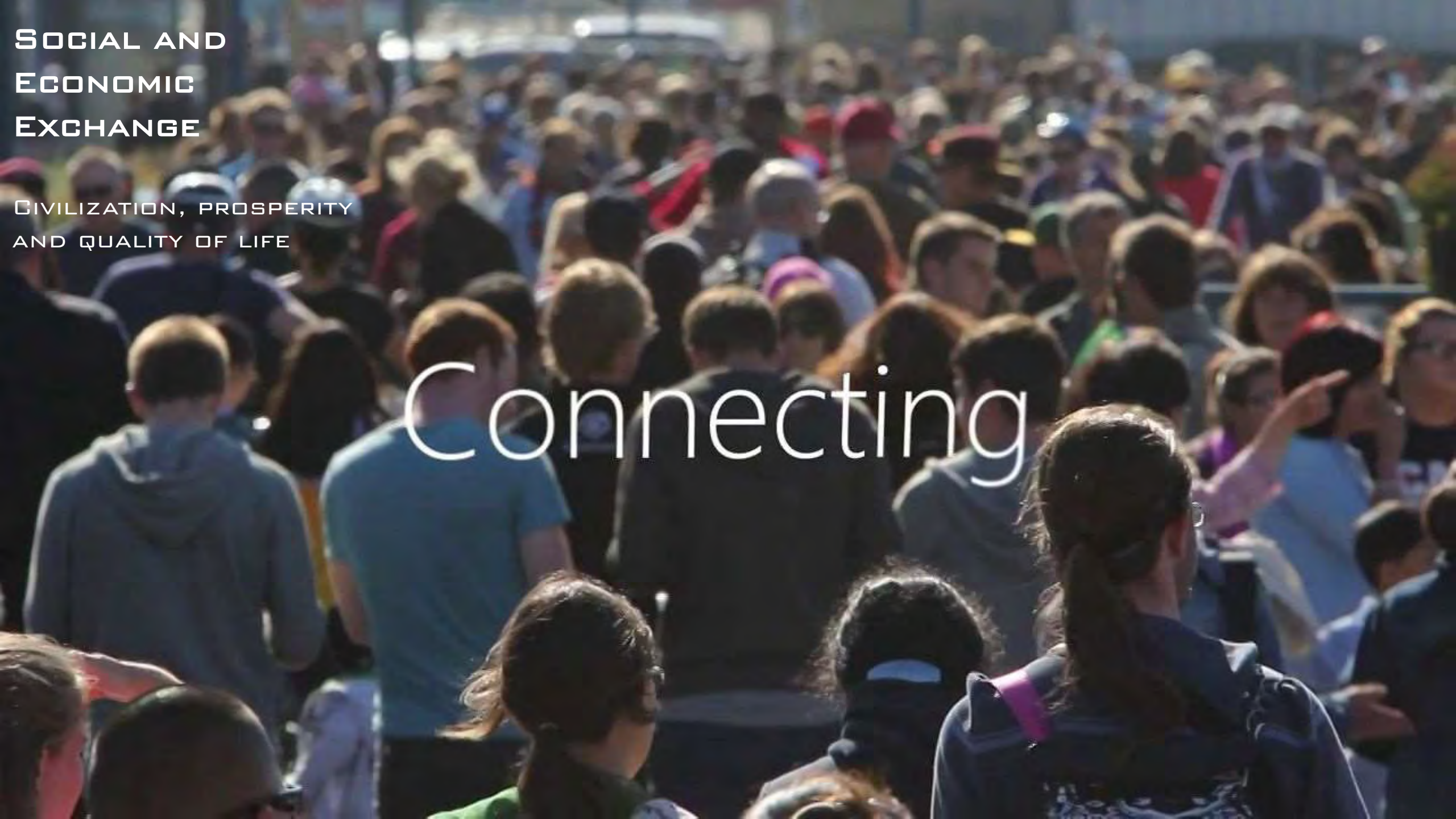
The Persistence & Value of the City


"THE ART AND SCIENCE OF URBAN DESIGN IS TO DESIGN STREETS AND PUBLIC SPACES TO MAXIMIZE PRIVATE USE OF THE LAND."
1912 City Plan of St Louis

Social and Economic Exchange

Civilization, prosperity and quality of life

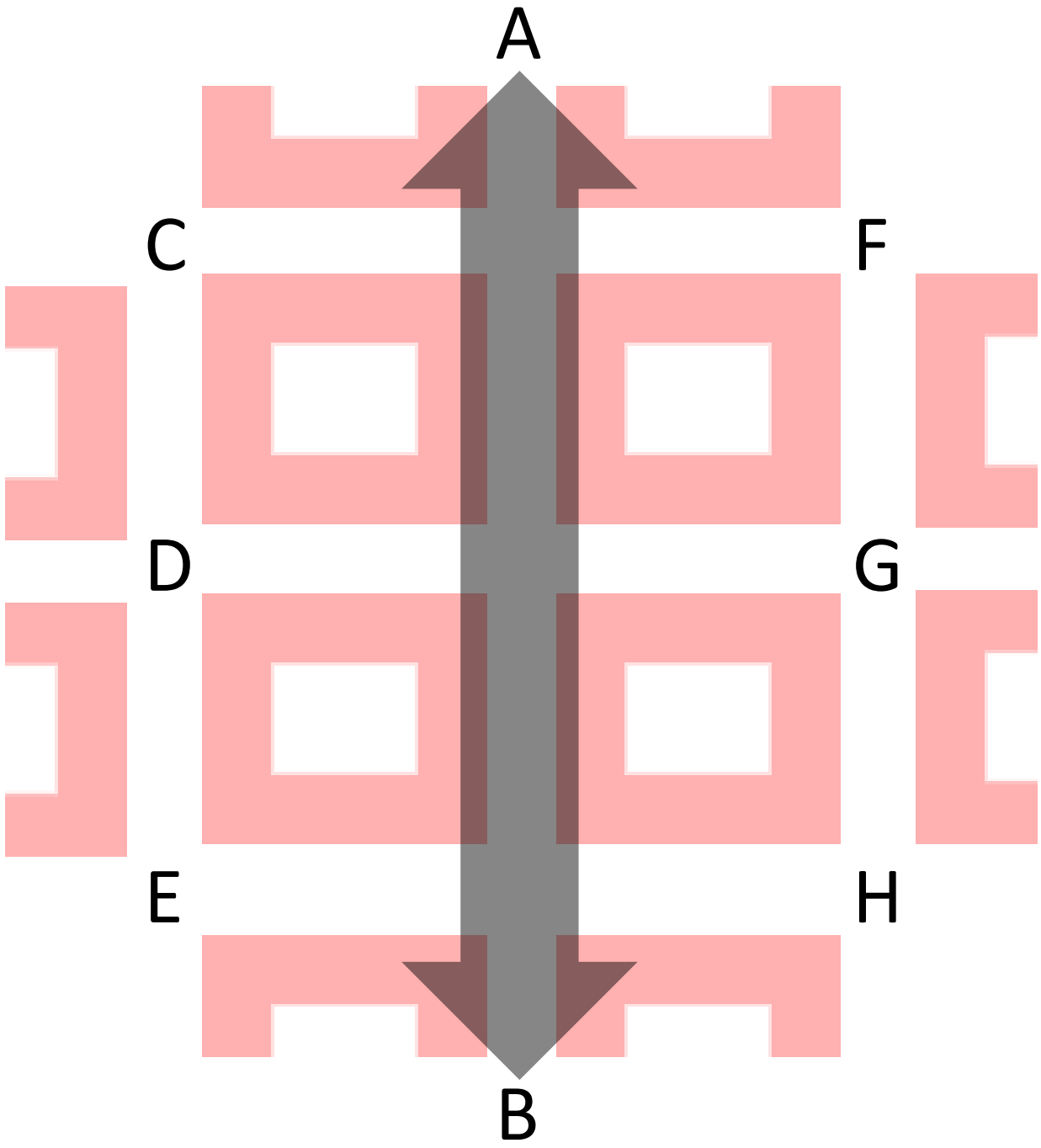


Highways Connect, but Also Disconnect

In dense areas/areas of desired density, disconnection devalues

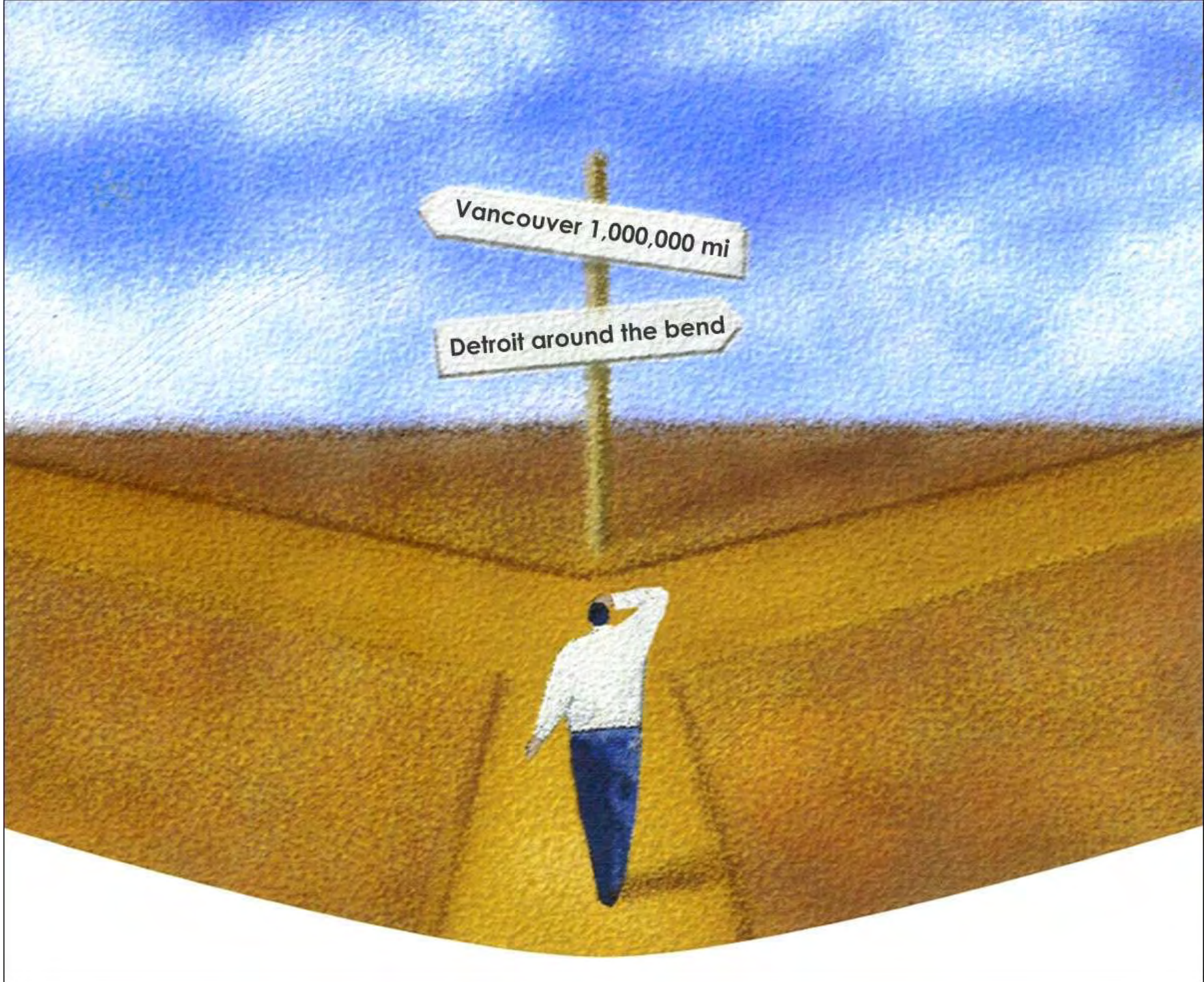
What kind of infrastructure is appropriate for the kind of place you want and need?

How do we maximize connectivity while minimizing costs to build sustainable places of prosperity?



Dallas at a Crossroads

How to address congestion?



Inter-city vs Intra-city (inner-city)Highways

The Funnel: Single Corridor handles increased capacity through cities by getting wider.

Sucks up all the energy from surrounding streets and neighborhoods, then areas decay.

Inter-City, Links regional economies

Intra- or Inner-City, Disconnects Local Economies

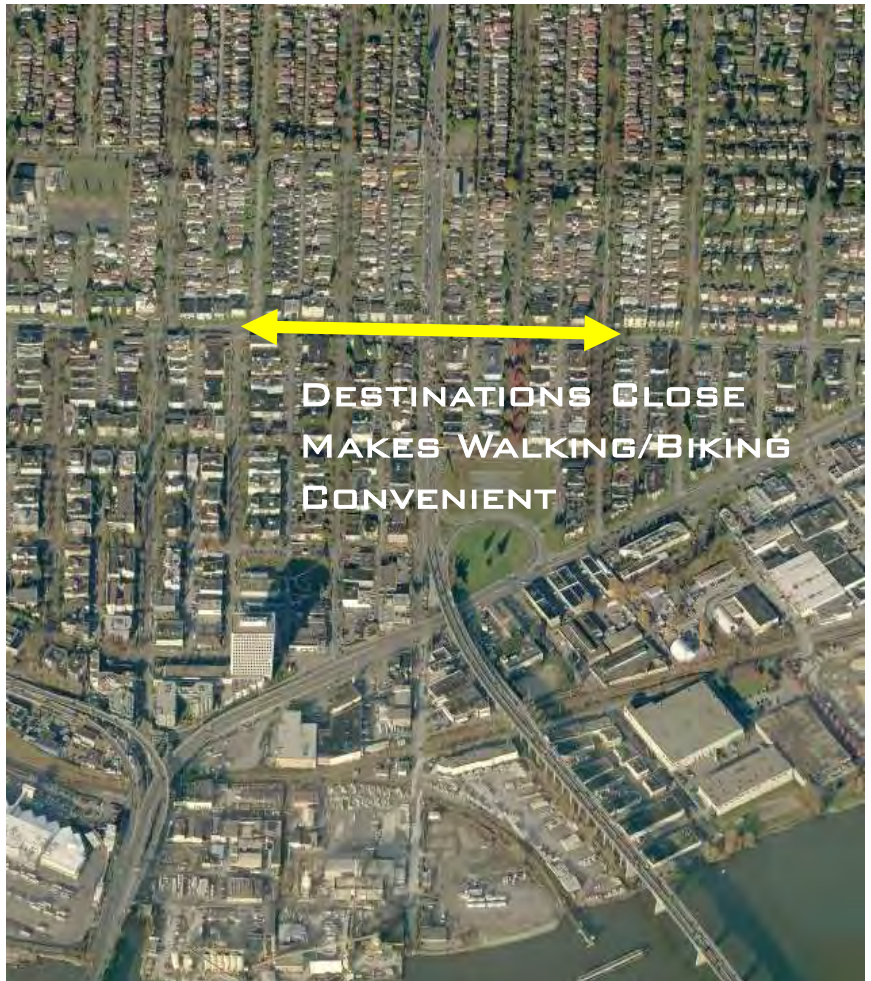
Context Sensitive Design

The Filter: Highway corridor narrows as it enters city allowing grid to handle increased capacity needs.

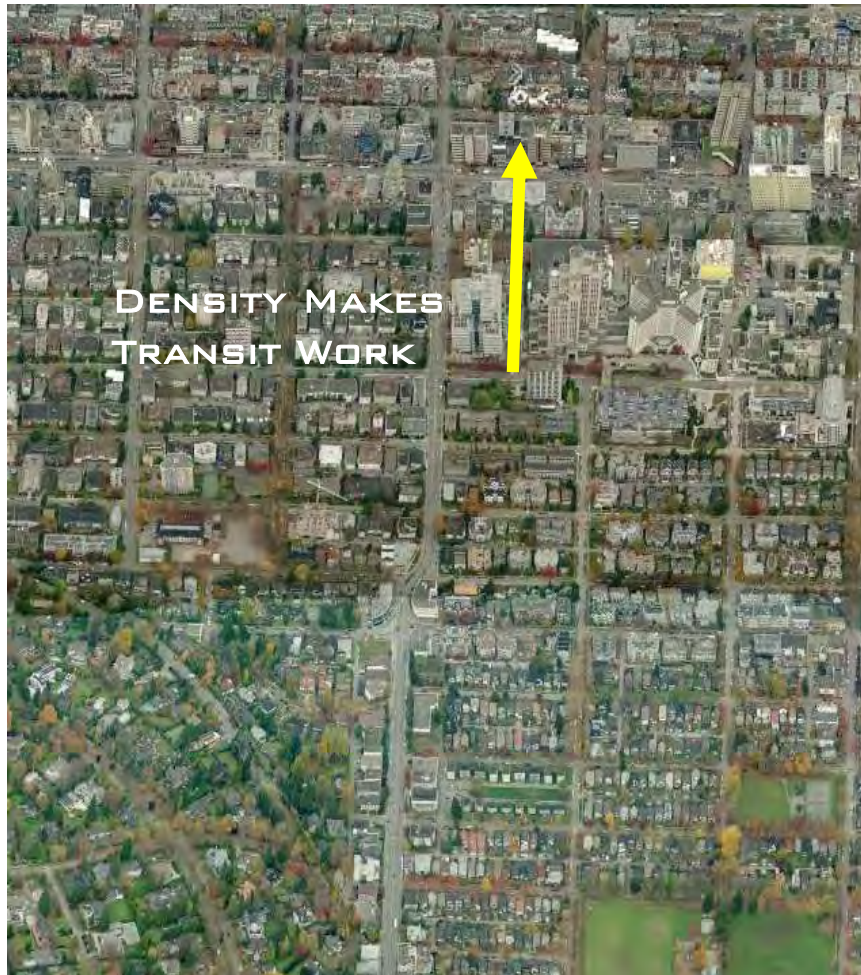
This diffuses the negative impacts of congestion while allowing for agglomeration economies, shortened trip lengths & providing greater route choice and adaptability

Rural to Suburban

Suburban to Urban Transition



Urban - Grid

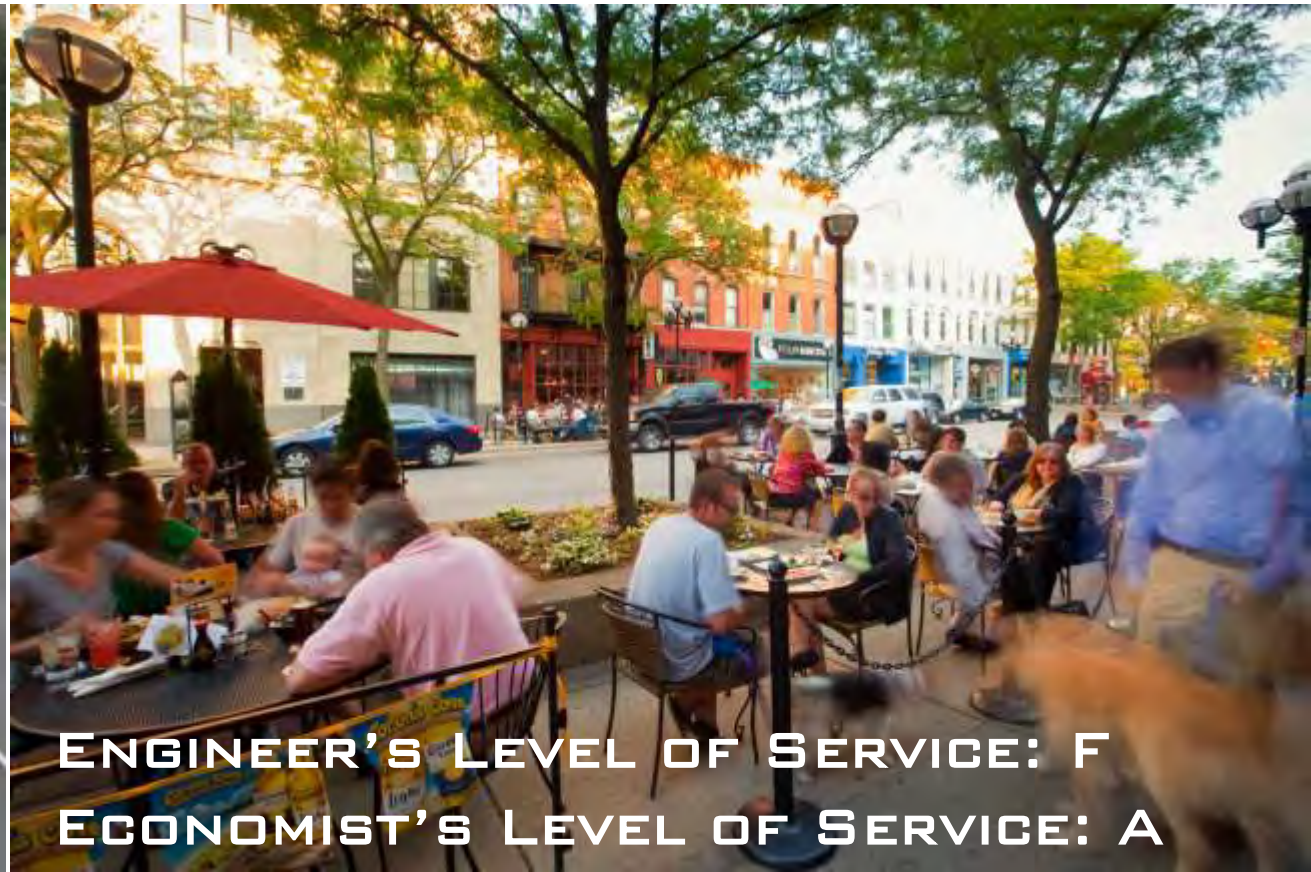


You get what you Prioritize

Highway: Functions best with NO Traffic on the Road

City Street: Functions Best with Many People on the Road

Engineer's Level of Service: A
Economist's Level of Service: F



Engineer's Level of Service: F
Economist's Level of Service: A

In the Urban Paradigm (People > Cars)

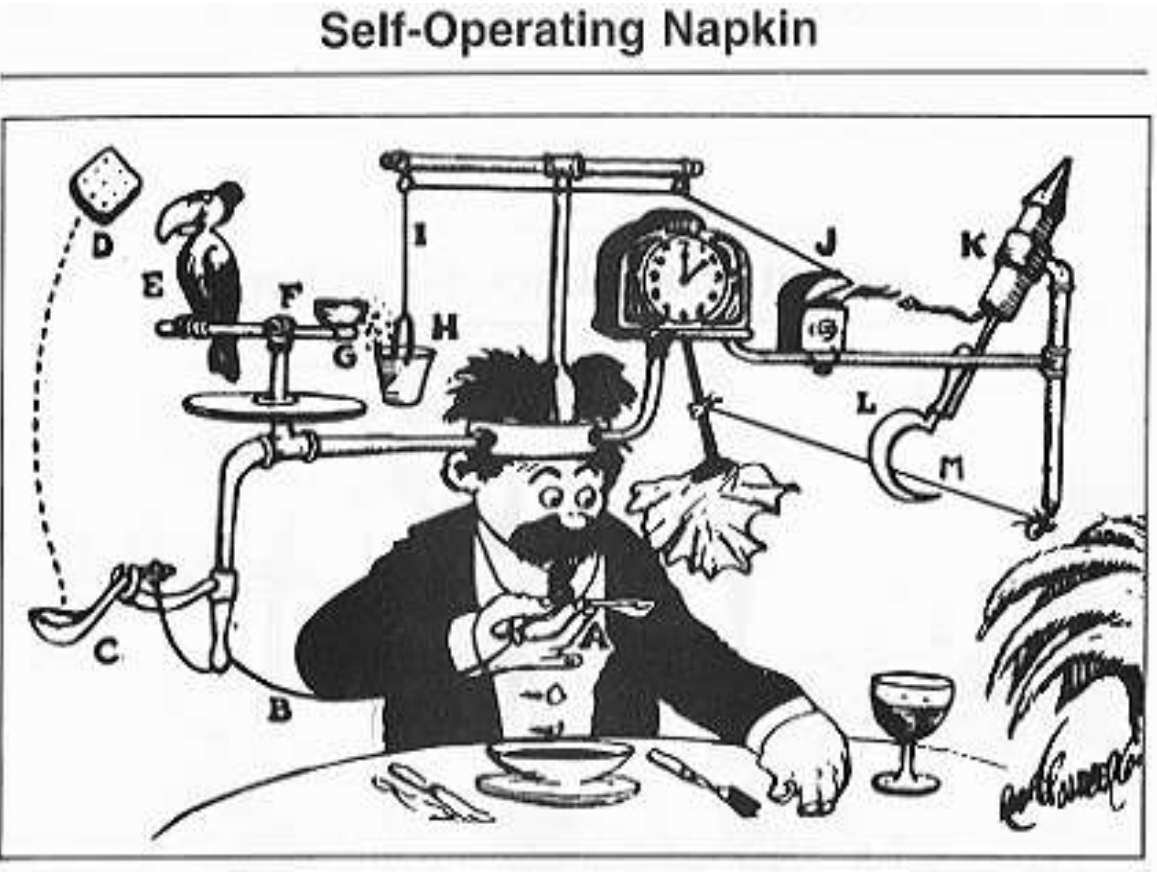
Traffic = Value... a proliferation of Billboards or Businesses?

On Highways, Traffic is Congestion.

On City Streets, Traffic is Energy.

Our Core Cities Require a Different Logic

One is an elegant, highly interconnected and interdependent ecosystem;
The other a cartoonish result of clumsy, simple machine-based modernism

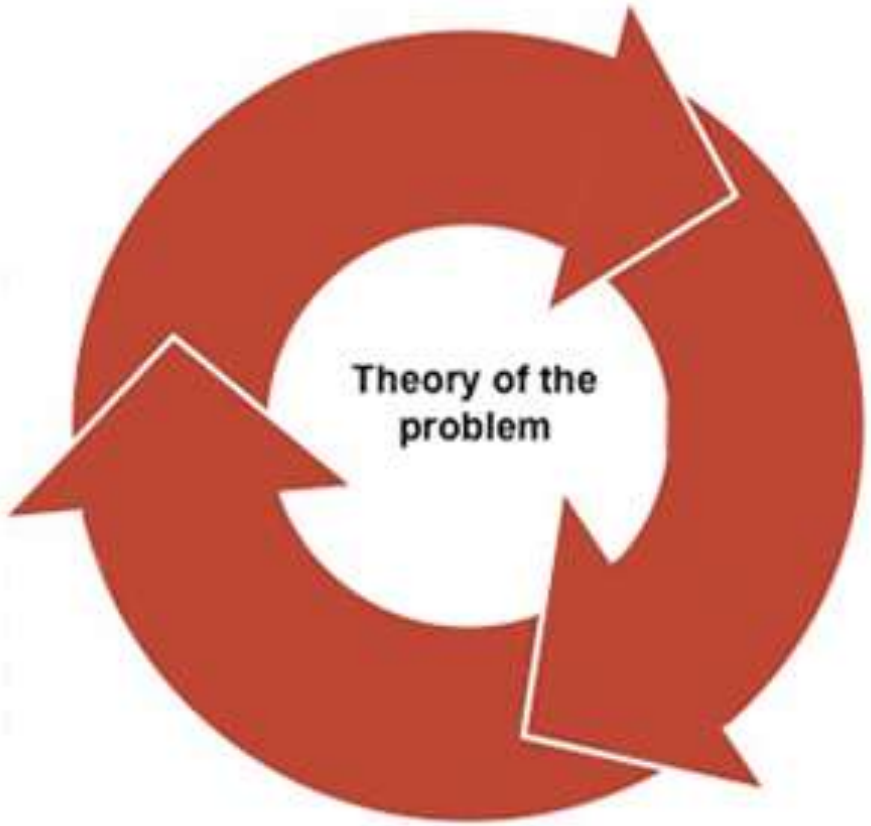


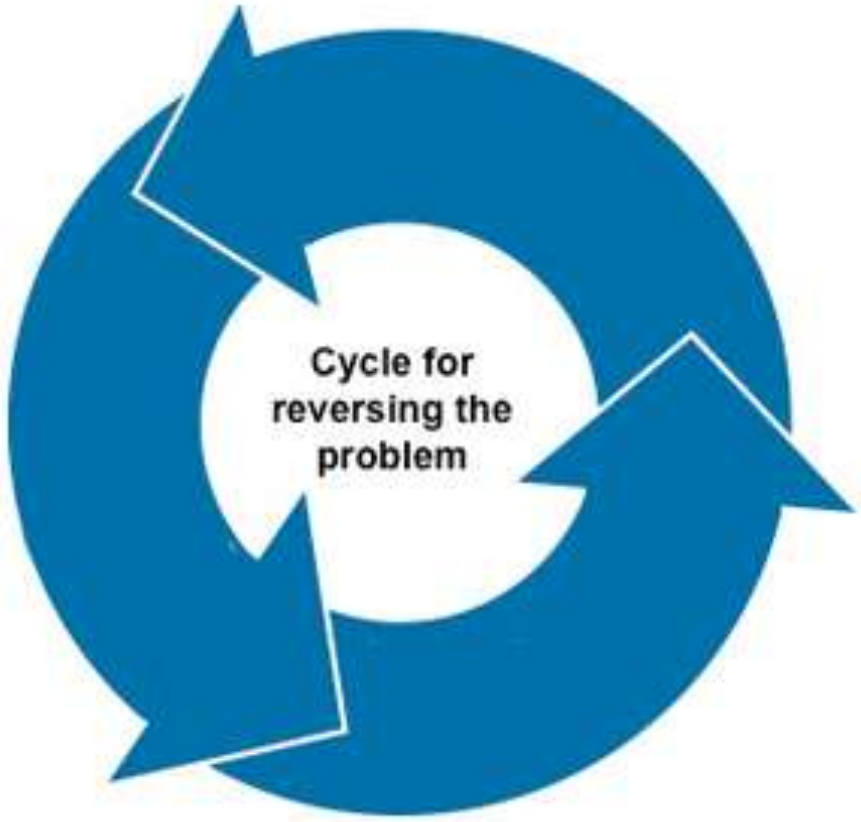
Two Directions of Complex Systems

We typically are focused on the right problem area, but usually make Matters worse trying more of the same

Problem of congestion: We need more supply

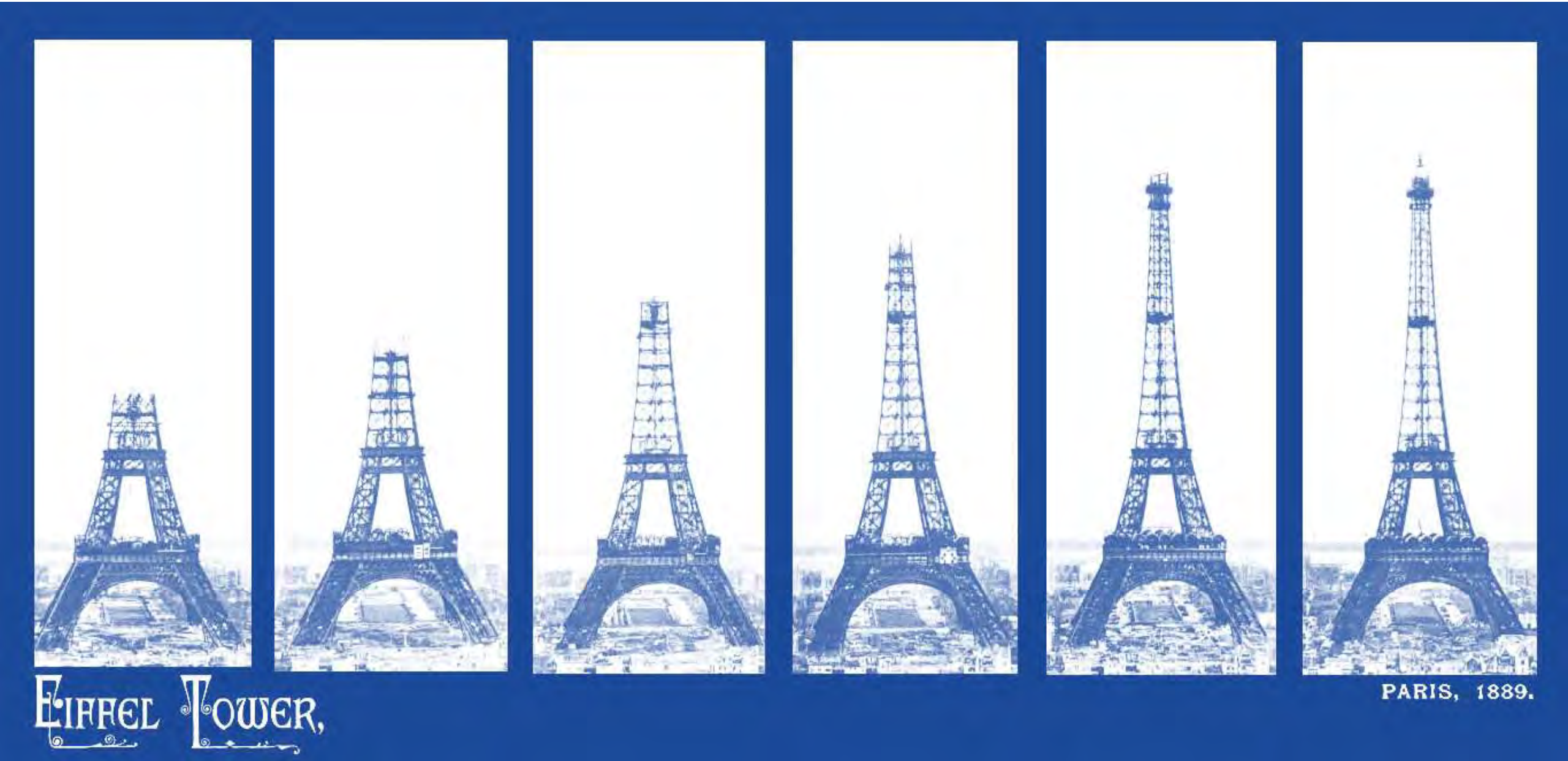
Cities are inherently counter-intuitive





This is NOT an engineering problem

We can engineer any kind of city we want. Instead, this is an economic and political issue.



Facilitate Human Interaction

Density benefits

More enviro,

More economic value...

More innovation

More interaction

Facilitate Human Interaction

Externalities of Density

Disease

Pollution

Congestion

Mostly antiquated – byproducts of industrialization and pre-sanitation

Desirable Density

About designing cities better at all densities

Density as a product of demand.

Cities doing it right are the cleanest, greenest, most profitable cities in the world.

Manhattan now is most energy efficient city per capita, least waste, and some of longest life expectancies

BCA uses 1/10TH of the energy of ATL

Designing for Choice

In Transportation networks

Greater flexibility and adaptability so people can choose most appropriate MODE and ROUTE for their particular needs

Designing for Choice

In Housing

Density according to value related to proximity

Highways as Barrier

Increases Distance Between people

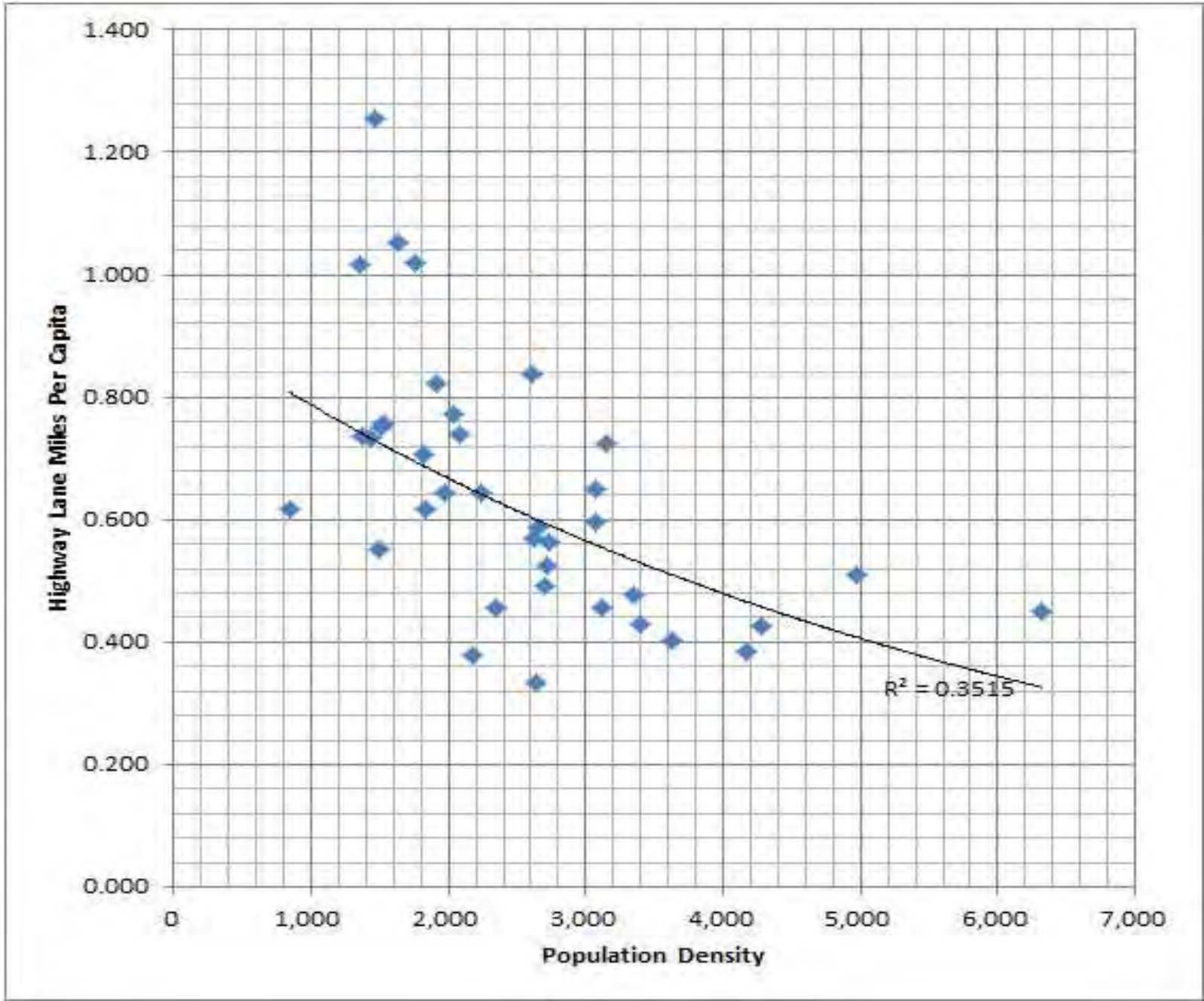
More Highway Capacity = Lower Population density

HIGHWAY LANE MILES TO POPULATION DENSITY

Build More Roads, Population Disperses, Density Drops

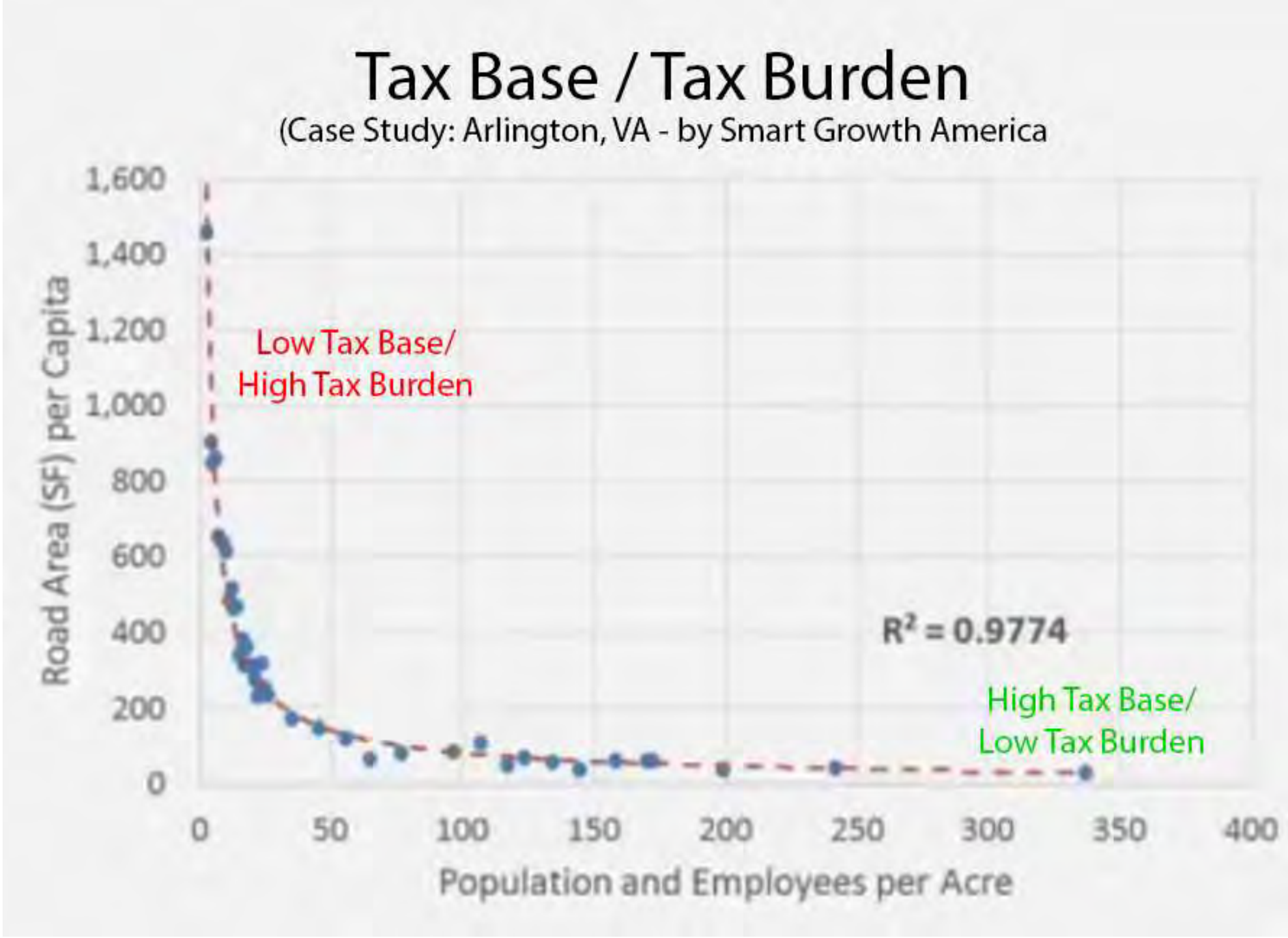
The more high-speed infrastructure we buy in favor of longer trips, the further everything gets from each other,

Population density drops.



More Roads = Lower Tax Base

And fiscal insolvency



More Highways + Lower Density = Driving More

VMTs per capacity

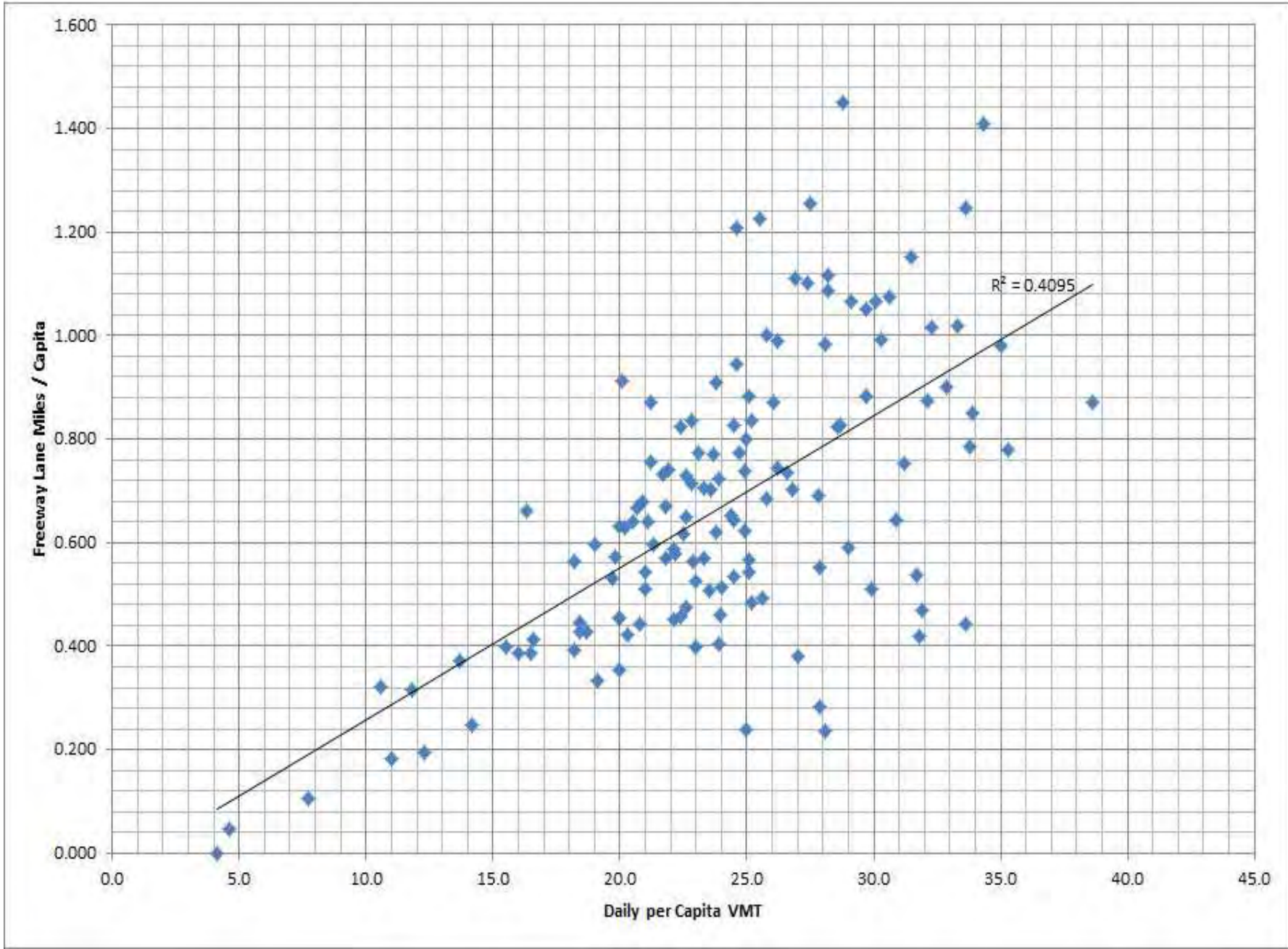
More roads = More Driving

As population disperses,
People are going to drive more.

It has effectively been subsidized and engrained into the culture…as if we chose it because “we love our cars”

…and since we love our cars, we’re eager to support highway expansion/construction projects to “reduce congestion.”

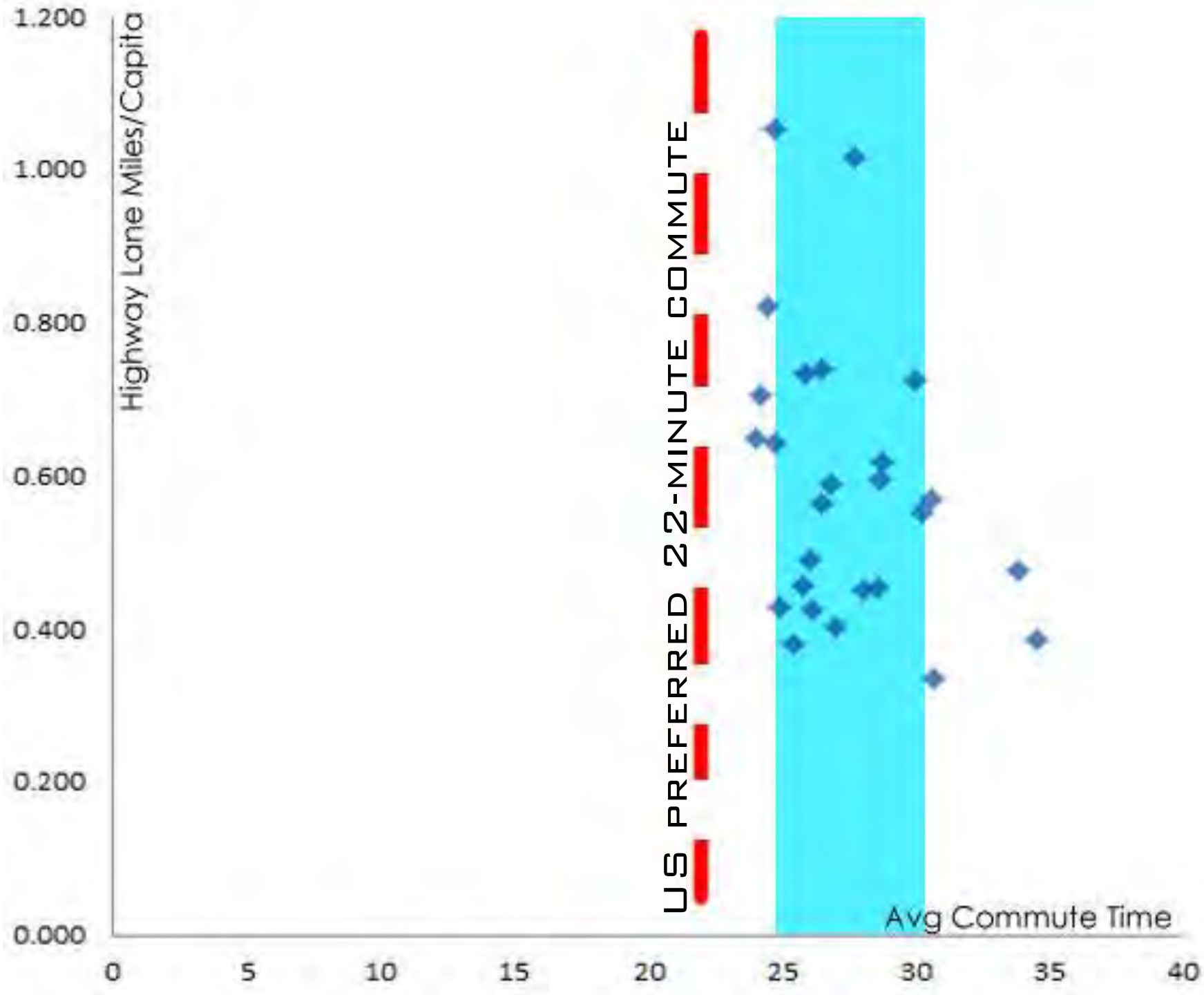
…and the entropy continues…



The Hour Wide City

…and neither does highway lane miles per capita.

We're not reducing congestion, but lengthening average trip length



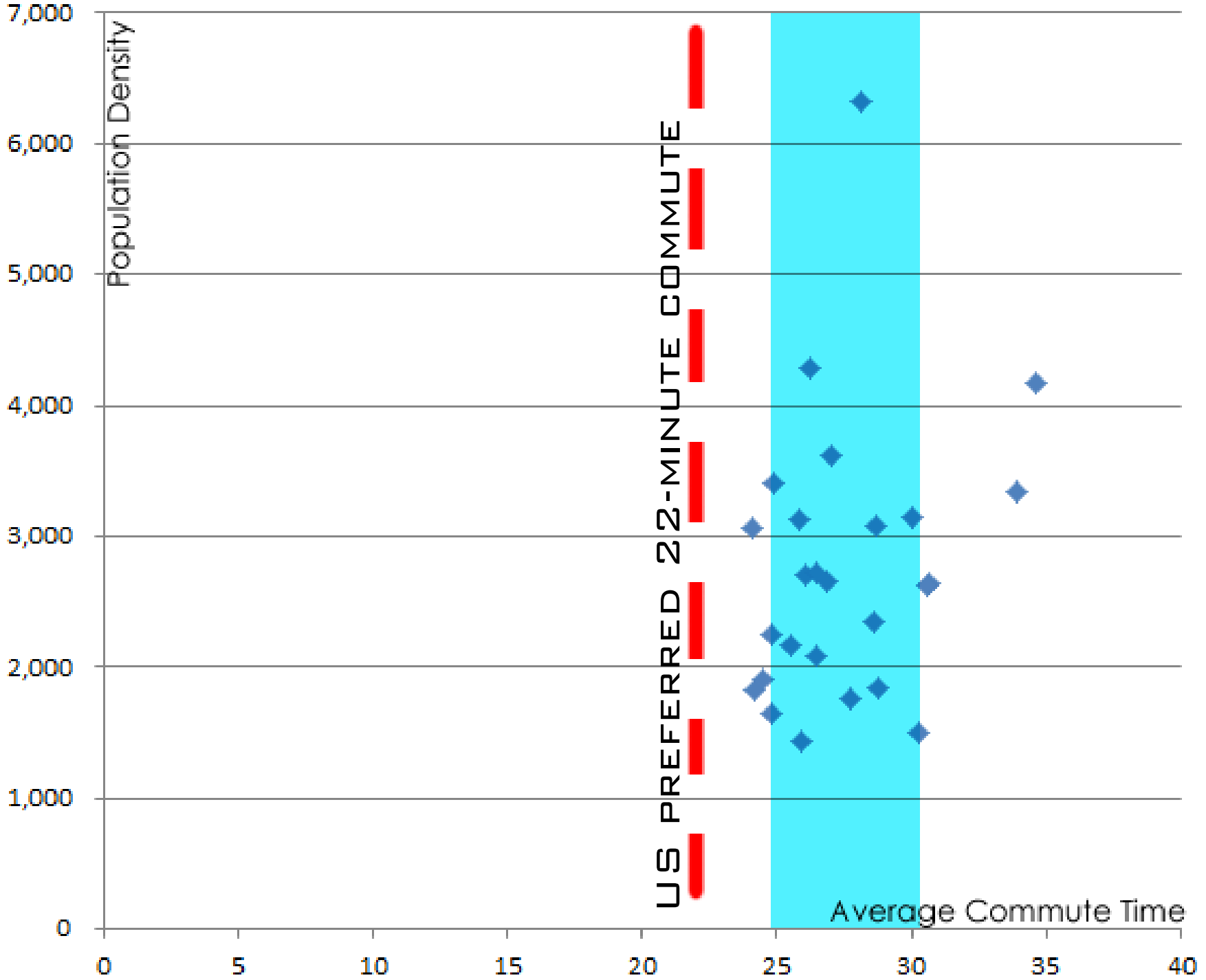
The Hour Wide City

Population Density has no effect on average commute times

Commute time is independent

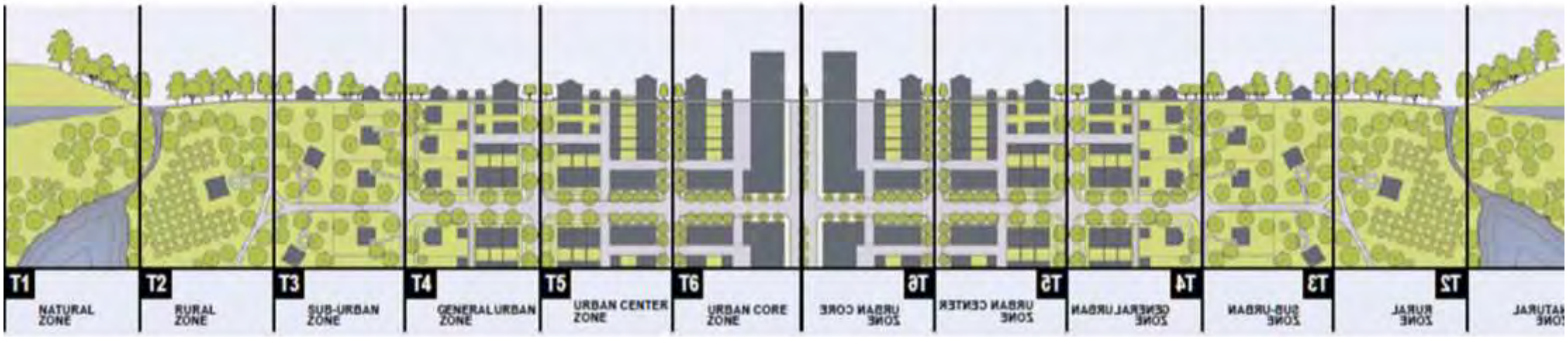
However, city form is dependent on travel speed.

Everything spreads out so as to be inconvenient for all other forms of travel besides the car.



Ironic Tragedy of Dallas...

built the most supply (1950s to 1980s)

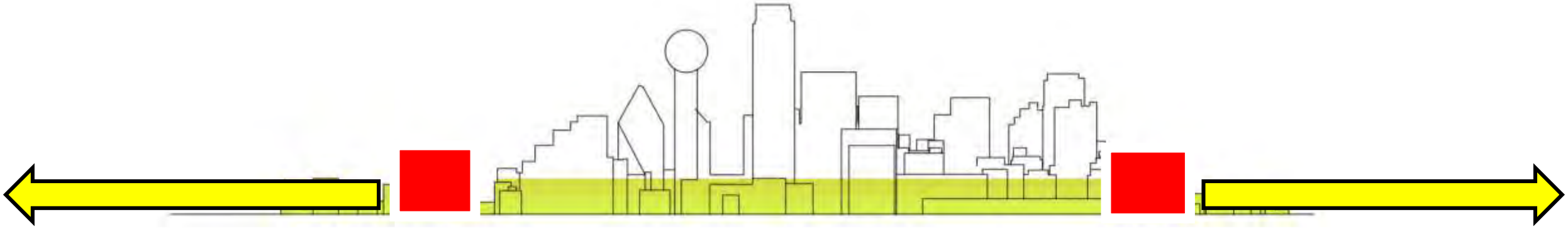


Ironic Tragedy of Dallas...

built the most supply (1950s to 1980s)

…at a time when we were stripping demand.

Building highways through downtown, unlocking new land, further afield, effectively made everywhere they touched, equally, poorly connected…resulting in low demand over an increasingly large area.



Inter-city(between) vs Intra-city(within)Highways

Jane Jacobs wrote that you need big infrastructure for big destinations, small networks for small destinations.

"**PRESIDENT EISENHOWER** went on to say that the matter of running Interstate routes through the congested parts of the cities was entirely against his original concept and wishes;

that he never anticipated that the program would turn out this way . . . and that he was certainly not aware of any concept of using the program to build up an extensive intra-city route network as part of the program he sponsored. He added that those who had not advised him that such was being done, and those who steered the program in such a direction, had not followed his wishes."

NOTES FROM MEETING - APRIL 6TH, 1960
EISENHOWER PRESIDENTIAL LIBRARY ARCHIVES

Inter-City Highways

Shorten time between metros (HSR, Air)

Appropriate place

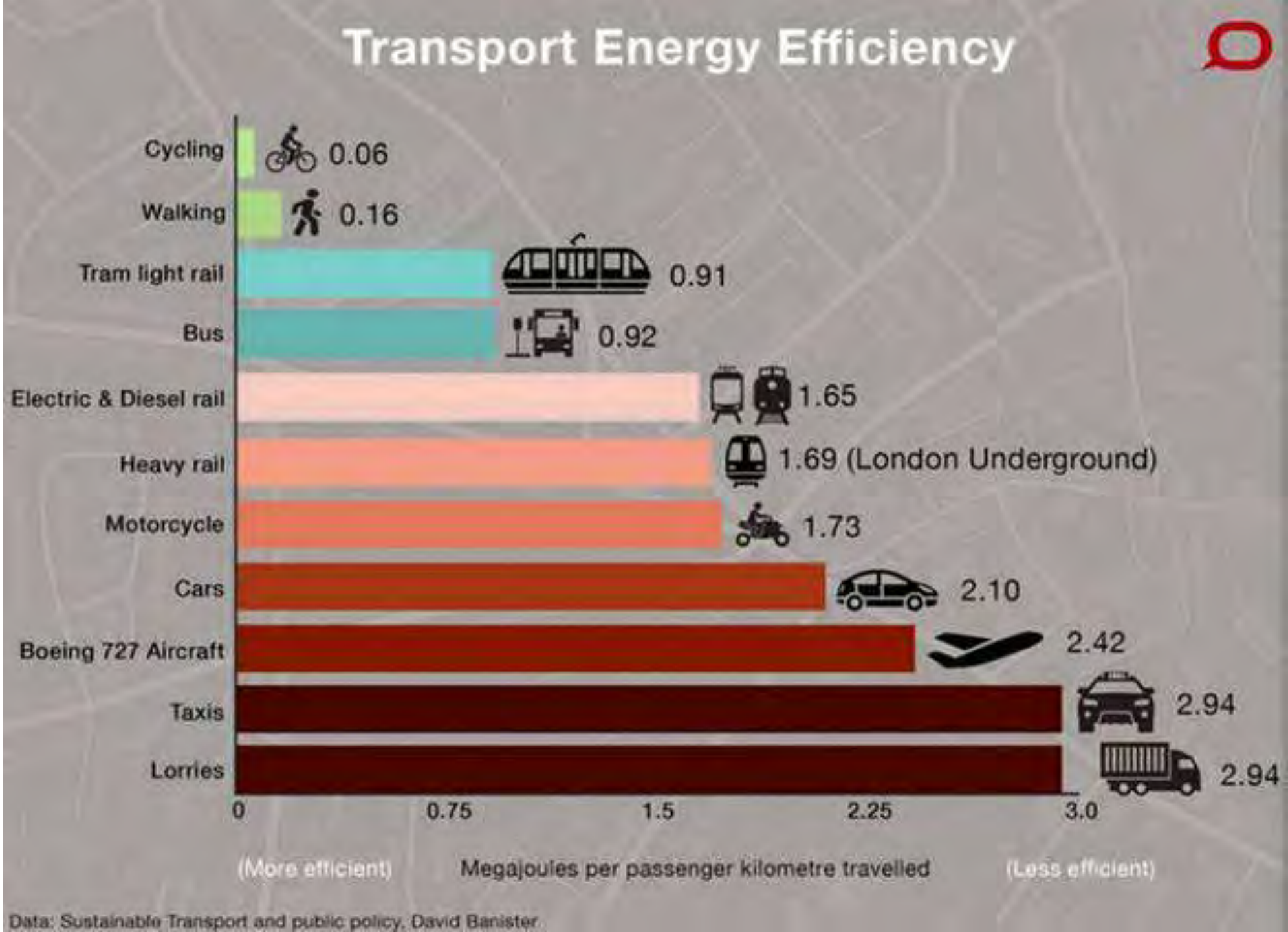
Appropriating Infrastructure

Choice, Overlap,
& Best Infrastructure
for Best Distance

If 99% of resources is invested in one, 99% of trips are likely to be by that mode...

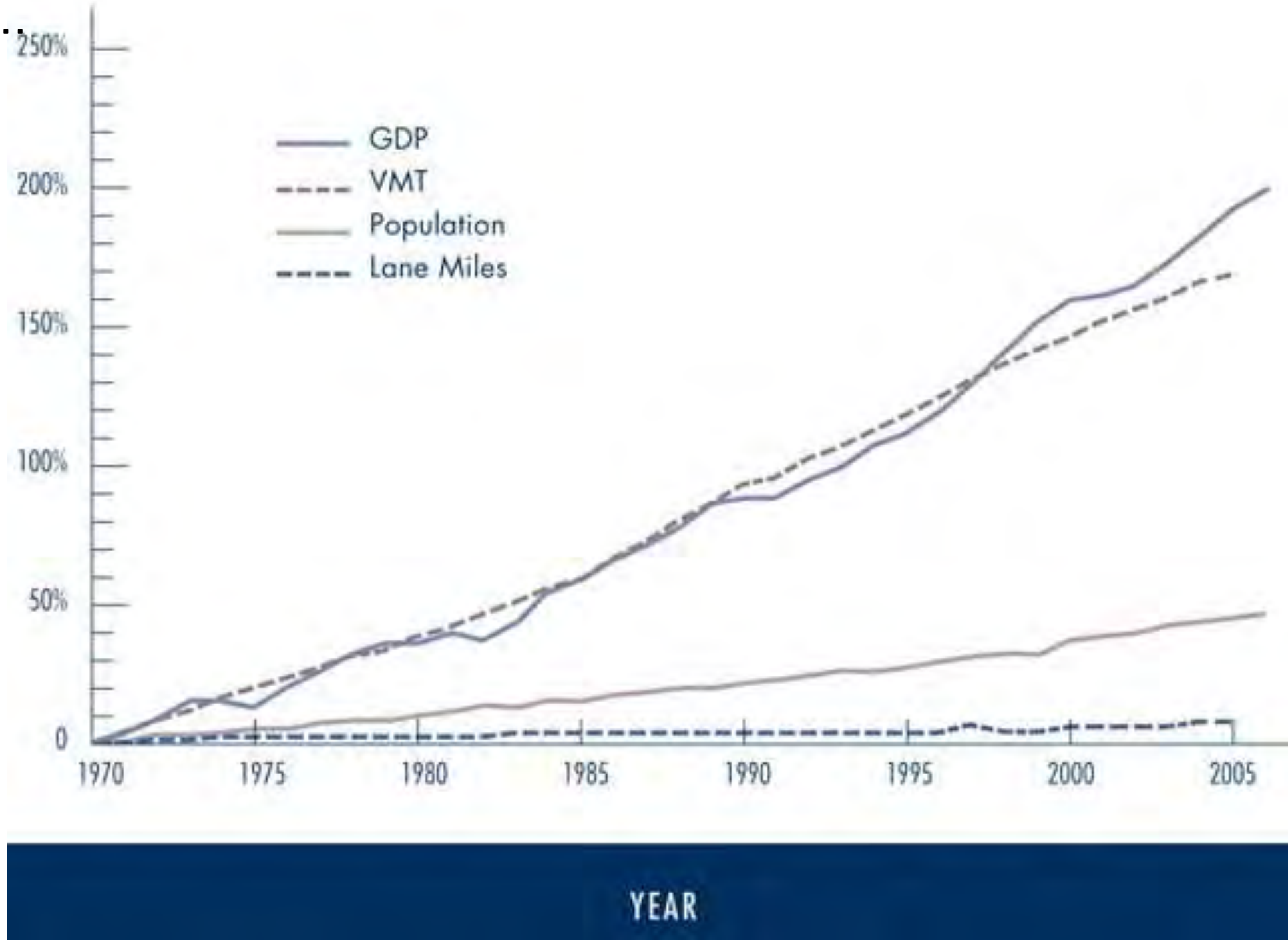
Appropriating Infrastructure

Just so happens that is the least efficient way to get around.



Theory for Why...

Correlation =/= Causation

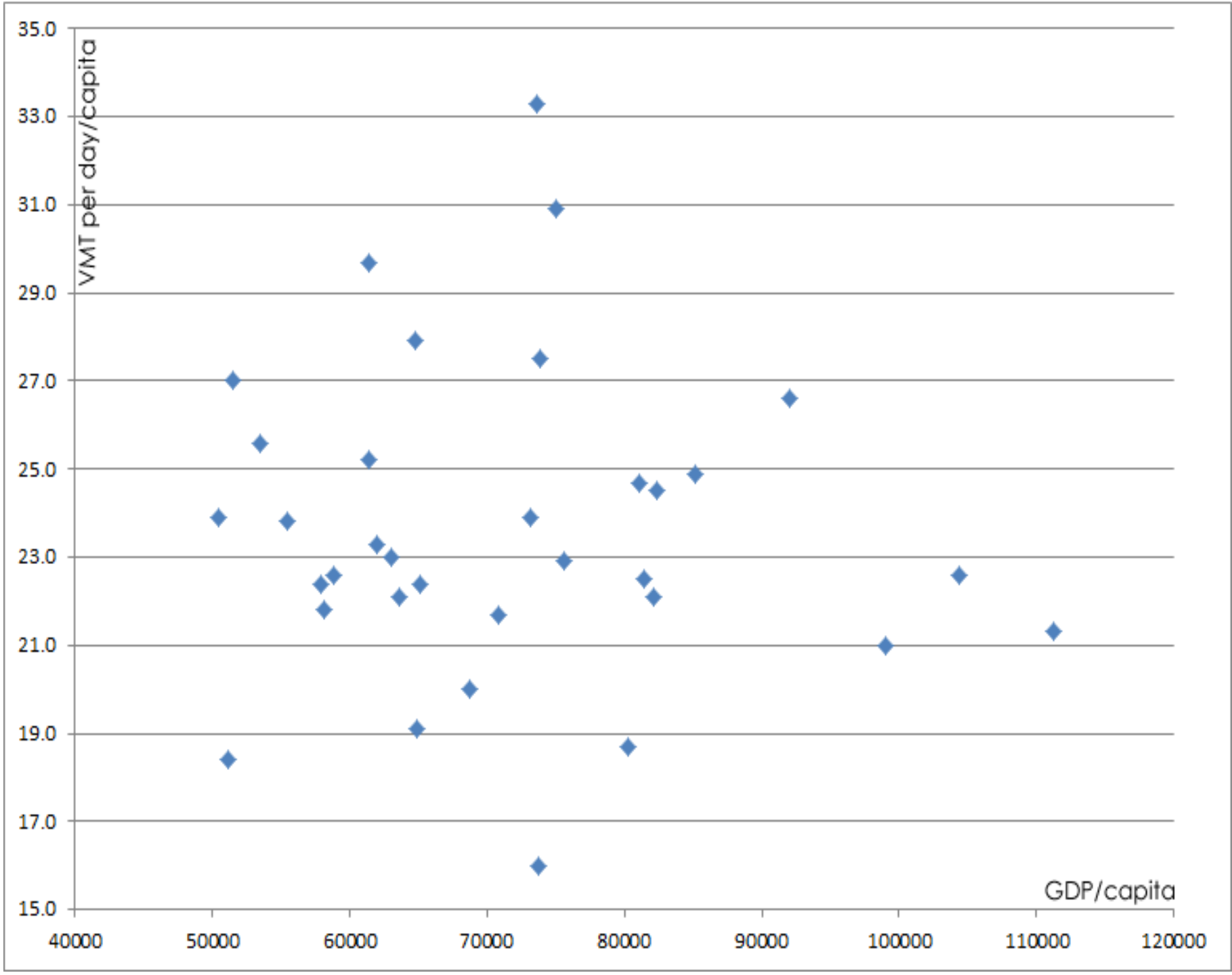


VMT:
Lagging Indicator

City to City there is zero relationship
Between GDP and VMT

Prosperity led to waste, a leading indicator of future hardship?

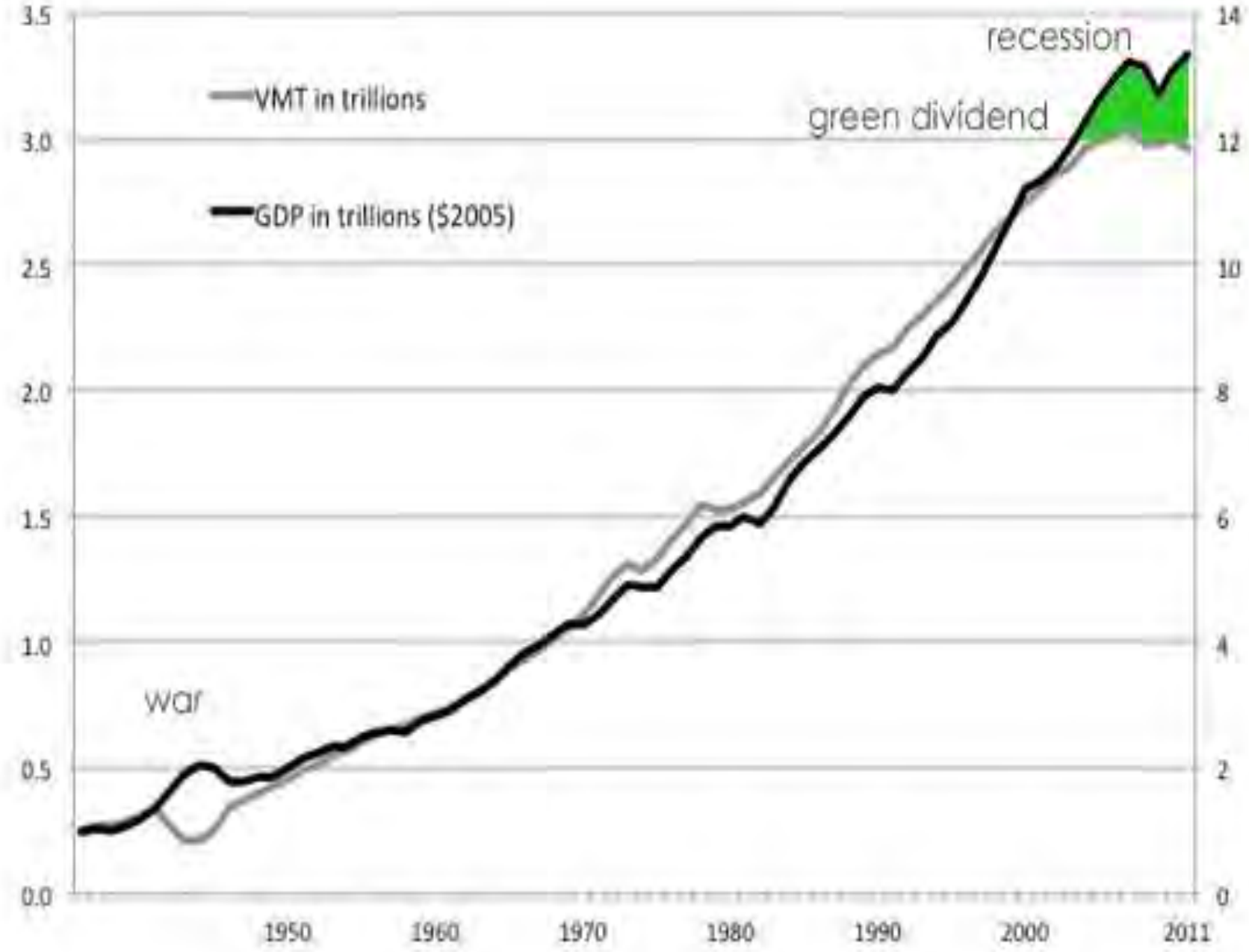
The cities that can achieve high degree Of connectivity without high level of driving…



Interesting Recent Phenomenon

VMTs are trending down

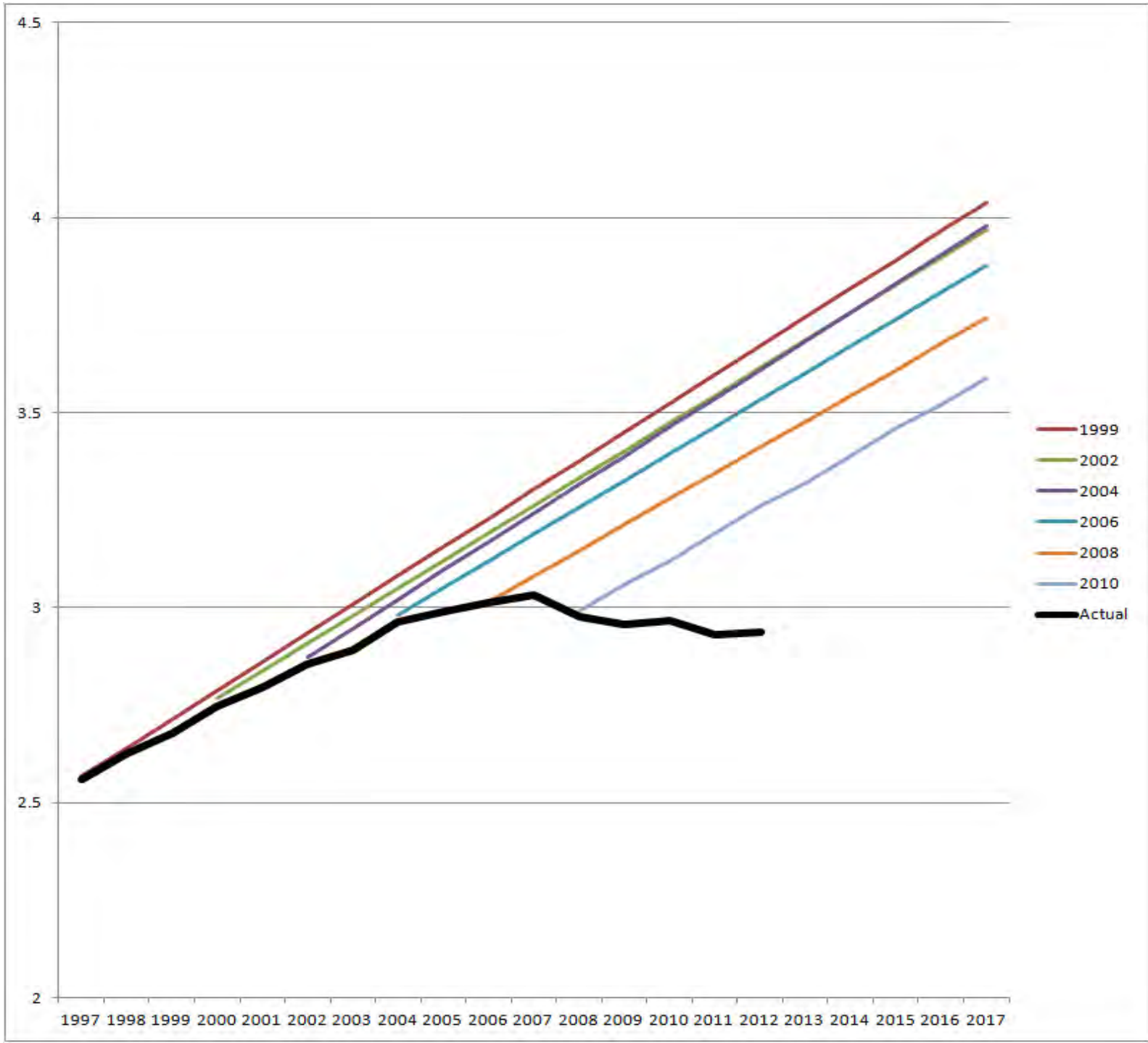
Despite the 2008 recession, GDP is rising again while no longer tethered to VMT



USDOT VMT Projections Against All Evidence...

And so we project upward trends of VMT despite all evidence to the contrary because we correlate increased driving with increased economic growth…

…but what about waste?



The Invisible Hand

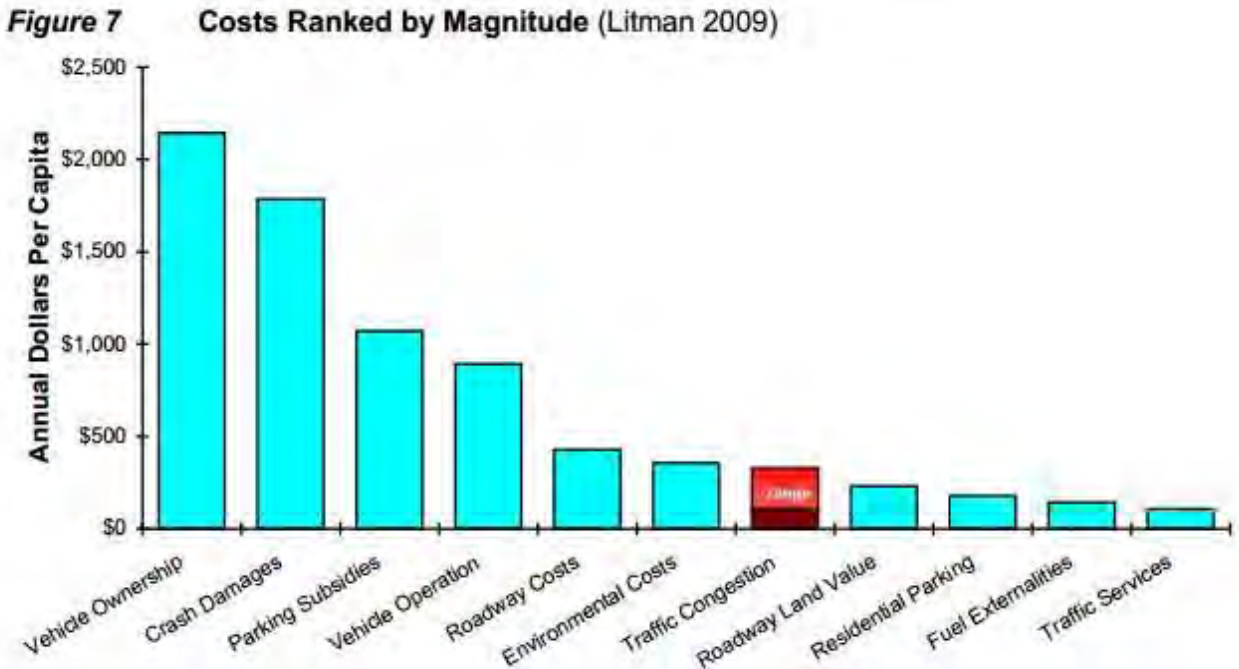
Land use patterns (form and density) follow public spending

Where the invisible arm (infrastructure) and the invisible brain (public policy) tell it to go.

Long-term Land Use Impact:
Upward Pressure (Greenfield) vs. Downward Pressure (core)

Economic Development occurs, but in a Cannibalistic and Unsustainable Fashion

Costs of congestion per capita...



Fear of Congestion

Congestion costs the country $120 billion each year.

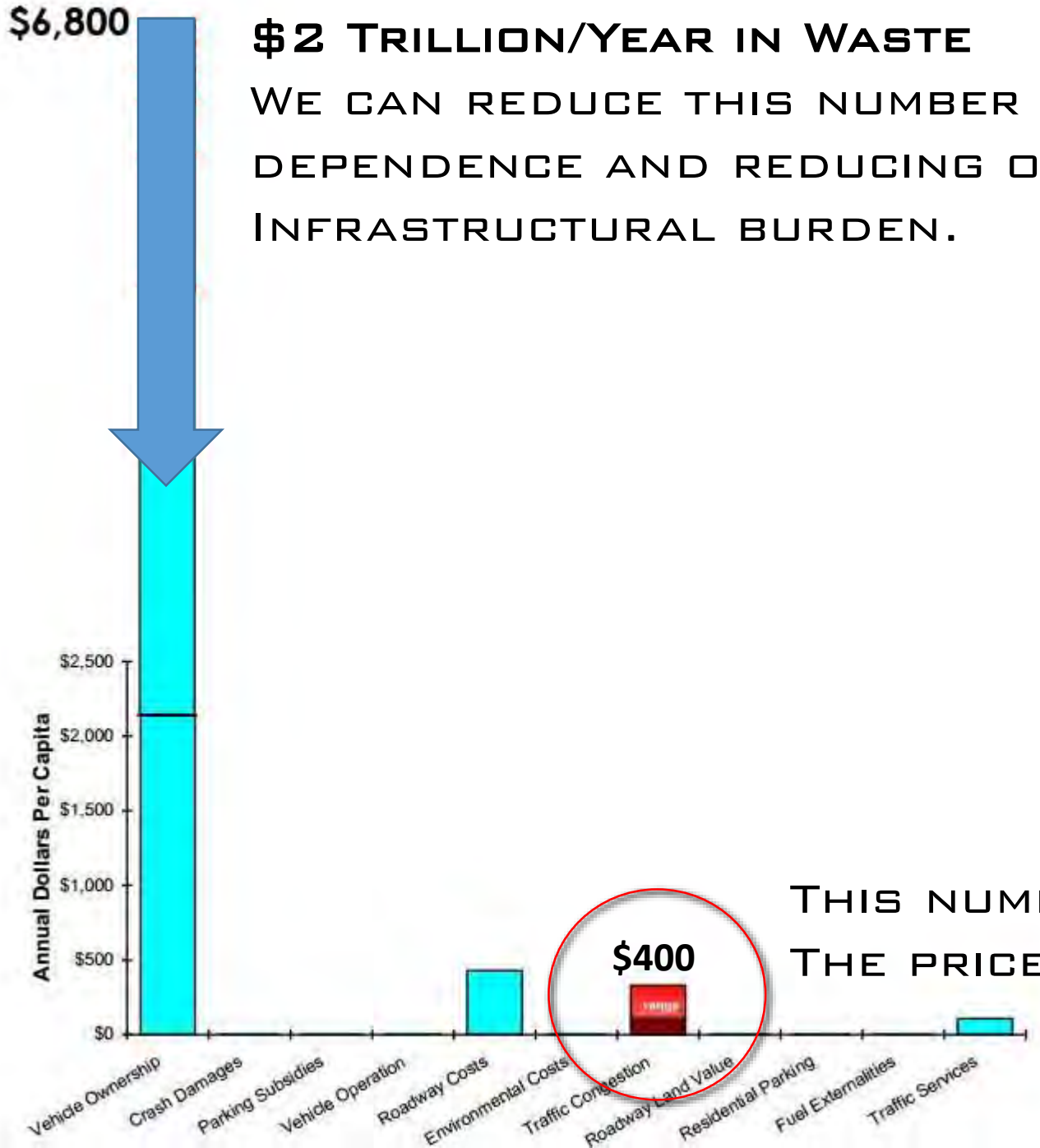
That seems like a big number.

…but what if we add up the costs of car dependence?

Source: Todd Litman, VTPI

$2 Trillion/Year in Waste

We can reduce this number by diminishing car-dependence and reducing over-built, wasteful Infrastructural burden.



Defining Congestion

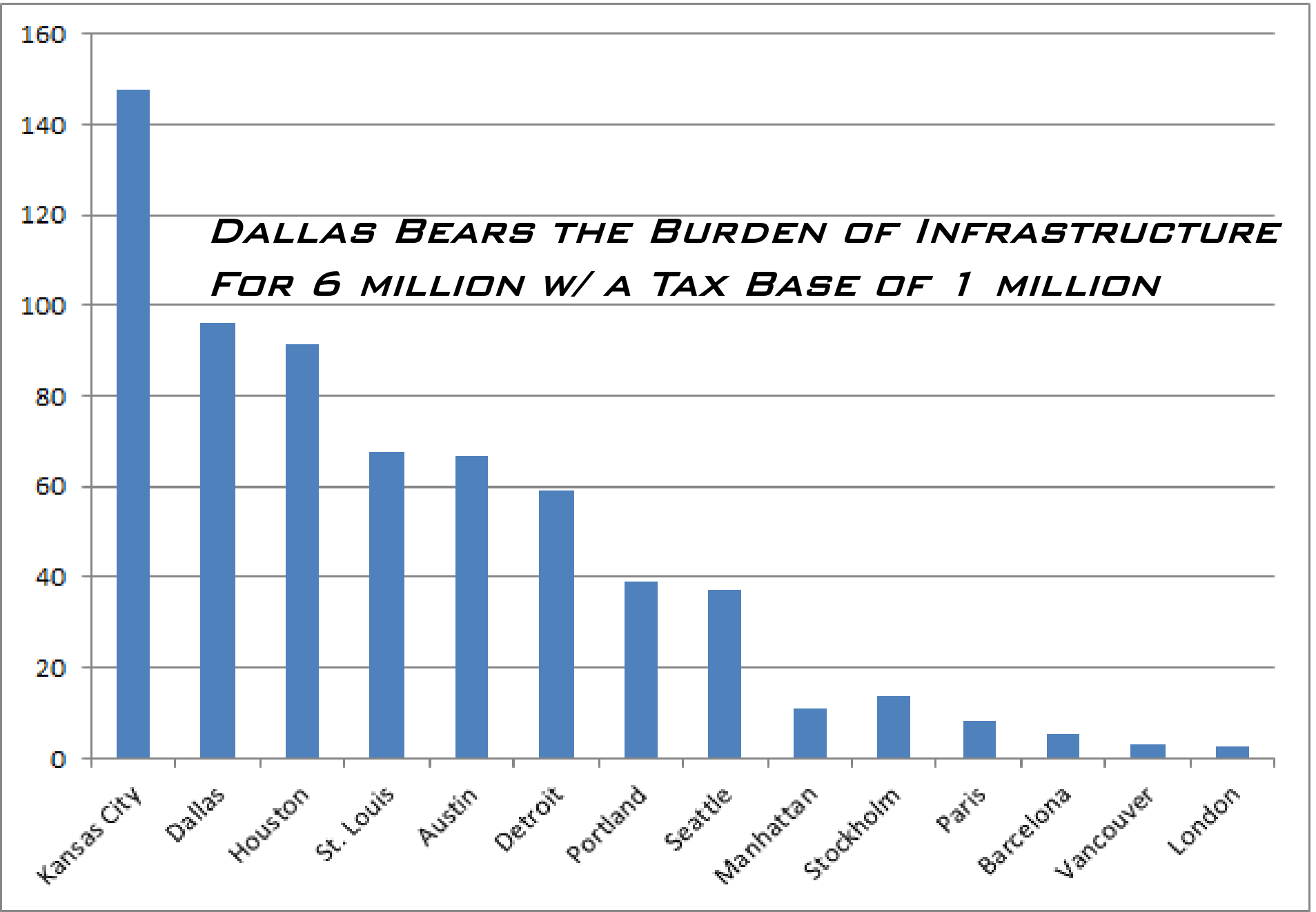
There is good and bad kind, like cholesterol. Social and economic exchange is predicated on people coming together.

When everybody is in cars funneled to certain arterials and highways, reducing modal and route choice, while degrading the quality of place, it is the bad kind.

City is the platform, but we're building Anti-City.

This number is constant across all cities. The price of doing business.

...So? Infrastructure burden to Tax Base Imbalance



City within the region

Hwy lane miles per 100,000 –

Kansas City: 147.74
Dallas: 96.38;
Houston: 91.41

St. Louis: 67.54
Austin: 66.53
Detroit: 59.31;

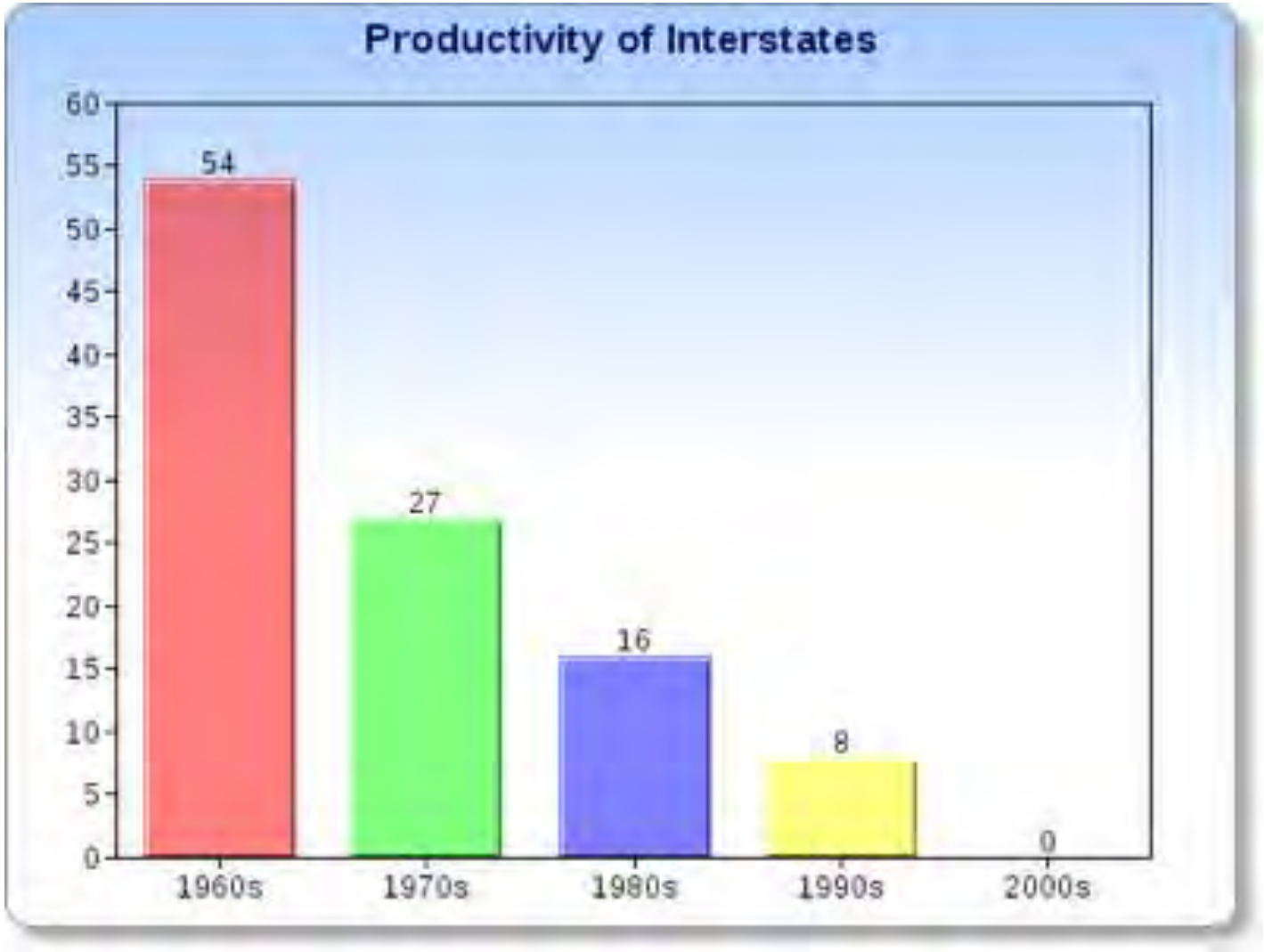
Portland: 38.84;
Seattle: 37.27

Manhattan: 10.83

Stockholm: 13.72
Paris: 8.15;
Barcelona: 5.38
Vancouver: 3.13
London: 2.37;

Externalized Costs

University of Minnesota Study – diminishing ROI



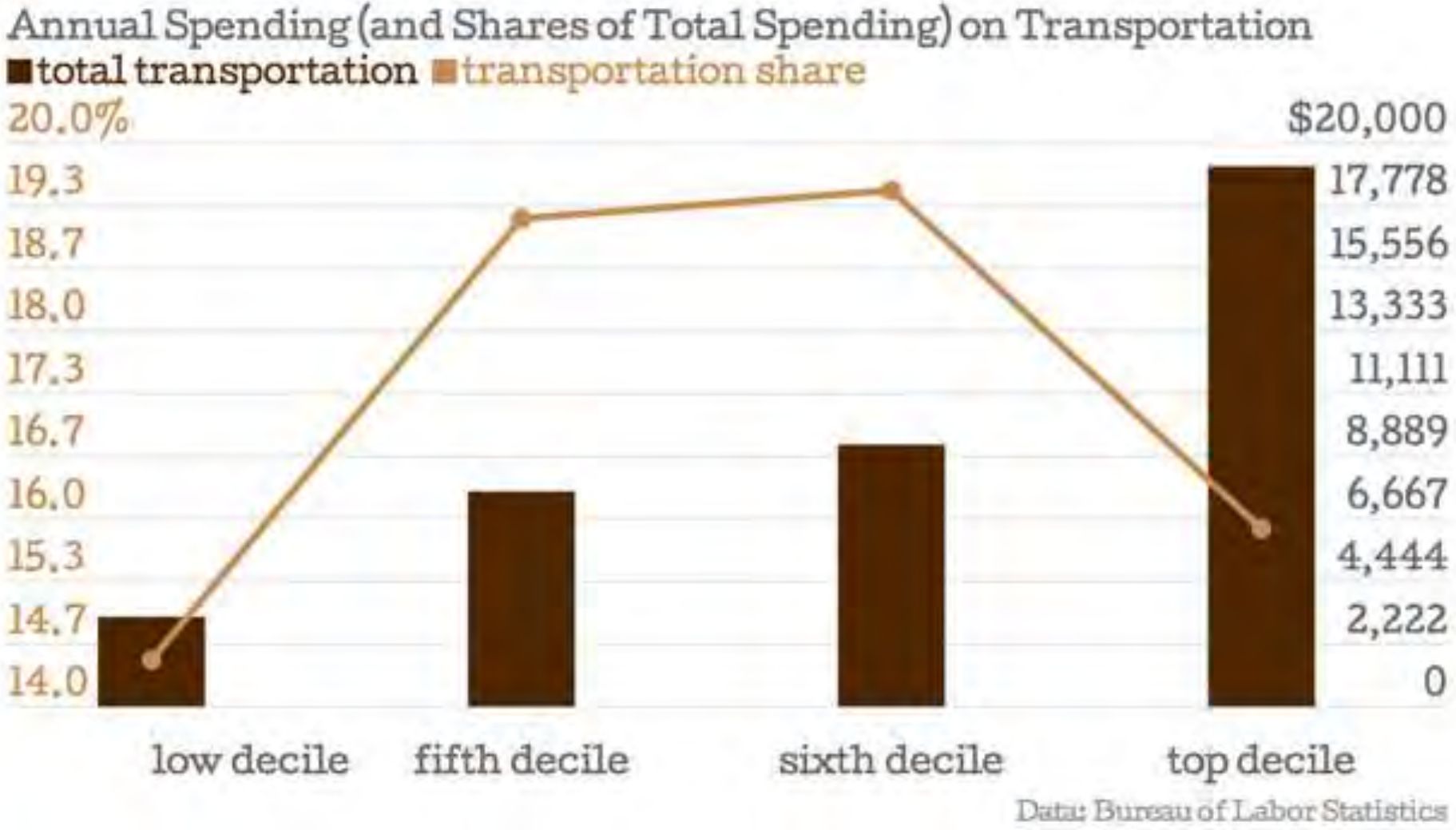
PERIOD	NET RATE OF RETURN
1949-1950	0.554
1960-1969	0.480
1970-1979	0.298
1980-1989	0.212
1990-2000	0.136

Necessity of Value

High public sector infrastructure spending

=

High private sector Transportation spending



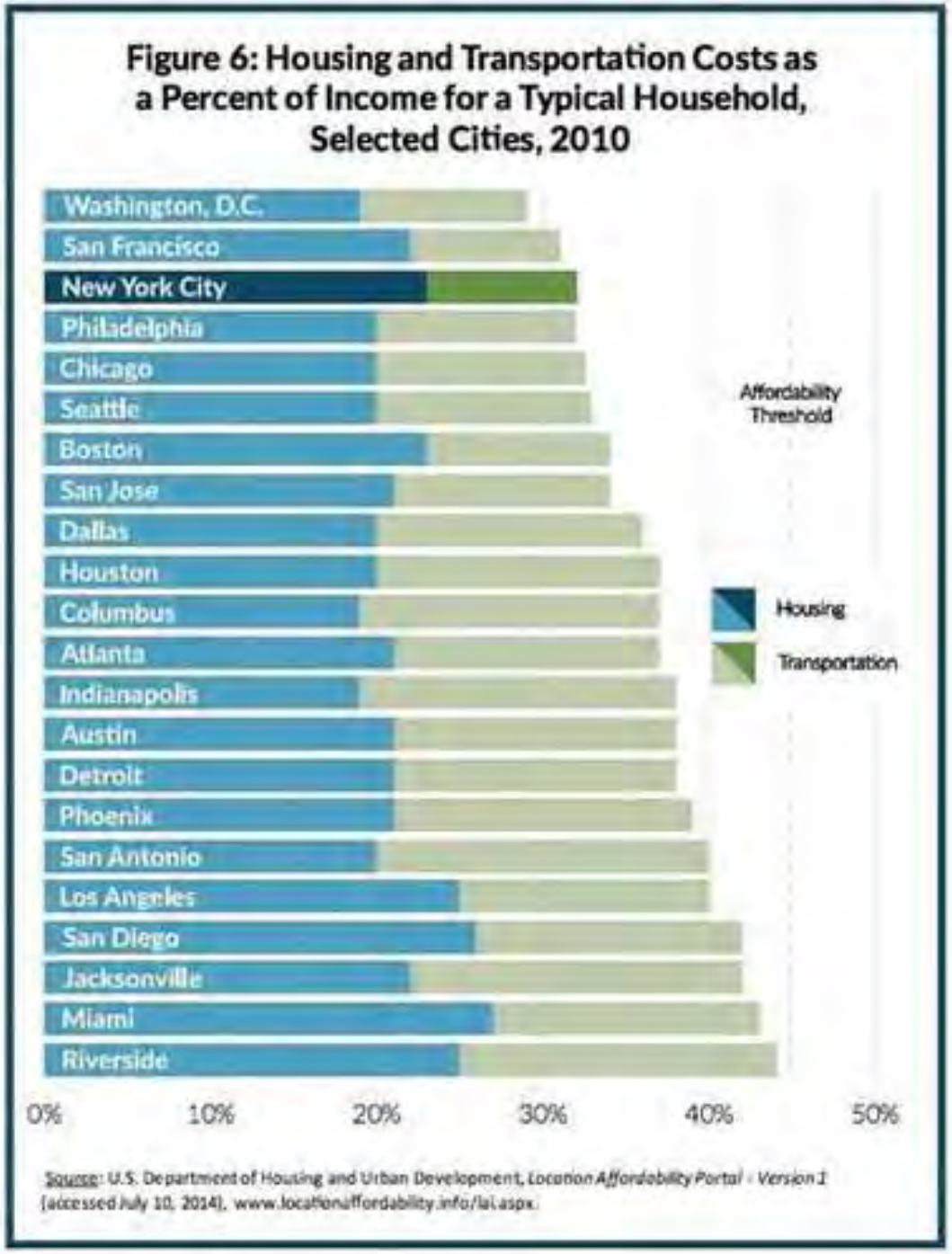
Affordability

When Looking at Strictly Housing, Much of DFW looks affordable
...but few of us are Hermits

When Adding Transportation, Nearly all of city costs about half of Income

Cities with High Housing Costs are Often more affordable to live in.

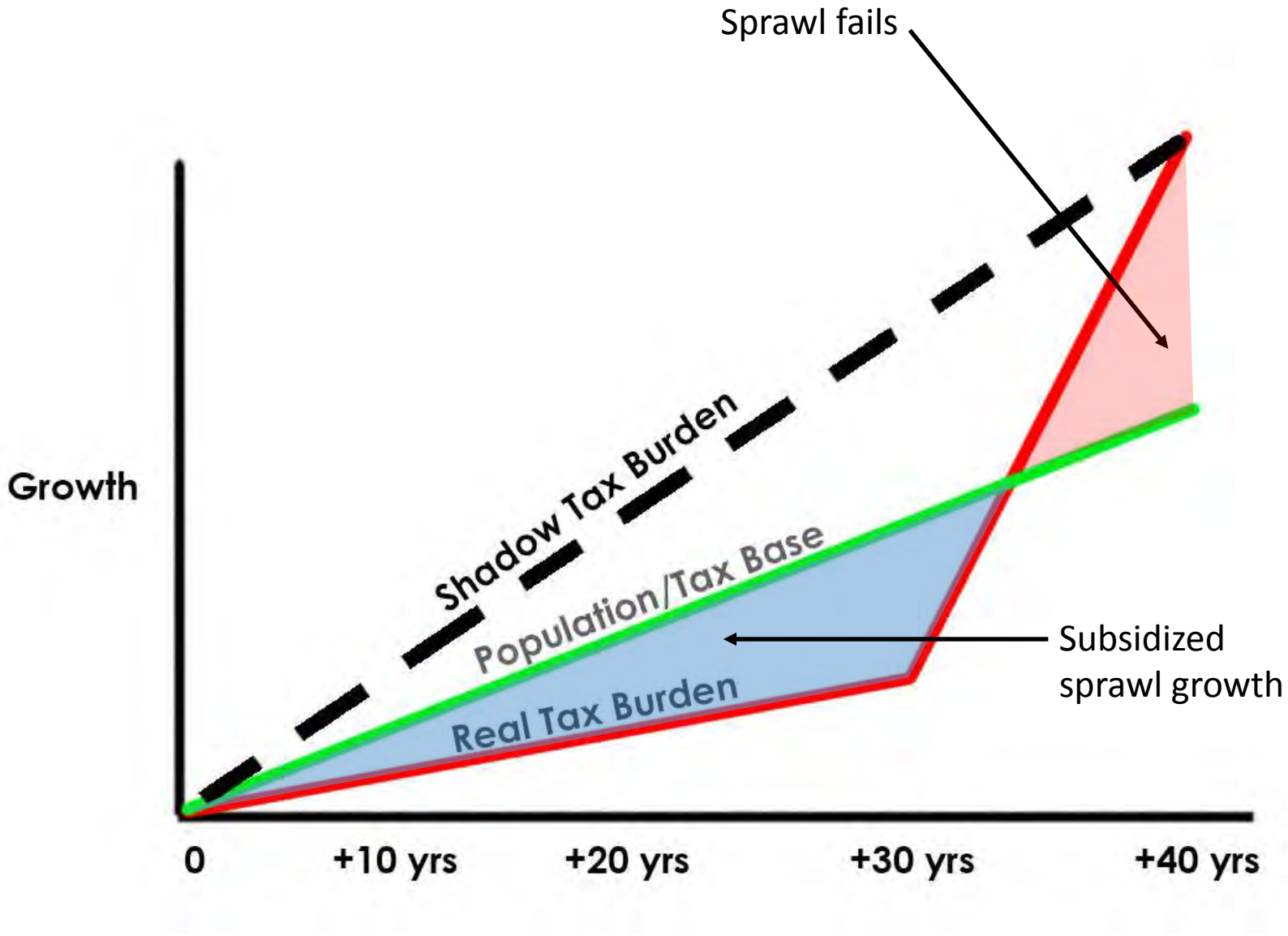
COUNTER-INTUITION: High Land Value makes for Greater Affordability



Illusion of Growth

Found that the "economic Development" associated with New Greenfield infrastructure took 40-50 years in tax base to pay off 30 year infrastructure.

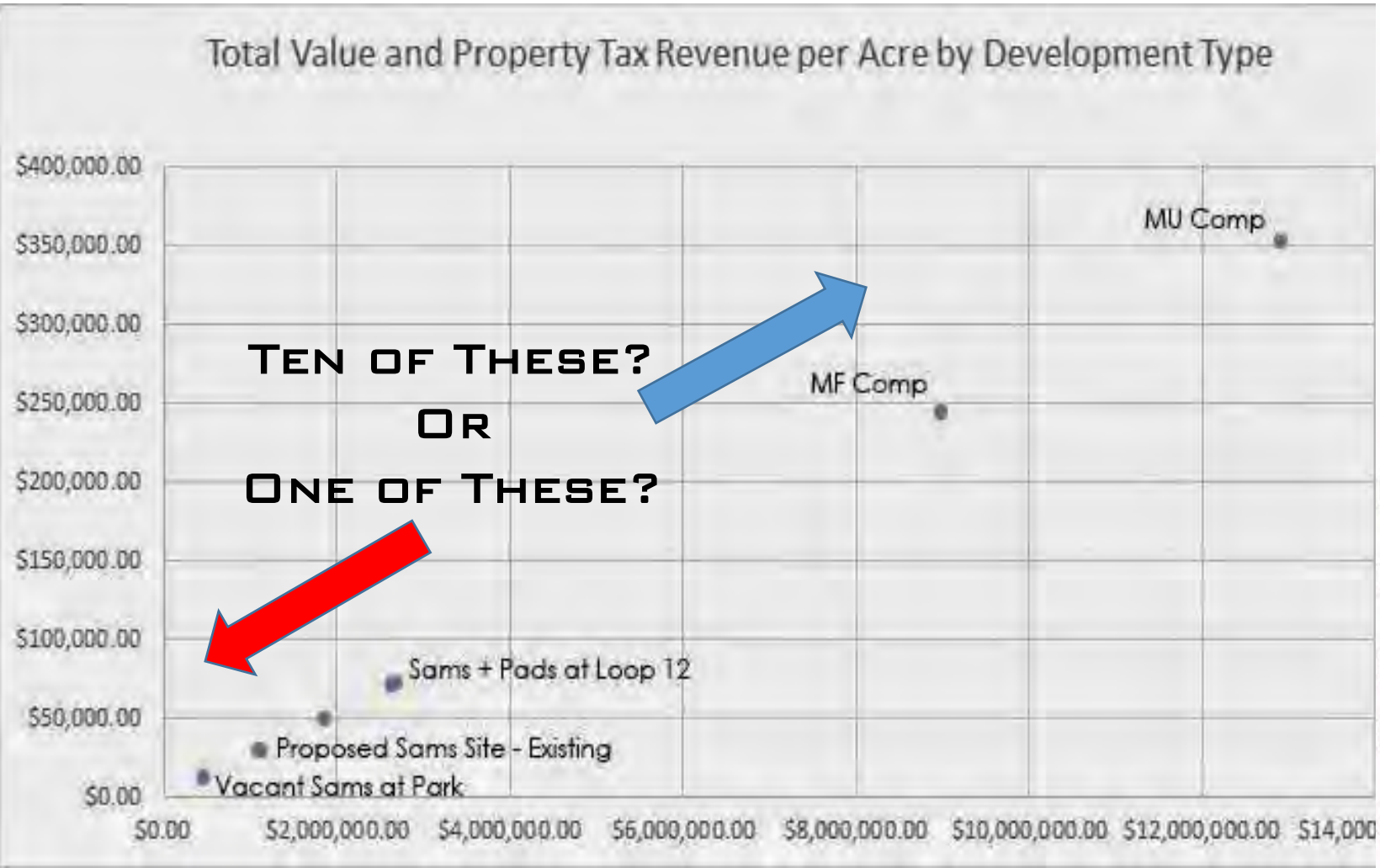
Economic Development was Happening, But it was net negative



Best Case Scenario for Car-Dependent Urban Devolution:

When building Car-Dependent Infrastructure you Get car-Dependent Development

Opportunity Cost of Not Having Higher Value, Mixed-Use Walkable Urban Neighborhoods?



Places that Drive more...Spend More to do so

Houston: 95% of trips by motor vehicle;
14% of metro GDP spent on transpo.

Copenhagen: 54%/4%.

10% gap = waste.

The more a city drives, the more it wastes. Every trip is a punitive tax, simply to participate in the local economy.

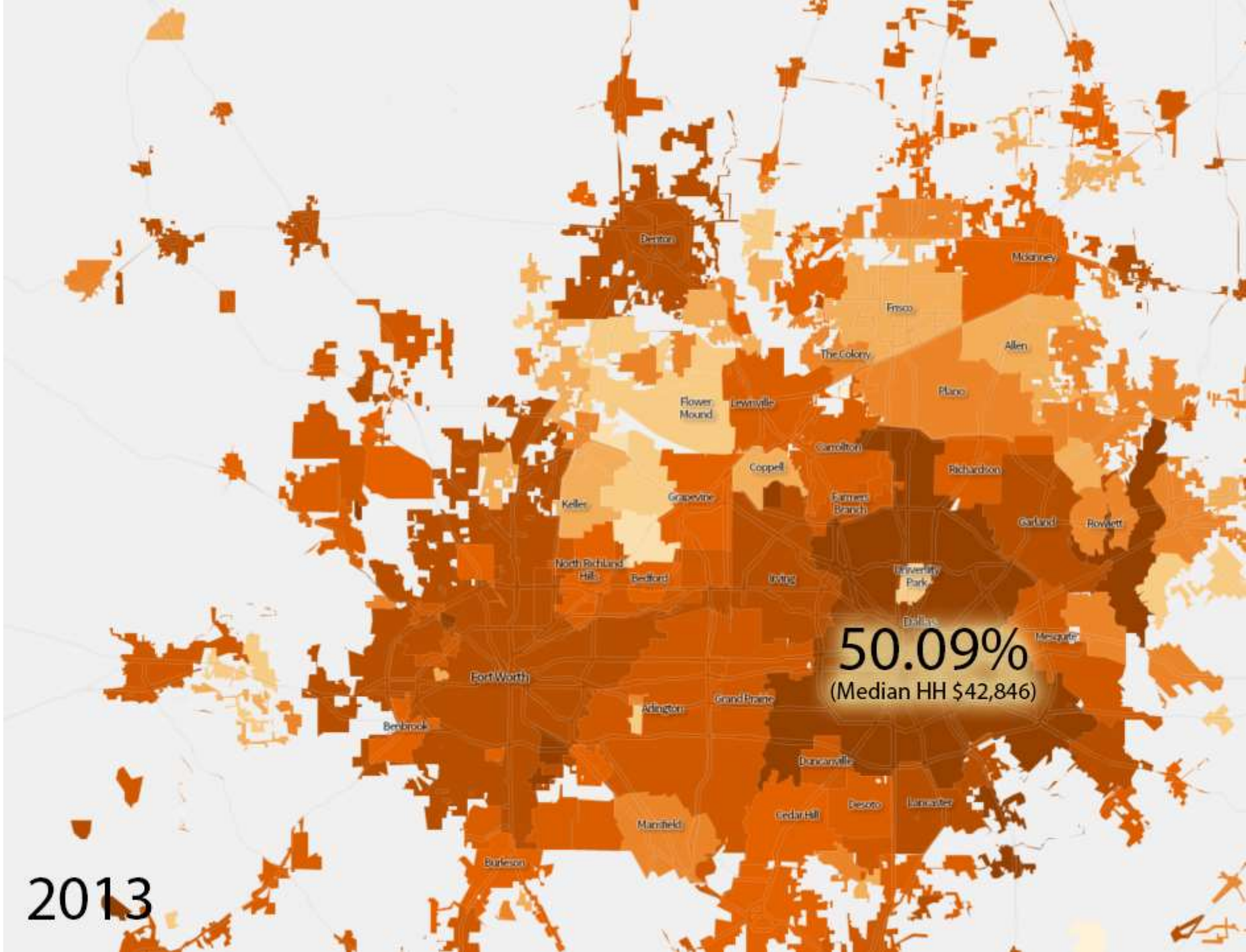
Is less commerce happening? No. People will always still meet their wants and needs. It's ***the buildings, uses, and demand for proximity that relocalizes.***

$3.87 Billion could stay in local economy if ½ of Dallas households found it convenient and economical to give up one car.

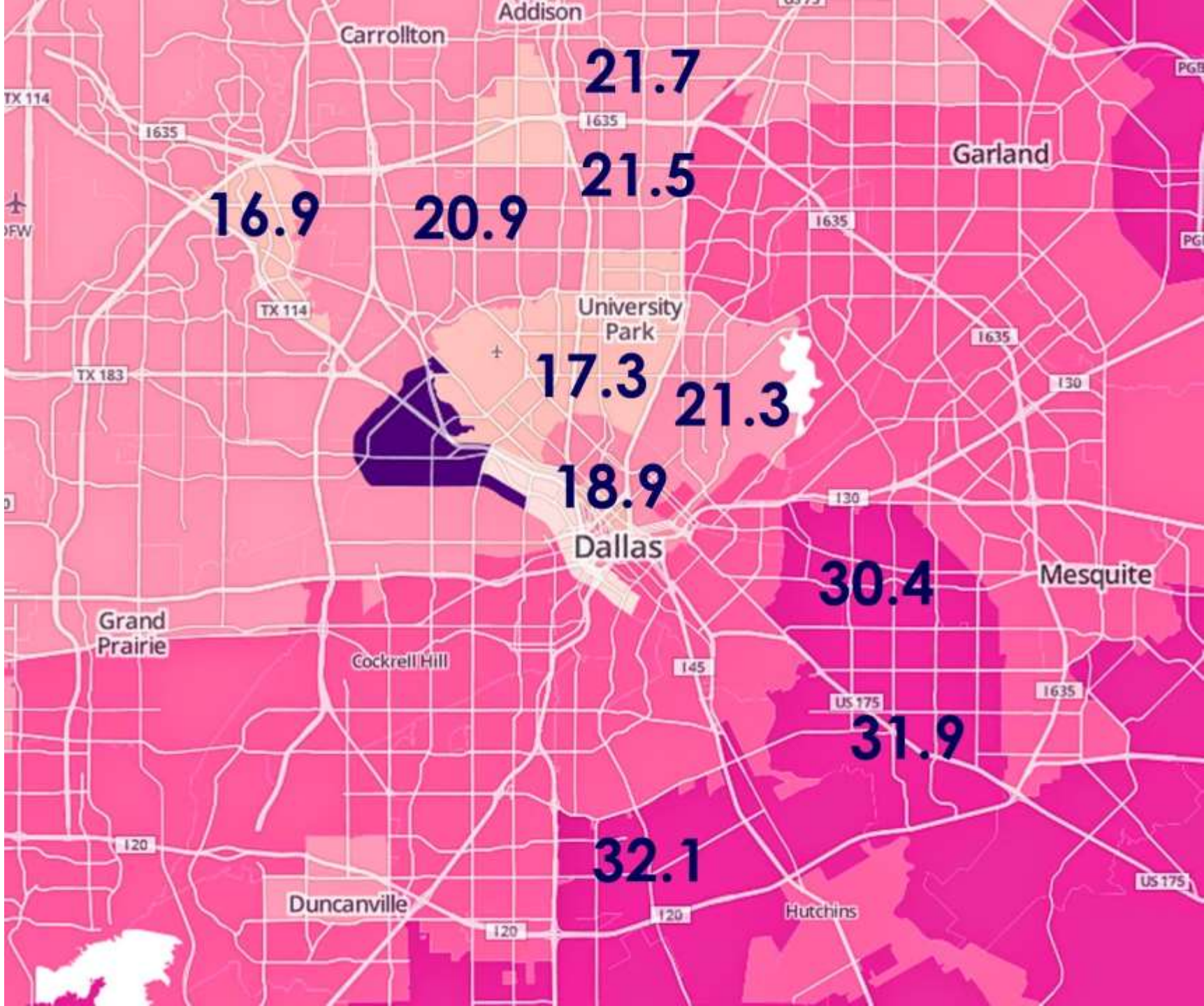
Struggling

Dallas 3rd in poverty + struggling
Only ahead of Detroit and Memphis

Systematic bankrupting of public and private sector



Average Commute Length by Census Tract

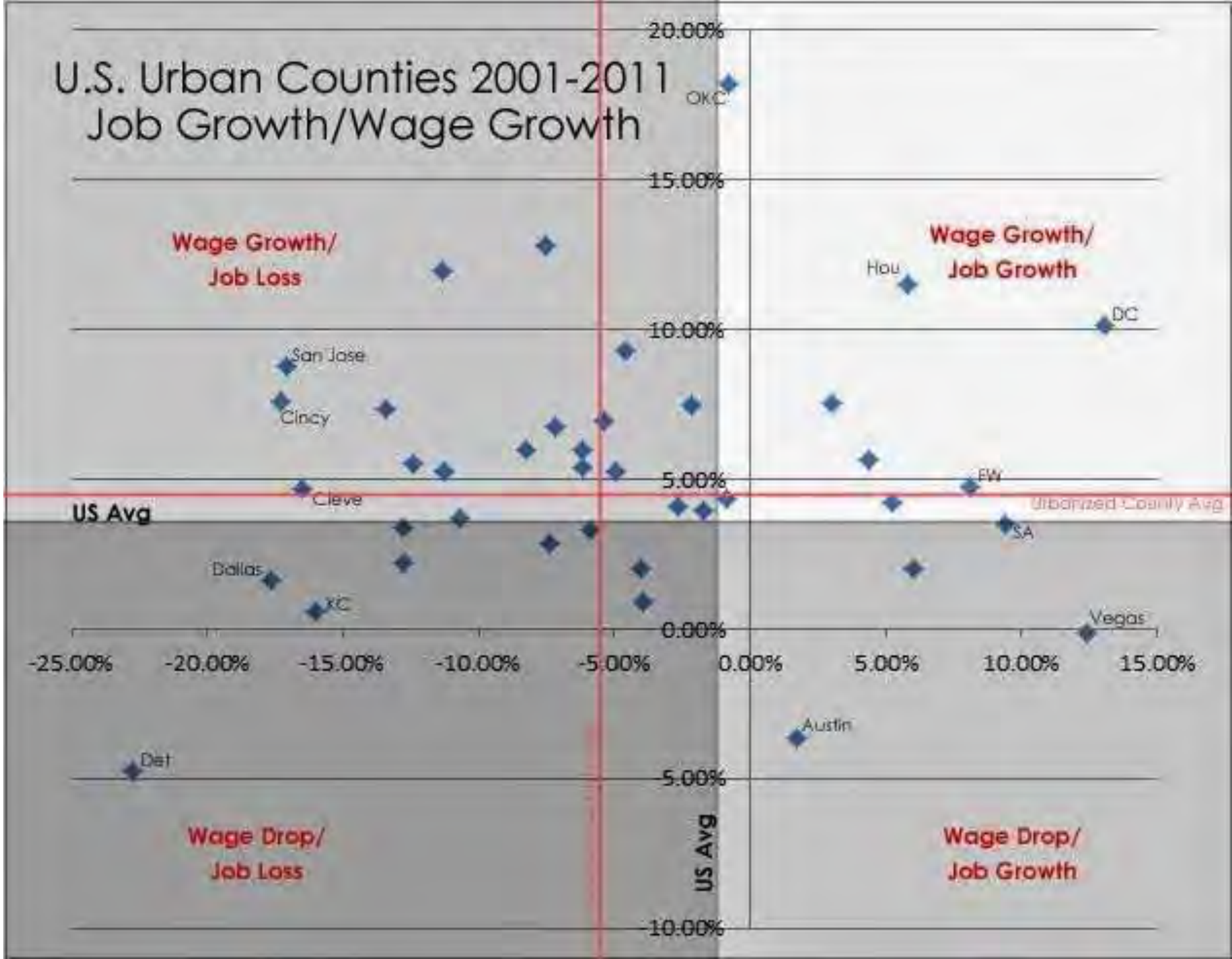


The Lost Boom?

According to US Dept of Commerce Census Data:

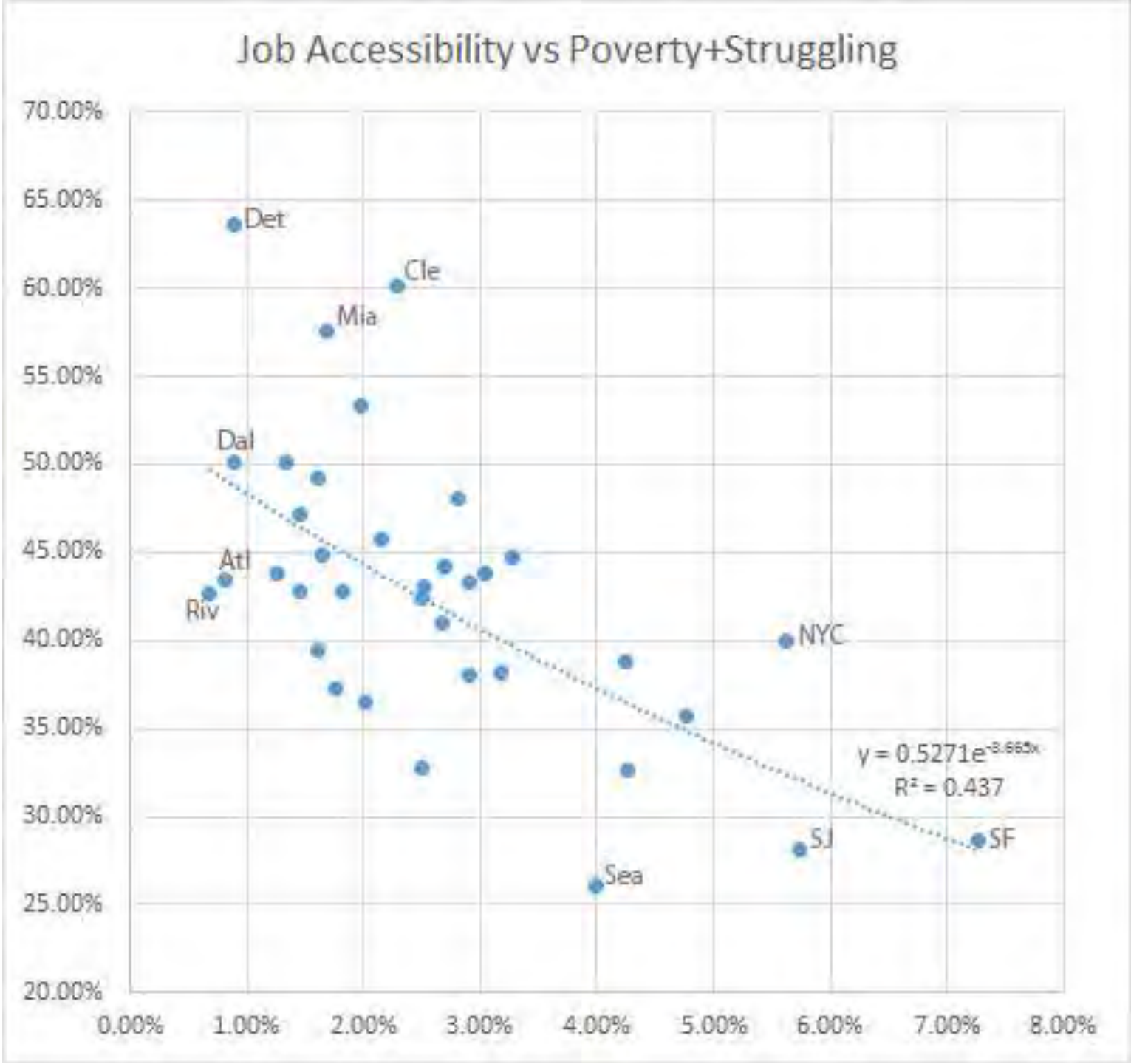
Dallas County Lost 266,000 jobs over a ten year span.

Also not keeping up in terms of Wage Growth



Necessity of Density

Makes Transit work

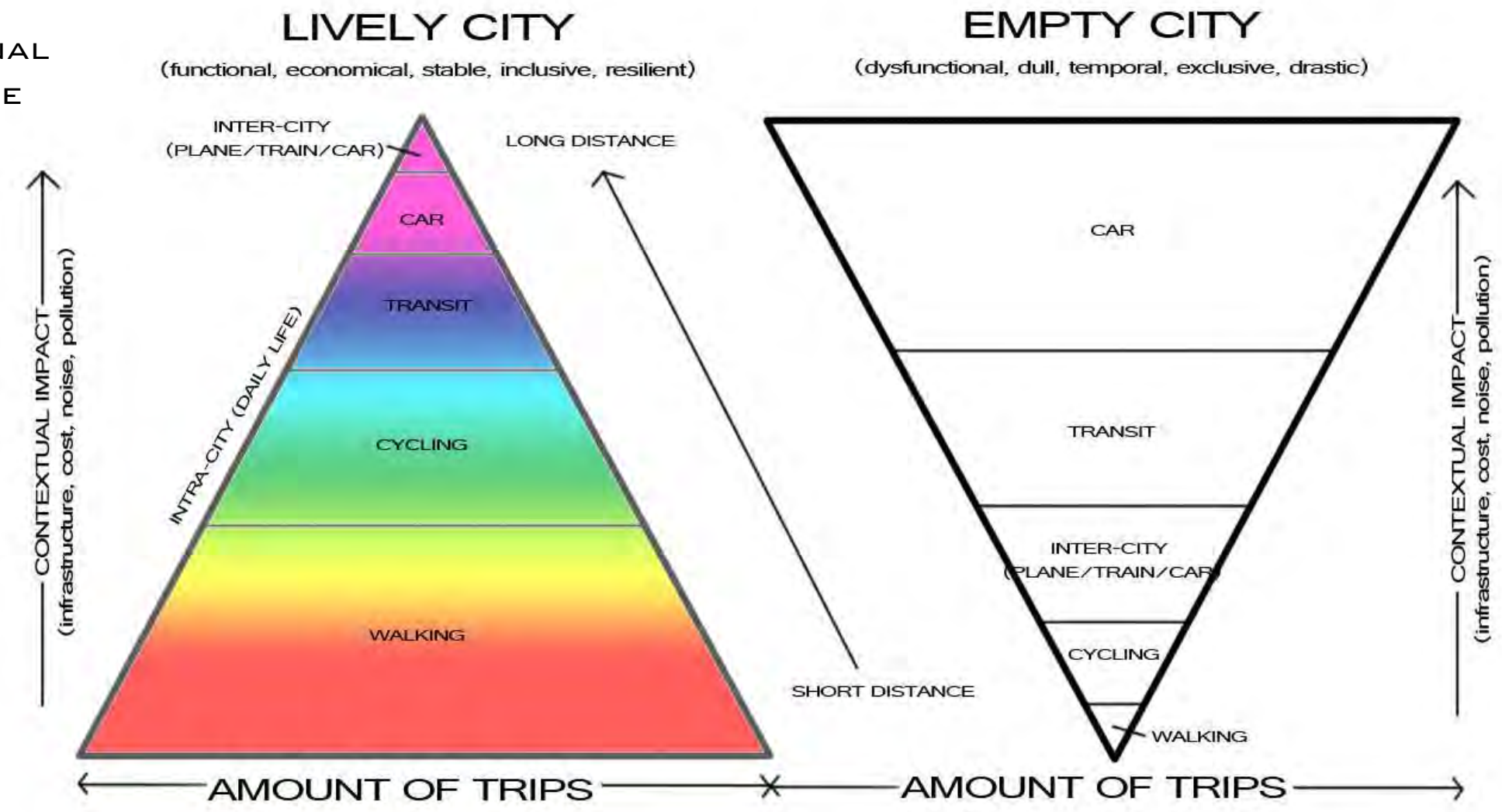


Efficient Infrastructure

Vast majority of investment is in regional highway infrastructure

Therefore, the market responds

In effect, subsidizing congestion



Demise of Regionalism

Internet

While internet doesn't fully replicate interpersonal human interaction, internet can replace many regional and global trips

...so stop investing so much in it.

21st Century City

Rise of Local + Global

And the new
infrastructure,
less impactful

Local physical, digital
global

Low impact 'Heavy' Infra
Regional
(Rail, highways outside city
core)

inter-regional (Airport)

Value of Proximity

Propinquity

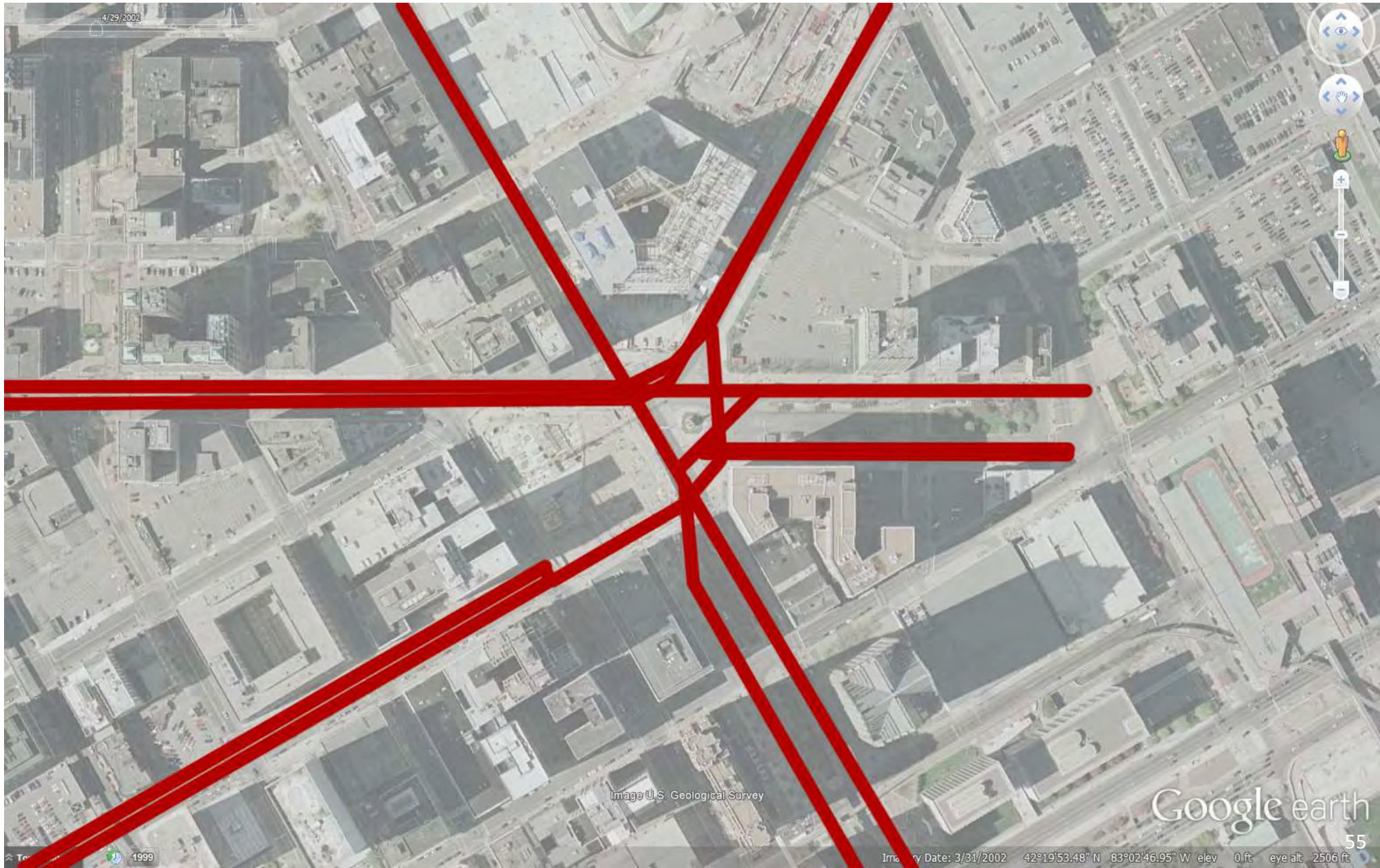
Premium of Walkability

Re-Thinking Infrastructure

Campus Martius
Detroit, MI

Re-Thinking Infrastructure

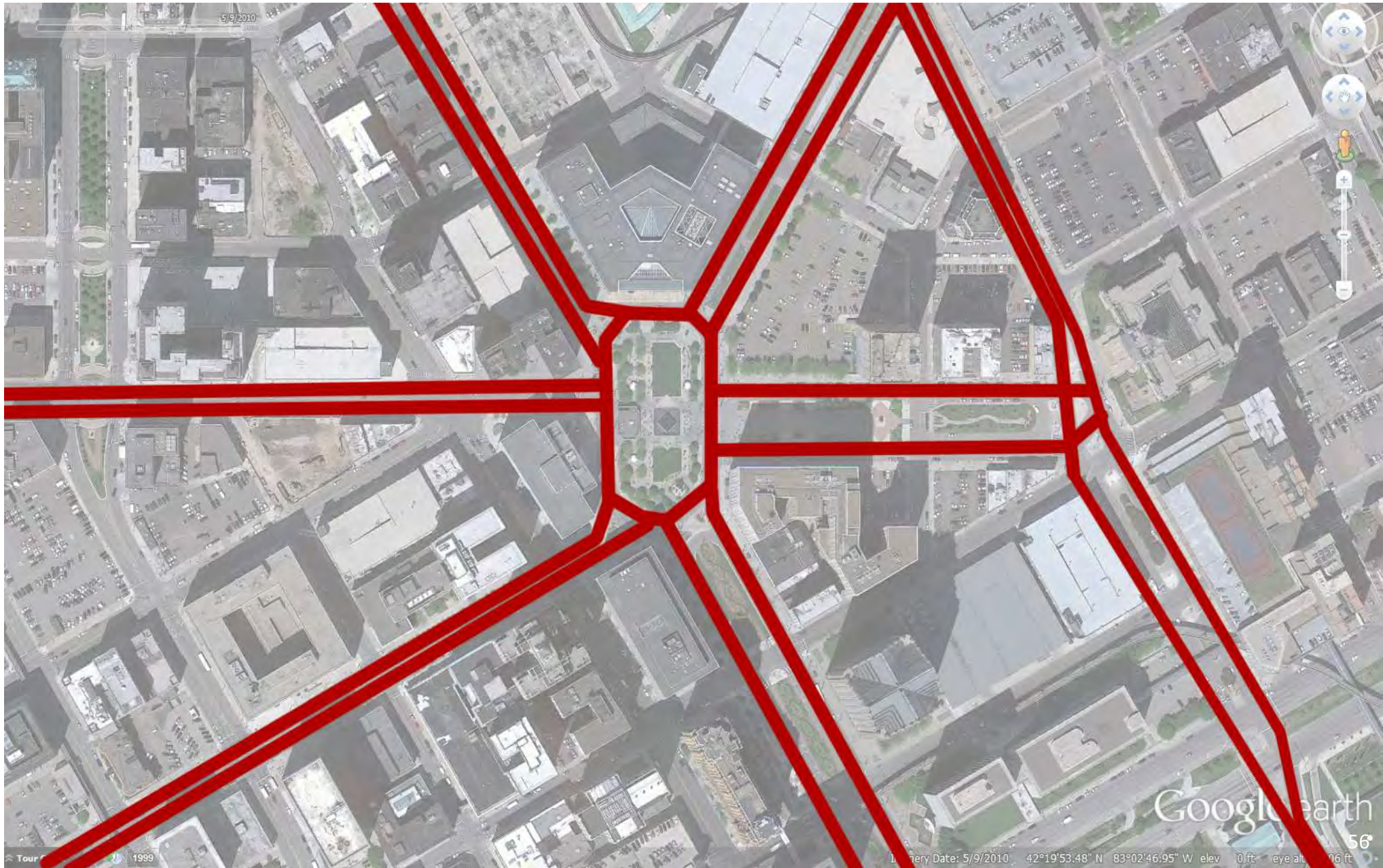
Campus Martius
Detroit, MI



Re-Thinking Infrastructure

Campus Martius
Detroit, MI

New 'pinwheel' square now moves More Traffic



Inspiration

A place to gravitate to, not get away from

Infrastructure not an ends itself but a means to city-build

To improve everyday lives, And facilitate social & economic exchange

Irving Boulevard vs Maple Road (Birmingham, MI)

Property Value:
$14.58 / sq Ft

16,000 vehicles/Day

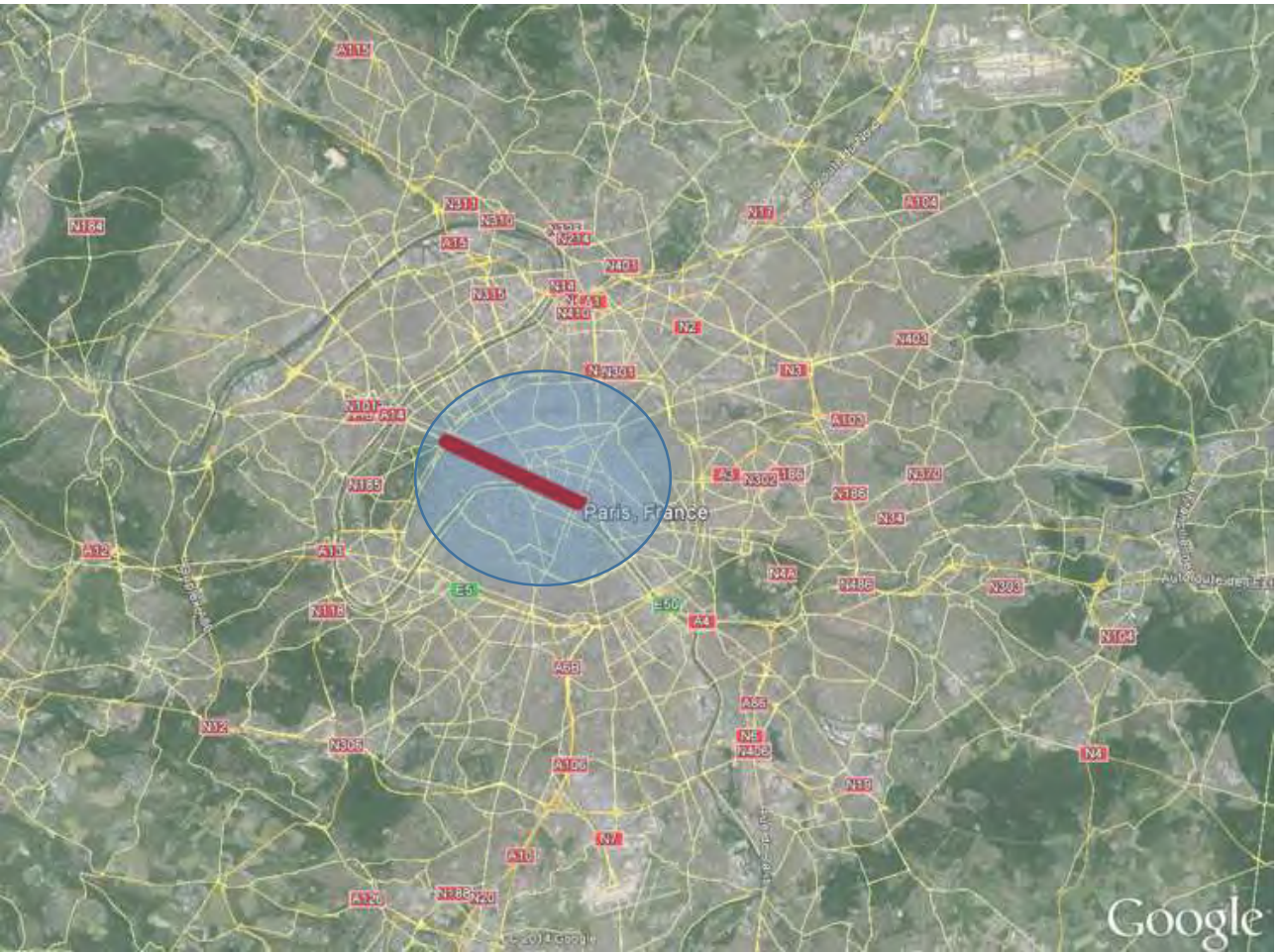
Irving Boulevard vs Maple Street (Birmingham, MI)

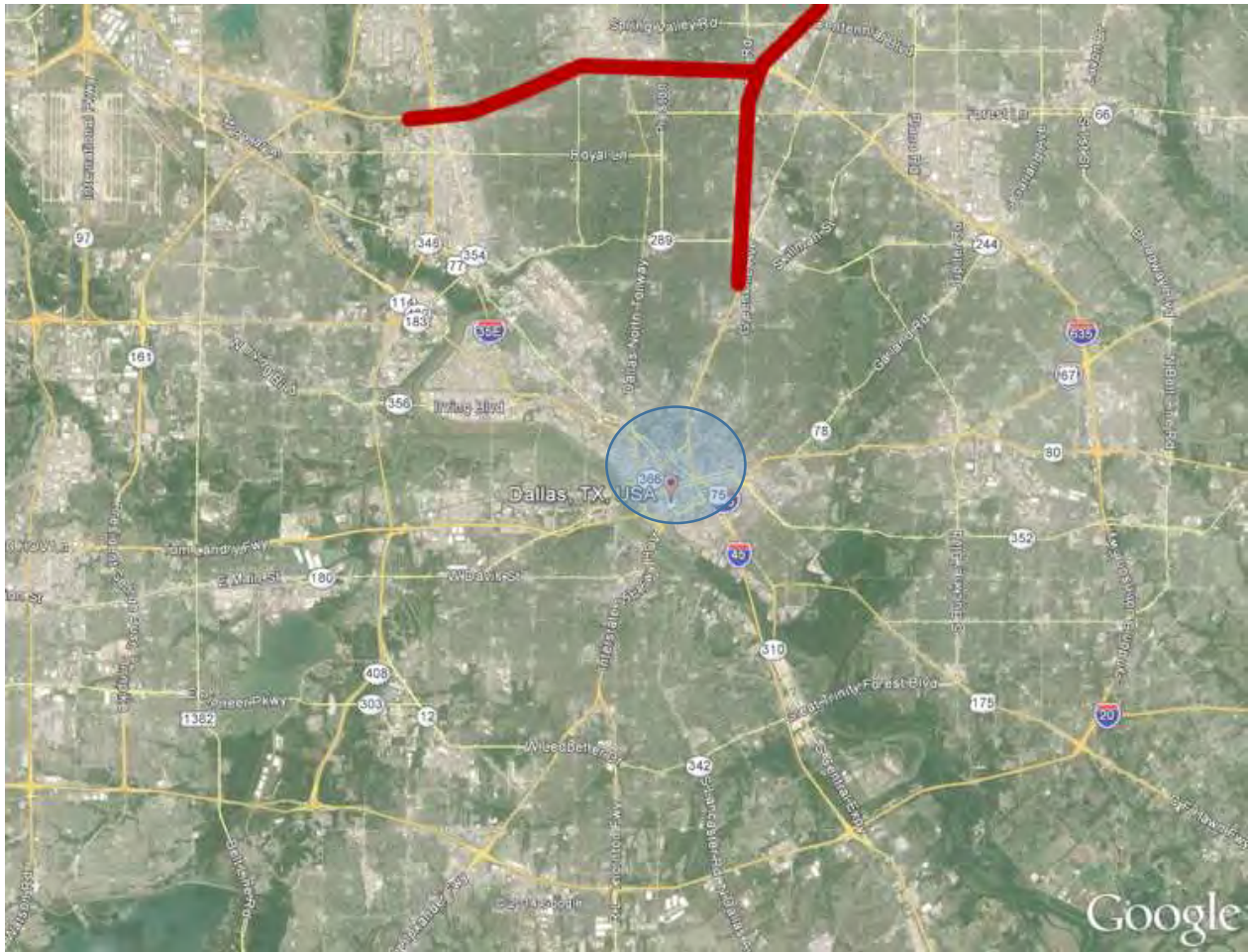
24,000 vehicles/Day

Property Value:
$77.04 / sq Ft
On Less than Half R.O.W.

The New Center of Town:

Paris and champs Elysees vs 635/75





Disconnection Disperses the Center of Town

Champs Elysees moves 84,000 cars per day. Part of a complex network.

635 moves 250,000. Traffic is funneled towards, undermining choice and adaptability.

Champs Elysees also moves 500,000 pedestrians per day. In half the width, moves more than twice the people and has 10 times the real estate value.

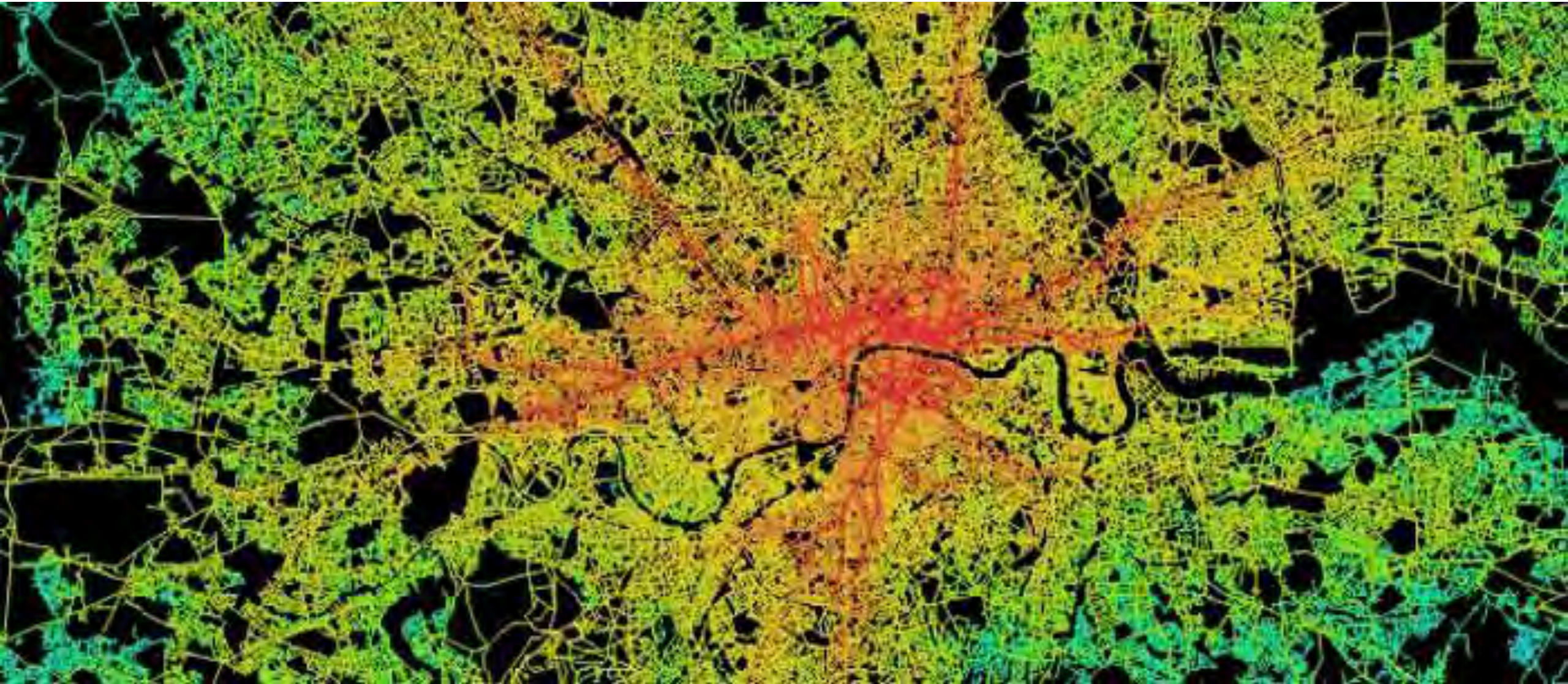
I-635

Champs Elysees, Paris

OBJECTIVELY MEASURING CONNECTIVITY

Interconnectivity is the release valve of demand. Foot traffic, safety, buildings and businesses (supply) respond to that demand.

London Spatial Integration Map – Created by Space Syntax lmtd



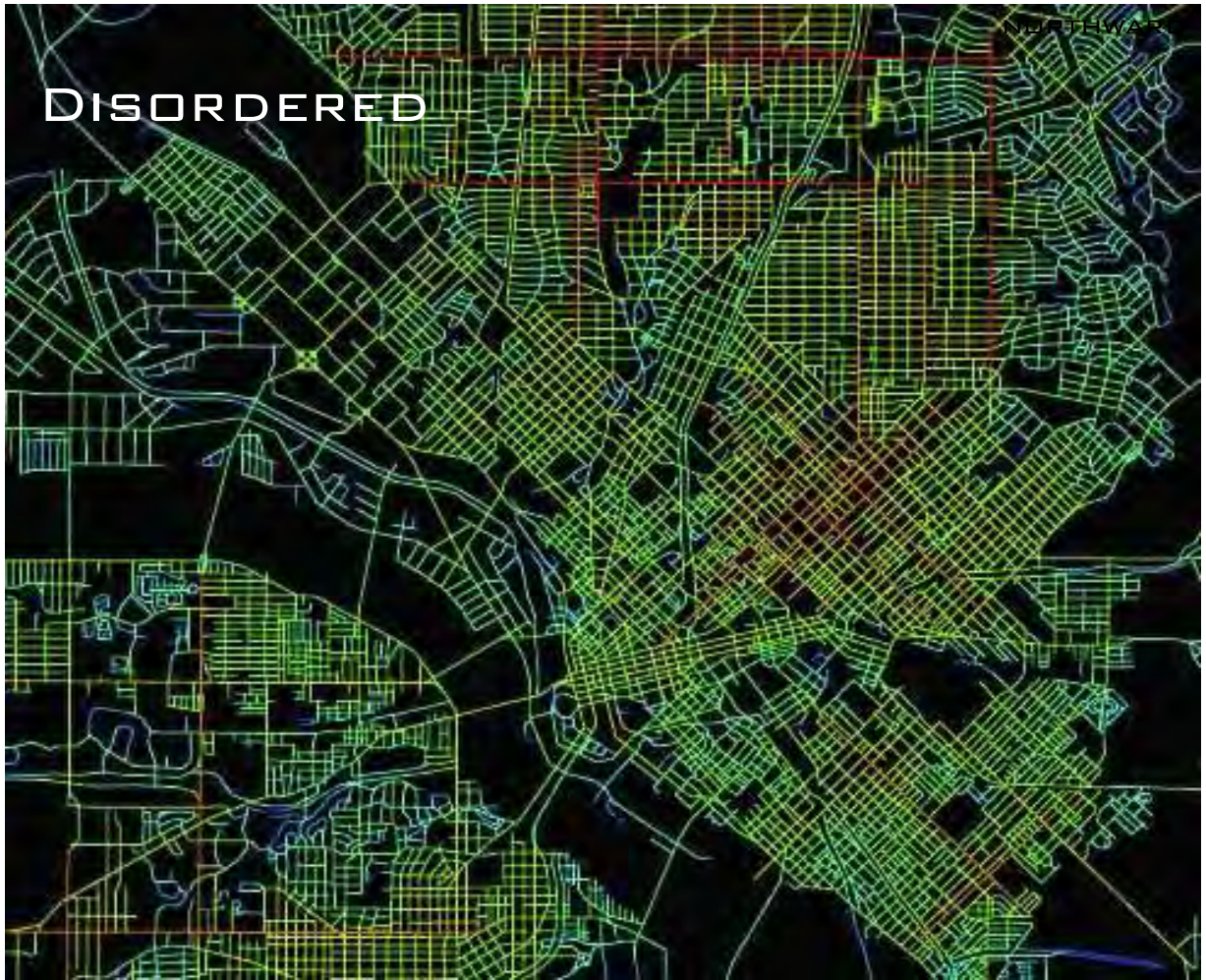
Sprawl was logical outgrowth of policy

Our goal with this plan is to flip the equation…Drive Demand higher while bringing down land prices through the supply of excess public right-of-way

We have to move the market. To do so we must change the infrastructure network to favor infill, meet pent-up demand

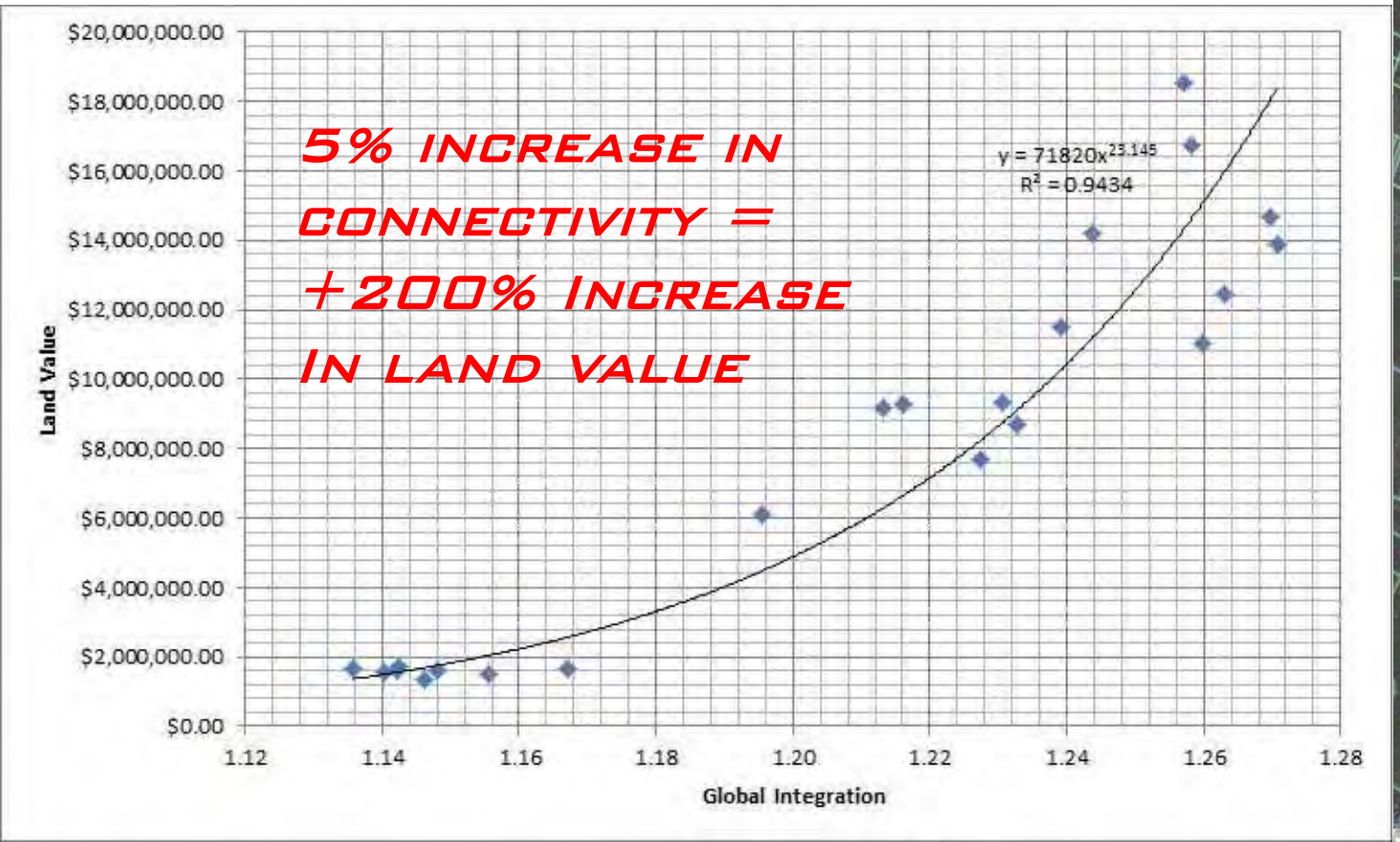
1945 Dallas Spatial Integration Map:

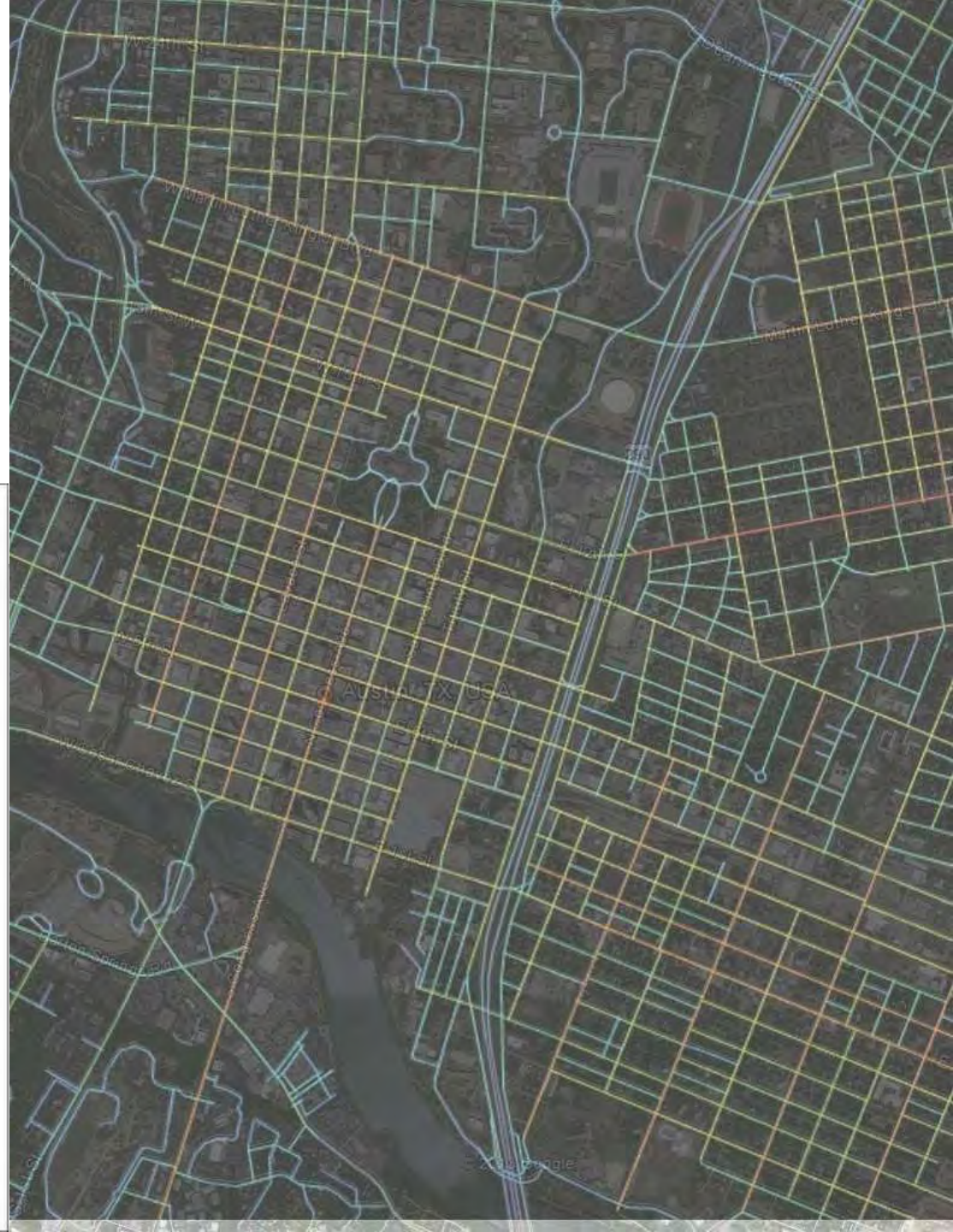
Present Day: highway networks devalued the center and dispersed value



Depression of value & opportunity

Austin Study
& value of connectivity





Depression of value & opportunity

KWP Study
& value of high
quality Greenspace

~$160M Premium

...left to ask, how
could this be better

(no highway)

Building for the Future: Peak car and Millennials

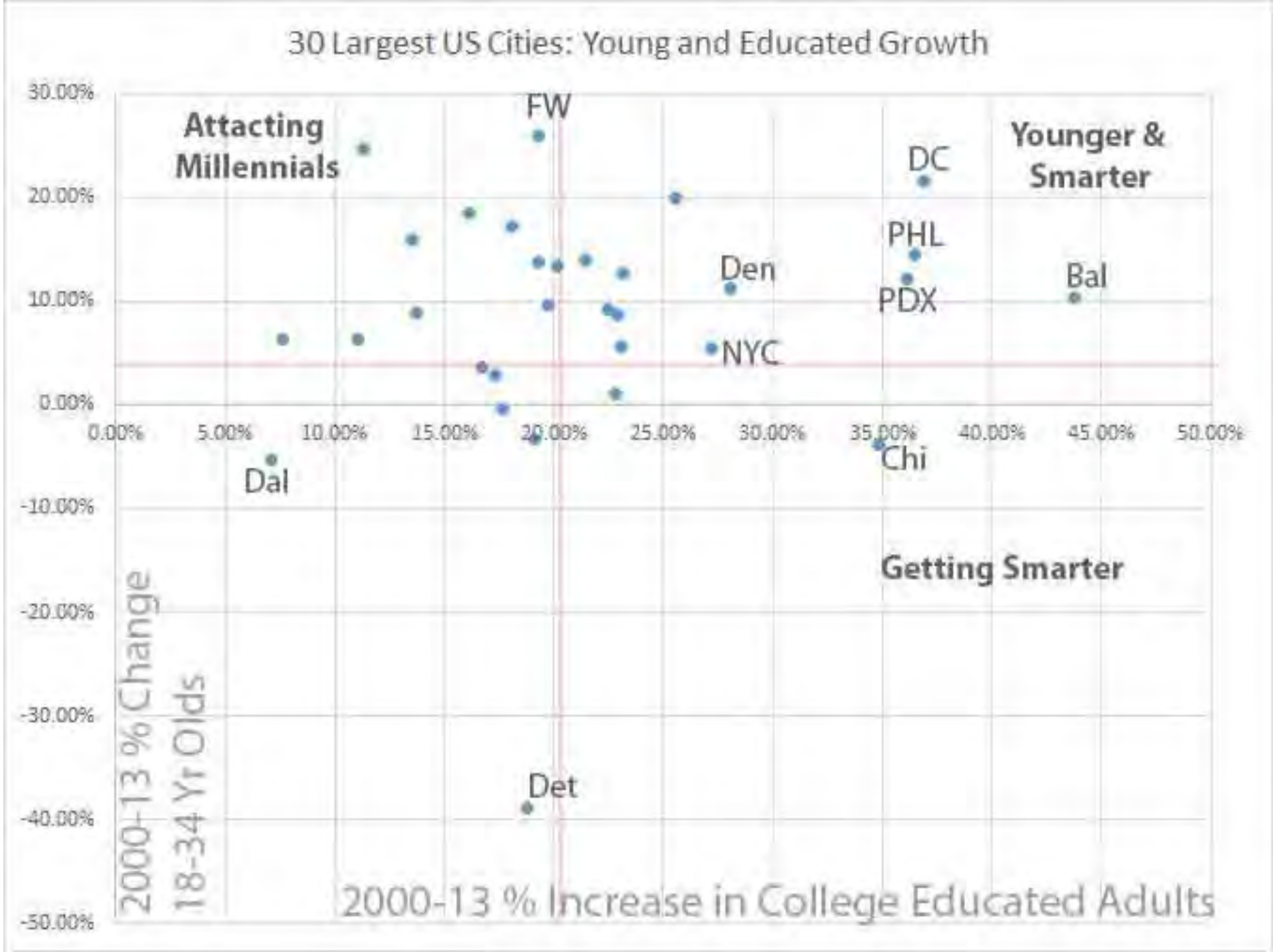
16-24 year olds getting their driver's license has dropped 18% over last 30 years, while VMTs for all Millennials has dropped 23%

What was considered "independence" to one generation might be the opposite to the next

Gas Prices will not save us

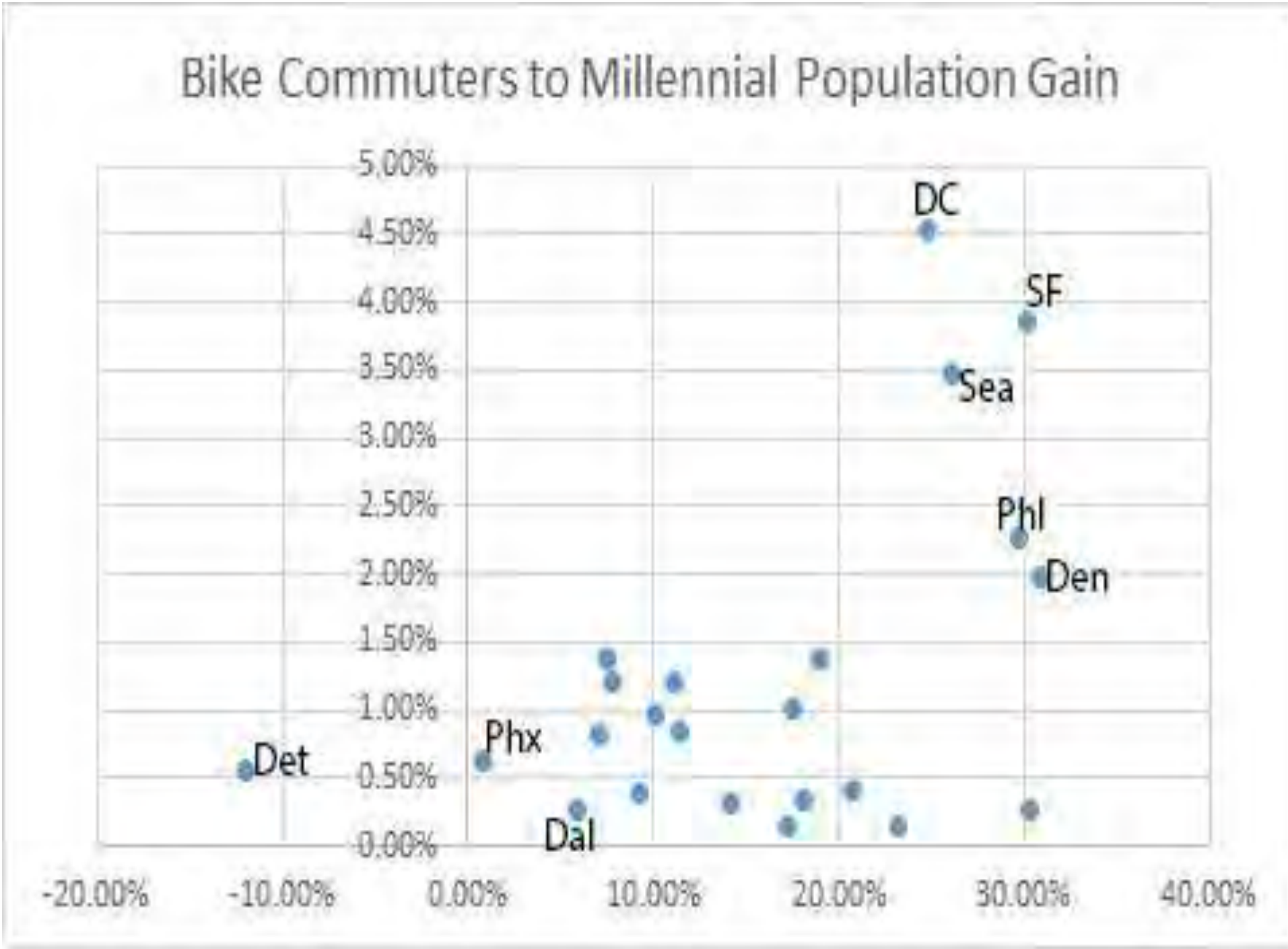
Building for the Future

Dead last in change in proportion of young & educated



Building for the Future

Where Millennials are Going



Timelessness

Highways and sprawl are the fad,

Walkability is timeless

Pent-up Demand

Demand and supply

68% of Dallas residents responded to survey wanting more walkability

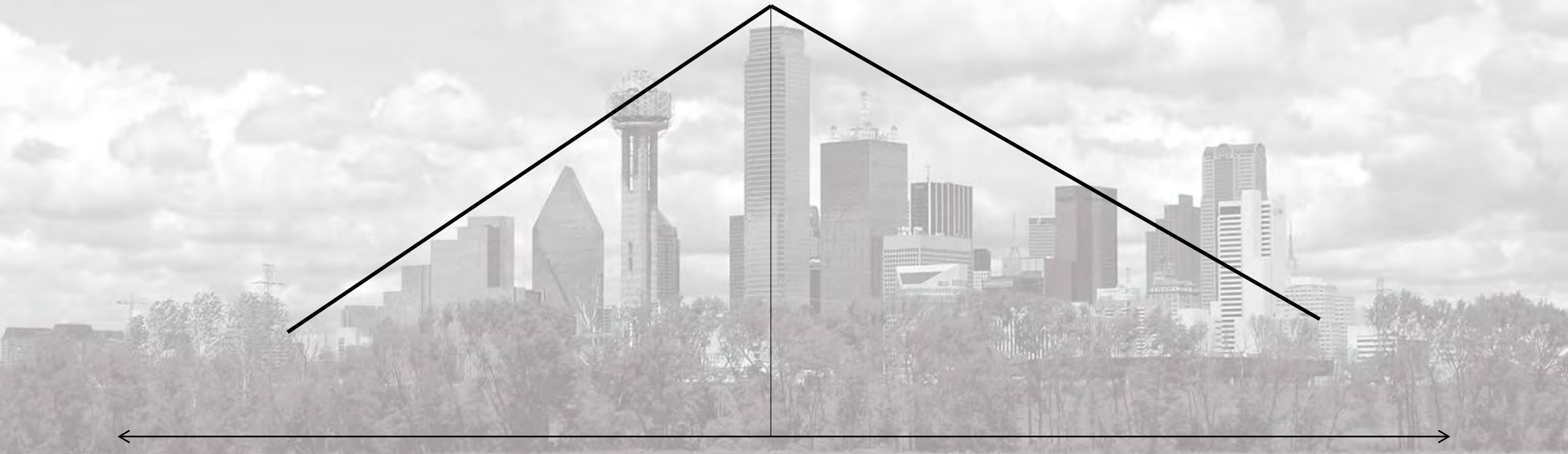
5% actually live in walkable areas

High cost of uptown

The pattern is supply meeting demand.

The most DEMAND for space is in areas that are the most connected…have the greatest “reach”…

Sure it’s harder to hop in a car and drive 20 miles, but in 5 minute (walk/bike/bus/car/transit) you can reach MORE DESTINATIONS



0: (Nature/Agricultural)

10: (Urban Core)

Highway Tear-outs, Re-urbanizing Cities:

Case Studies

Case Studies – Where else?

San Francisco - Embarcadero

Damaged in 89 loma prieto earthquake

Carried 100,000 cars per day

Took down 1.2 miles

Boulevard now carries 50,000 vehicles per day

Trolley carries 20,000 per day

Land value up 300%

75% increase in transit commute trips in the impact zone since 1990

54% increase in housing units in impact zone compared with 31% increase in the control zones

The number of jobs increased 23% compared to 5.5% in city

Case Studies – Where else?

San Francisco – Central Expressway / Octavia Boulevard

Damaged in 89 loma prieto earthquake

.8 miles

Carried 80-90,000 per day

Replaced with boulevard, promenade, and park

Now carries 45-52,000 per day

Before: Freeway depressed home values $116,000
After: 1,000 new residential units added

When it closed 75% of vehicles re-routed to other freeways,
25% used different means: 11% used city streets, 14% other modes

Case Studies – Where else?

Portland – Harbor West

Replaced a 3-mile long riverfront highway
with park and trail system

By 2002:
Property values had tripled,
increasing faster than anywhere in city by 7%

Crime has been reduced significantly
Dropping 65% since 1990
versus 16% reduction citywide

Experienced a drop in vehicular demand in the
study area by 9.6%

Case Studies – Where else?

Milwaukee – Park East Freeway

Cost of repairing the freeway was going to run over $100 million

Demolition only cost $25 million

Carried 54,000 vehicles per day

By 2010 census the area added 3400 new residents

Boulevard now carries 18,600 vehicles per day

City Owned Land has seen $700,000,000 in investment...However County owned Land (majority) has been too encumbered by political regulations, limiting overall impact

Case Studies – Where else?

New York – West Side Highway

After 1973 collapse, repairs would cost $88 million

Afterwards, 53% of vehicular traffic in the area disappeared.

Majority of traffic was found to be heading from New Jersey to New Jersey

Case Studies – Where else?

Seoul - Cheonggye

8.5 mile section of elevated freeway buried a stream

Cost $281 million or $33M per mile

Number of vehicles entering the area decreased by 43%

Air Quality:
21% less tiny airborn particulate matter
No2 dropped 20%
BETX dropped 25% overall and 65% in some areas

Reduced summer temps along corridor 8 degrees

125,000 visitors per weekend day. 50,000 per weekday

Added 113,000 new jobs along corridor

Long-term benefits expected to approach $25 billion

Case Studies – Where else?

Vancouver – Never had them

City of Vancouver refused to allow freeways entering the city

Maintained "tangential" non-disruptive relationship

Downtown has no freeways, but twice the vehicular capacity of a highway. Handles 70,000 cars/hour

The much derided decision was made in the 1960s.

<u>Most Livable Cities Ranking:</u>

Economist's Intelligence Unit: 3rd

Mercer: 5th

Monocle (tilts toward arts/culture): 15th

Traffic Mitigation

Where does the traffic go?

When first closing the Central Freeway in San Francisco, CalTrans traffic planners warned gridlock would be:

"Historic"

"Serious"

"Horrendous"

Scare Language, city not at threat but rather their worldview

They were all wrong and couldn't figure out why.

San Francisco Chronicle
NORTHERN CALIFORNIA'S LARGEST NEWSPAPER

PAGE ONE -- Traffic Planners Baffled by Success / No Central Freeway, no gridlock -- and no explanation

Carl Nolte, Chronicle Staff Writer
Published 4:00 am, Friday, September 13, 1996

Traffic experts appear to have produced a minor urban miracle: the closure of much of San Francisco's Central Freeway without major traffic problems. But they have no idea how they did it.

"We have a success on our hands," said Jeff Weiss of Caltrans, the agency that had predicted traffic chaos once the half-mile stretch of freeway was shut down on August 25.

Caltrans and other traffic agencies made it sound as if San Francisco would stop cold without the freeway. The media relayed the message in grim scenarios of gridlock just around the corner, traffic jams of historic proportions. It would be "serious," said Caltrans director James Van Loben Sels. It would be "horrendous," said state senator Quentin

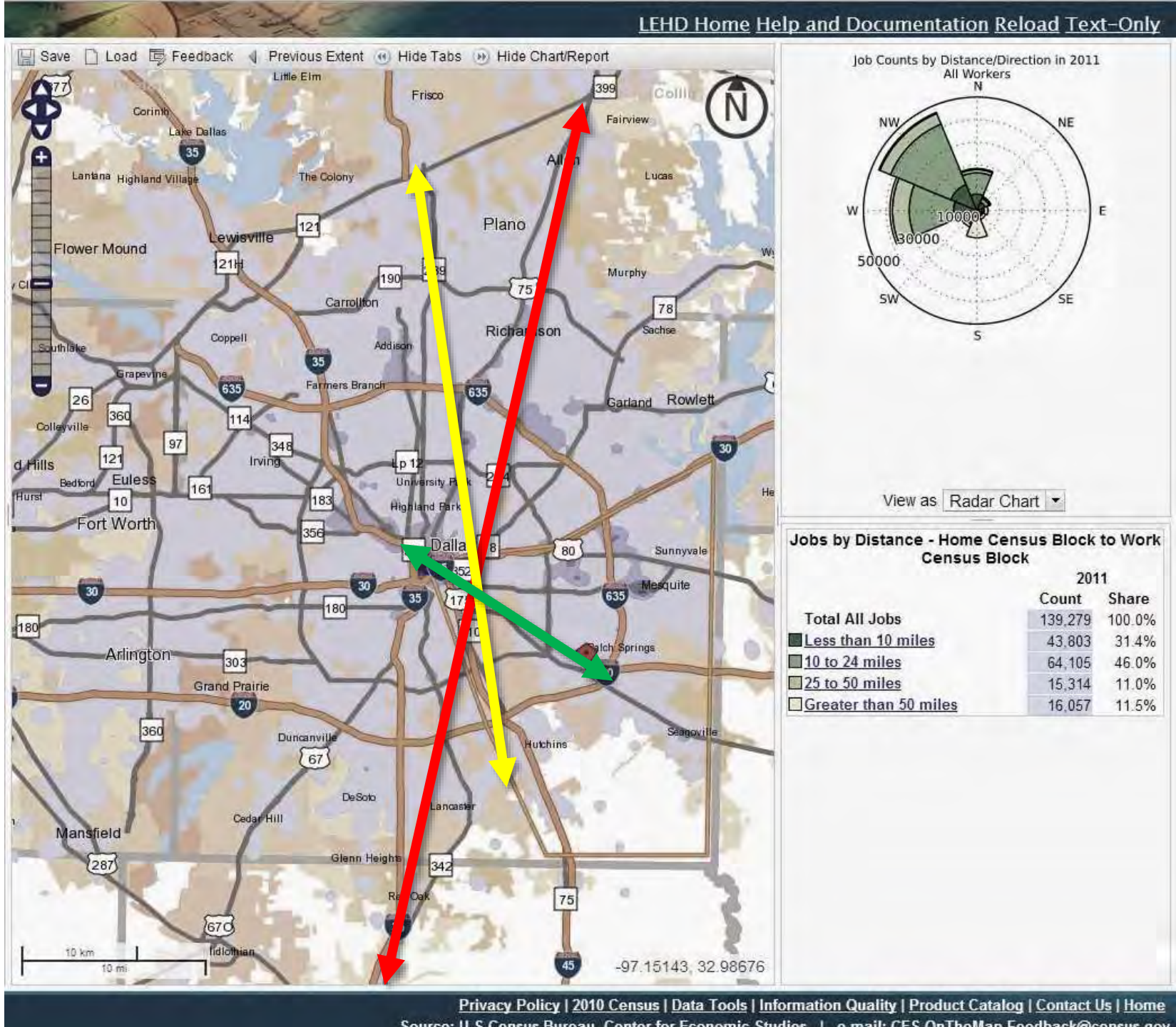
Critique of Inner-city Highways as Efficient Urban Transportation

Traffic is there because the highway is there.

Three primary origin-destinations competing for the same space at the same time: Congestion

1. **Long Haul/Interstate**
2. **Long Commute (15+ Miles)**
3. **Short Commute**

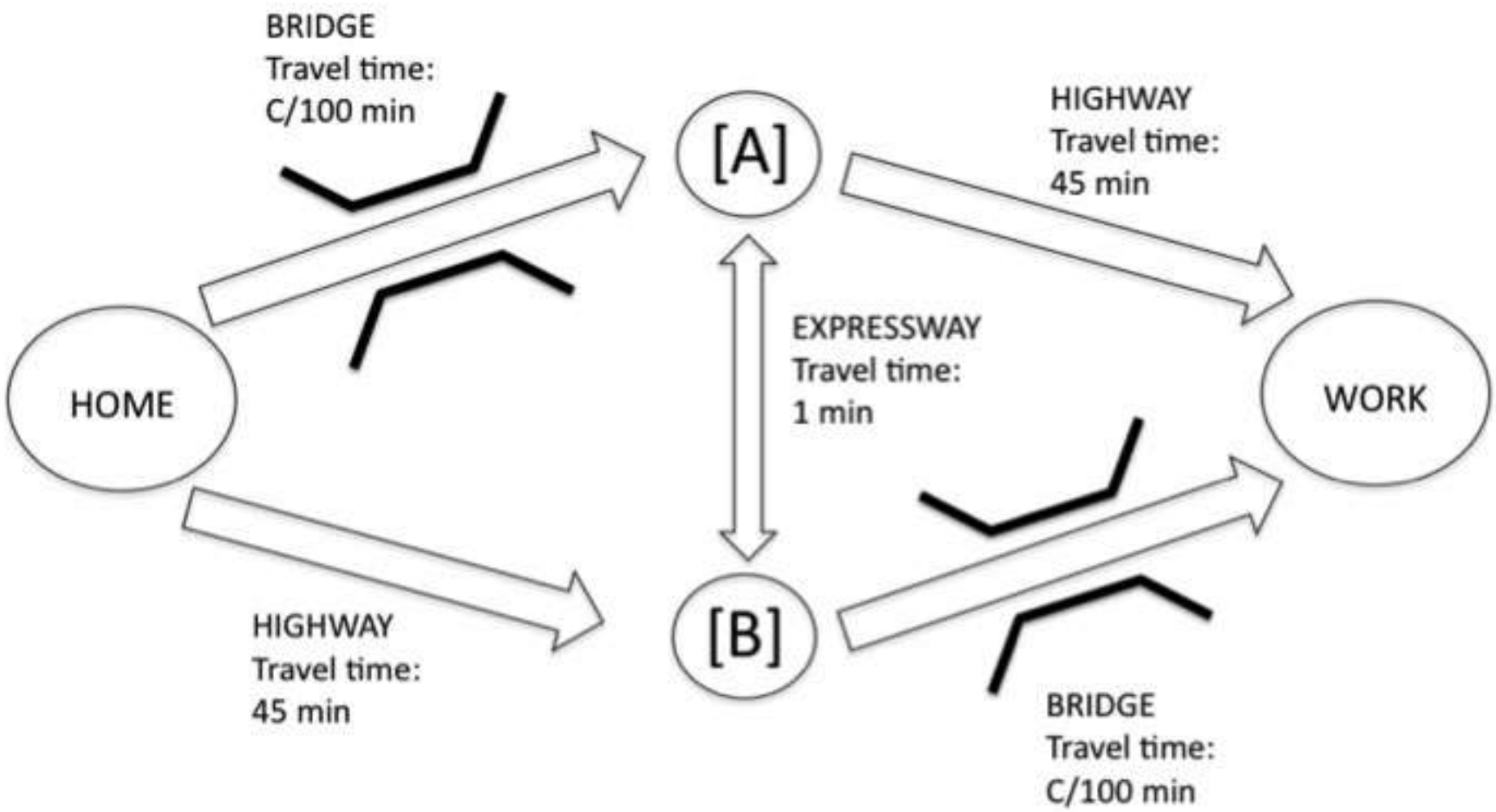
Is 345 the best way to move this traffic?



Supply and Demand of Transportation:

Braess' Paradox

Short-cuts and Self-Interest



Peak Time vs Imaginary Optimal

We tend to imagine highways in their optimal condition…

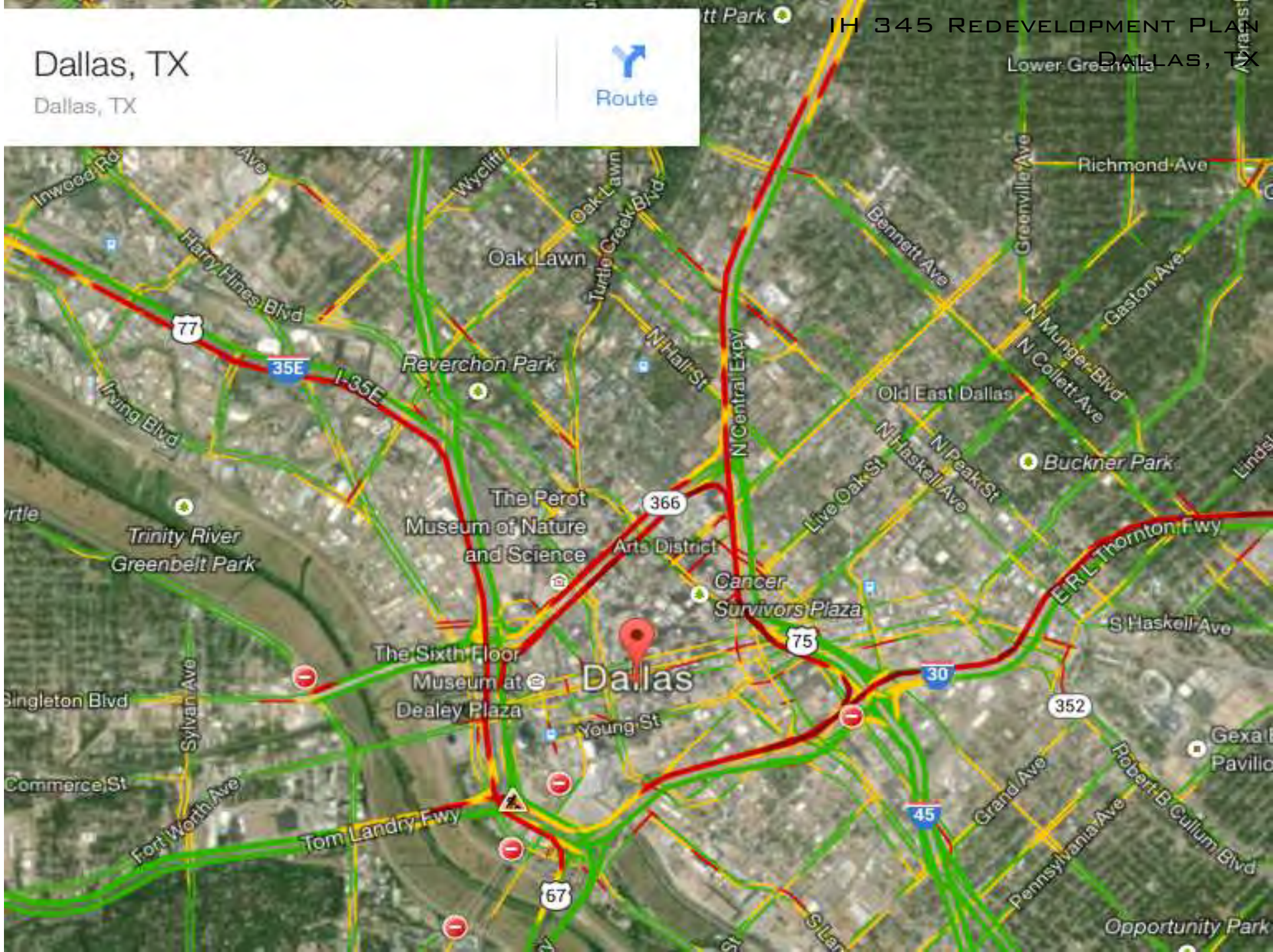
Which is no other drivers on the road.

But the point of infrastructure is to facilitate social and economic exchange

There is no socio-economic interface to a limited access freeway.

Through this lens, traffic is a good thing, it drives value, when the infrastructure is designed appropriately for the place.

In this case, downtown.



Over-Reliance on Hierarchy of Streets

Too many invaded and abandoned streets

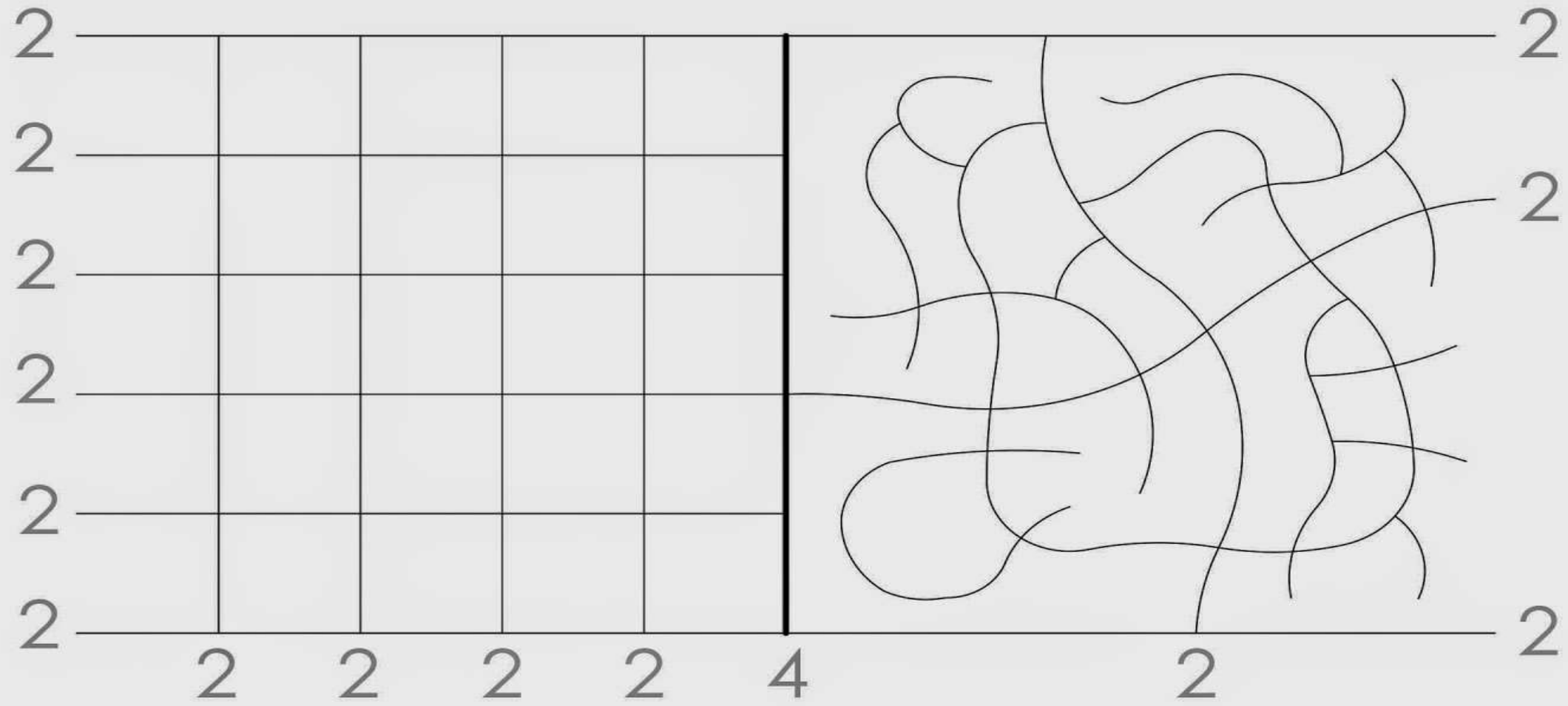
Over-Reliance on Hierarchy of Streets

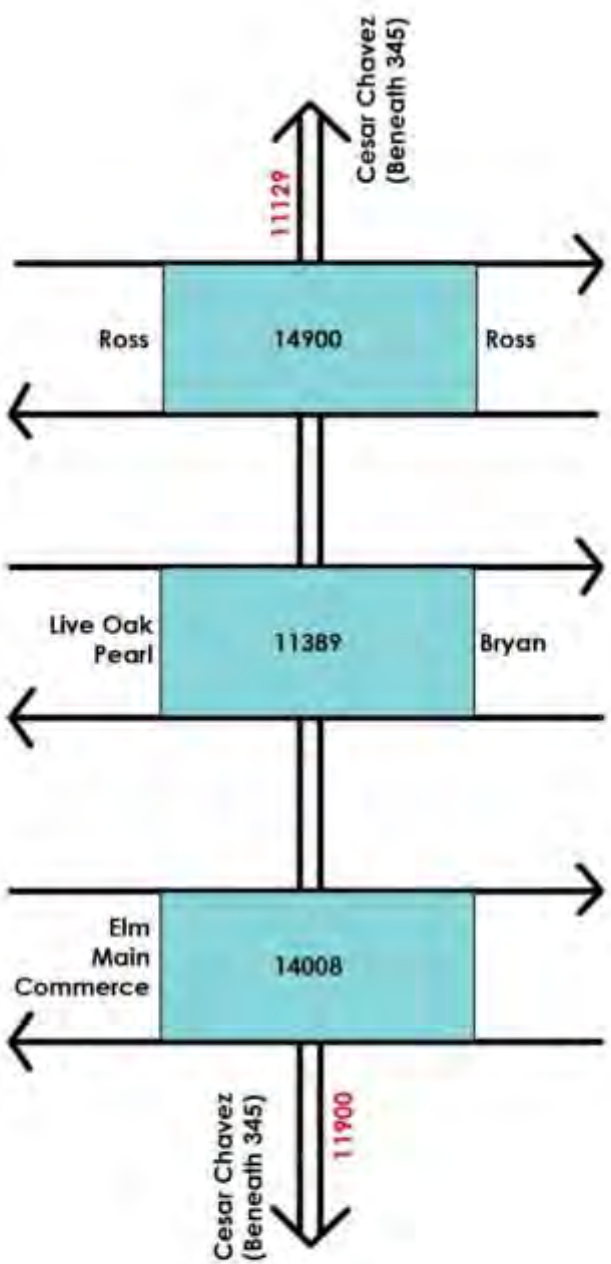
Too many invaded and abandoned streets

The funnel and the Filter:

Grid filters the Bad (Congestion) and Concentrates the Good

Funnel Concentrates the Bad While scatters/Filters the Good





Majority of traffic is not coming to or leaving downtown

Only 1/4th of the traffic, or ~40,000 cars are exiting or entering from downtown adjacent access points

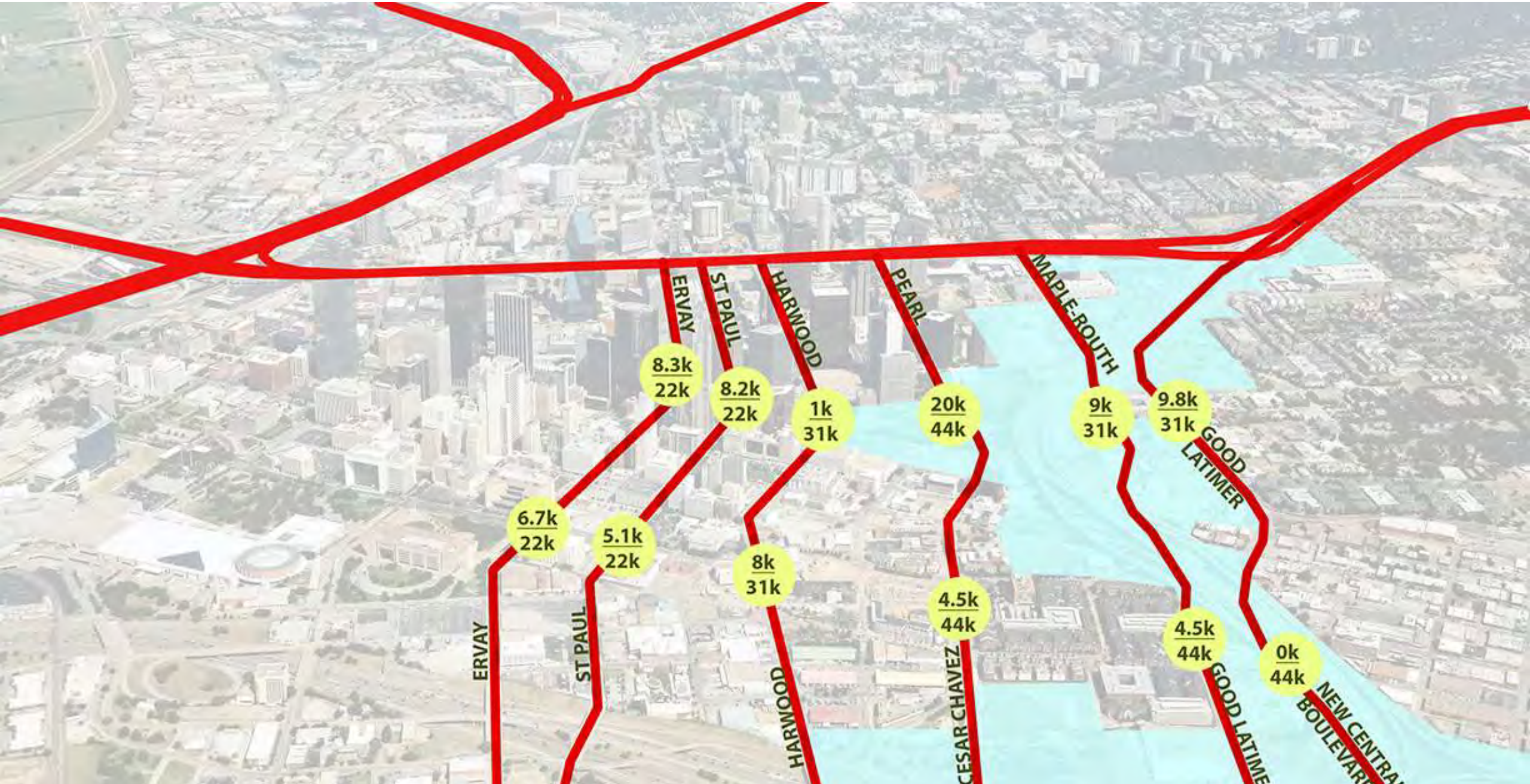
Another 11,000 are using Cesar Chavez beneath, but these are either local trips or among the exit/entrance ramp counts…

3/4th of the traffic are regional trips moving from highway to highway.

Where does the traffic go?

Where does the traffic go?

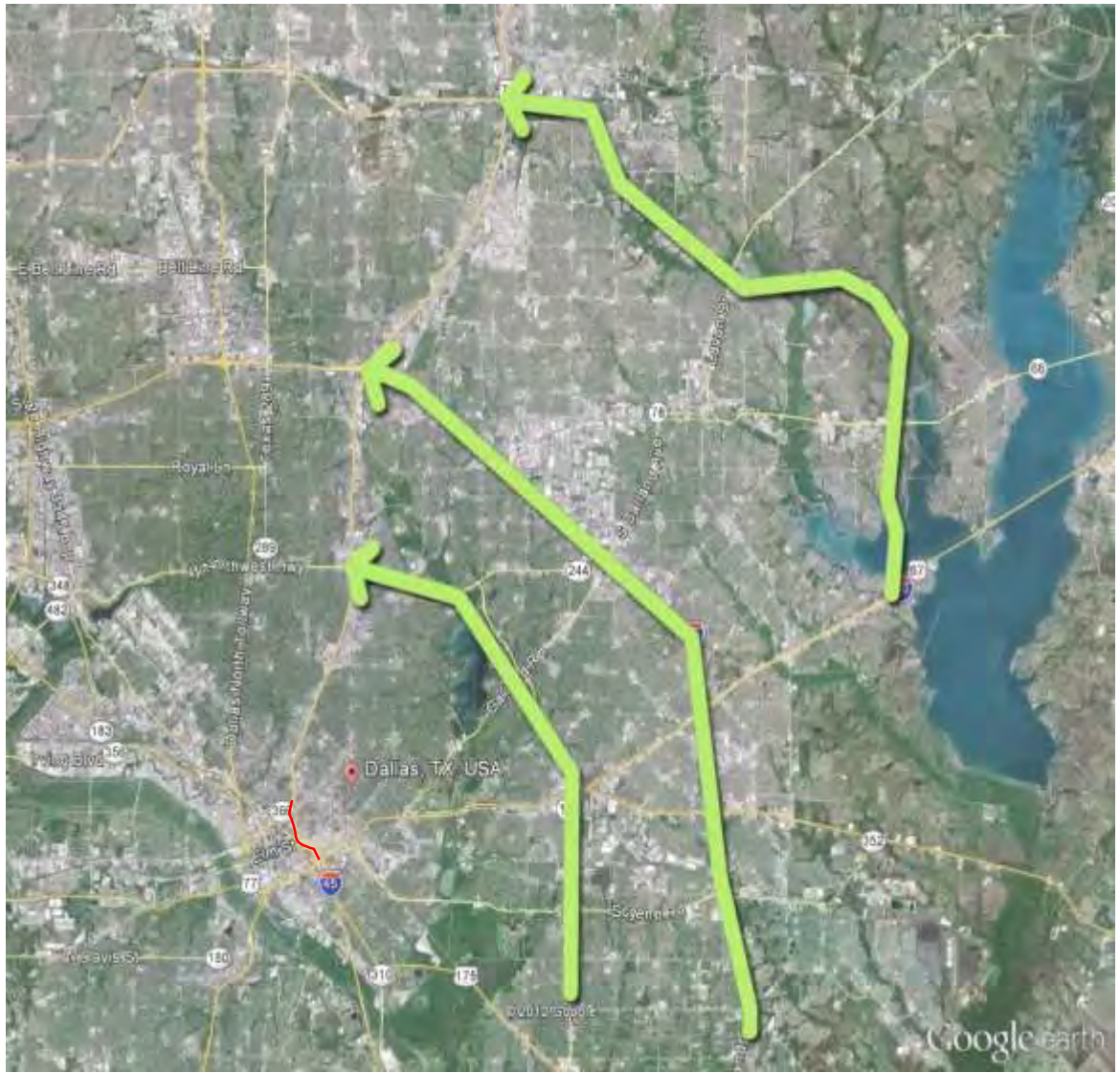
Where does the traffic go?



Where does the traffic go? 160,000+ vehicles/day

Four Places: **Regional**, Local, Short-term, Long-term

Regional traffic by-passing downtown anyways reroutes to Loop 12, 635, and 190



Much of this traffic, you don't want near downtown, polluting the air and causing undo congestion.

If it's not going TO downtown, It should stay OUT of downtown

Westside Highway Example '75

Where does the traffic go?

Four Places: Regional, **Local**, Short-term, Long-term

Local traffic means value and filters onto local streets. ***Don't fear traffic, diffuse it & discipline it.***
The grid disperses the bad (congestion) and concentrates the good (walkable centers and business clusters)…

Peak and Haskell are currently one-way couplets designed to carry upwards of 44,000 vehicles per day.

Today, they carry on average 7-10,000.

They are badly under capacity and could use the increased energy.

Investors and Developers look at traffic counts, the movement and visibility of sites.

Spin-off benefit of this plan is potential revitalization of peak/Haskell corridors

Funnel that traffic into one highway, all you get is parking lots and drive-thrus

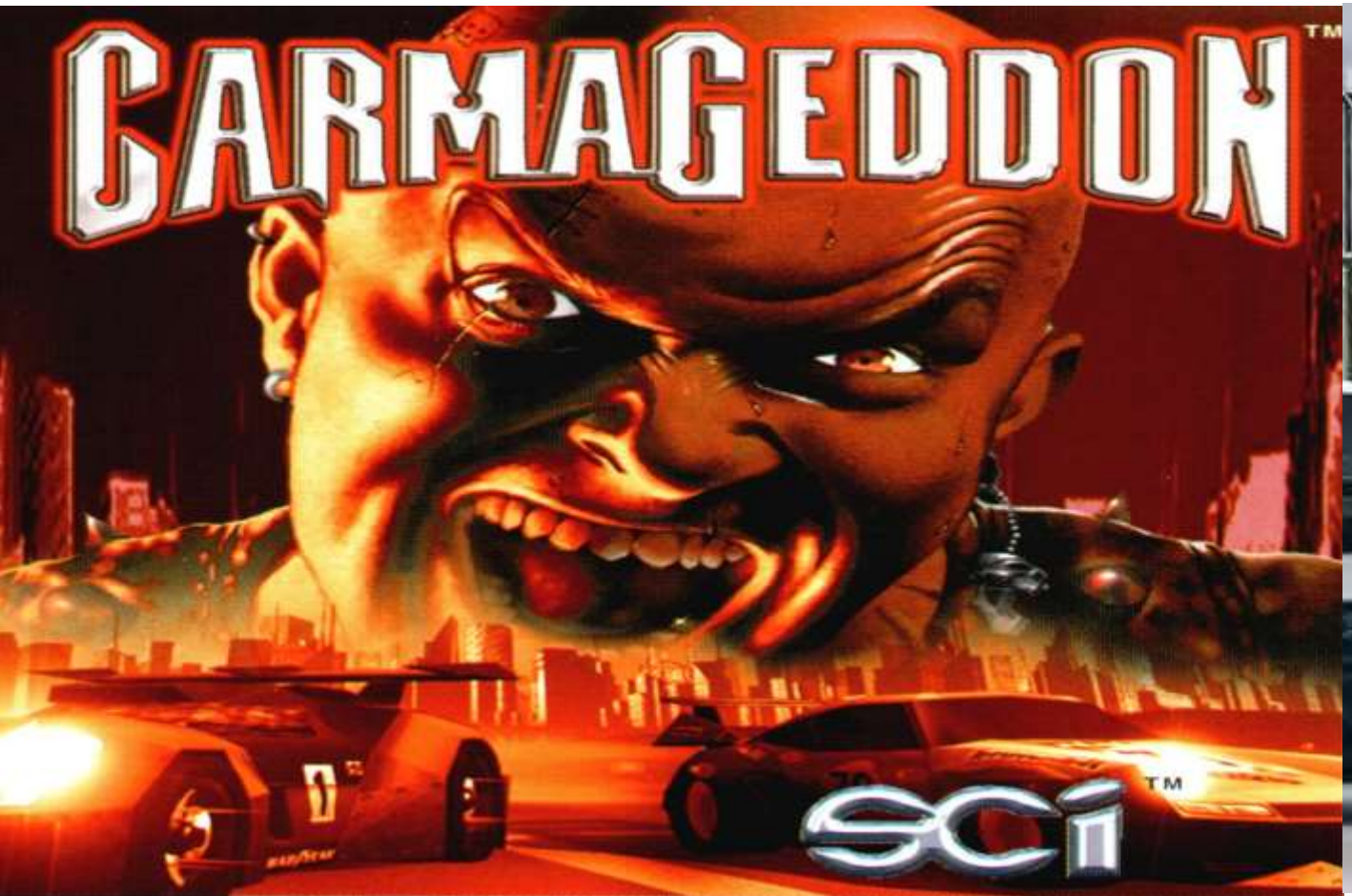
The state of disrepair on Peak & Haskell.

Where does the traffic go?

Four Places: Regional, Local, **Short-term**, Long-term

Increased capacity = INDUCED demand.
10% new capacity sees immediate 40% increase in total demand, all 100% additional capacity fills within 10 years, VMT increases as highway capacity increases, and for every intra-city freeway a city loses 18% of its population.

Reduced highway capacity = REDUCED Demand. 25% vehicular traffic just goes away. People adapt.



Where does the traffic go?

Four Places: Regional, Local, Short-term, **Long-term**

By creating housing closer to downtown and nearby amenities, combined with local transit options and complete streets, we'll have 25,000 people moving back to downtown with increased transportation options and proximity. In terms of commuting, that's **50,000 less highway trips per day**. Repositioning infrastructure, reorients the housing market. New housing means increased stability and more local businesses.

AzDOT study found less congestion around higher intensity land uses. **Fighting "congestion" thru increased highway capacity, is fighting the nature of the city, to bring people together for social and economic exchange.** The result is anti-city, Detroit.

Study Area

Total Study Area:
245 Acres

Existing Underdeveloped Land:
118.29 acres

Net Recaptured Right-of-Way:
63.93 acres

After reviewing every property in the area...

Existing Improvements:
$19,906,970

Or $81,252.94/acre
(Less intense than most sprawl)

Yearly City Tax Revenue (2012):
$3,584,832.20

Economic Development

Total Study Area:
245 Acres

25,000 new residents, 22,000 new jobs

Projecting 95% absorption at 15-year build-out:
Projected New investment: **$4,060,663,220 (204x greater)**

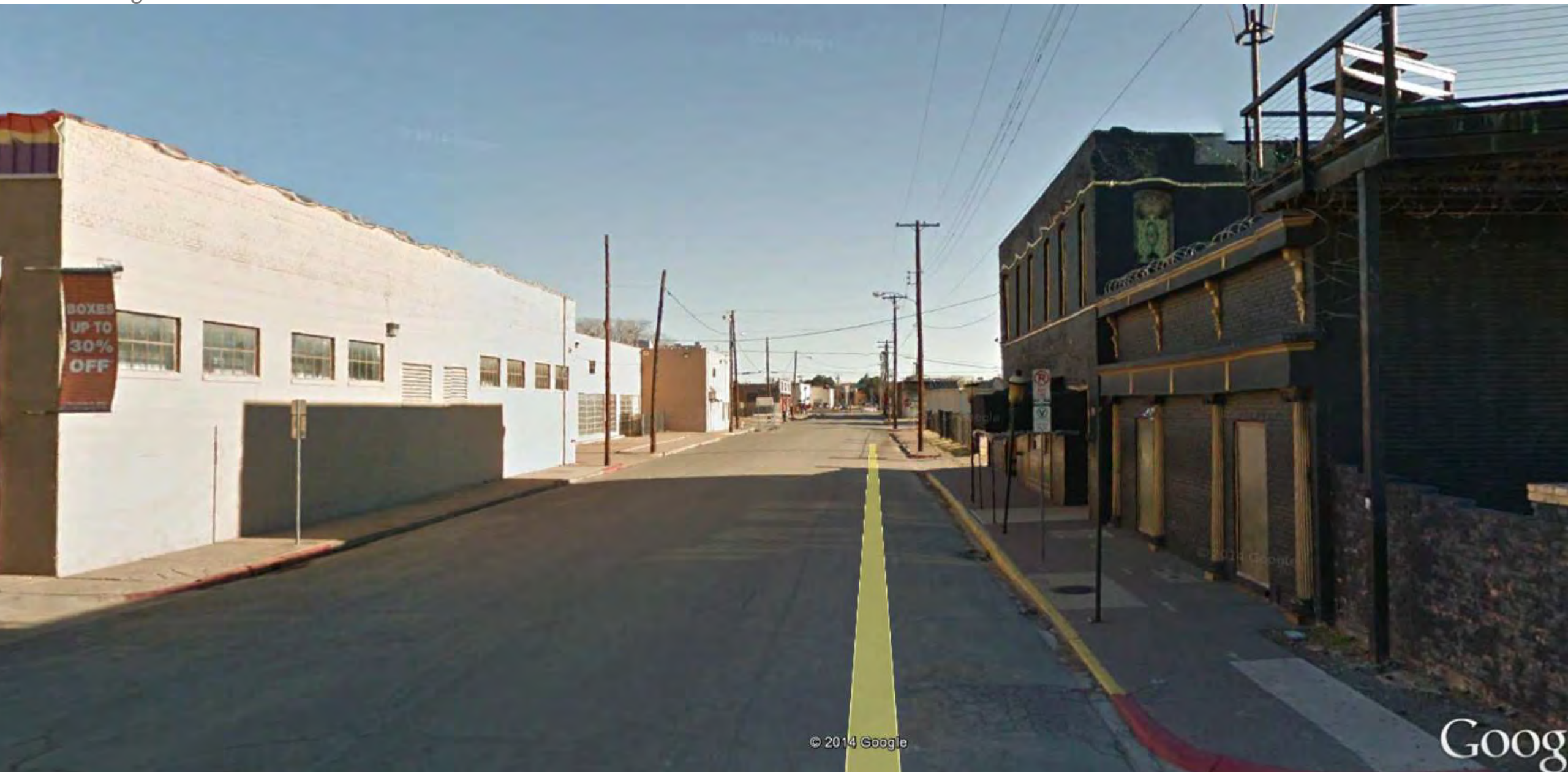
Projected Tax Revenue (Per Year):
$110,043,972 (31x Greater)

One year of Tax Revenue from this plan builds a modern streetcar line from West End to Lower Greenville AND Union Station to Exposition.

Calculating at CityPlace FAR & LoMac/Crescent Land Value:
A few high-rises, but mostly mid-rise, vertical mix of uses

MAKING GREAT STREETS GREAT:

Prioritizing Swiss Avenue



MAKING GREAT STREETS GREAT:

Prioritizing Leonard Avenue axis to Arts District and Winspear Opera House

Main Street: Before/After

Courtesy: Munn Harris Architects