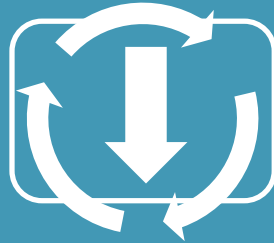


To a worm in horseradish,
the world is horseradish

The connection between
transportation and land use



Land Use and Development



Affects

Transportation





Intra-City

Transportation that connects places within a city



Inter-City

Transportation that connects cities with other cities



Omni-City

Transportation that connects to within and to other cities

Marchetti's Constant:

The average time spent by a person for commuting each day, which is approximately one hour.







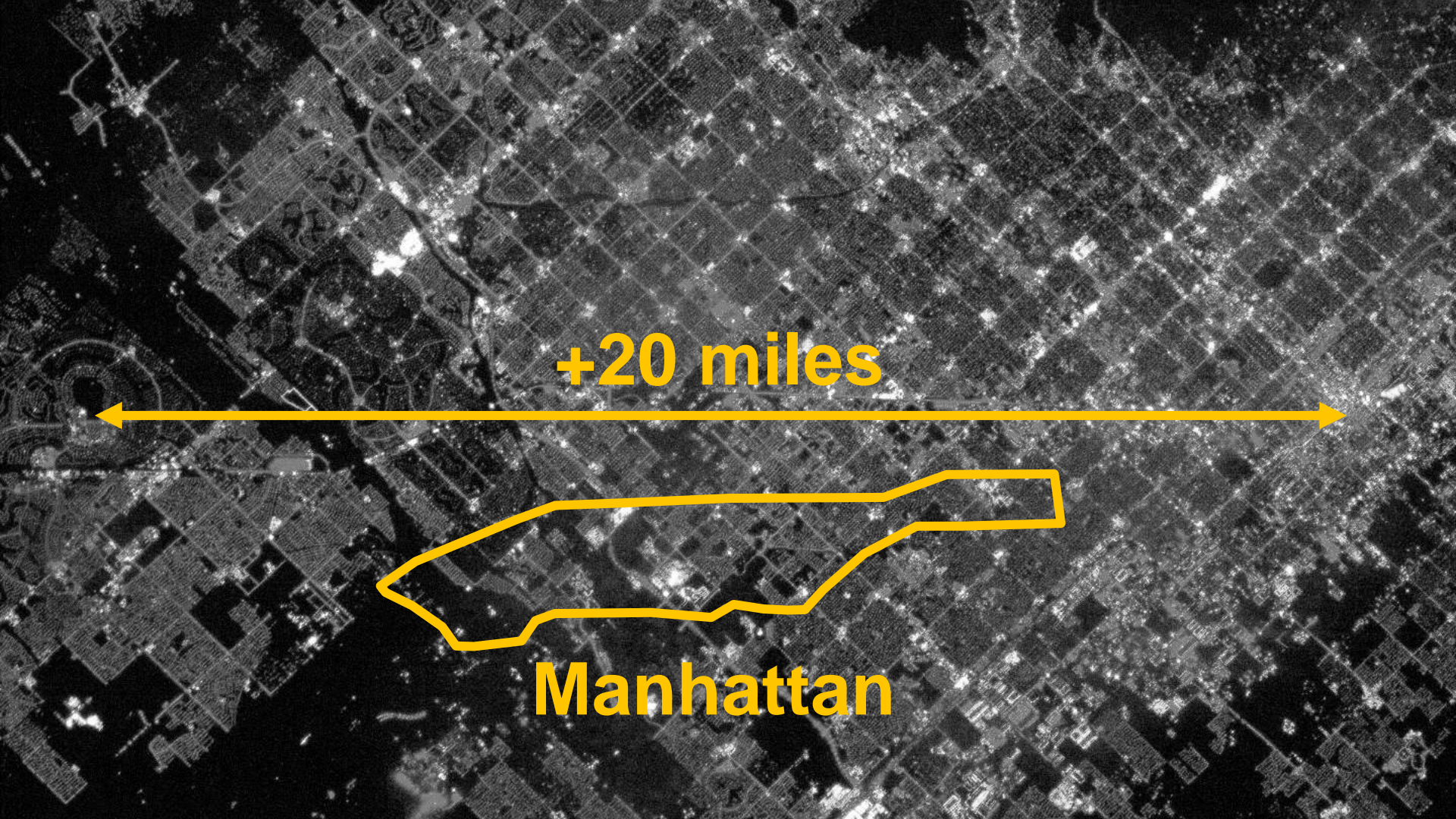








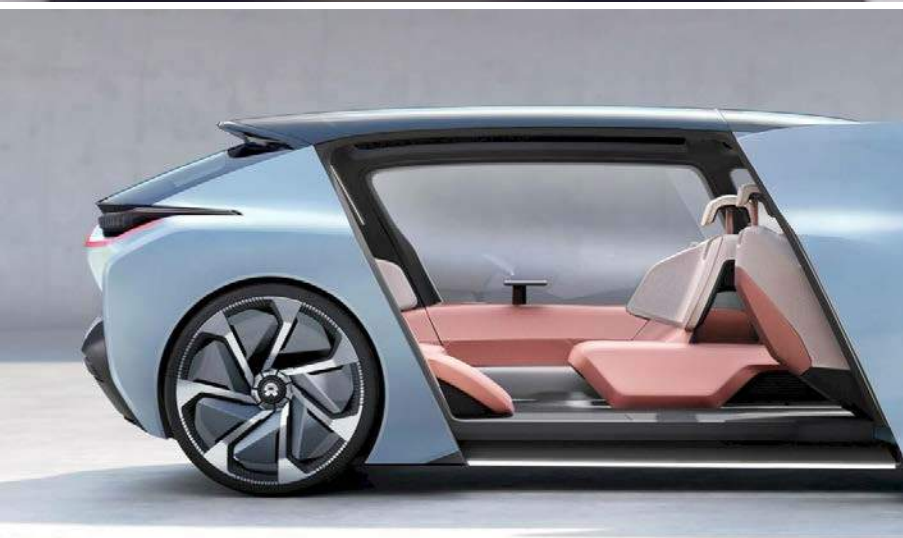




+20 miles

Manhattan







Waymo (Google) MaaS/TaaS

- 1.2M Autonomous miles in 2018 (CA)
- +10M Autonomous miles total
- 1 billion Autonomous miles in simulation
- Commercial taxi services in AZ and CA.
- Program operating in 6 states, 25 cities



Waymo (Google) MaaS/TaaS

- 62,000 new Chrysler Pacifica Minivans\
- 20,00 new Jaguar I-Pace SUVs
- More miles driven than all other competitors combined



Waymo (Google) Freight

- Expanding system to freight and trucking applications
- “Anything that has wheels and moves along the surface of the earth is something that we, in the future, could imagine being driven by Waymo.”

What is the size of a parking space?

What is the size of a parking space?

9x18, 10x20
+/- 200 s.f.

How many parking spaces can fit on one acre of land?

How many parking spaces
can fit on one acre of land?

+/- 100 spaces

How many parking spaces would be needed
for 1,000 square feet of retail?

How many parking spaces would be needed
for 1,000 square feet of retail?

3-4 spaces

-or-

1,740 square feet

How many square feet in an acre?

How many square feet in an acre?

43,560 square feet

Given one acre of land,
how much retail can be developed?

10,000 square feet

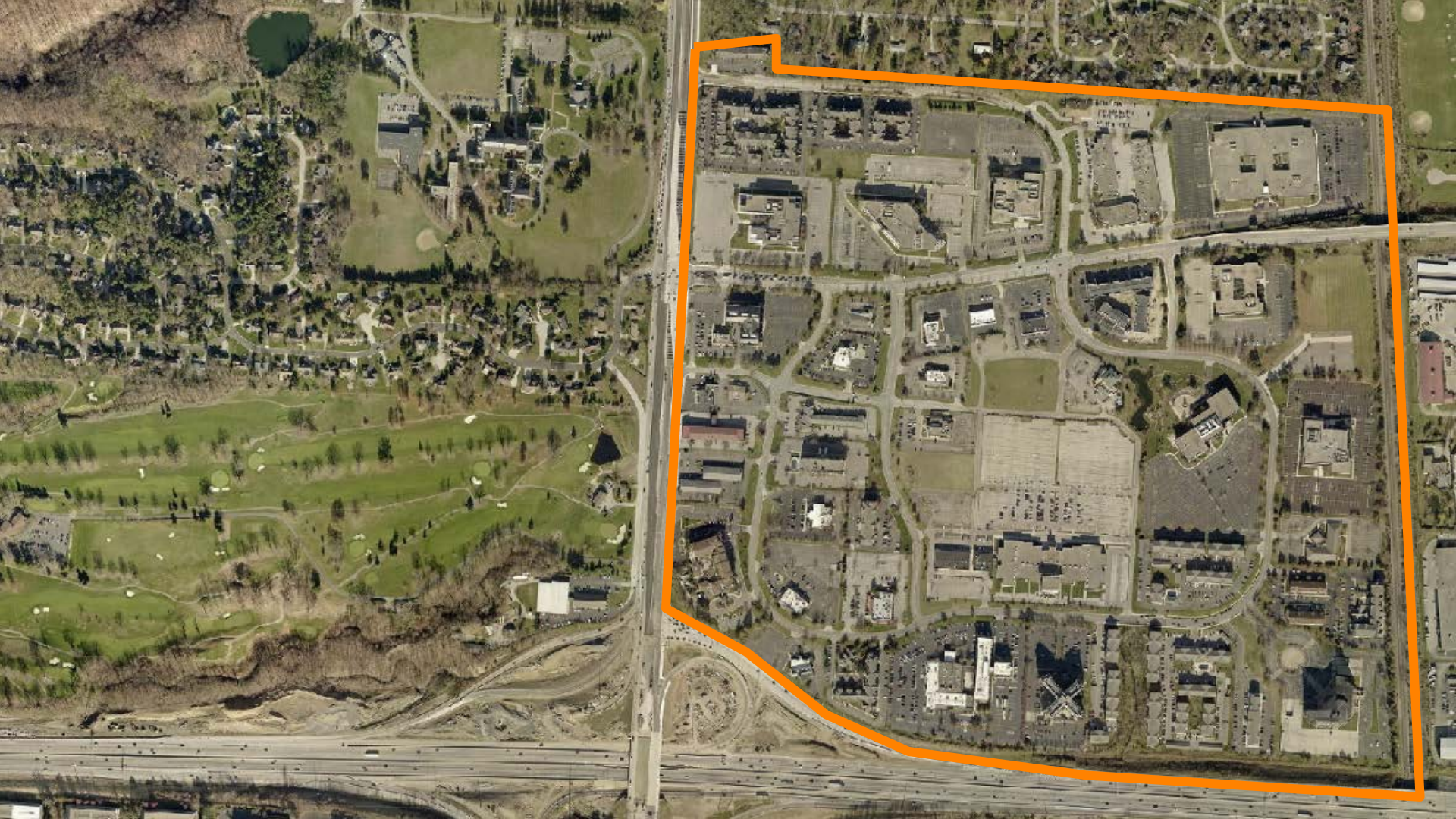
Given one acre of land,
how much retail can be developed?

10,000 square feet

*Or less than 25% of the site

Parking is THE #1 constraint for development in almost any context.

- It is keeping us from:
 - Building densely
 - Developing sustainably
 - Building walkable communities



350
Acres



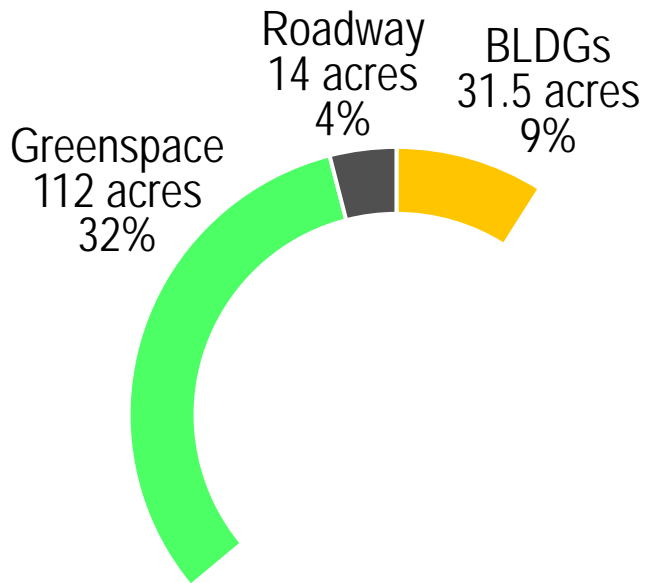
Roadway
14 acres
4%

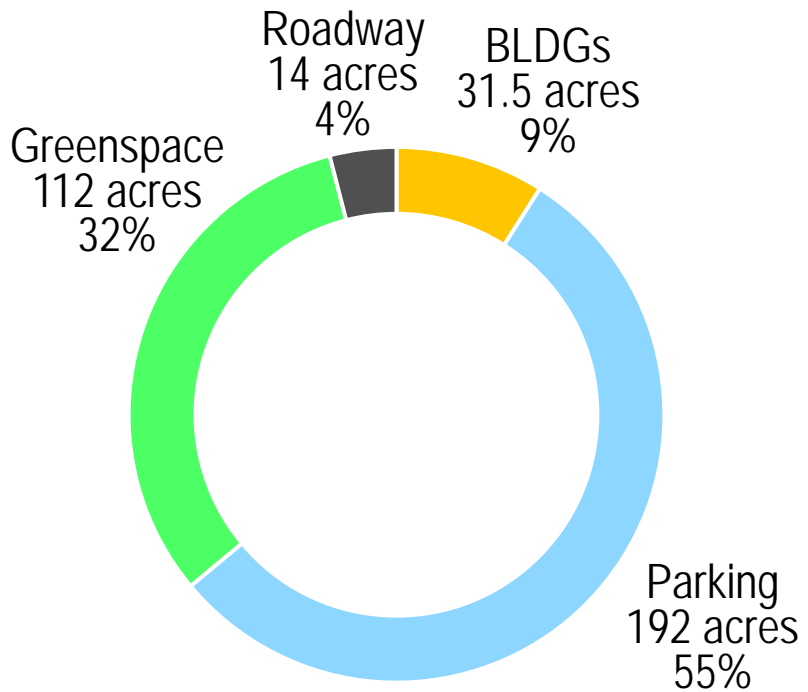


Roadway
14 acres
4%

BLDGs
31.5 acres
9%











Personal

- Reevaluate how our right of way is divided
 - Slow lane
 - Personal mobility lane
- Plan for modes that do not yet exist
- Establish safe areas for boarding / storage



Transit

- Dedicated space is critical, regardless of mode
- Plan for flexibility and the use of new and emerging modes
- Potentially redefine what we understand as transit



Robotic

- Designate space in the ROW for robotic operations
- Define how these vehicles will cross from roadway to building

So what are the impacts?

- Land and development value**
- Change the infrastructure/development equation**
- Redefine the size and organization of our cities**

So what do we need to do?

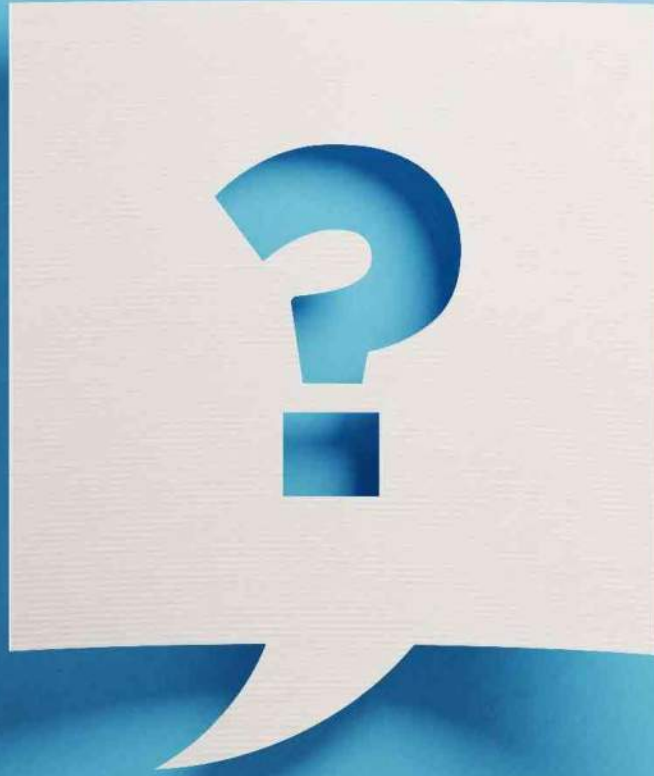
- Leverage the capabilities of AVs to start rebuilding our communities**
- Re-think the right of way**
- Reconfigure our infrastructure to accommodate modes that do not yet exist**

But also...

We need to tell the story of what these changes in transportation can do for communities we serve.

We are in the business of transportation.

**But more importantly, we are in the
business of building our cities.**



QUESTIONS