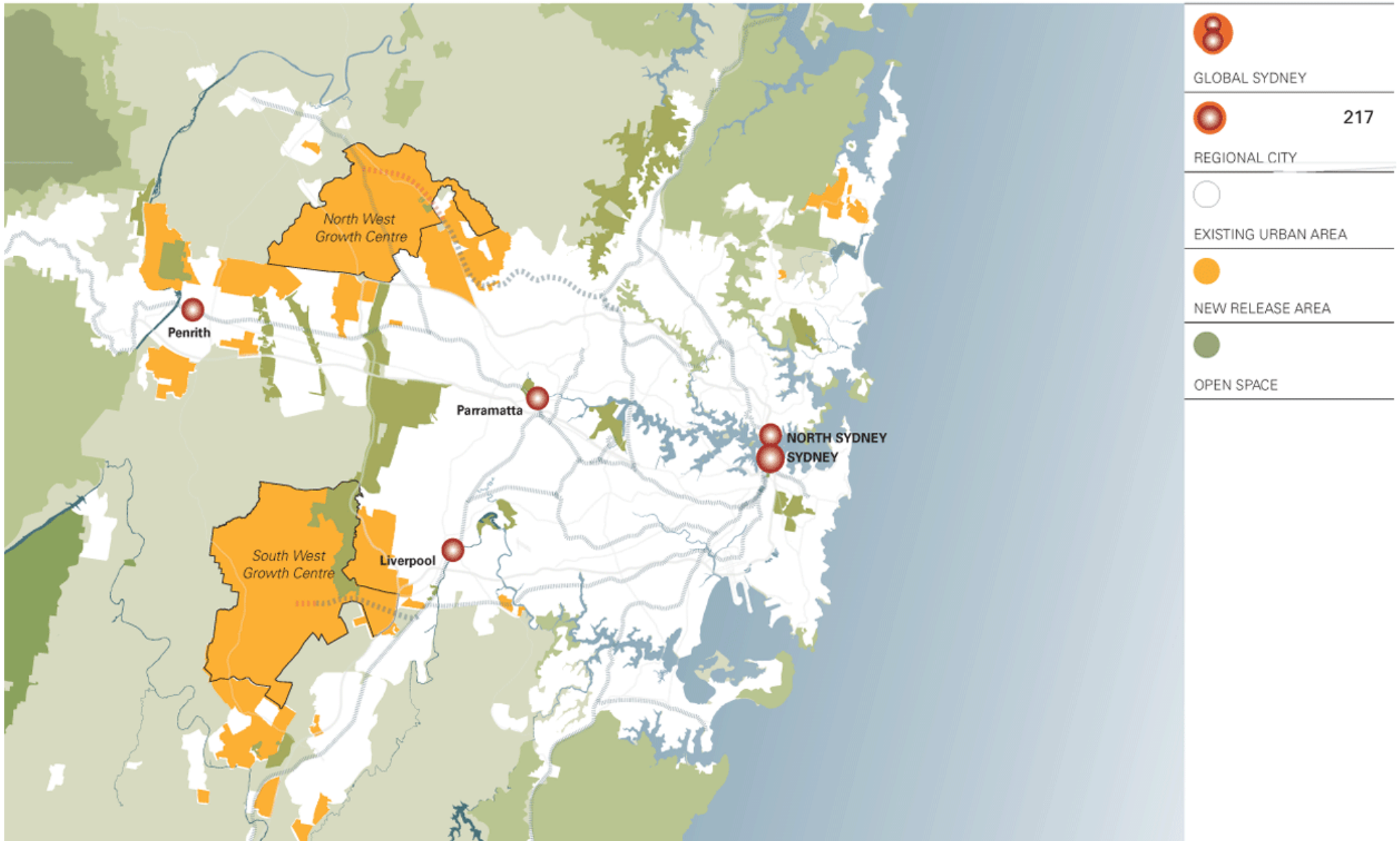
**3. Mode Split
(fn trip type, income...)**

**4. Route Assignment
(based on travel times)**

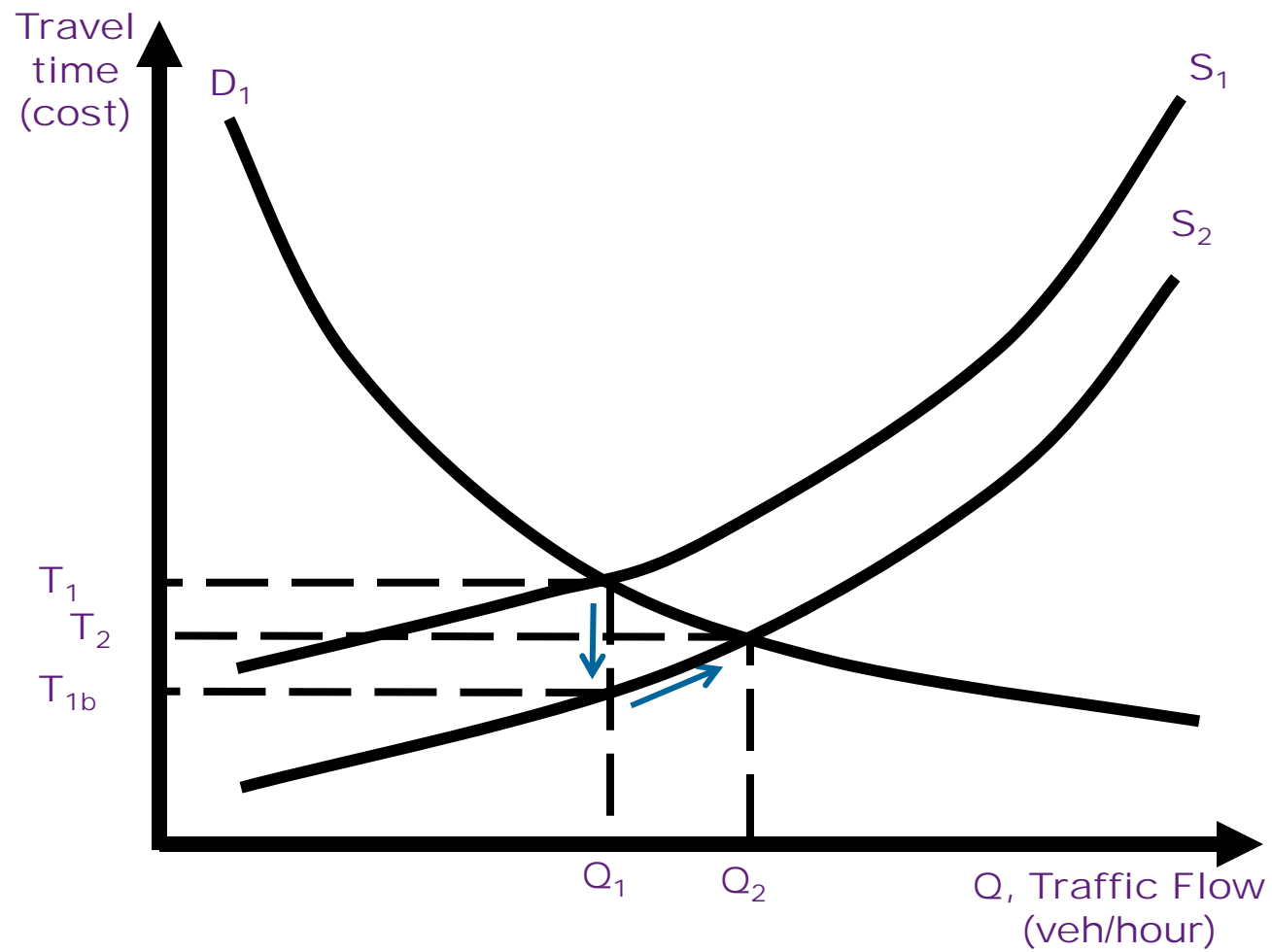


Prediction v. prophecy

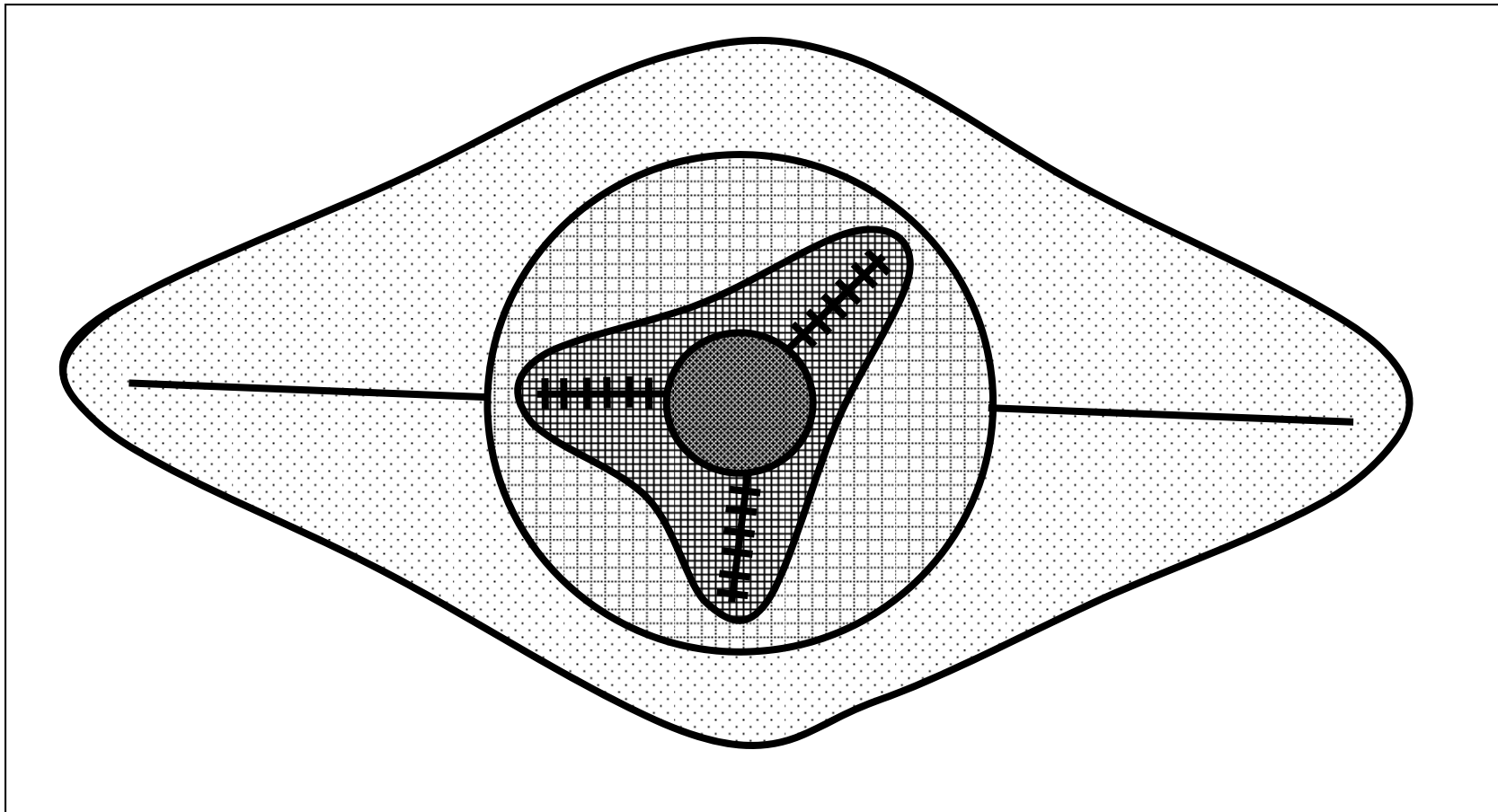
FIGURE E5 URBAN DEVELOPMENT IN NEW RELEASE AREAS



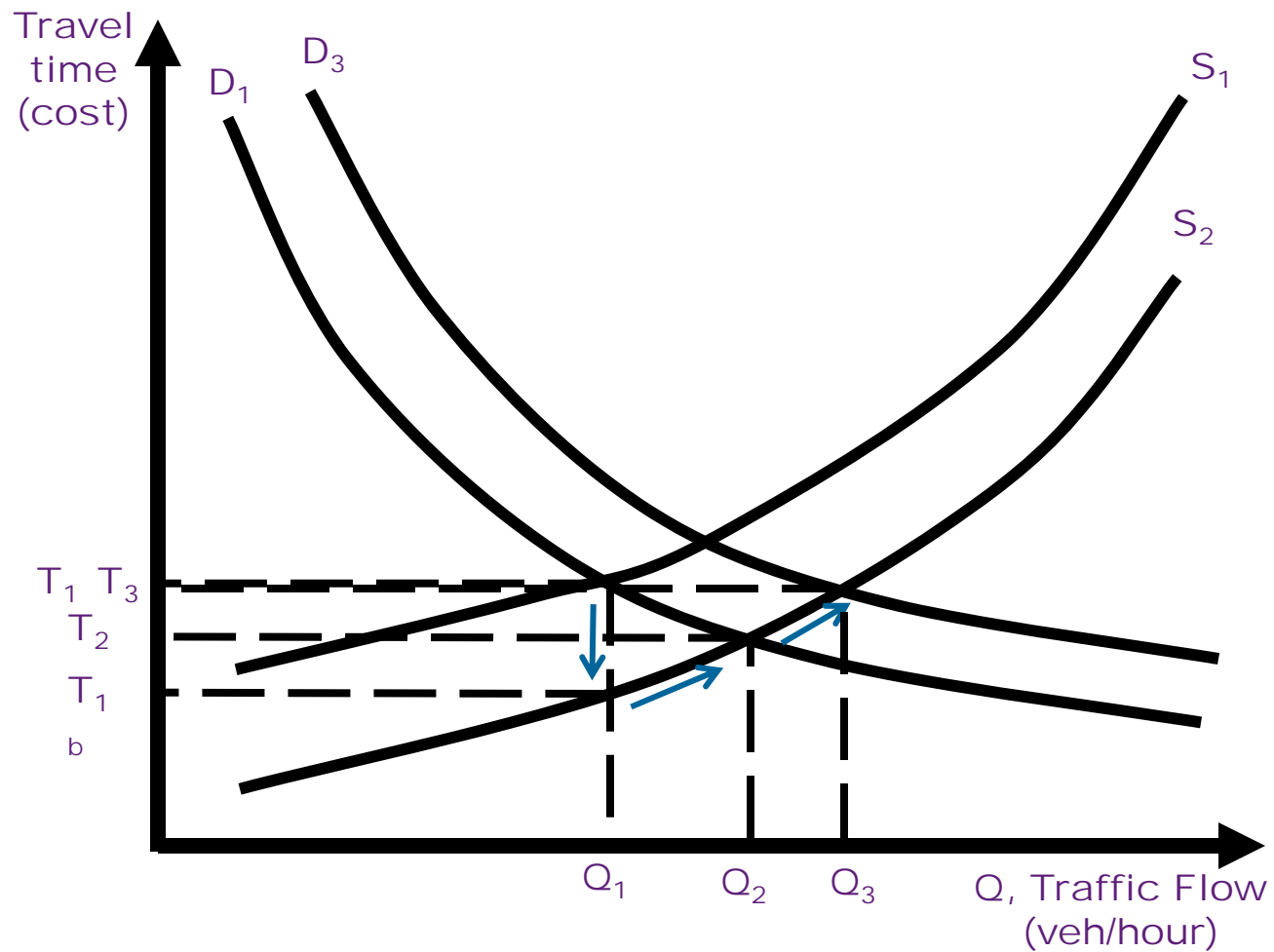
Induced travel demand



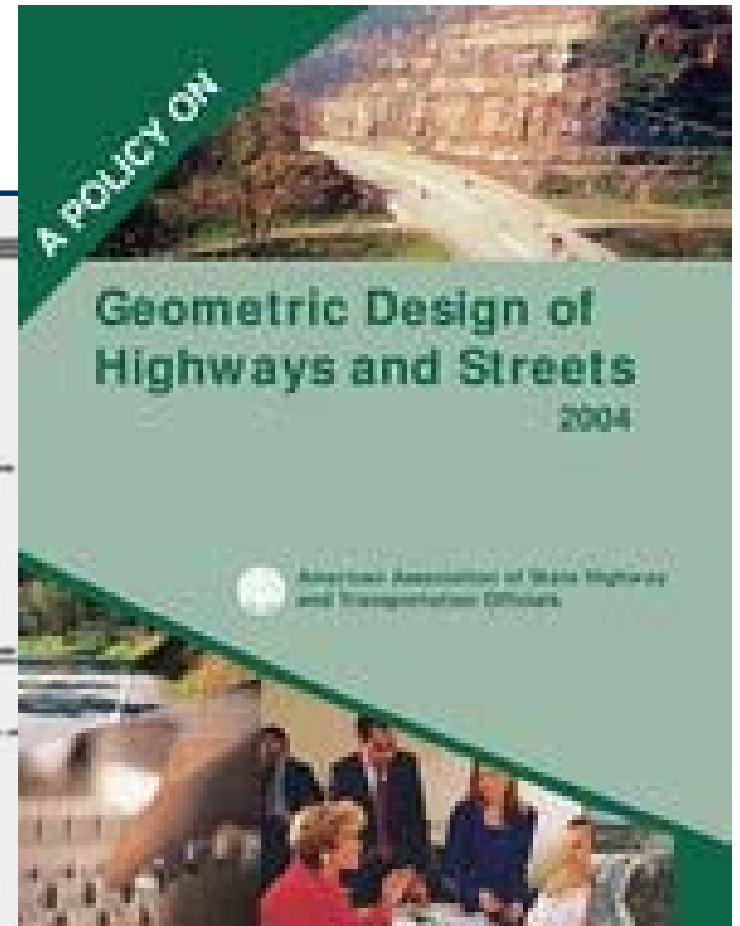
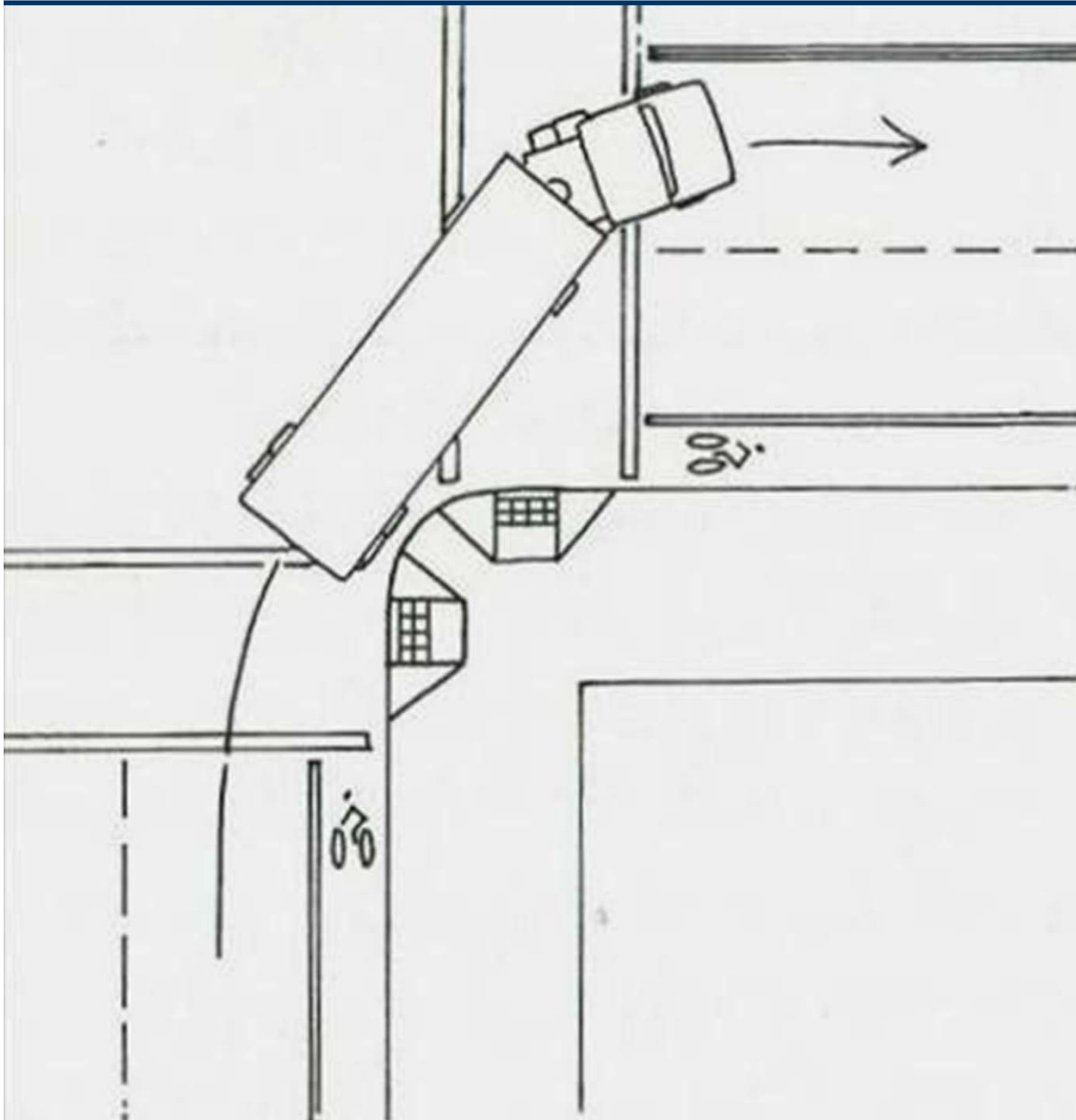
Induced investment



Induced travel demand & induced investment



Planning Design Standards



- Design vehicle
- Design dimensions



4th Edition

Parking Generation

ite

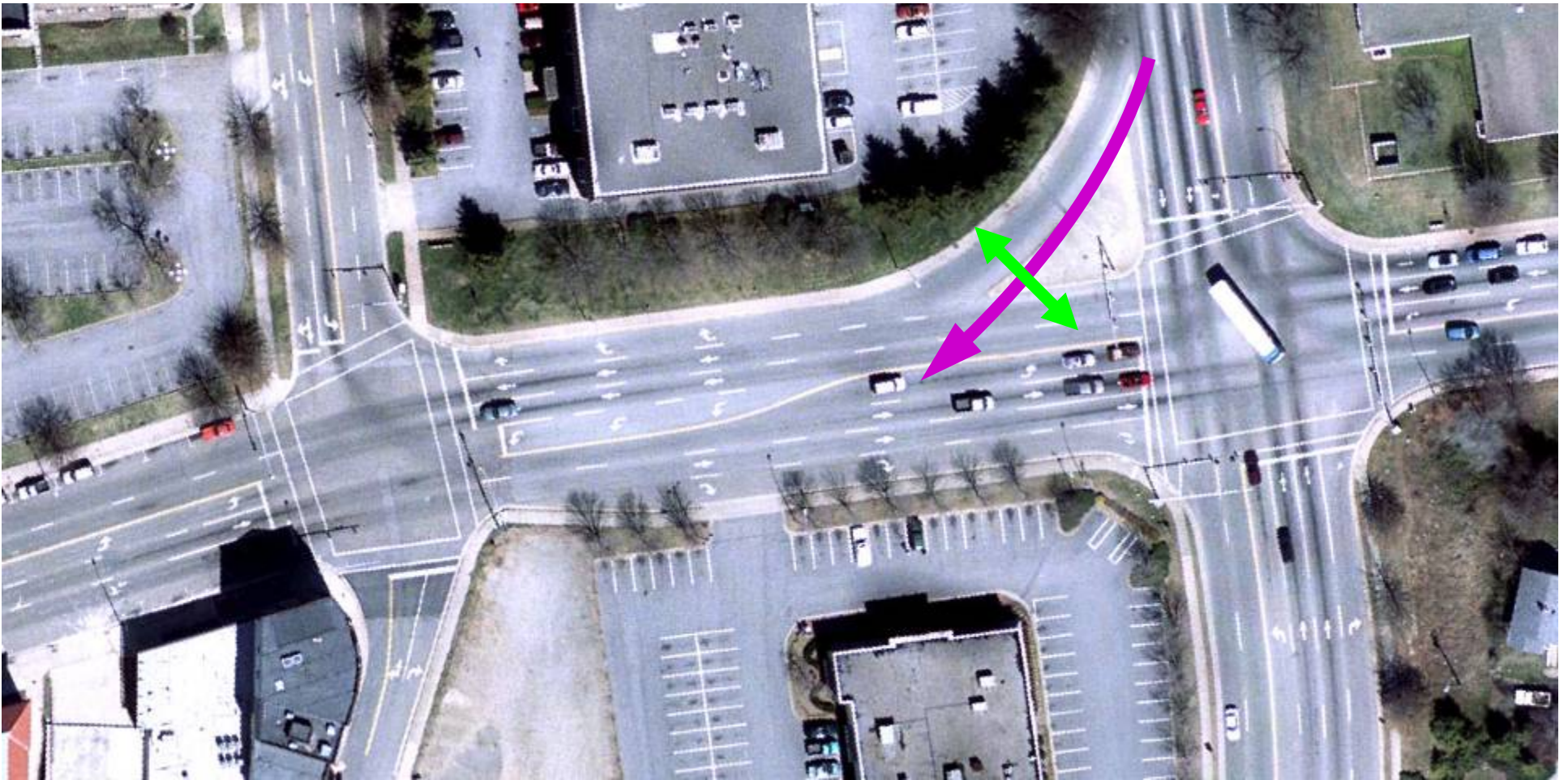
Institute of Transportation Engineers

Performance Standards (Highway Capacity Manual)

Level of Service (LOS)	Signalized Intersection	Unsignalized Intersection
A	≤ 10 sec	≤ 10 sec
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	≥ 80 sec	≥ 50 sec

The Results: Cities Optimized for Vehicles

- Scale, speed, sprawl → mode captivity, inactivity



Question: What is taking people's lives* today?

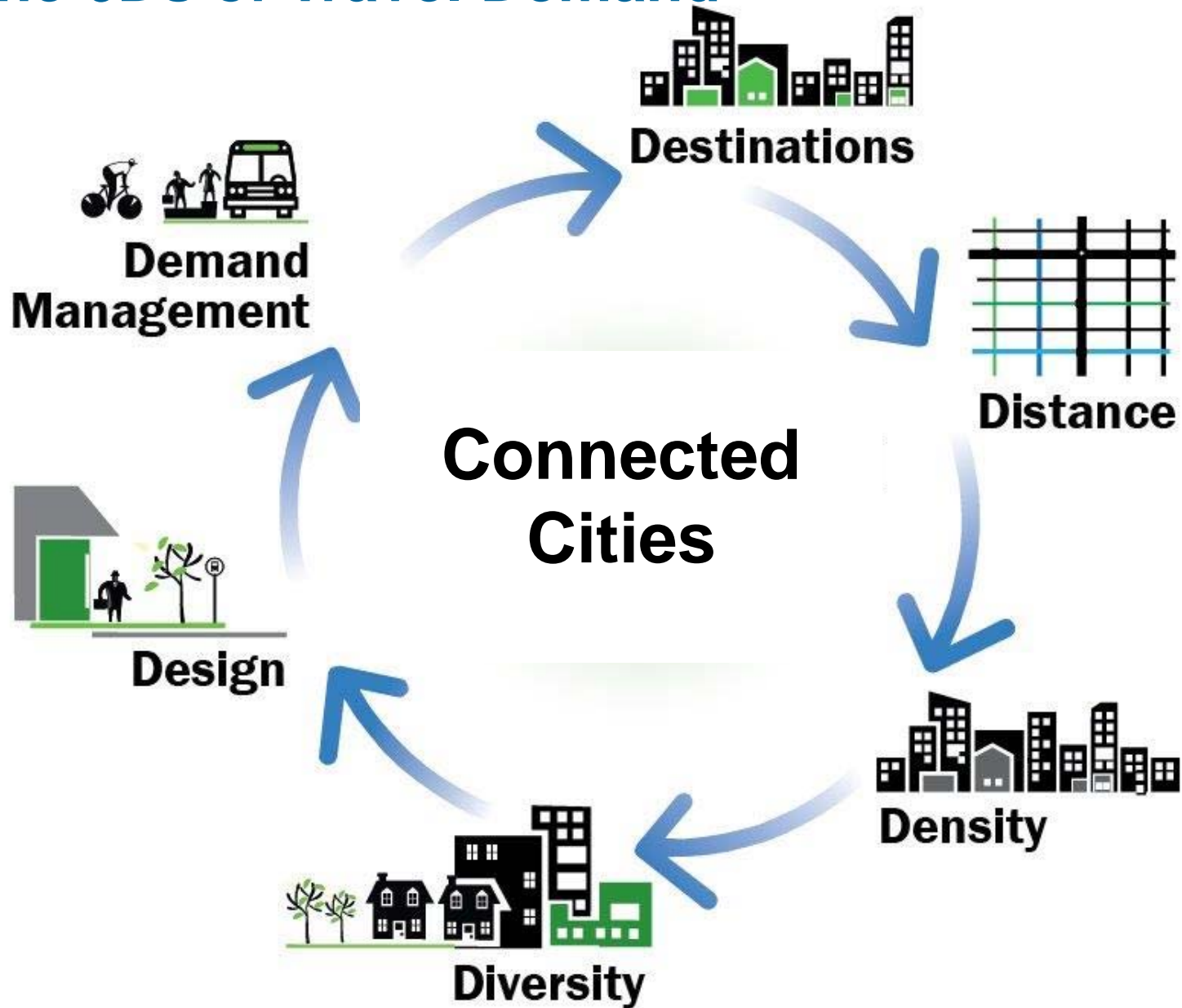
* or disability adjusted life years

Disconnected Cities

- In the United States, inactivity and obesity is related to the leading causes of death & disability (CDC)
 - Heart disease, stroke, type 2 diabetes, certain types of cancer
- In “developed” countries, mental illness & depression results in more disability than any other group of illnesses (WHO)
- Globally, road traffic injuries are a leading cause of death & disability—3rd by 2020 (BMJ)
 - 90% of global road traffic deaths are in the majority world
 - 55-70% of victims are urban pedestrians
- **More connected cities reduce inactivity, isolation & injury**

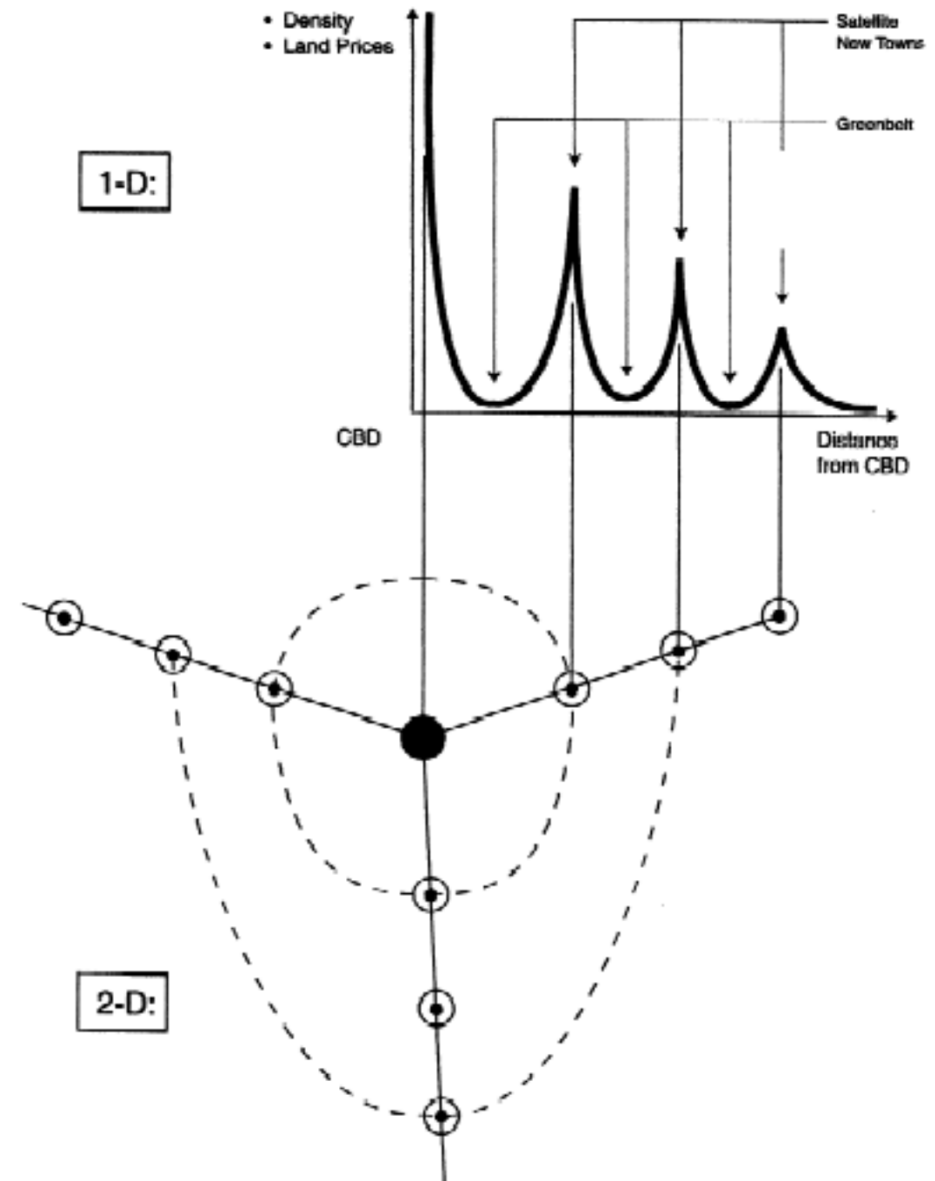
What makes cities more connected & walkable?

The 6Ds of Travel Demand



Destinations, Diversity & Density

- Where are the jobs?
- Where are houses?
 - Supply
 - Affordability
 - Schools
- Where are services?
 - Retail
 - Health
- Are they connected & concentrated around transit?



Destinations & Density

Seattle Transit Master Plan

- Thinking strategically
- Identifying urban village hubs
- Coordinating between agencies
- Prioritizing walking, biking and transit connections

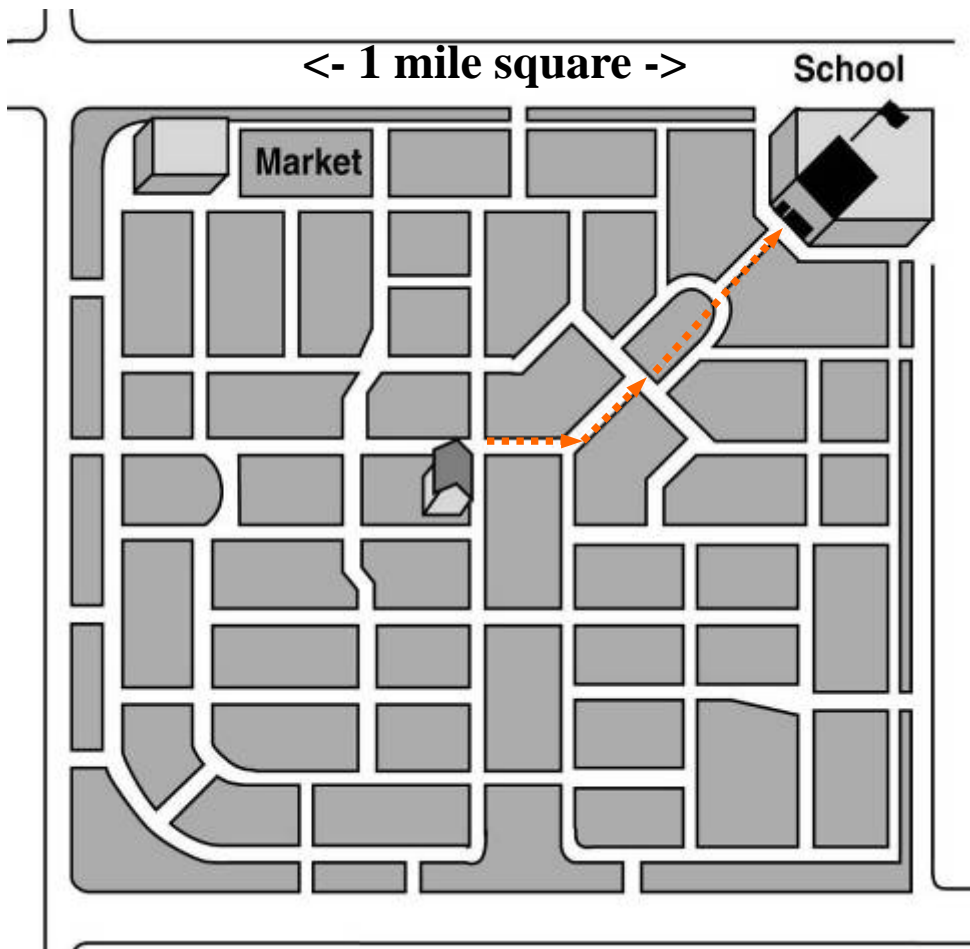
2030

Seattle Transit Connections

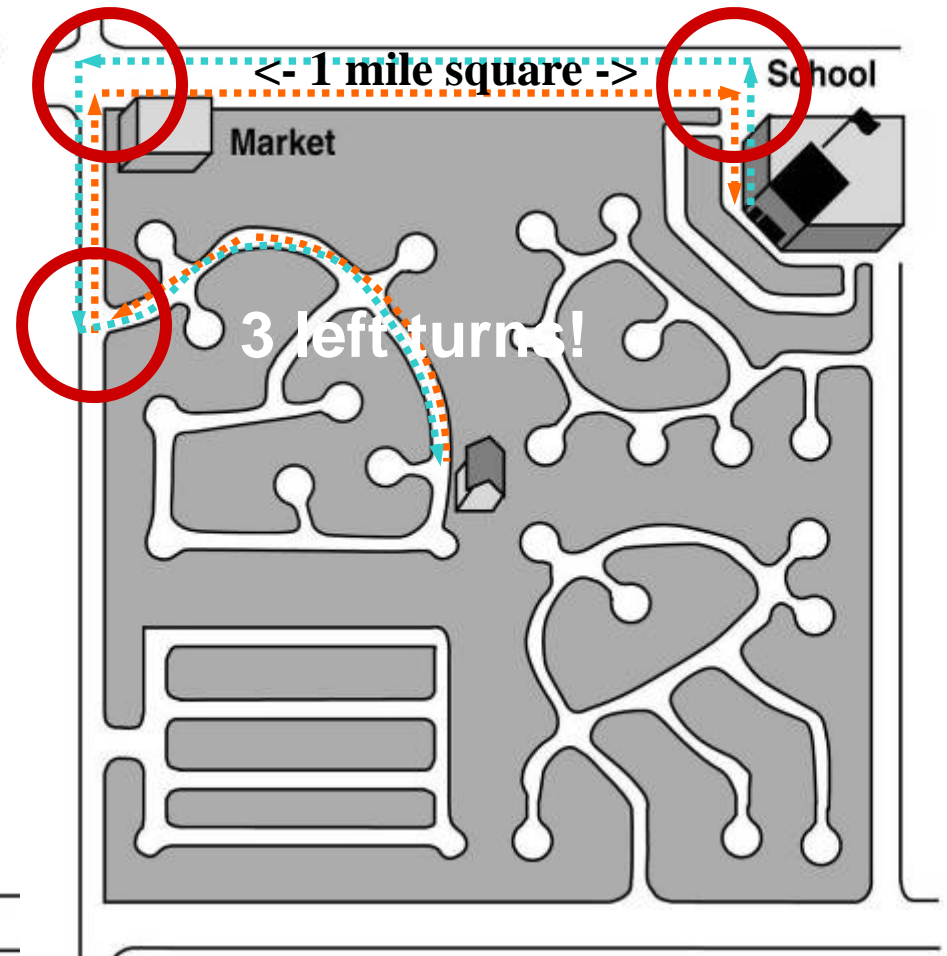


Distance

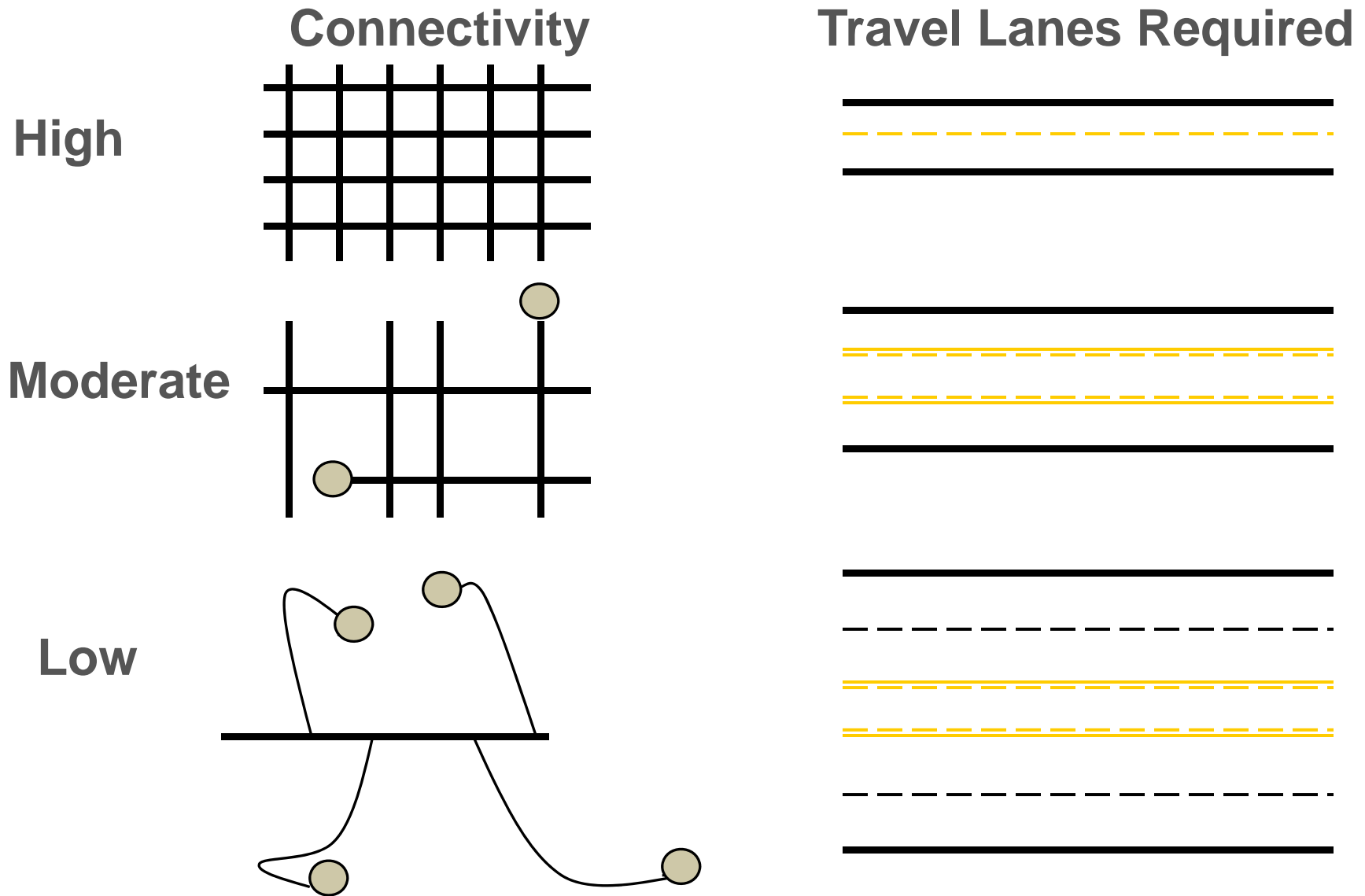
Grid pattern



Cul de sac subdivision



Distance & Design



Design



Design



- Bike lanes
- Narrow travel lanes
- Shade trees, landscaping & medians

Density, Diversity & Design



- Eyes on the street
- Buildings address street, not parking
- Building forms create enclosure

Density, Diversity & Design



- Infill development
- Increased density

Design

- Petaluma Form-Based Code



Photo: Nick Danty 2013

Design

- NACTO Urban Street Design Guide



Demand Management

- Parking pricing
- Congestion pricing
- Transit & shuttle services
- Transit subsidies & incentives
- Guaranteed ride home programs...



Planning Connections for Healthy Cities

People's risk of inactivity, isolation & injury is directly affected by how we plan cities.

Demographics & interest makes a difference, but most people will do what makes sense.



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