

An aerial photograph of a large, dense urban housing complex. The complex consists of numerous high-rise apartment buildings arranged in a circular or semi-circular pattern around a central courtyard. The buildings have a repetitive architectural style with many windows and balconies. In the center of the courtyard, there are several recreational facilities, including a swimming pool, a tennis court, and a basketball court. The overall scene illustrates a high-density urban environment where infrastructure and community amenities are integrated into the housing design.

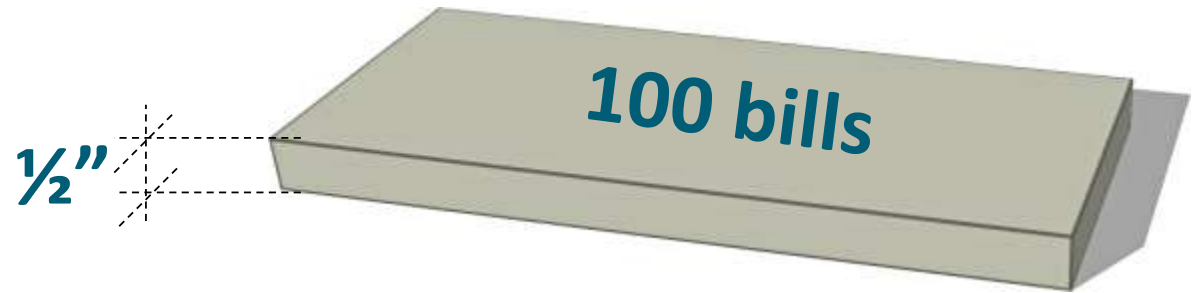
Infrastructure for Health

“the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.” (WHO, 2017)

\$\$\$, to scale



\$100



\$10,000

\$\$\$ to scale



\$100,000

\$1 Million

\$\$\$ to scale



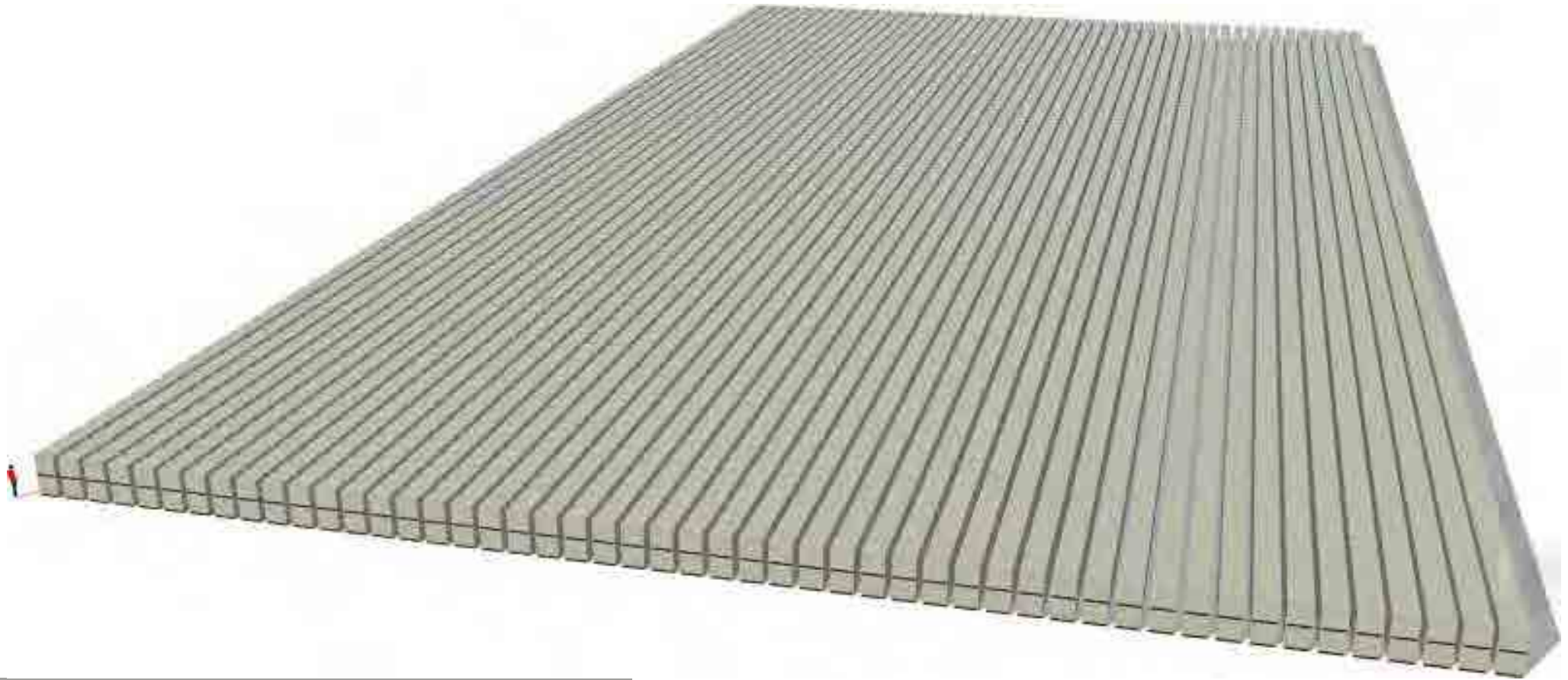
\$100 Million



\$1 Billion

10x

\$\$\$ to scale



\$1 Trillion

2015 U.S. Healthcare Expenditure



\$10,348 per American

\$3.2 Trillion

2015 U.S. Healthcare Expenditure

MONEY WELL SPENT?

The United States has not seen an increase in life expectancy to match its huge outlay on health care.



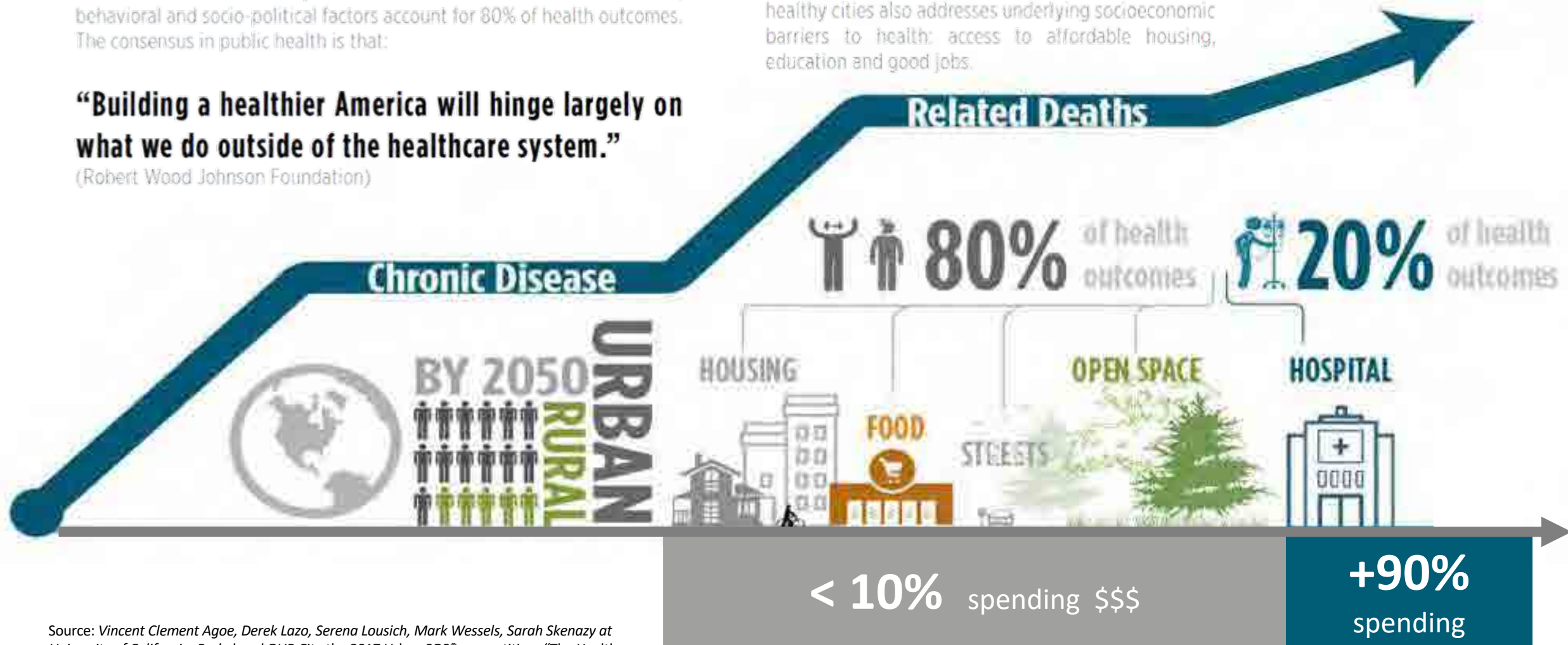
THE [UN]HEALTHY CITY- A GLOBAL EPIDEMIC

In 2015, the United States spent 17.8% of GDP on healthcare. That's 3.2 trillion dollars (Centers for Disease Control and Prevention). At best, this massive investment lead to a 20% improvement in health outcomes. Environmental, behavioral and socio-political factors account for 80% of health outcomes. The consensus in public health is that:

“Building a healthier America will hinge largely on what we do outside of the healthcare system.”

(Robert Wood Johnson Foundation)

We can leverage healthcare spending to build more equitable cities with greater opportunities for physical activity, healthy food and community life. Investing in healthy cities also addresses underlying socioeconomic barriers to health: access to affordable housing, education and good jobs.



Rise of Lifestyle Diseases

7/10

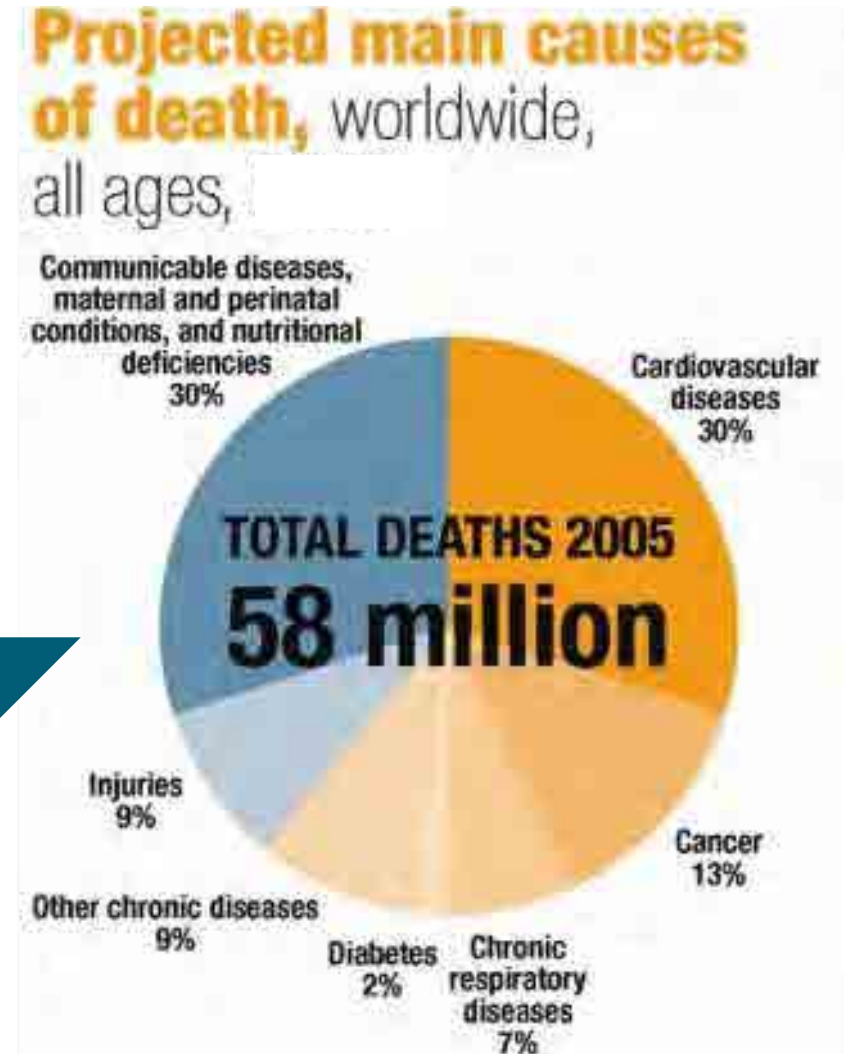
Communicable Diseases

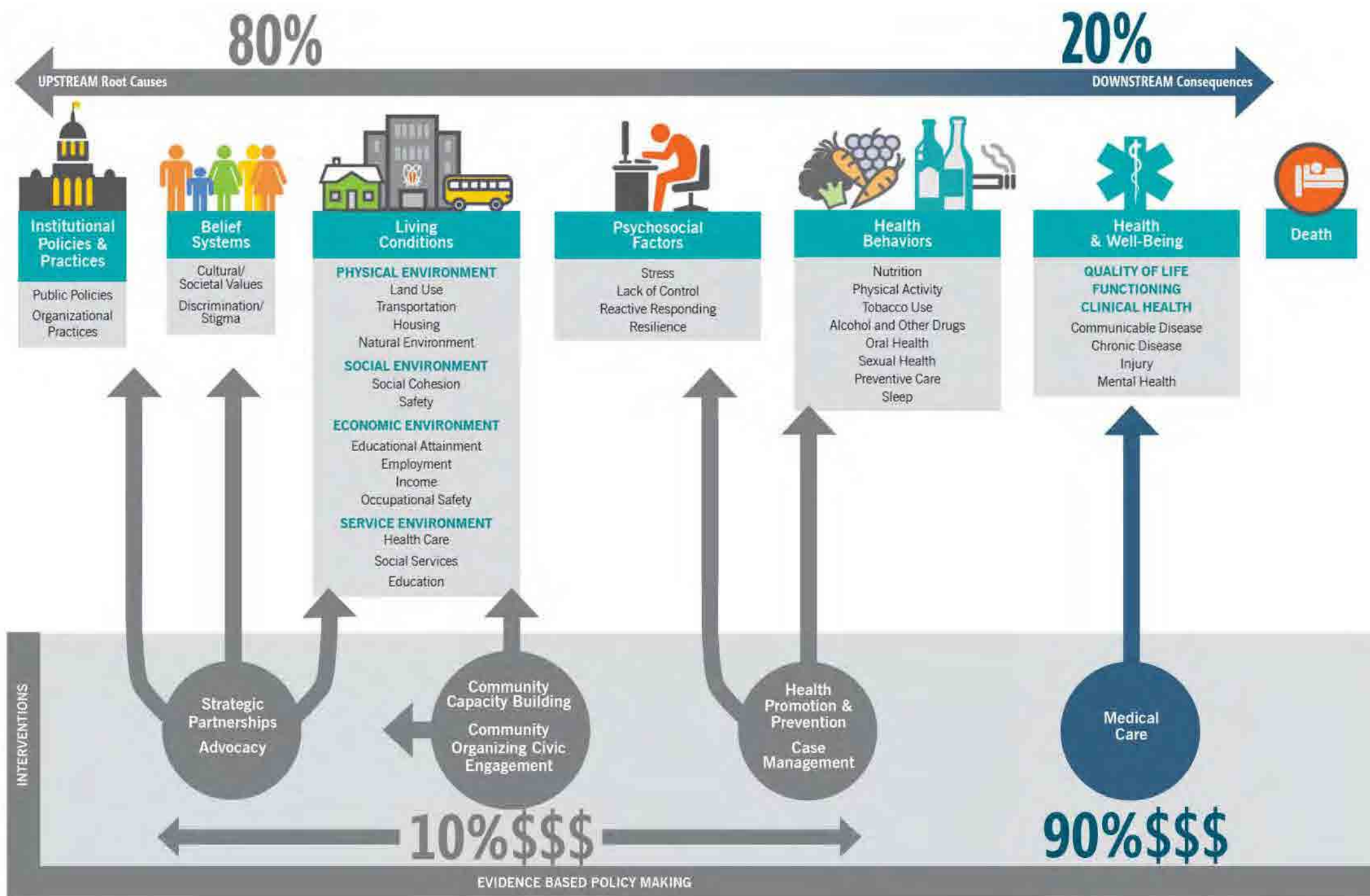
Asthma
Heart Disease
Type 2
Diabetes
Cancers
Stroke
Obesity
Arthritis

Chronic Diseases

Polio
Measles
Whooping
Cough
Malaria

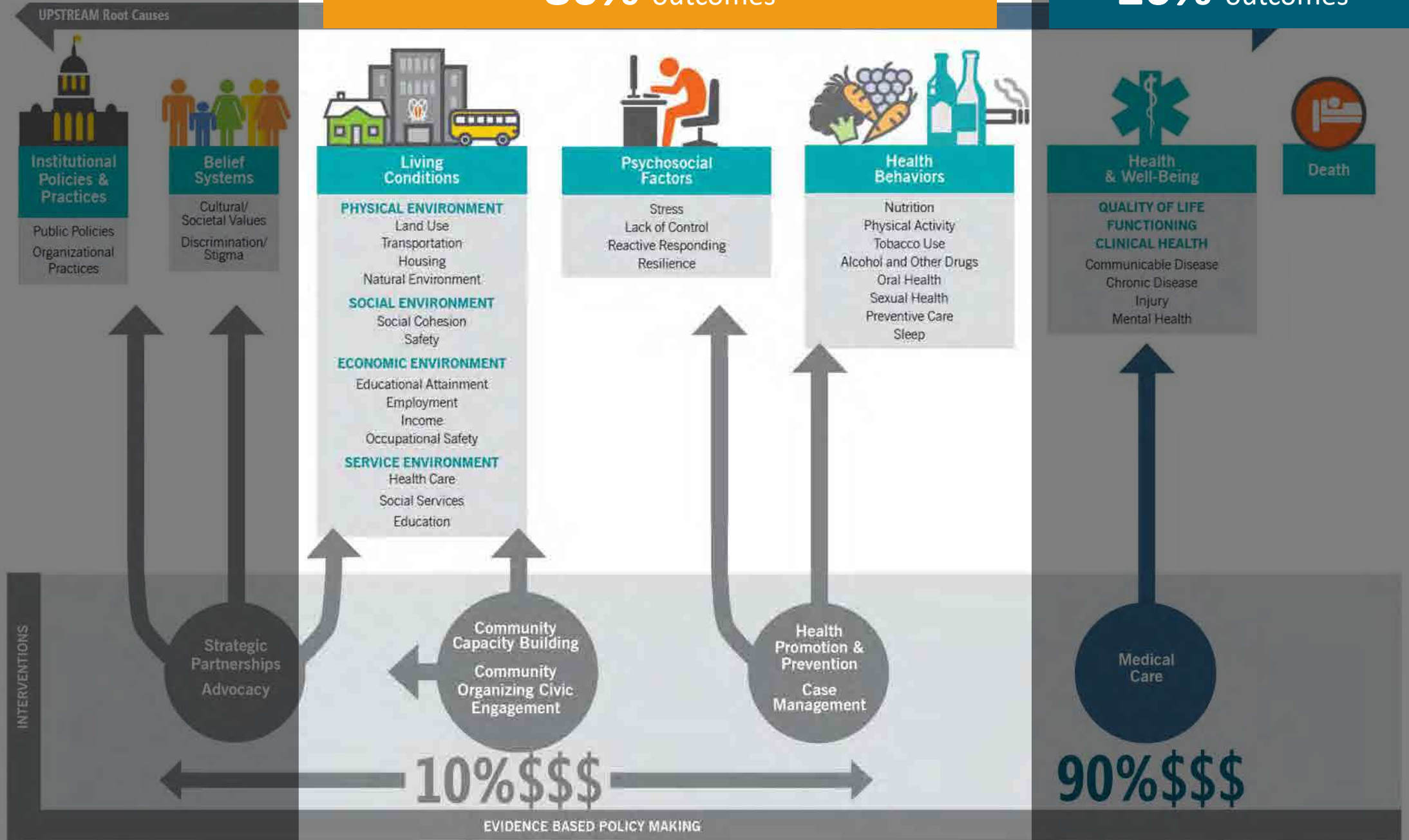
3/10





80% outcomes

20% outcomes





West Bellevue residents live **10 years**
longer than those in South Auburn, WA

Infrastructure for Health



“the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.” (WHO, 2017)



Fewer than **4%** of Americans walk or bike.

We can change that.

Infrastructure for Health



Physical inactivity is the **4th** leading risk factor in global mortality

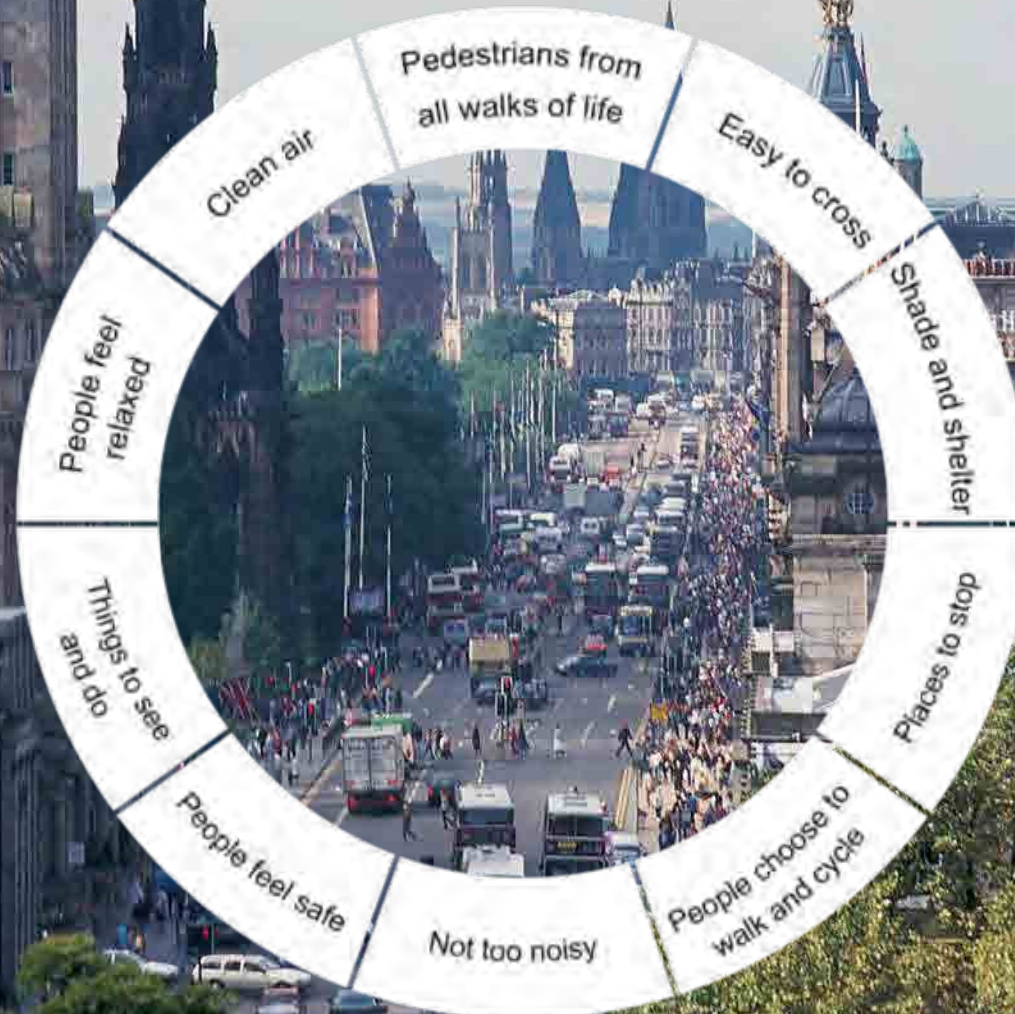


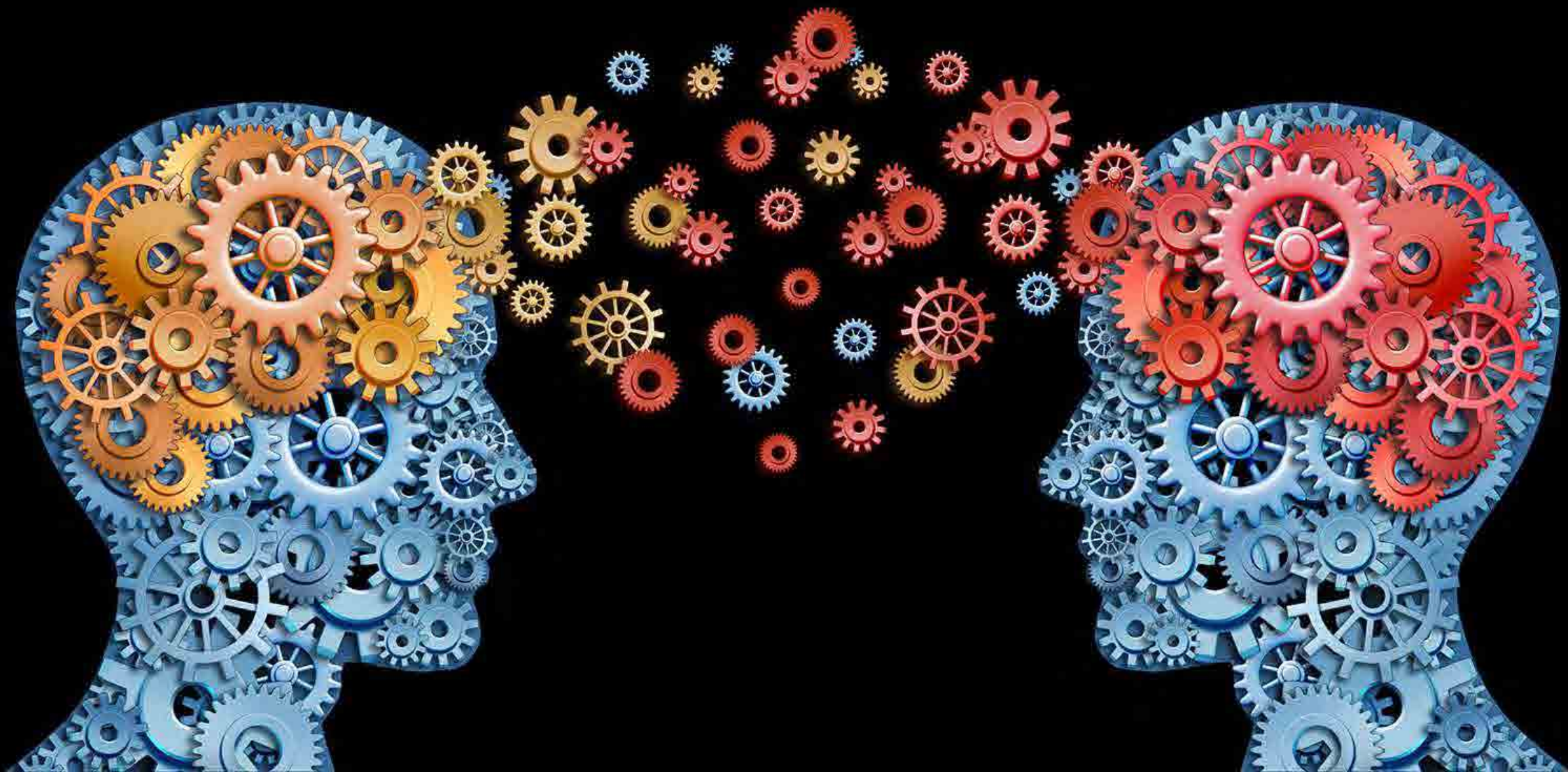
WHY FOCUS ON PEOPLE

Mobility for Health

Streets are anywhere between
25-35% of a City's land area

What could this look like?





Planning for Health

The background is an aerial photograph of a city skyline at sunset. The sky is filled with soft, colorful clouds in shades of orange, pink, and blue. The city below is densely packed with buildings of various heights and colors. Four large, semi-transparent circles are overlaid on the image, each containing text. The circles are colored in shades of teal, blue, green, and light blue. The text is white and bold.

HEALTH

Active Aging
Open Space
Livability
Sense of Play
Quality of Life

ECONOMY

Mobility
Connectivity
Attraction + Retention
Education

ENVIRONMENT

Air Quality
Tree Canopy
Water Quality

EQUITY

Prioritizing People
Culture
Multi-Generational
Access



menu



< All Maps

Air Quality: Air Toxin Cancer Risk (per million) for Portland, OR



Area of interest



Portland, OR



Display map by:

Air Quality: Individual Lifetime Can...



Display data by:

Census Tract

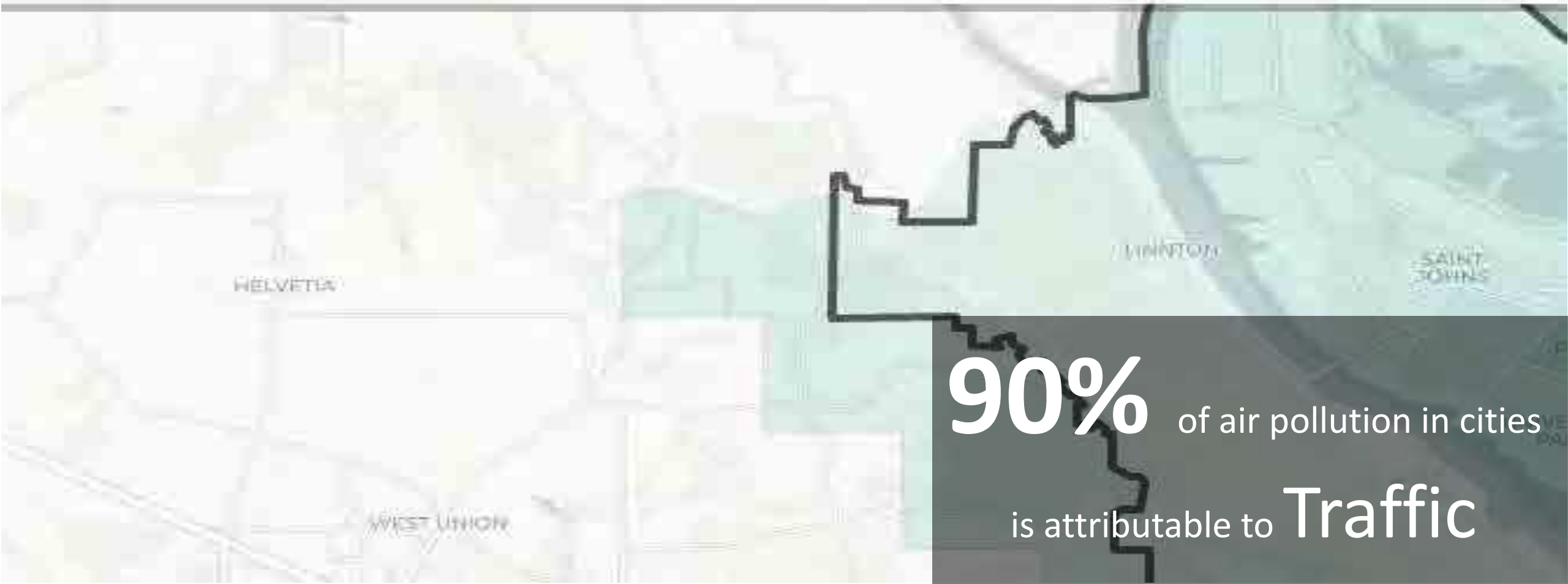
and, OR



Air Quality: Individual Lifetime Can...



Census Tract



90% of air pollution in cities
is attributable to **Traffic**

Environment

An aerial photograph of a city street, likely in Madrid, Spain. The street is wide and paved, with a large, dense canopy of green trees lining both sides. The buildings on either side are multi-story, with red-tiled roofs and light-colored facades. In the background, a hill with a tower is visible under a clear sky.

Streets account for **70%** of
city-owned open space

Environment

An aerial photograph of a city, likely New York City, showing a dense urban landscape with numerous skyscrapers and buildings. A large, lush green park, Central Park, is visible in the center of the image, surrounded by the city's buildings. The image is used as a background for a presentation slide.

A short walk improves creative
problem solving by **50%**
and short term memory by **20%**

Economic Benefits

200%+ investment return
for sidewalks for health
& air quality
vs. sidewalk installation costs

\$1,800 yearly health benefit
for drivers who switch to cycling over
a 3-mile commute

Economic Benefits

Investing in better streets provides
\$11.80 per \$1

65% Pedestrians spend
more \$\$\$ than drivers

Social Benefits + Safety



+3.1 more friends per person
on streets w/ 2,000 daily cars vs 16,000 daily trips

Health Benefits



Physical activity has **declined**
32% in the past 45 years in the US...

-22% reduction in early death
via **15min** daily exercise

Health Benefits



Obesity rates drop **4.8%** for every
 $\frac{3}{4}$ mile walked, on average, a day

So what do we do?

How do we Thrive?



So what do we do?

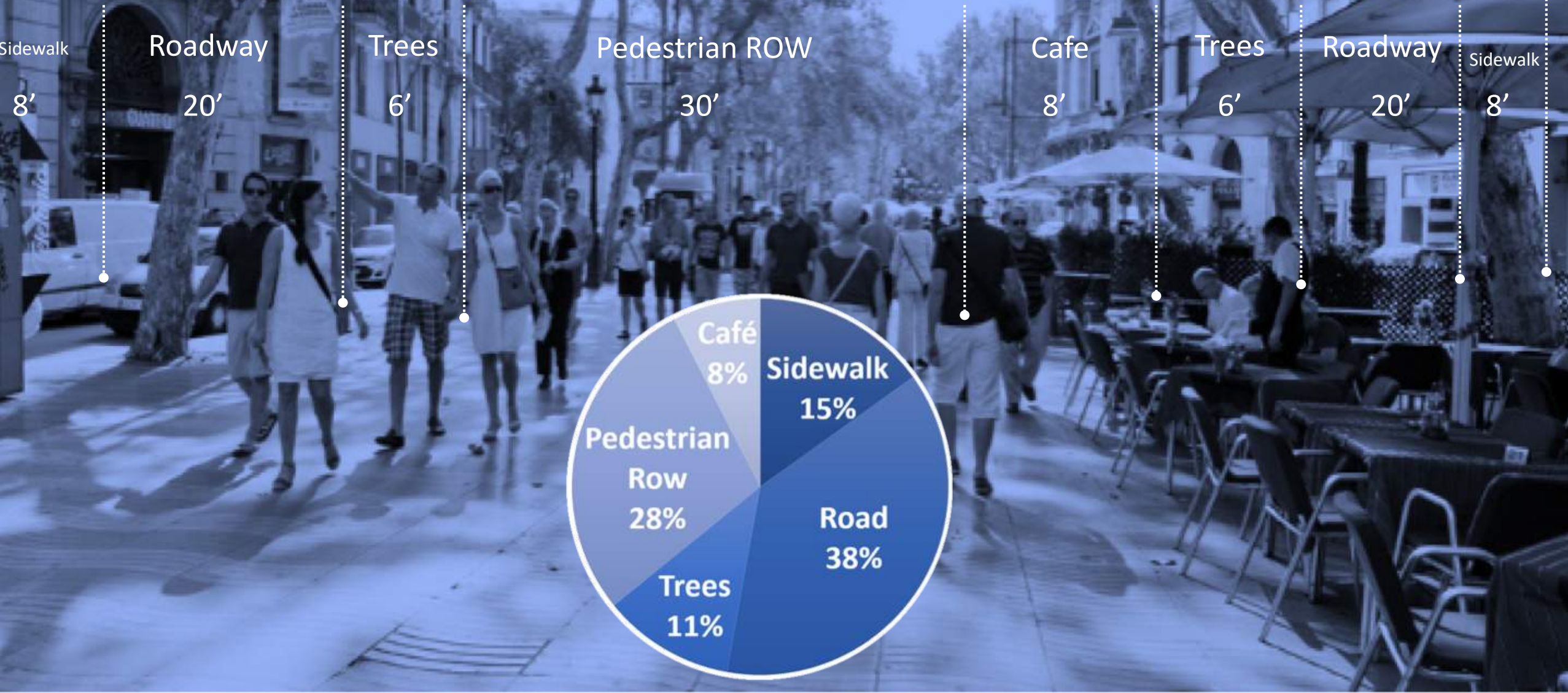


What do we Retrofit?

Planning for Health



Return of Great Streets



PUBLIC LIFE

The background image shows a sunny day in a park. In the foreground, a young boy in a red shirt is running towards the left, and a young girl in a striped shirt is standing on the right. They are on a dirt path with white chalk lines. In the background, other people are visible, including a man in a red shirt on the far right. The scene is filled with trees and dappled sunlight.

Population Health

Trust

Civic Engagement

Social Capital

Social Capital

Economic Development

Active Mobility

Attracting & Retaining Talent

Local Identity

Safety

Real Estate Value

Resilience

Equity and Access

Sustainability

How?

1. Visualize VALUE;
2. Think CORRIDORS, instead of 'stations';
3. Think COMMUNITY, instead of 'transportation';
4. Think PARTNER, instead of 'competitor'; and
5. Think CHAMPIONS, instead of 'stakeholders'.

A Focus on Corridors

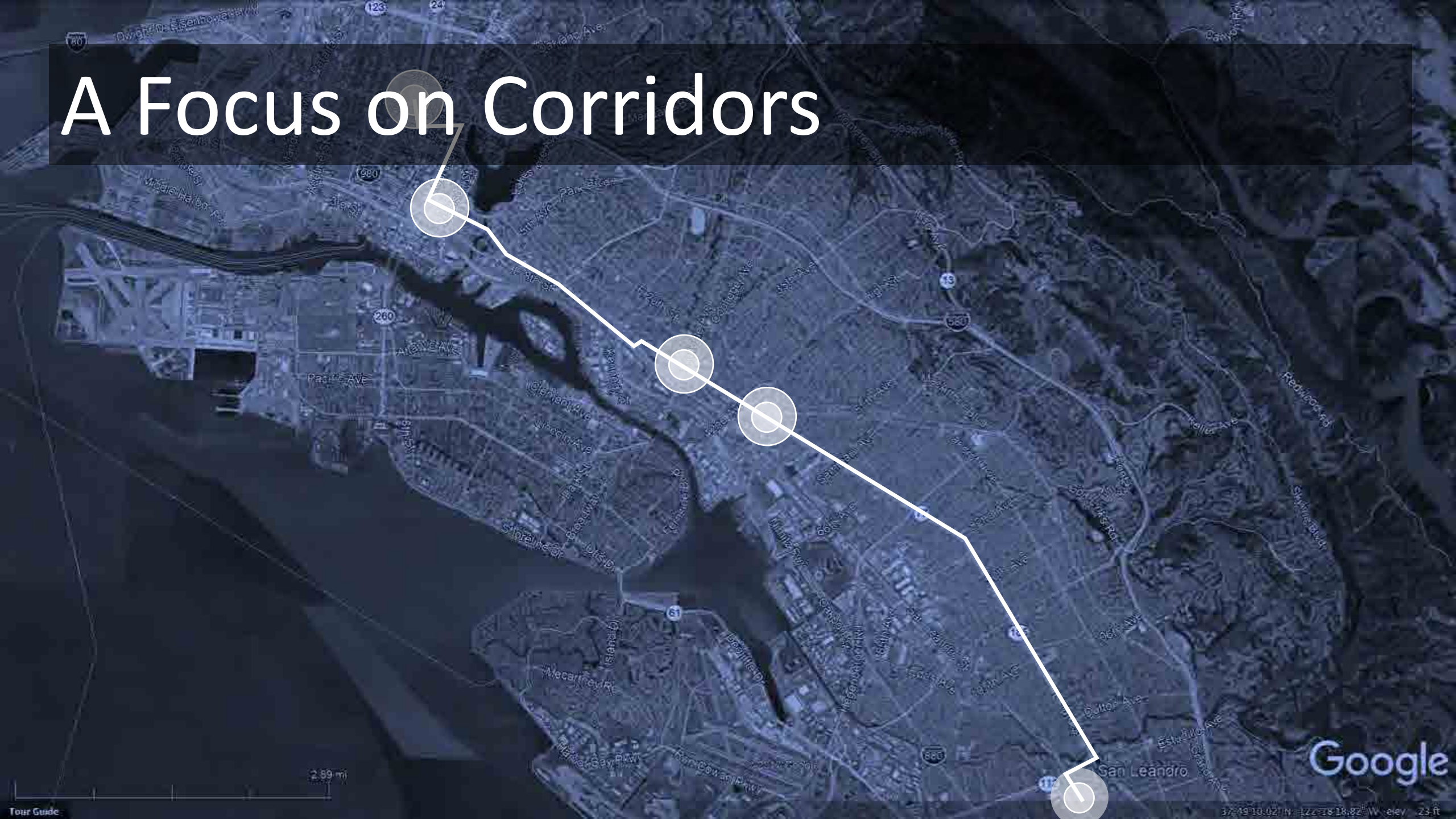


2.89 mi

Google

37°49'10.02" N 122°18'18.82" W elev 23 ft

A Focus on Corridors



2.99 mi

Google

37°49'10.02"N 122°18'18.82"W elev. 23 ft

A Focus on Corridors



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How?

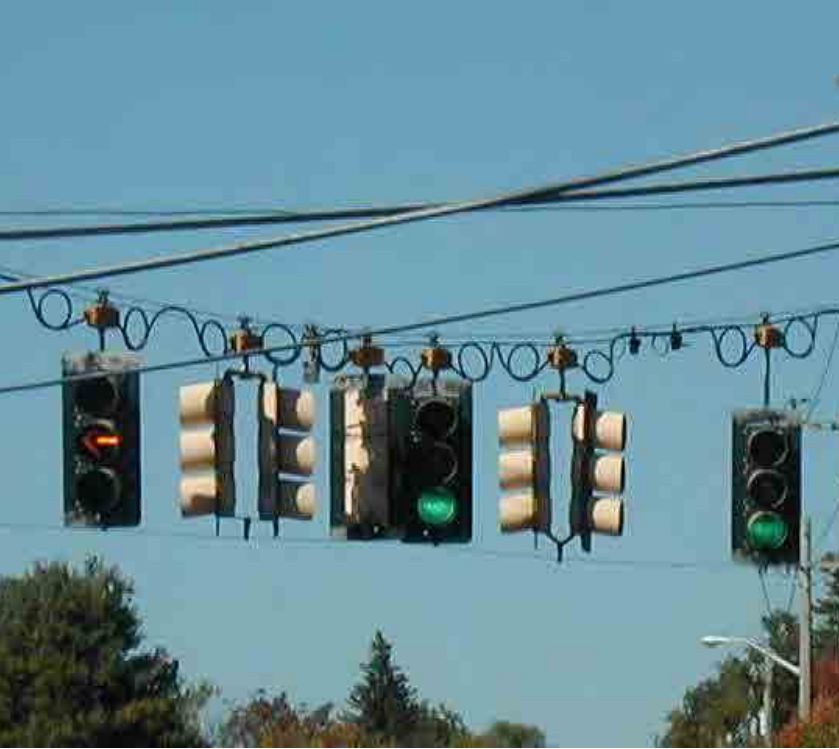
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public realm transformation

human and environmental health and well-being



"... safely connect people to places, things,
and experiences they care about ..." Cruise



The car doesn't need to see anything . . . anymore
and . . . they are quiet, safe, and don't smell

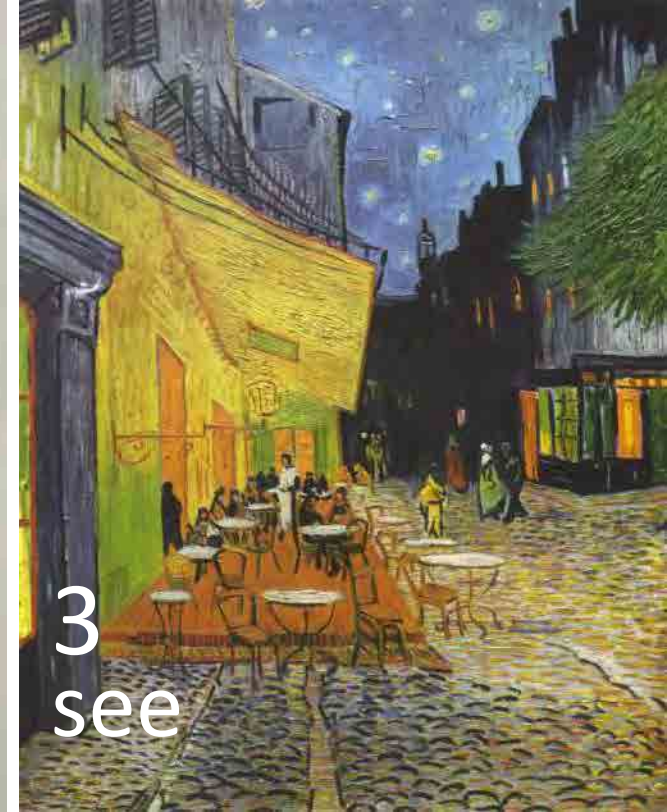
1 taste
Urban ag



2
hear
65db to 45db



3
see

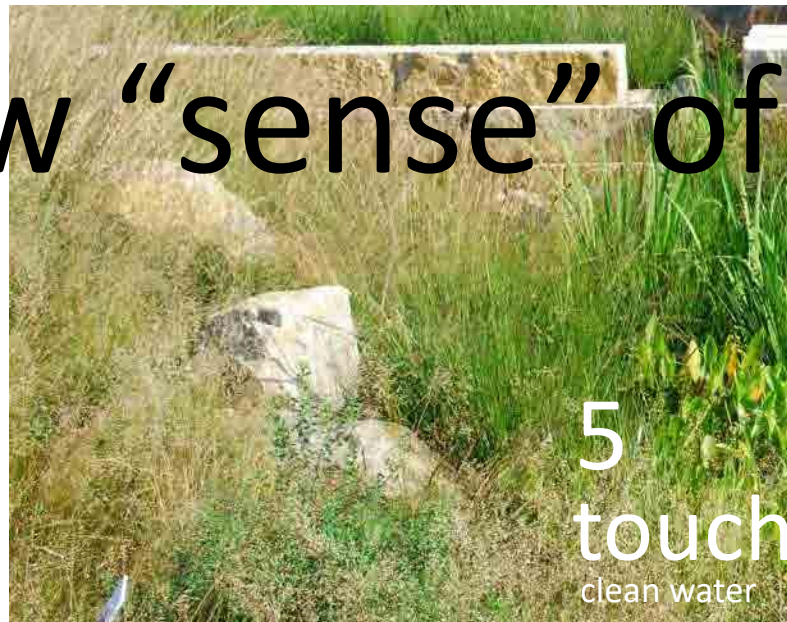


A new "sense" of place

4
smell
fresh air



5
touch
clean water



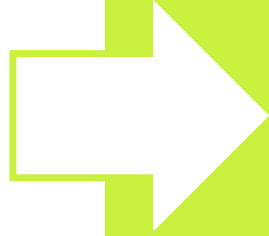
feel
cooler environment



Building

Vitamin D
Eye health
Improved sleep
Clean air
More energy
Nature
Psychological
health

get



outside

healthy immune system + serotonin
nearsightedness + vision
circadian environment
Increase your attention span
Connect to nature not caffeine
Boost your immune system
Feel happier

Community

Building

Air
Water
Nourishment
Light
Fitness
Comfort
Mind



THE SUSTAINABLE SITES INITIATIVE



Air
Water
Nourishment
Light
Fitness
Acoustics
Mind
Thermal
Materials
Community

Community



streetcars

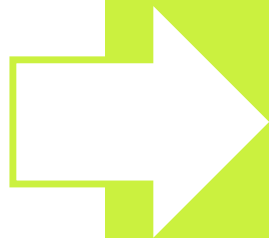


swales



urban ag

parklets



Recreation



Collaboration

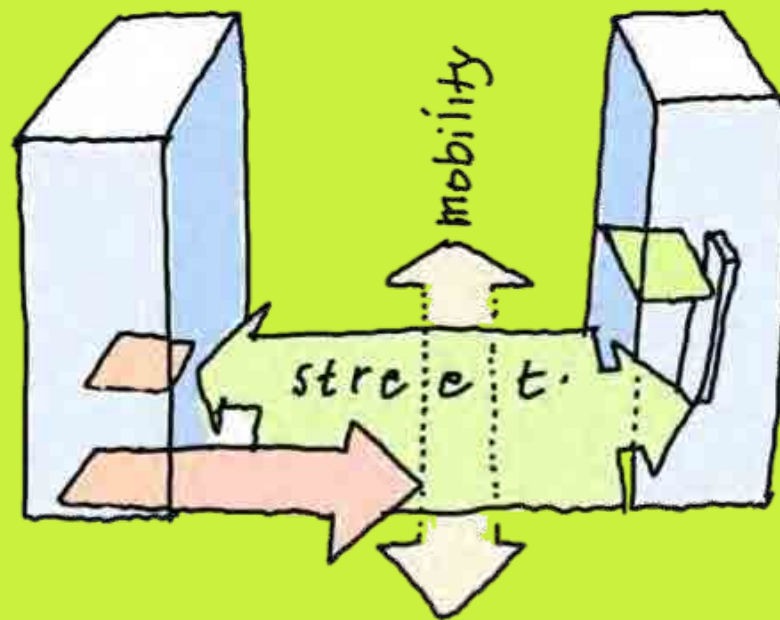
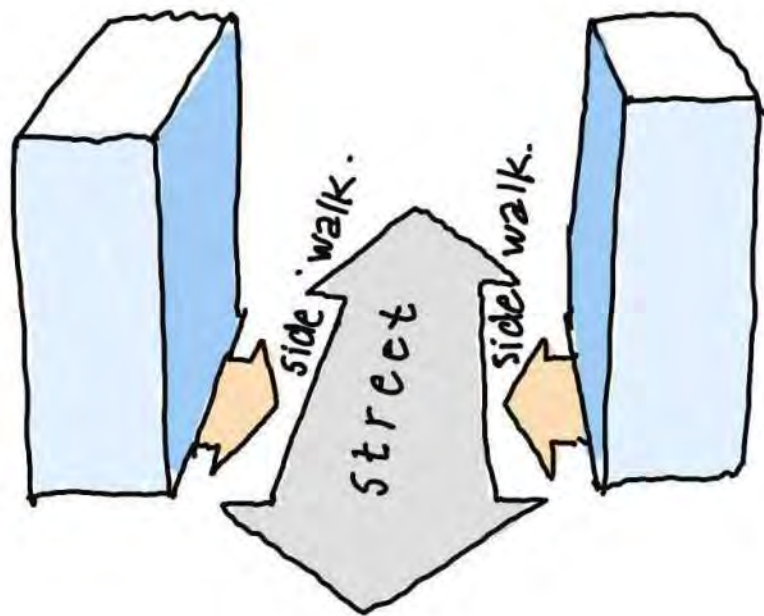


Play

Nature

Commerce

Building

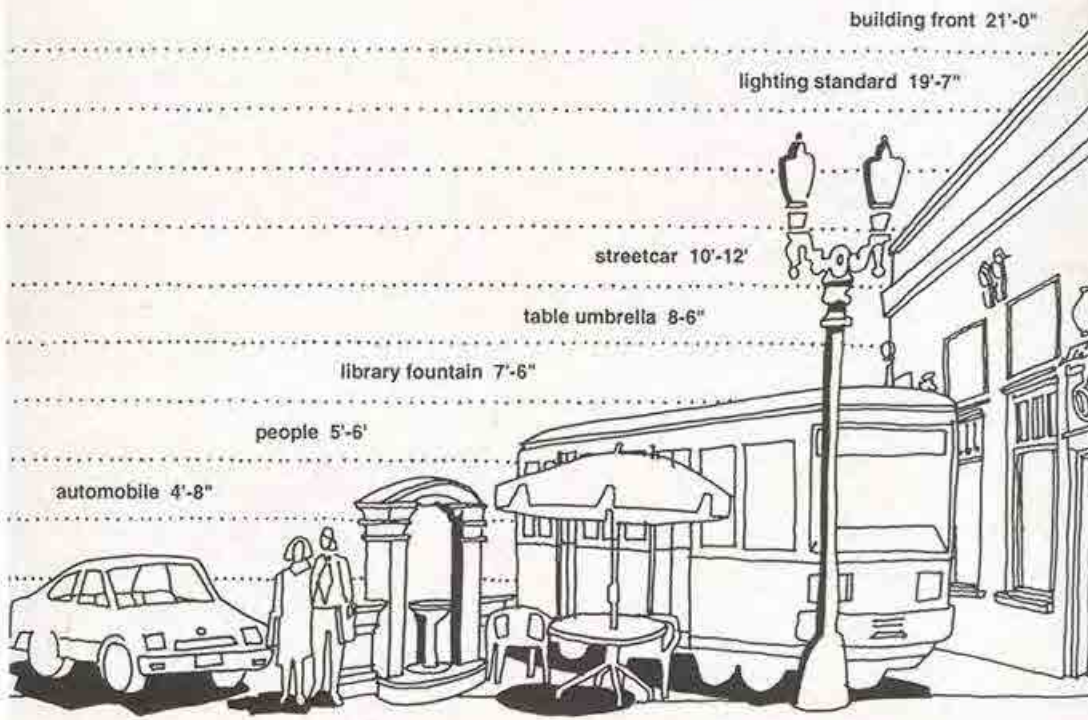


Community

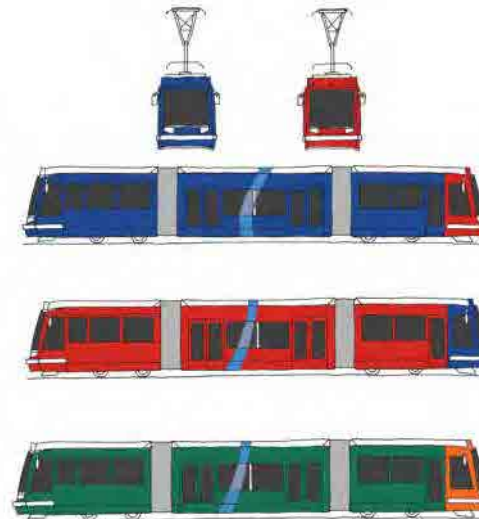
The Central City Streetcar

Streetcars are convenient, integrate with everyday street life, and respect the human scale of the city. A streetcar system:

- will not require separation from automobile traffic
- will not disrupt existing on-street parking
- will not require special platforms
- will be non-polluting
- will reduce short-distance automobile travel, which accounts for 2/3 of all auto travel. Short-distance trips typically occur on urban streets and are 8 miles or less in length
- will utilize existing technology that has world wide acceptance



Streetcar Characteris





Typical Street ROW 60'



Forest Bathing



Fit & Active



Culture & Commerce



AUTONOMOUS VEHICLE STUDY

8.20.2017 DRAFT

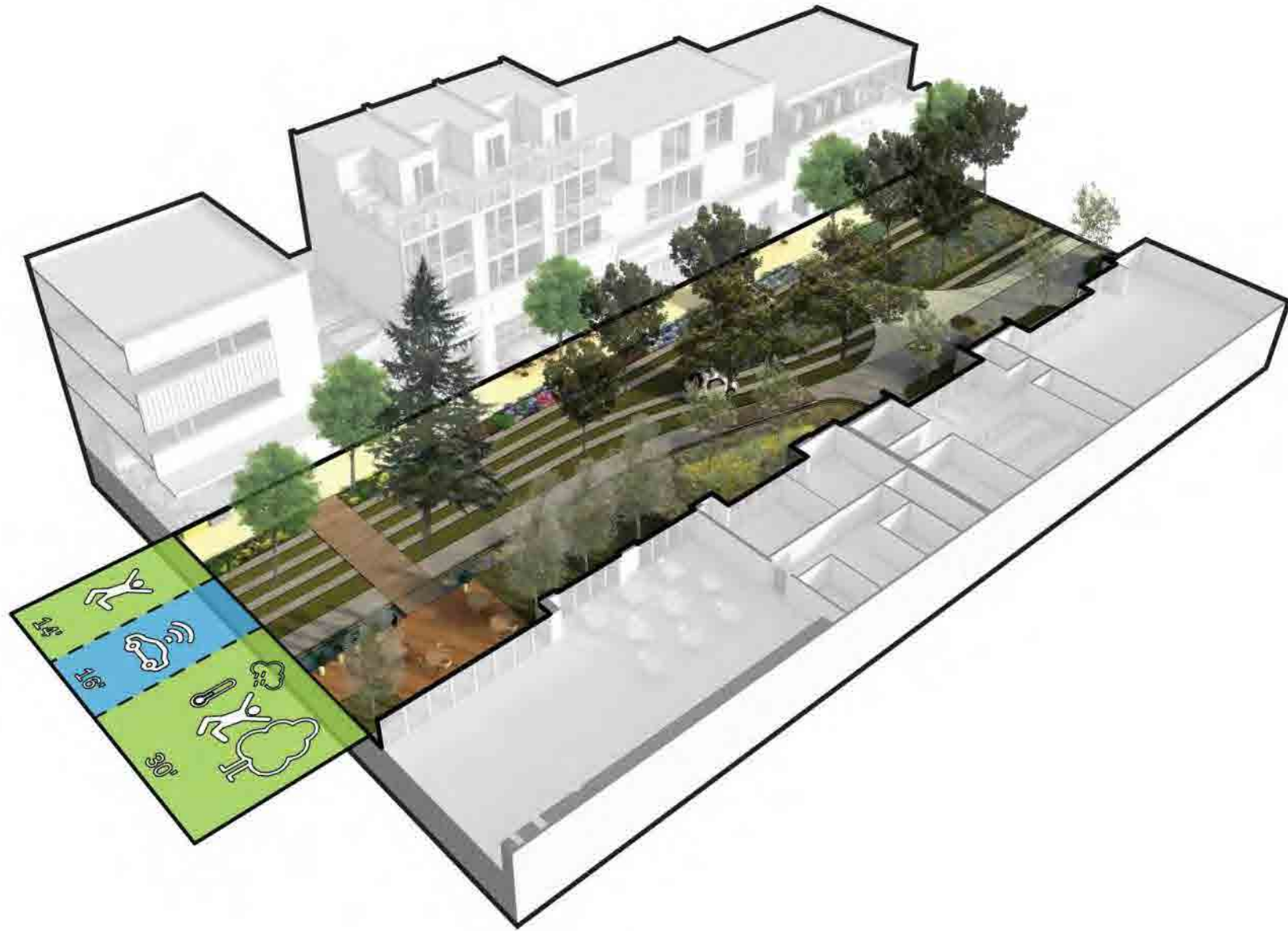




AUTONOMOUS VEHICLE STUDY

8.20.2017 DRAFT





AUTONOMOUS VEHICLE STUDY

What if

- ... air was fresh and good for your immune system? phytoncides
- ... the street wasn't a heat-sink, but lush, shaded, soft and comfortable?
- ... it was quiet and conversations were easily heard? 45db
- ... streets were dimmer, cars don't need light, a circadian city for humans and wildlife?
- ... streets and blocks cleaned water?



forest bathing

12 20 10 5 13

What if

- ... asphalt was reduced and pavement was permeable?
- ... the street felt like front porch and yard that the AV passes through?
- ... nature moved in and song birds replace sirens and honking?
- ... cleaning stormwater was an amenity?



forest bathing

12 20 10.5 13



AUTONOMOUS VEHICLE STUDY

What if

- ... the street catered to walkers, runners, and bicycles?
- ... kids could play in the street again? risk and scaffolding play
- ... streets contributed to a decrease in diabetes, lower blood pressure?
- ... streets contributed to an increase in physical and mental well-being?



fit + active

13 18[10] 6 23[31]

What if

- . . . the street was home to climbing walls, boccie ball, and other physical games?
- . . . streets could accommodated the expansion of building activities outdoors?
- . . . streets contributed to the reduction of a 70% obesity rate for adults and children saving an estimated 150 billion dollars in health care per year and billions more in lost worker productivity?

fit + active

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fit + active

13 18[10] 6 23[31]



AUTONOMOUS VEHICLE STUDY

What if

- ... retail and commerce replaced parked cars and car lanes?
- ... outdoor seating for restaurants in a fresh air and quiet environment was plentiful?
- ... if there were as many people outside as inside and streets felt safe?



commerce + culture

30

18

12





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commerce + culture

30

18

12

What if

... there were new ways to capture revenue?

**INVESTMENT
DEVELOPMENT
REVENUE**

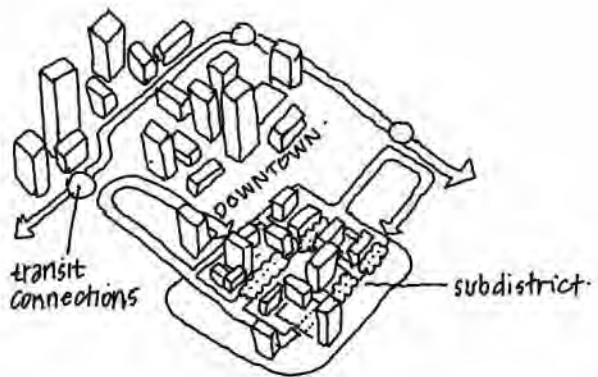
quality of street materials/environment
social equity/entrepreneur business incubation
stormwater infrastructure
affordable housing funds
and ...

1 to 100 year leases
fixed-non fixed elements
temporary/permanent structure

20' - 26' ...

commerce + culture

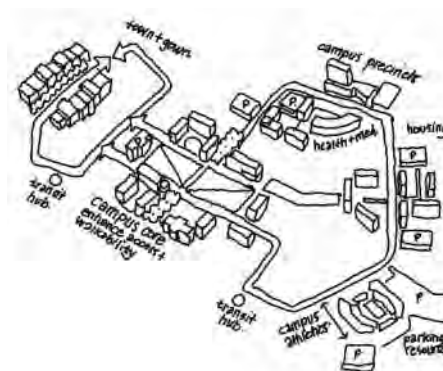
“Toes in the
Water”



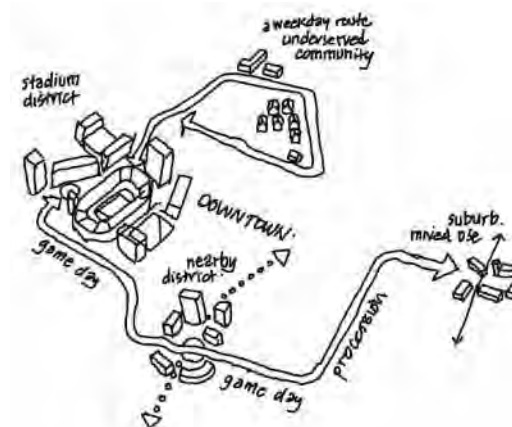
1 subdistrict showcase

7

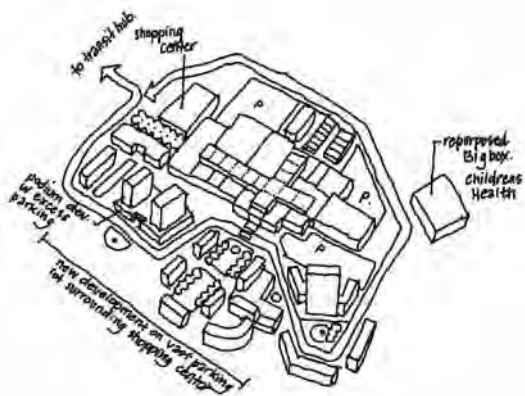
Autonomous Vehicles “toes in the water” projects



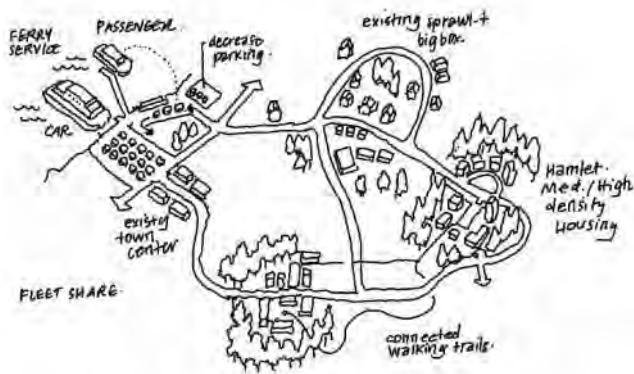
2 connective campus



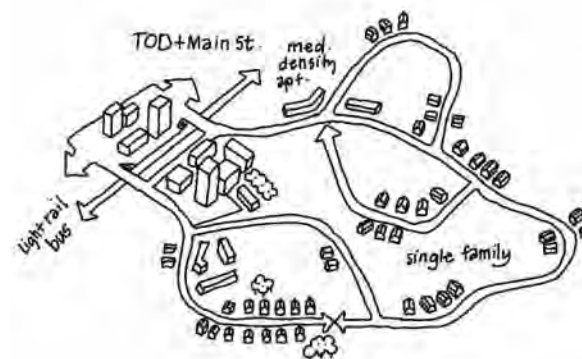
3 a bigger event



4 shopping center city



5 Ferry and forest



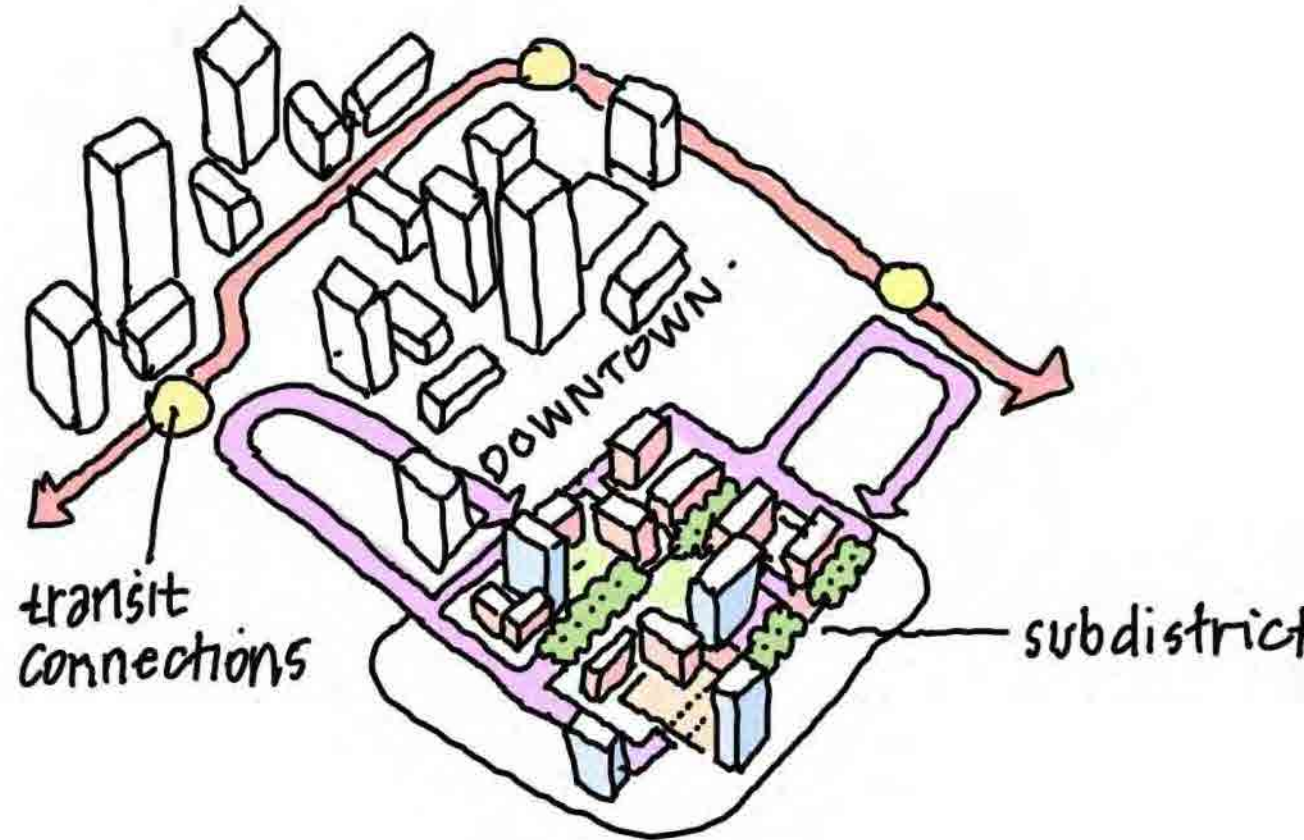
6 singles should mingle



7 driven to nature

1 sub-district showcase

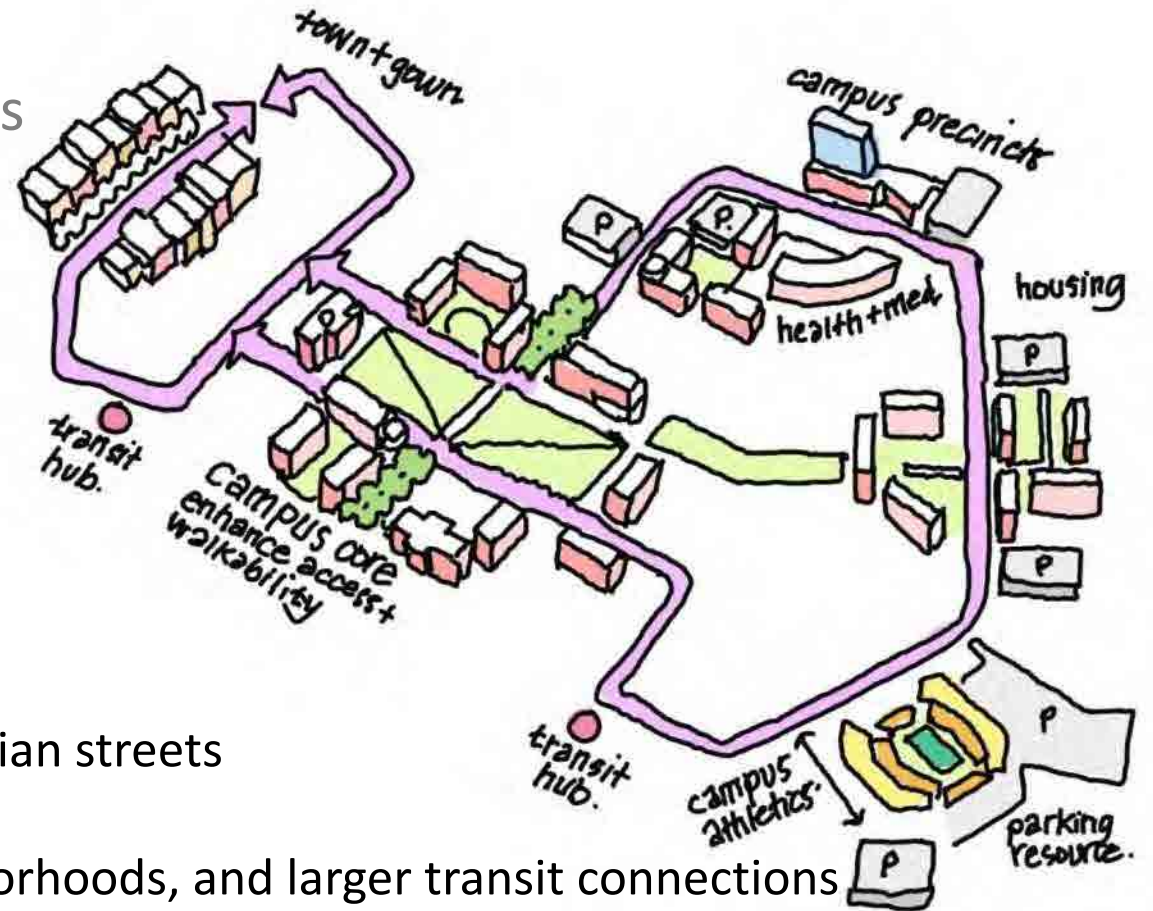
What if a mixed-use project within a district connected to nearby transit by AV with exceptional public realm + street environments?



- Early AV infrastructure as an amenity and showcase
- Benchmark with WELL + Living Community, ULI Healthy Places Leed ND + other protocols
- Connect a catalytic district enhancing livability and activity

2 connective campus

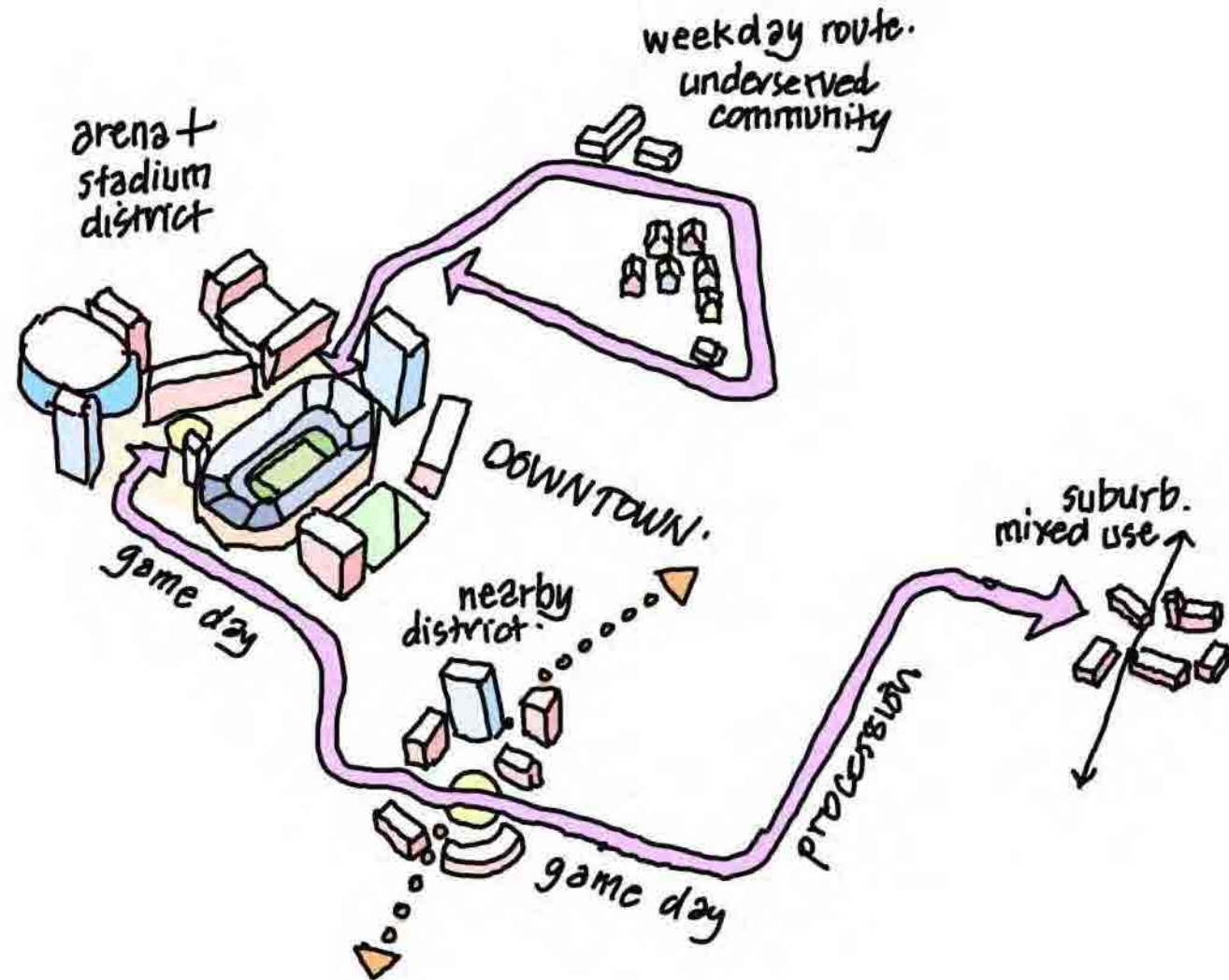
What if a campus loop connected the campus core to significant transit connections and parking located or built away from the campus



- Use AV networks to create safe and world class pedestrian streets and public realm environments
- Consider "town and gown" loops for campuses, neighborhoods, and larger transit connections
- Pursue flexibility to adapt to connective relationships between housing, academic, sports and other institutional and cultural elements of campuses

3 a bigger event

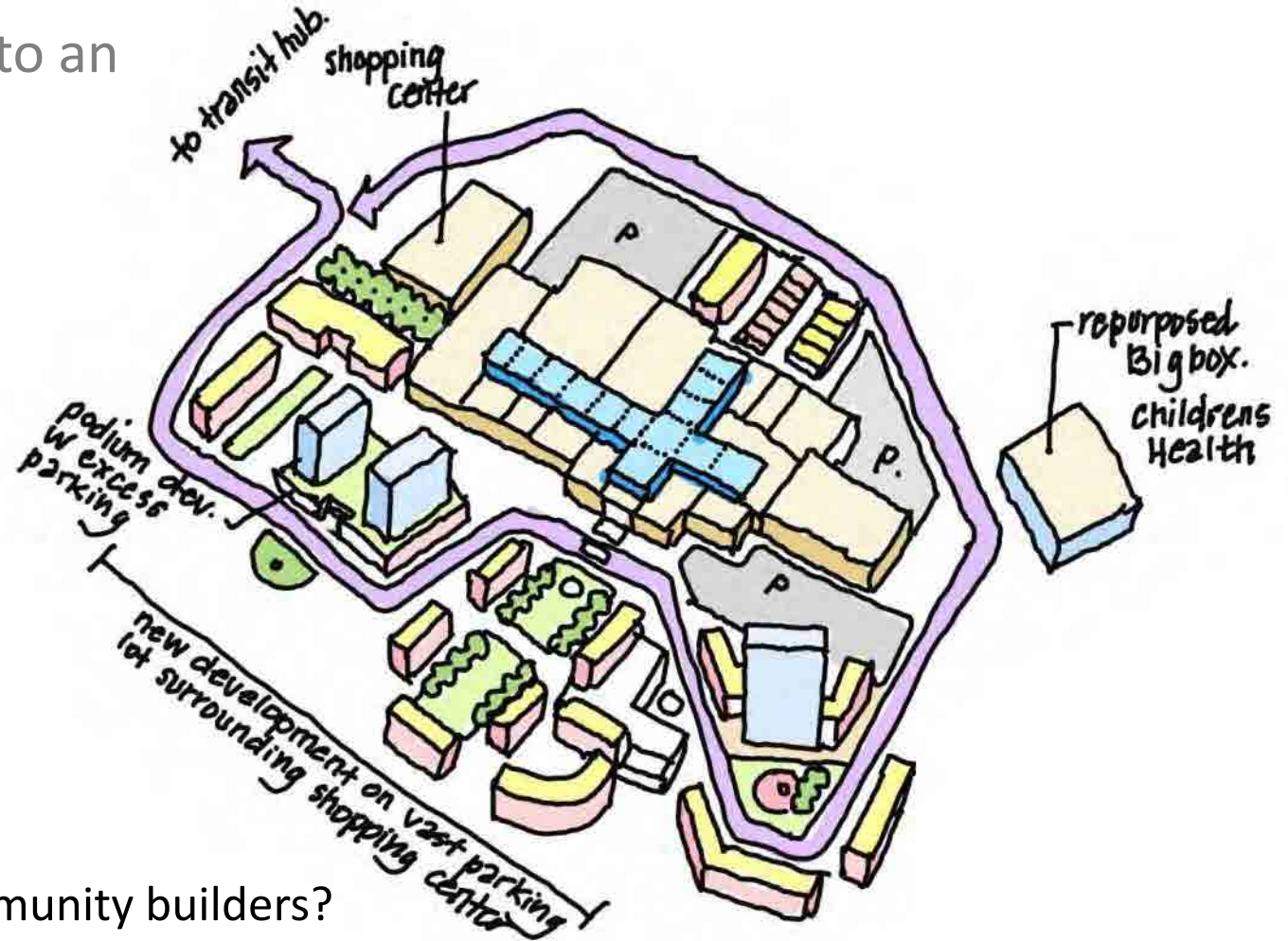
How can AV enhance and extend fan and community experience during large sporting and entertainment events and give back during the non-event period?



“The timing of this Milo technology could not be better,” said Rob Matwick, executive vice president of business operations for the Texas Rangers. “To be able to give our fans the opportunity to experience this innovative technology and give them the convenience to deliver them close to the ballpark or AT&T Stadium is outstanding. We are all about customer service and making memories here at the ballpark.”

4 shopping center city

What if we extended mall concourses into an integrated AV and pedestrian network connecting mixed-use and connected to regional transit?

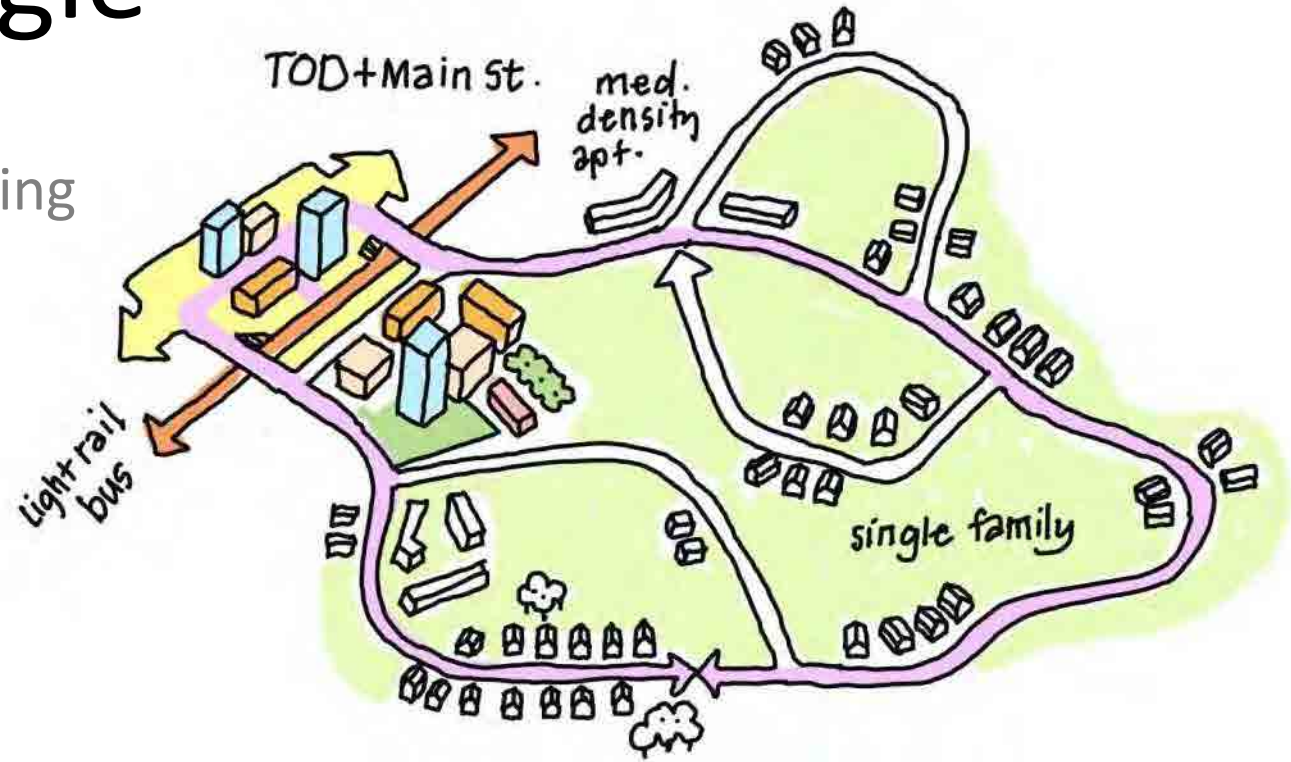


- What if “brands” become co-investors and community builders?
TargetPlay [parks] or NikeRun [trails]

-

5 singles should mingle

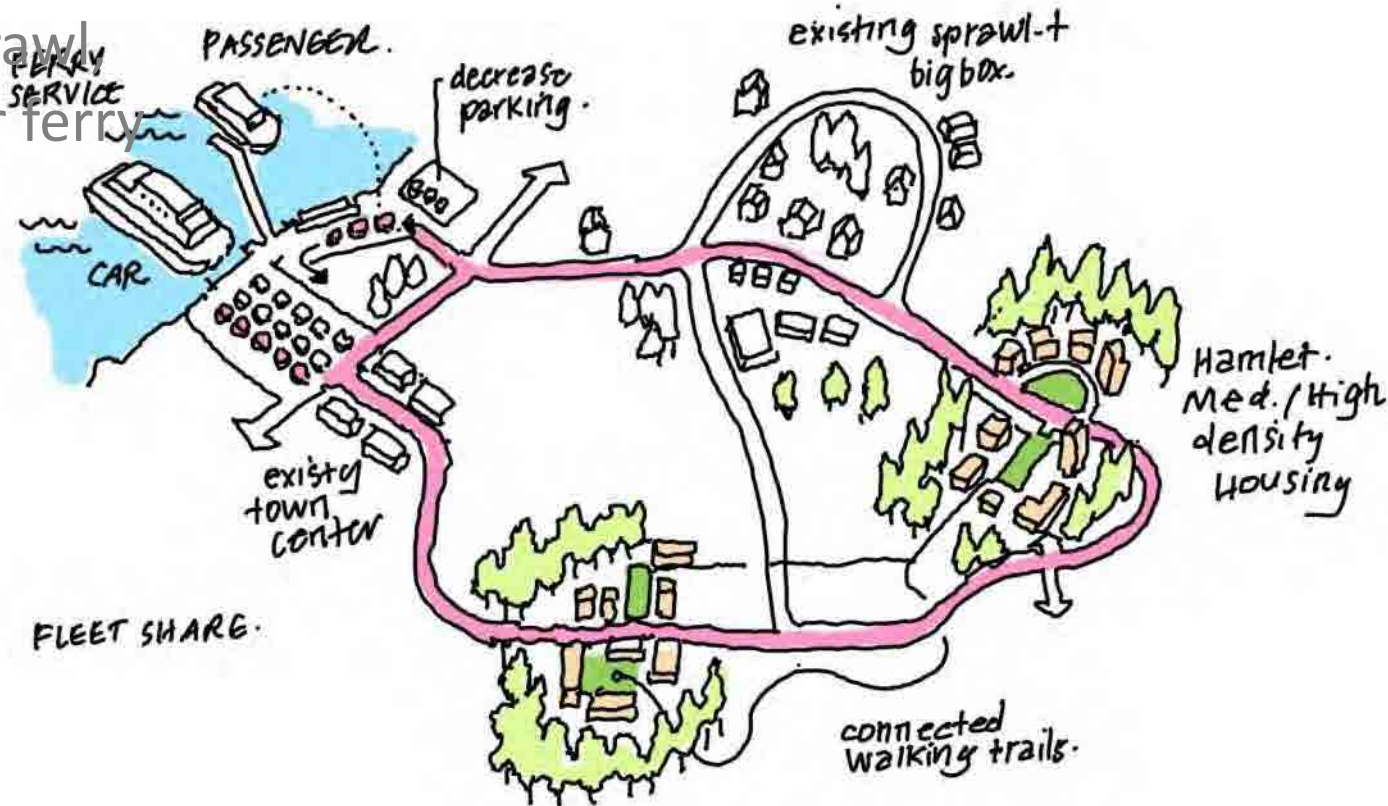
What if AVs connected low and medium density environments to existing or emerging TODs?



- What if AV supported aging in place connecting people to pharmacies, grocery, dining and entertainment
- What if the frequency and presence of AV could eliminate the need to build park and ride garages in an effort to increase density and activity and enhance nodes of 20 minute living.

6 ferries and forest

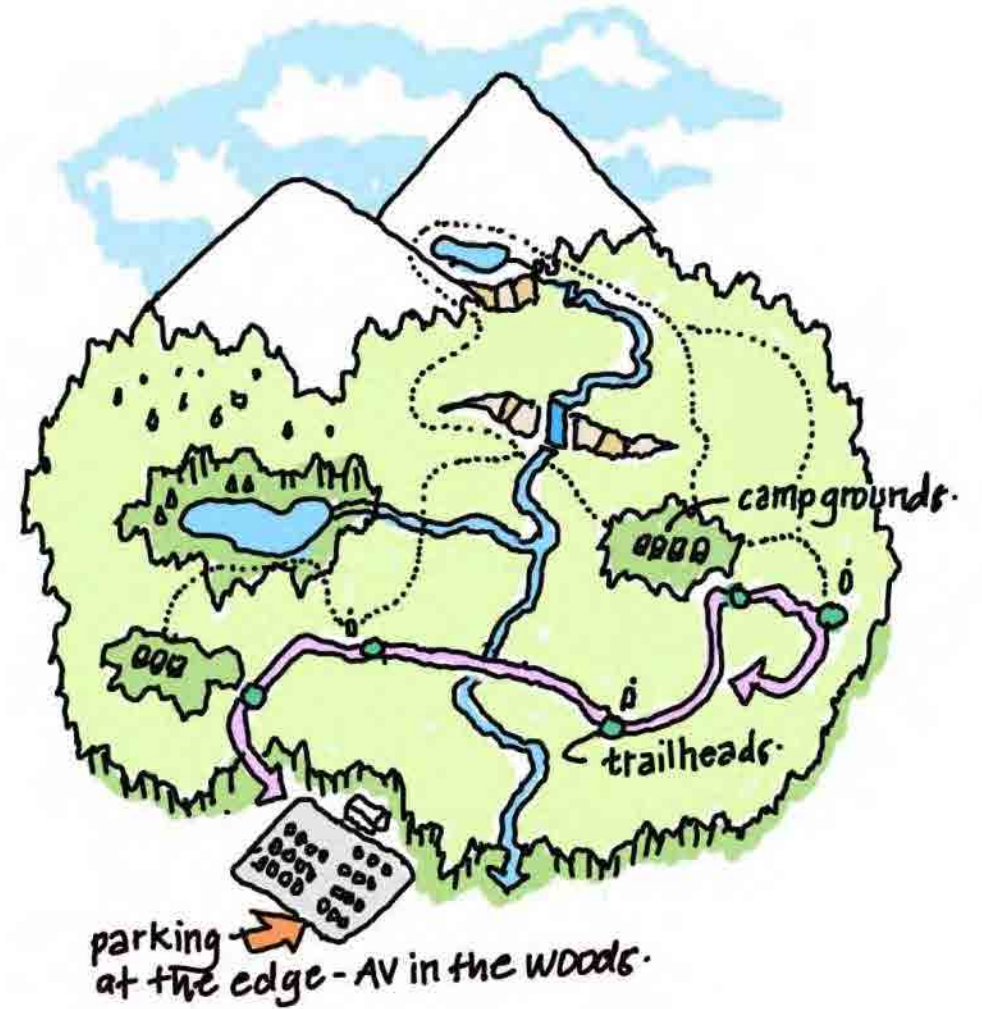
What if AV loops connected new denser mixed-use environments minimizing sprawl, ferry terminal surface parking and other ferry infrastructure?



- What are the public private opportunities for co-investment?
- What if AV ferry boarding was prioritized and less costly for riders?
- What if FOD development provided commuter connectivity and off commute connectivity to main streets and town centers?

7 driven to nature

How can AV help protect our national parks from the noise, light and air pollution of combustible engine cars minimizing the impact and cost of infrastructure upkeep and diminishing budgets?





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