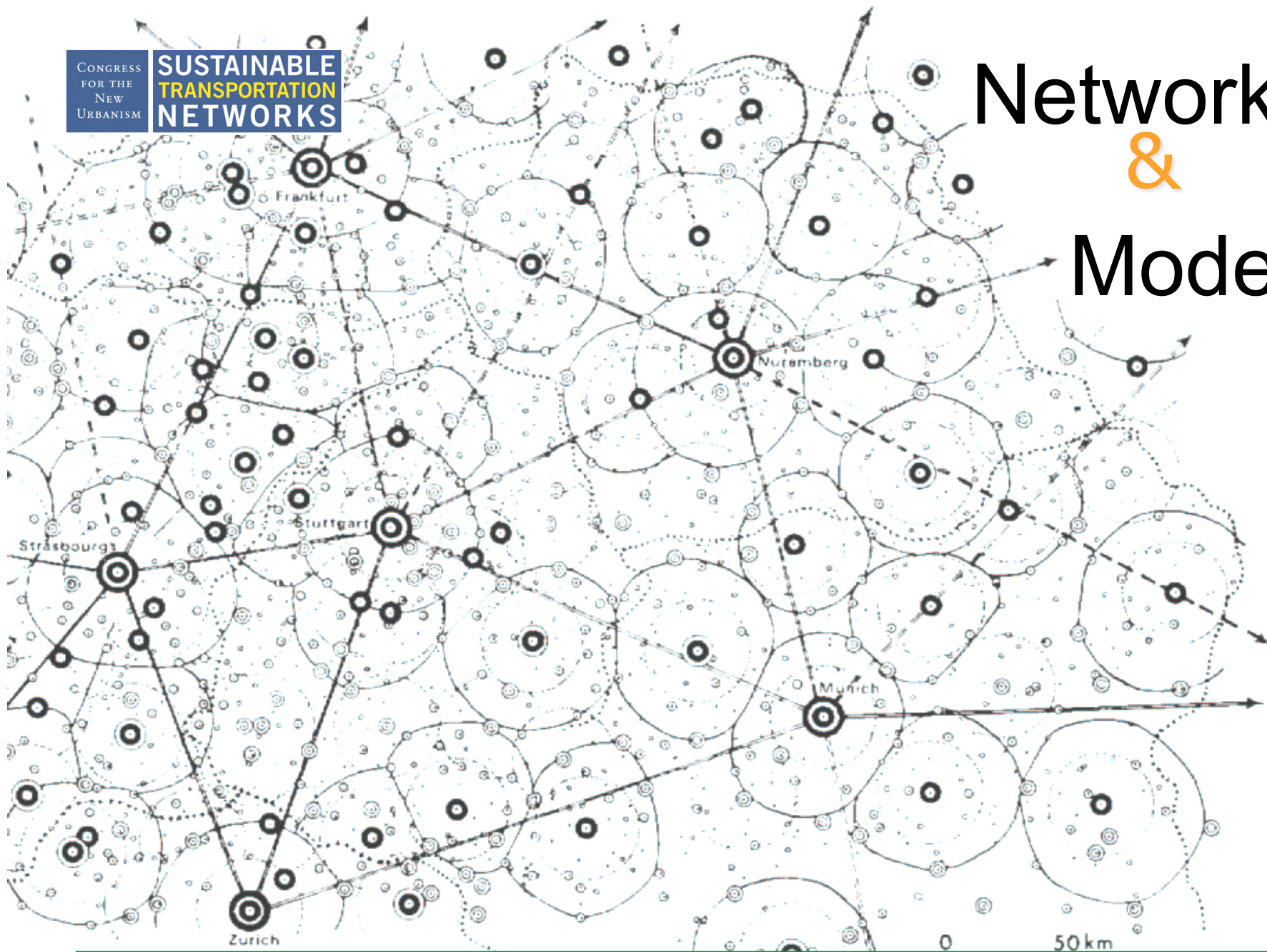
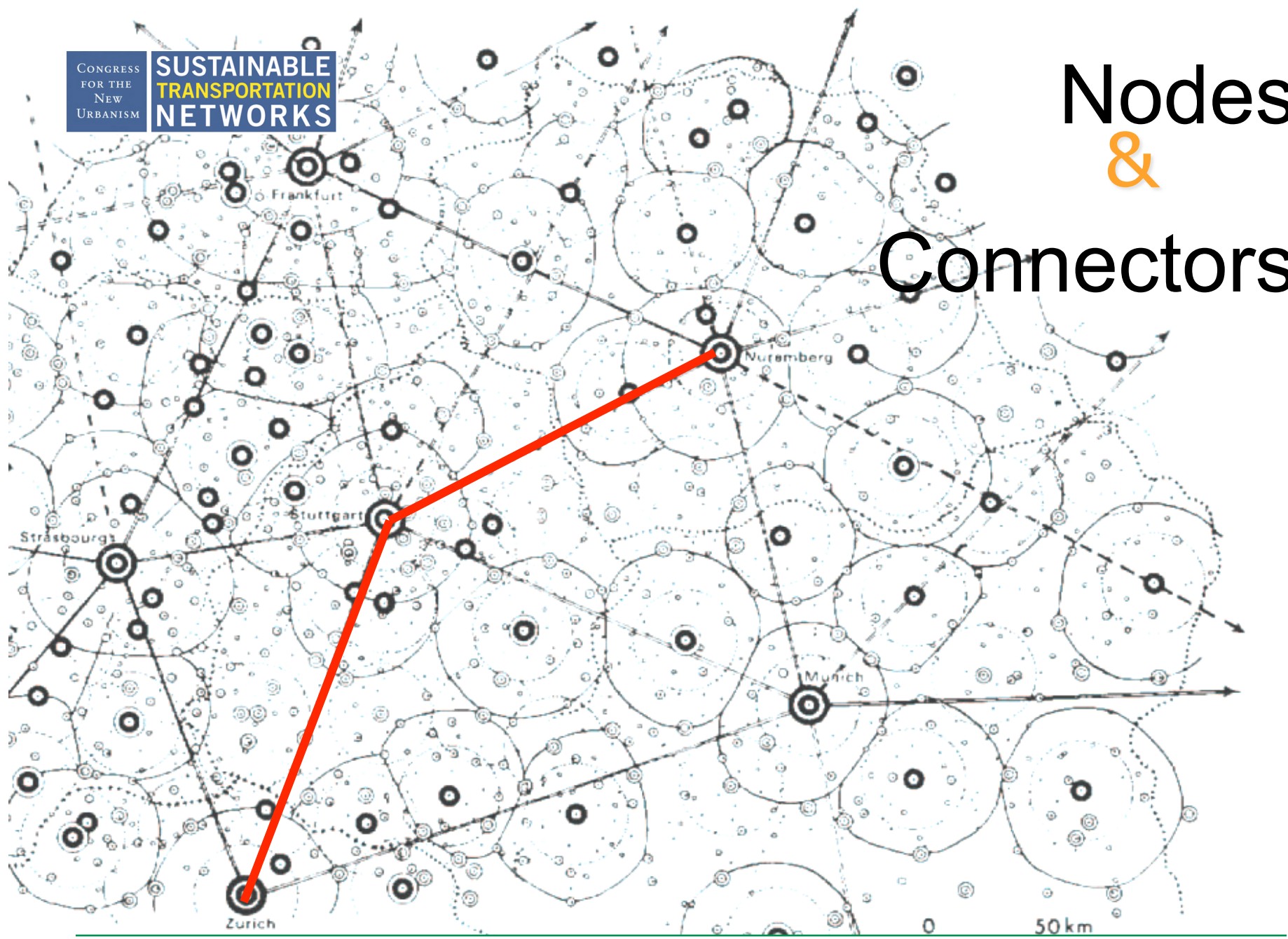


# Networks & Modes



# Nodes & Connectors



# Networks & Modes

Our topic is the **connections among nodes** in the network of human communities; that is, the means and ability people have in order to gain access to other people, goods, and services.

The purpose of a multi-modal metropolitan transportation system, like other municipal functions, is to equitably **maximize access of citizens to other people, goods, and services, while minimizing access costs**, which include personal and collective costs, plus externalities.

It is our premise that an efficient access network is a major solution to transportation challenges and the quality of our neighborhoods, towns, and cities.



## Guiding Principles

### *The Region*

3. The physical organization of the region shall promote transit, pedestrian, and bicycle systems to maximize access and mobility while reducing dependence on automobiles and trucks.
4. The spatial balance of jobs and housing is enabled at the regional scale by extensive transit systems. Development shall be primarily organized around transit lines and hubs.

### *The Neighborhood, Town, and City*

1. The balance of jobs, shopping, schools, recreation, civic uses, institutions, housing, areas of food production, and natural places shall occur at the neighborhood scale, with these uses being within easy walking distances or easy access to transit.
8. Natural places of all kinds shall be within easy walking distance or accessible by transit.



## CANONS OF SUSTAINABLE ARCHITECTURE *and* URBANISM

*A Companion to the Charter of the New Urbanism*

GLOBAL CLIMATE CHANGE and habitat destruction, accelerated by global settlement patterns of sprawl, pose significant challenges requiring a global response. The scale and extent of these problems has come into sharp focus in the decade since the execution of the Charter of the New Urbanism. Timely action is both essential and presents an unprecedented opportunity.

THESE ENVIRONMENTAL CHALLENGES complicate equitable development the world over. Holistic solutions must address poverty, health and underdevelopment as well ecology and the environment.

***Network typology***

Several types for transit

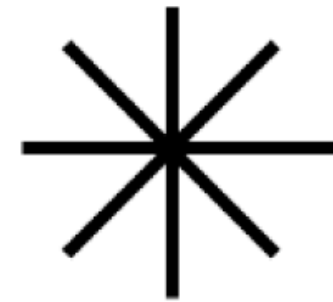
Many use hybrids

Services changes must consider whole network

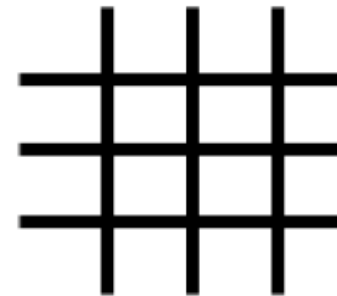
William Lieberman paper:  
“Transit Networks”



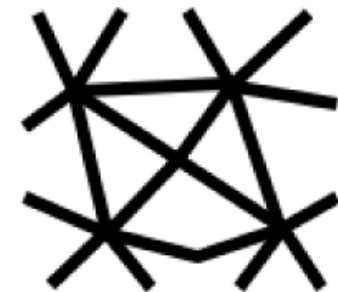
**Amorphous**



**Radial**



**Grid**



**Hub-and-Spoke**

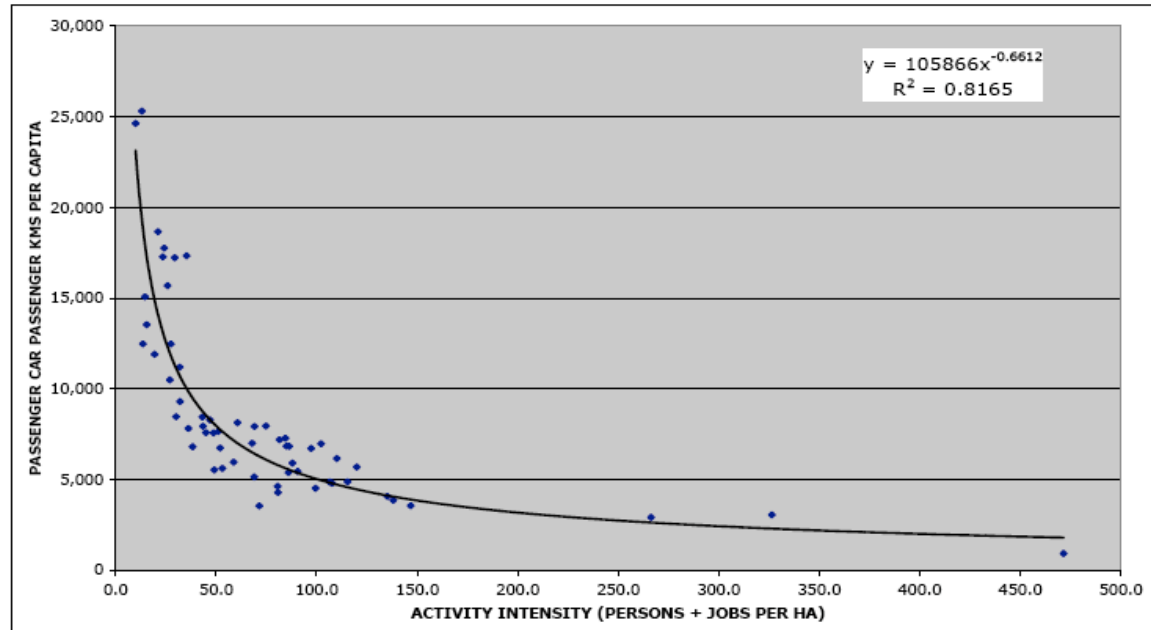
### Identifying nodes

- Activity Intensity
- Transit use vs car use

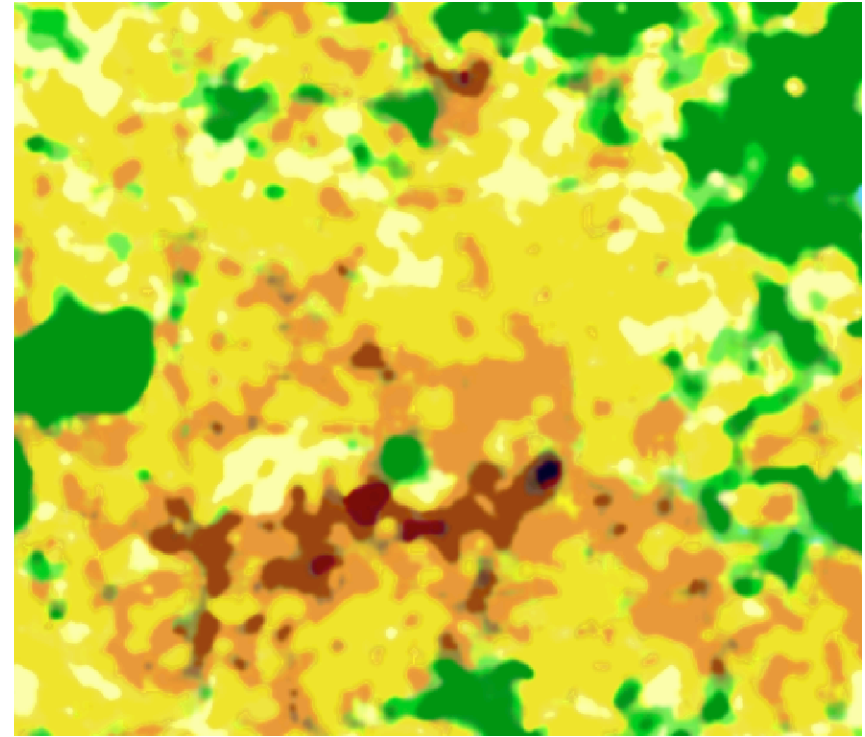
Strong reduction in auto dependency effect begins at about 14 jobs + pop per acre

Newman & Kenworthy  
 “Urban Design to Reduce Automobile Dependence”

Figure 2. Activity Intensity versus Passenger Car Use in 58 Higher-Income Cities, 1995



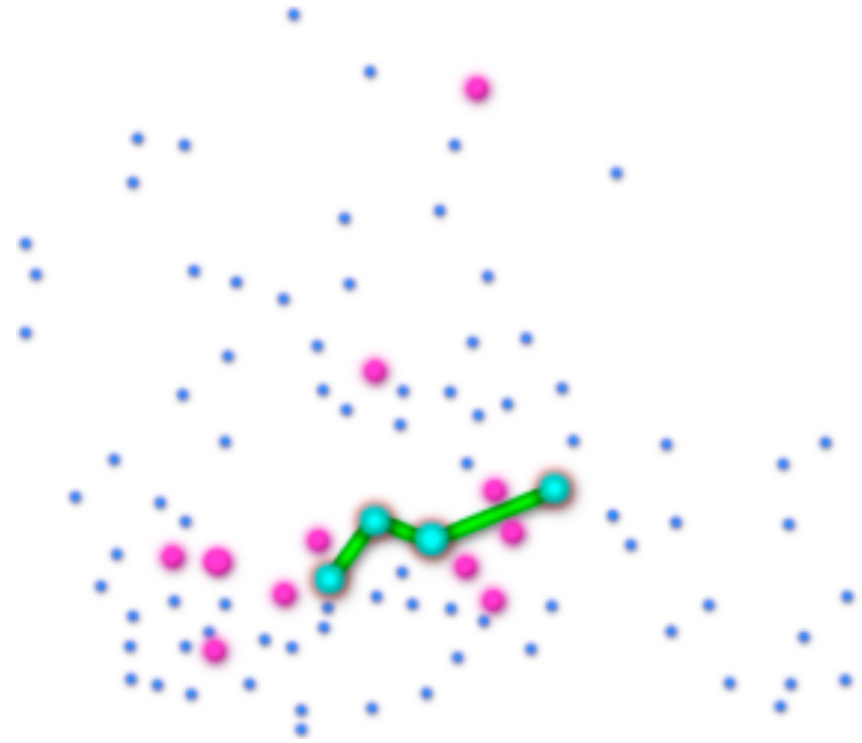
*Identifying nodes*



Houston Region – about 30 miles

David Crossley  
“Activity Intensity & Transit Networks”

*Identifying nodes*



David Crossley  
“Activity Intensity & Transit Networks”



*Identifying nodes*



David Crossley  
“Activity Intensity & Transit Networks”

## *Types of transit service*



### **Suburban transit**

Longer trips

Two trips per day

Serves home, work

Passengers arrive by car

Built in railroads, freeways to go fast



### **Urban transit**

Shorter trips

Multiple trips per day

Serves home, work, study, play

Passengers arrive on foot

Built in streets to go where the people are

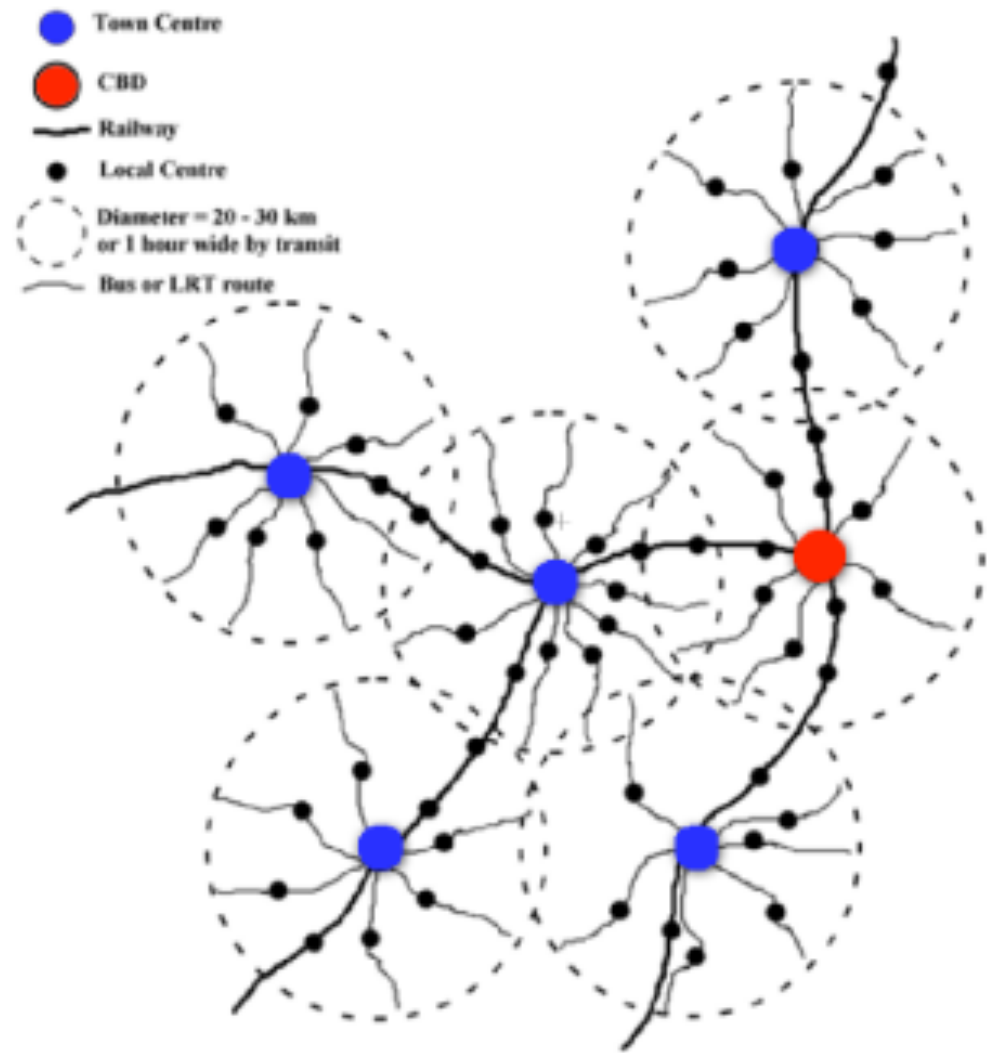
Christof Spieler, Citizens Transportation Coalition Houston

*Reconstructing an automobile city*

Transit cities, centers, and satellites

Transit cities 20-30 kilometers in diameter

Newman & Kenworthy

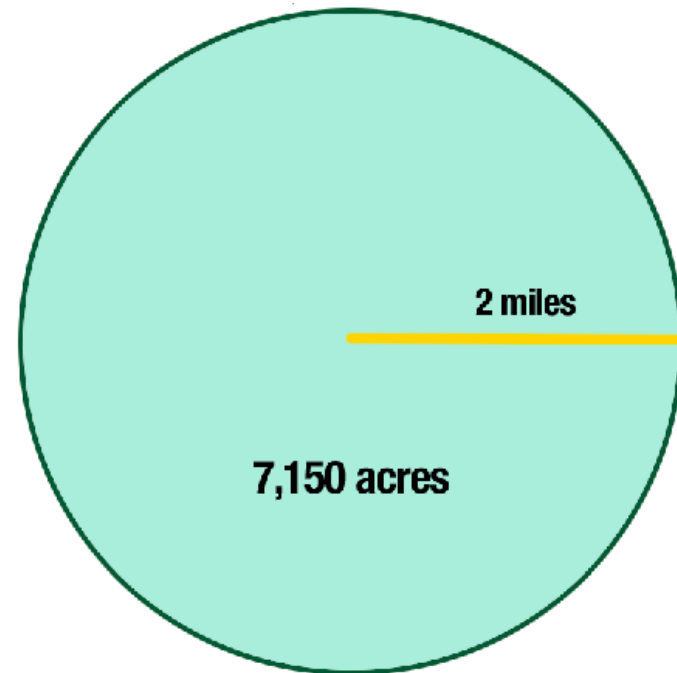
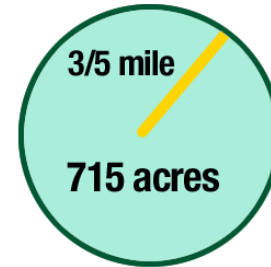


***Pedestrian & bicycle sheds***

Ped shed: 10,000 pop + jobs

Local center: 100,000 pop + jobs

Newman & Kenworthy



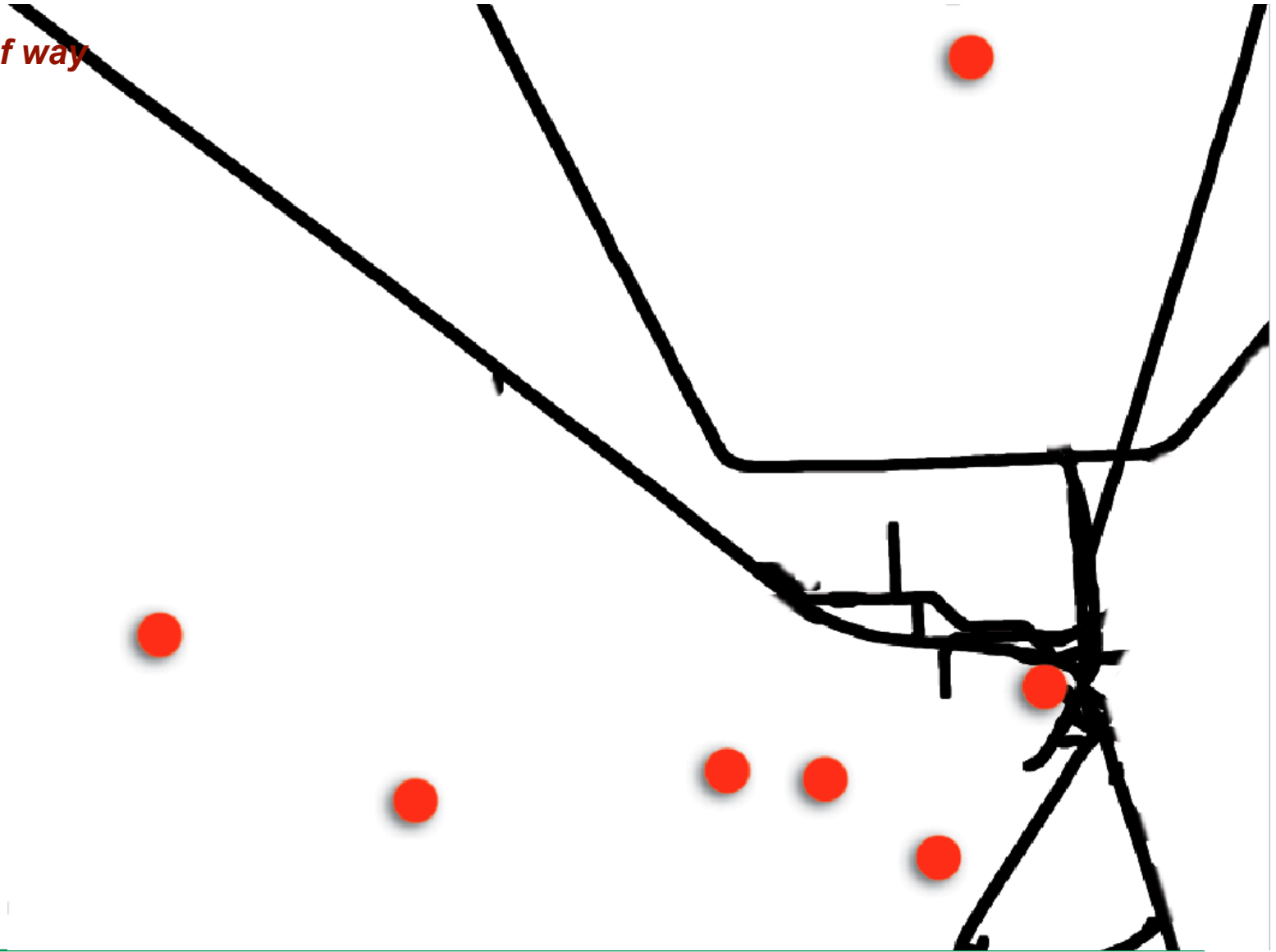
## *Transit right of way*

Something between high speed rail connecting cities like Austin and Houston and the local urban light rail system.

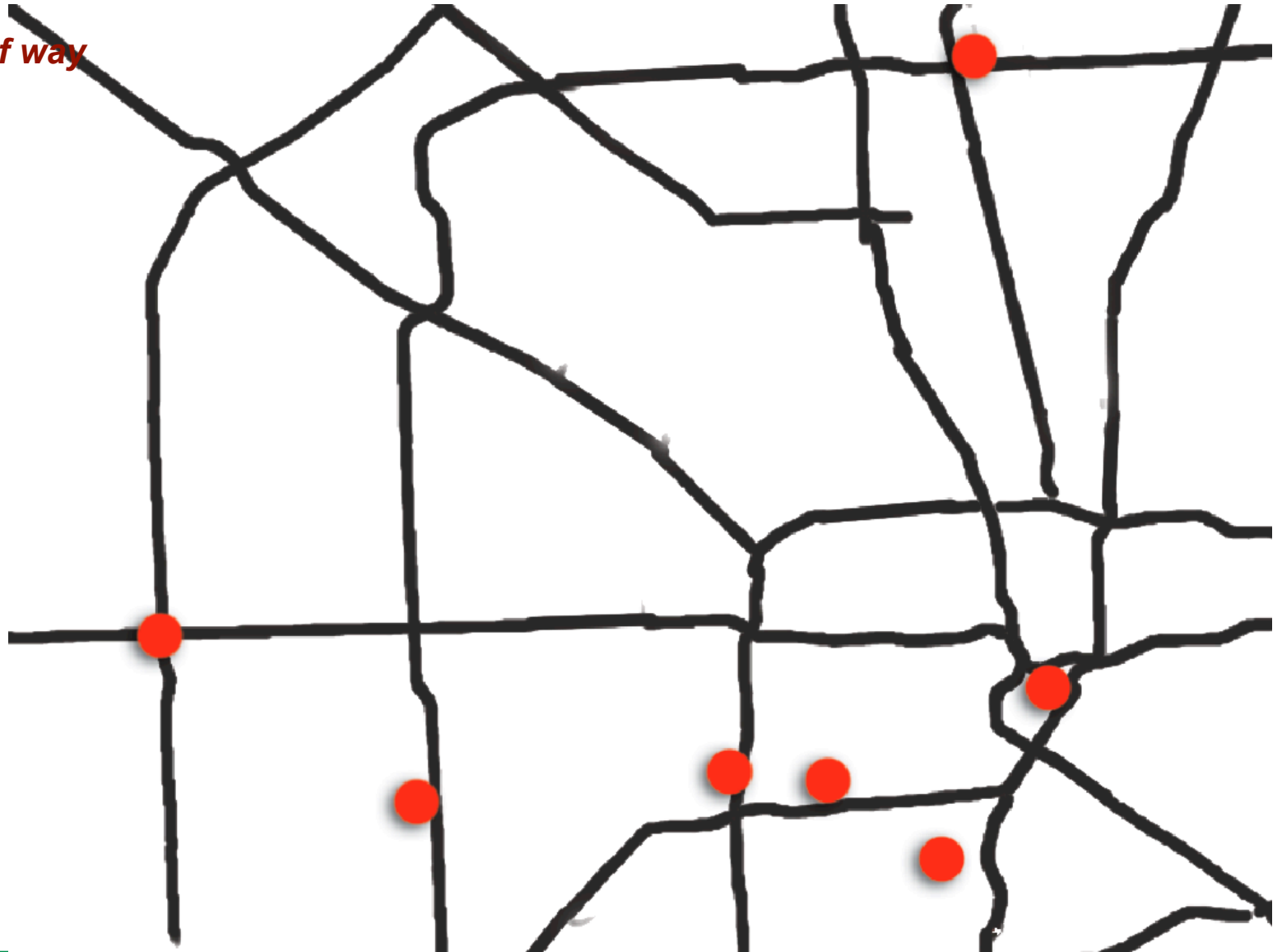
“Cities” inside regions



*Transit right of way*

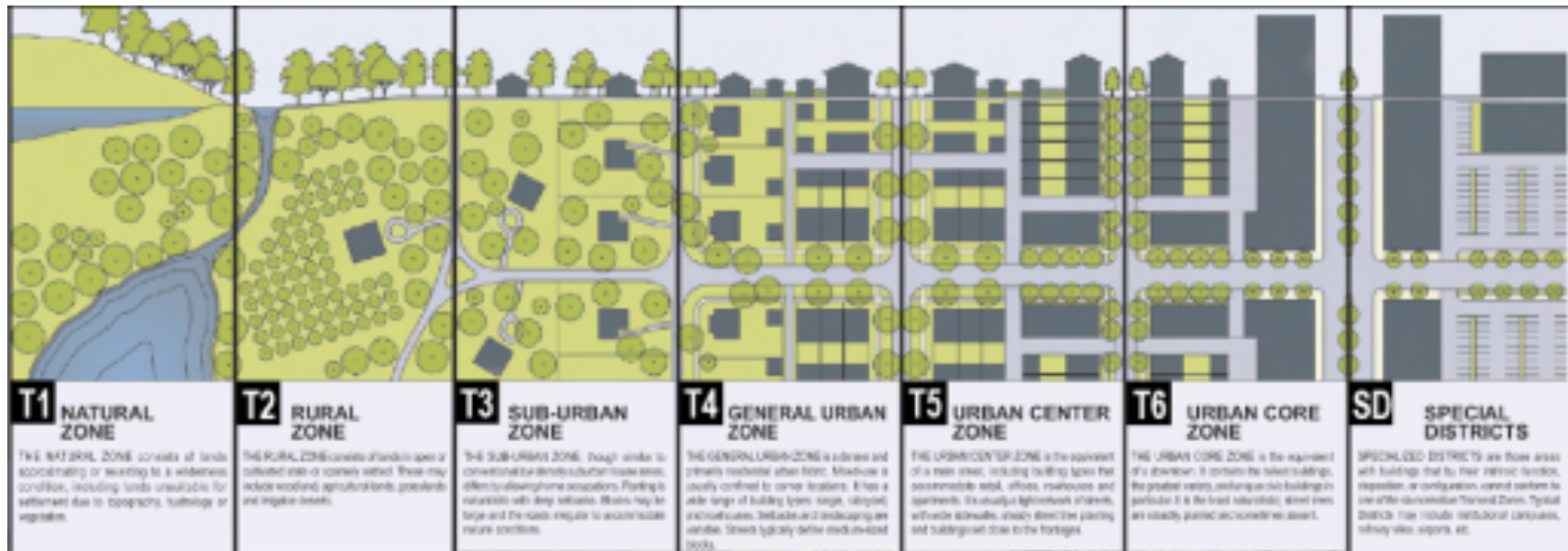


*Transit right of way*



## The Transect

Need for a matrix showing:  
 Network spacing per mode  
 Appropriate transit types in each zone  
 Technical specs



## Networks & Corridors

Operational planning/implementation unit

Multi-modal thinking hampered by funding silos

Need to serve different purposes.

Sam Zimbabwe paper:  
"Networks & Modes Discussion Paper"

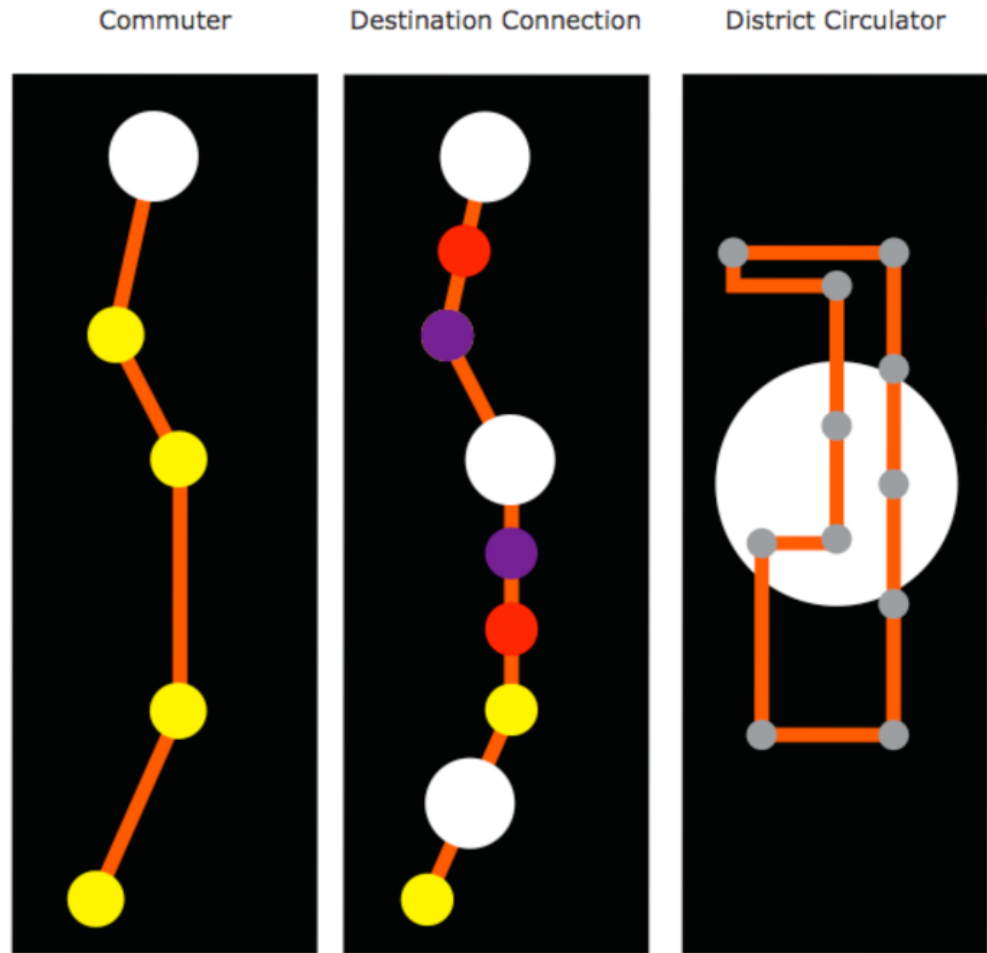


Figure 7: Three corridor types

## *The Neighborhood Scale*

Provide broad access, safe circulation  
by variety of nodes

Range of route choices but not  
necessarily route overlap

Failure of most suburban streets (only  
one modal scale – automobile)

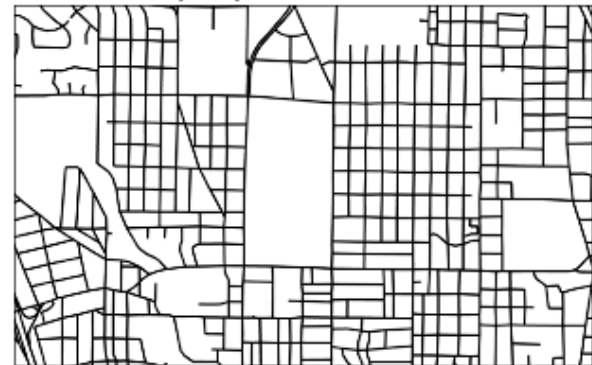
Traditional city grids, but other patterns,  
too

Overlap with neighborhood and “place”  
planning

*Poor connectivity • Circle C • Austin, TX*



*Grid connectivity • Hyde Park • Austin, TX*



*Non-Grid with moderate connectivity • Barton Heights  
Austin, TX*





## *Generative Capacity + Setting Funding Priorities*

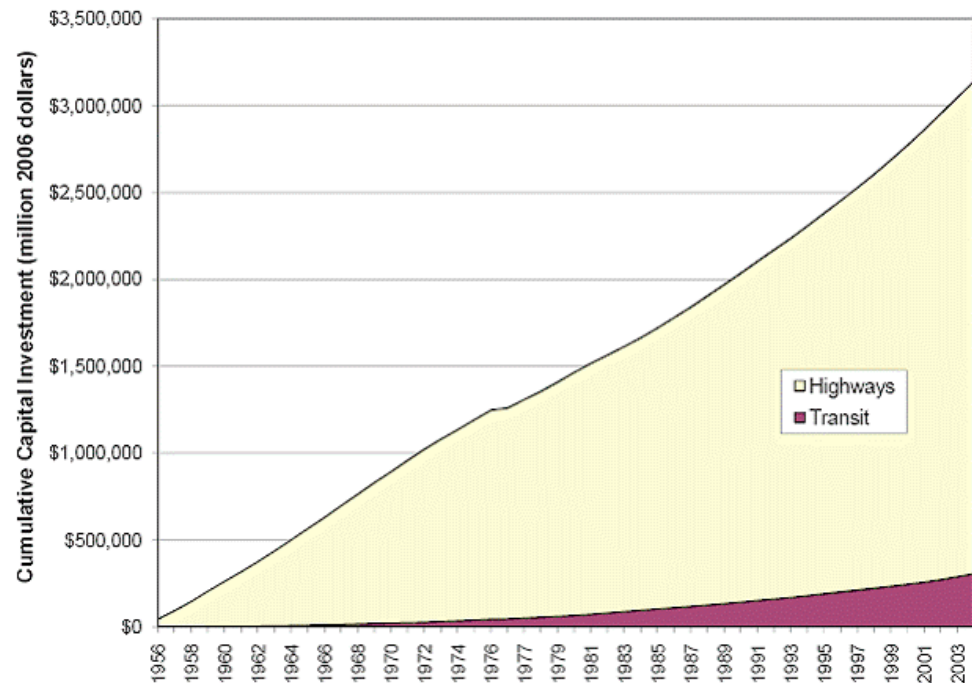
Current paradigm rewards moving people farthest, fastest, at lowest cost.

No accounting of “return on investment” for public infrastructure.

Need metrics and ways to account for these benefits that make sense from a planning perspective.

Andrew Gast-Bray

Figure 8. Cumulative Government Capital Investment in Transit and Highways Since 1956 (2006 dollars)<sup>86</sup>



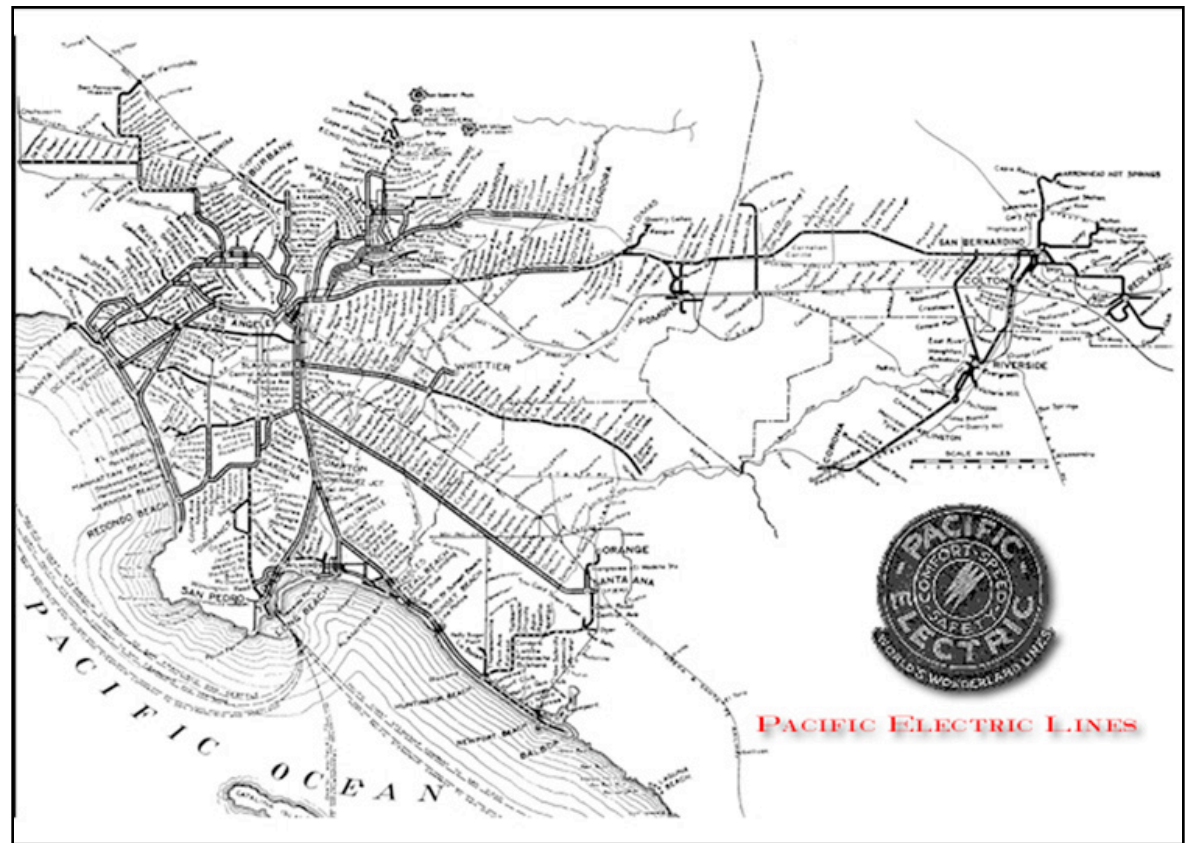
## *Existing practice*

Little coordination between transportation and land use

Little coordination among jurisdictions

Funding silos prevent multi-modal planning

Funding criteria do not support Sustainable Transportation Network goals



## ***Major discussion topics***

How does multi-modal network planning interface with place and land use planning?

How do we see transit as integral to regional growth and land use patterns?

How do we balance funding for all modes of travel?

In diffuse networks, how are the links aligned and connected?

What are the goals of the multi-modal network, and how do all modes fit into this framework?

How do we communicate the multi-modal network in simple graphic terms to others?

(Many other questions at the end of the paper)