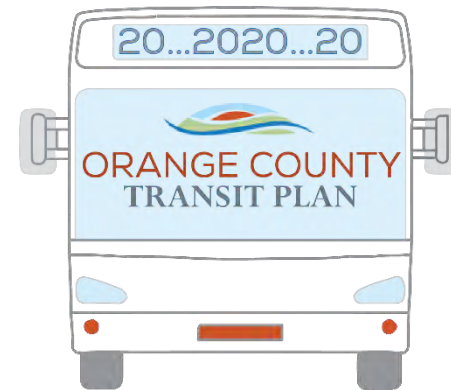


# Thinking Clearly about the Real Products of Your Transit Investment

Scudder Wagg, Jarrett Walker + Associates



**What is the transit “product”?**





Is this the transit product?



# What's the essential product of a fire department?

Firefighters participate in community programs, fundraising for good causes

Provide dramatic content for film, TV, video

Build confidence in cities as places to live and invest



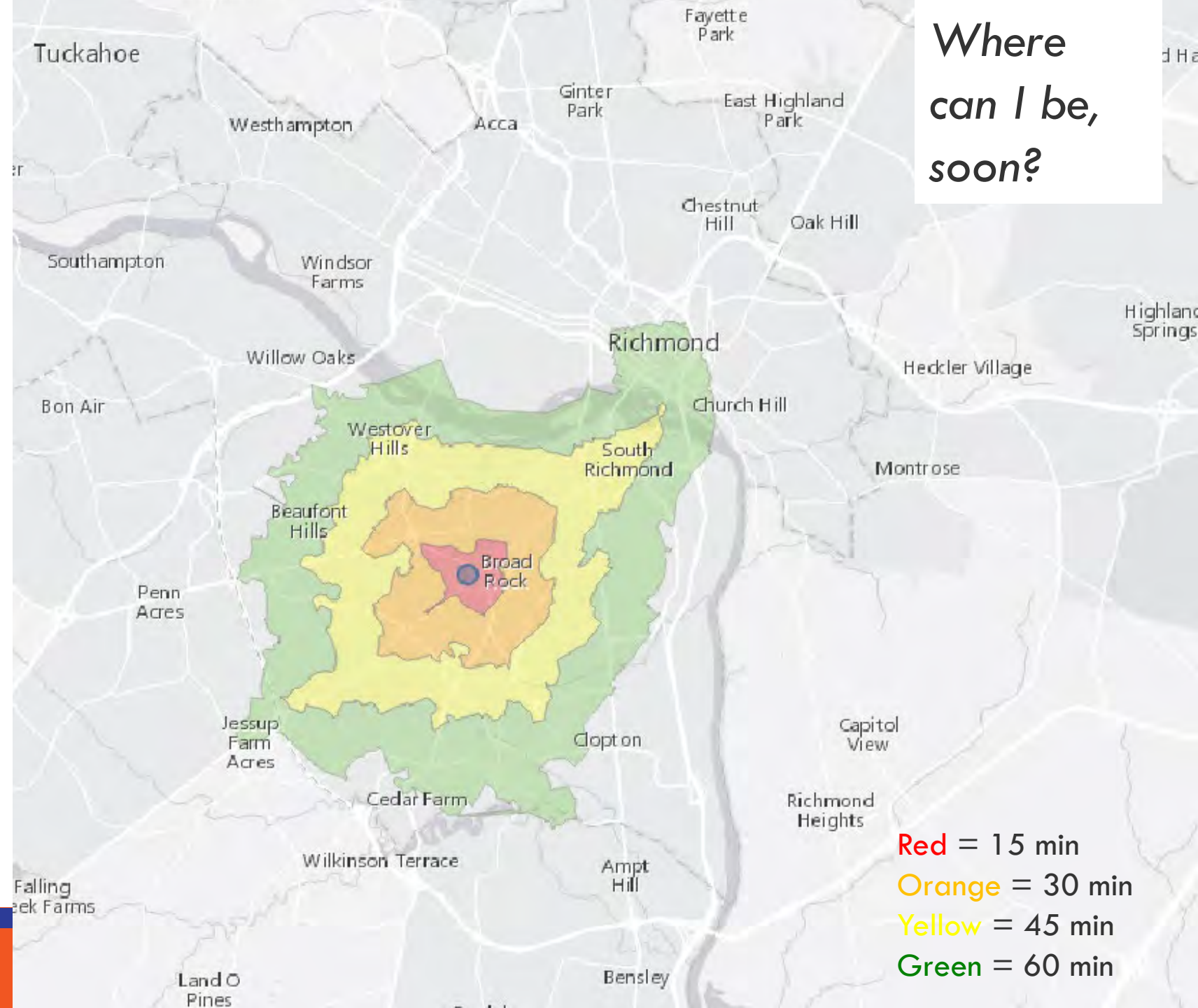
Fire and  
building  
safety

Sirens make city sound exciting

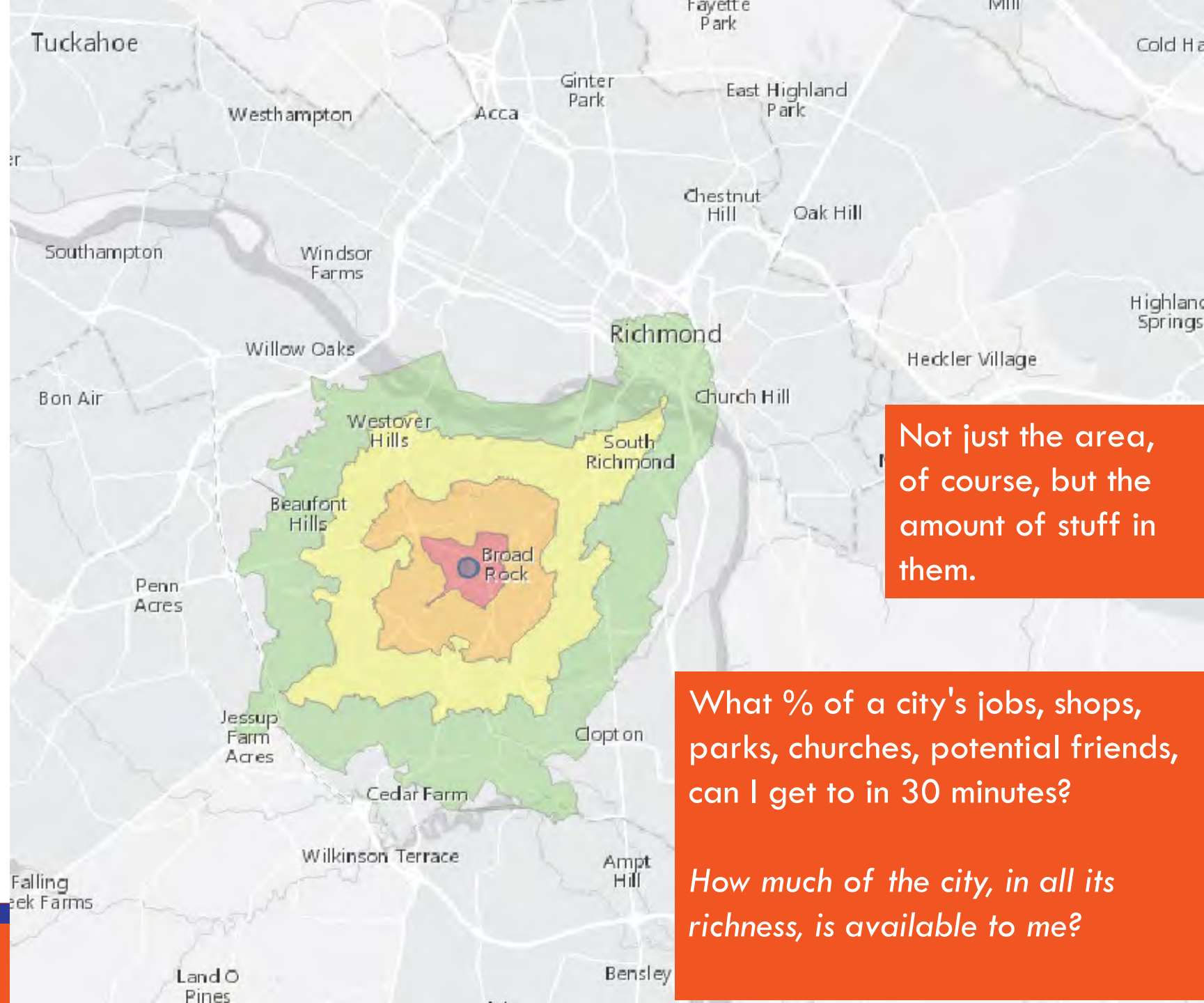


# The walls around your life

Where  
can I be,  
soon?



What if we were trying to grow these “blobs”?



Not just the area, of course, but the amount of stuff in them.

What % of a city's jobs, shops, parks, churches, potential friends, can I get to in 30 minutes?

*How much of the city, in all its richness, is available to me?*

# The Freedom (and Ridership) Recipe

High all-day frequency ...

Forming a connected network ...

With reasonable speed and reliability ...

With sufficient capacity ...

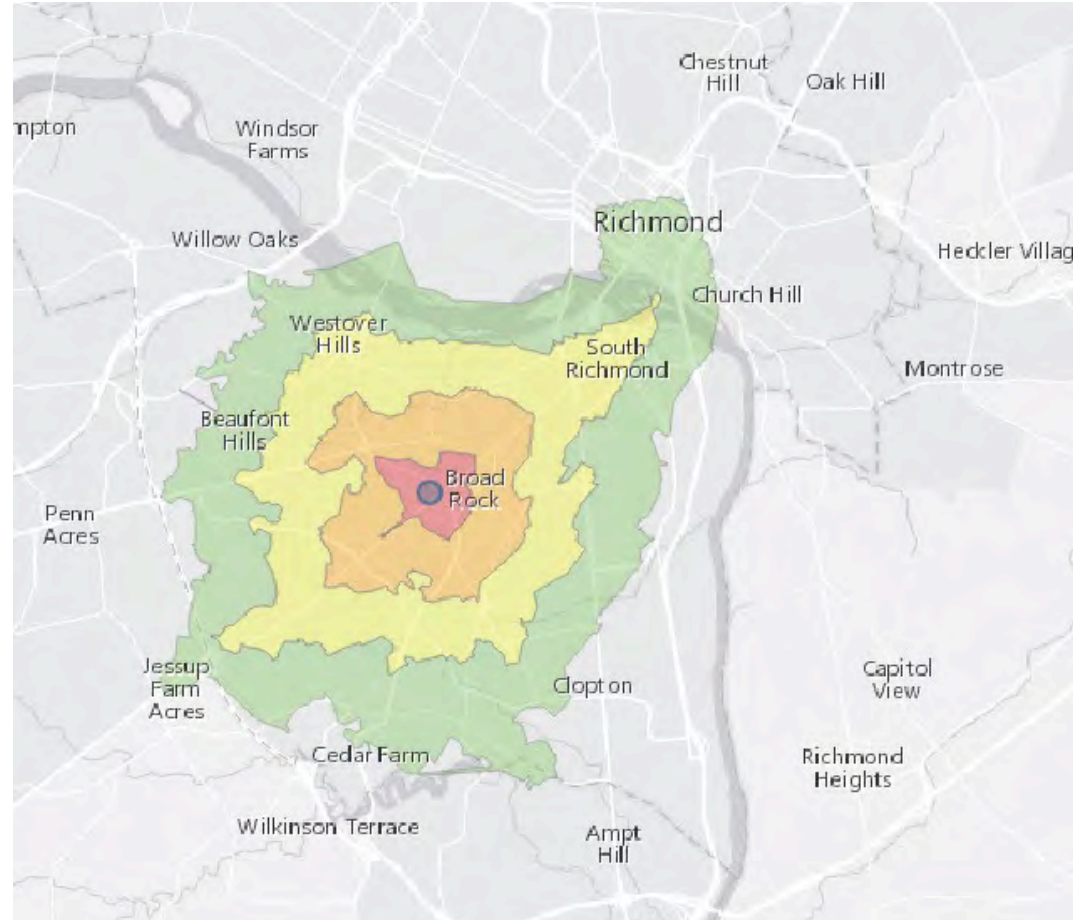
following patterns of ...

Density

Walkability

Linearity

Proximity



**Another term for this: Abundant Access**





How do they contribute to freedom?





Frequency

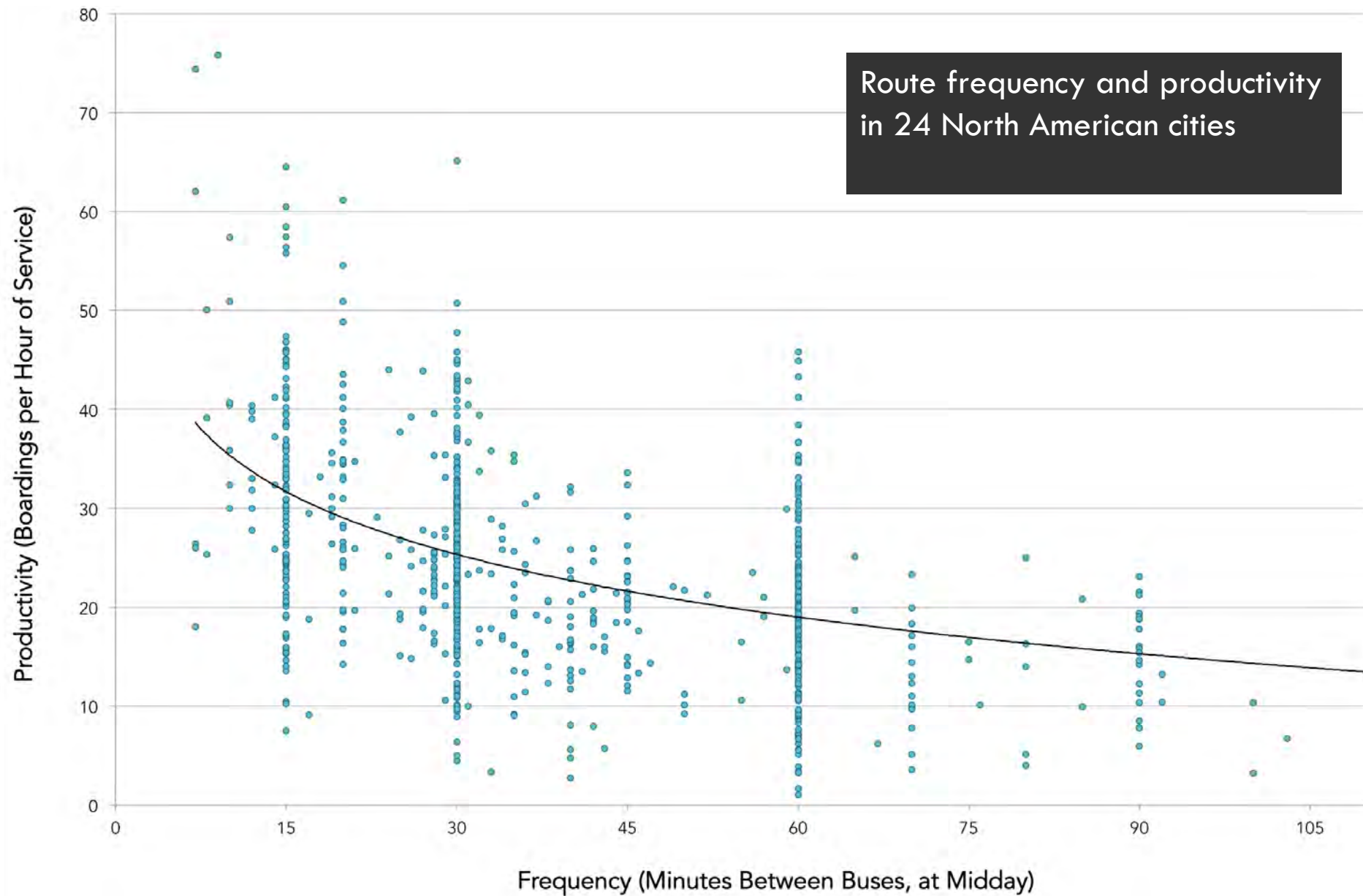
# Frequency is key

- Most overlooked
- Offers a “cubed” value:
  - Go when you want to
  - Connections!
  - Reliability
- Key to affordability





# High frequency (left) = high productivity



... But frequency is hard to explain.

- Elevators?
- Traffic signals?



Imagine that there's a gate at the end of your driveway that opens only once an hour!



# Where does transit succeed

... on ridership and freedom terms?

# Density

How many people are going to and from the area around each stop?

High  
ridership



+ Many people and jobs are within walking distance of transit.

Lower  
ridership

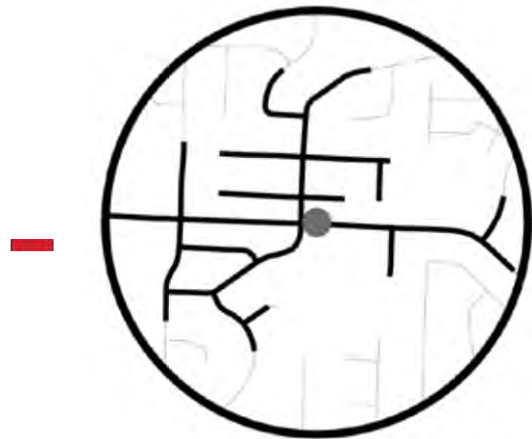
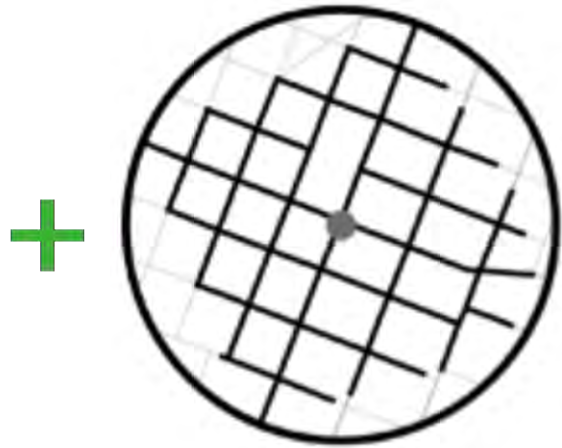


- Fewer people and jobs are within walking distance of transit.



# Walkability

Can the people around the stop walk to the stop?



The dot at the center of these circles is a transit stop, while the circle is a 1/4 mile radius. The whole area is within 1/4 mile, but only the black-shaded streets are within a 1/4 mile *walk*.



+ It must also be safe to cross the street at a stop. You usually need the stops on both sides for two-way

# Linearity

Can transit run in straight lines that are useful to through-riders?

Higher  
ridership,  
lower cost

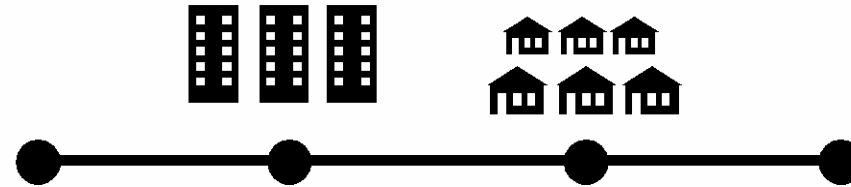


Lower  
ridership,  
higher cost



# Proximity

Does transit have to cross long low-ridership gaps?



+ Short distances between many destinations are faster and cheaper to serve.



- Long distances between destinations means a higher cost per passenger.  
(Distance-based fares can compensate in part.)



# Frequency or Coverage?

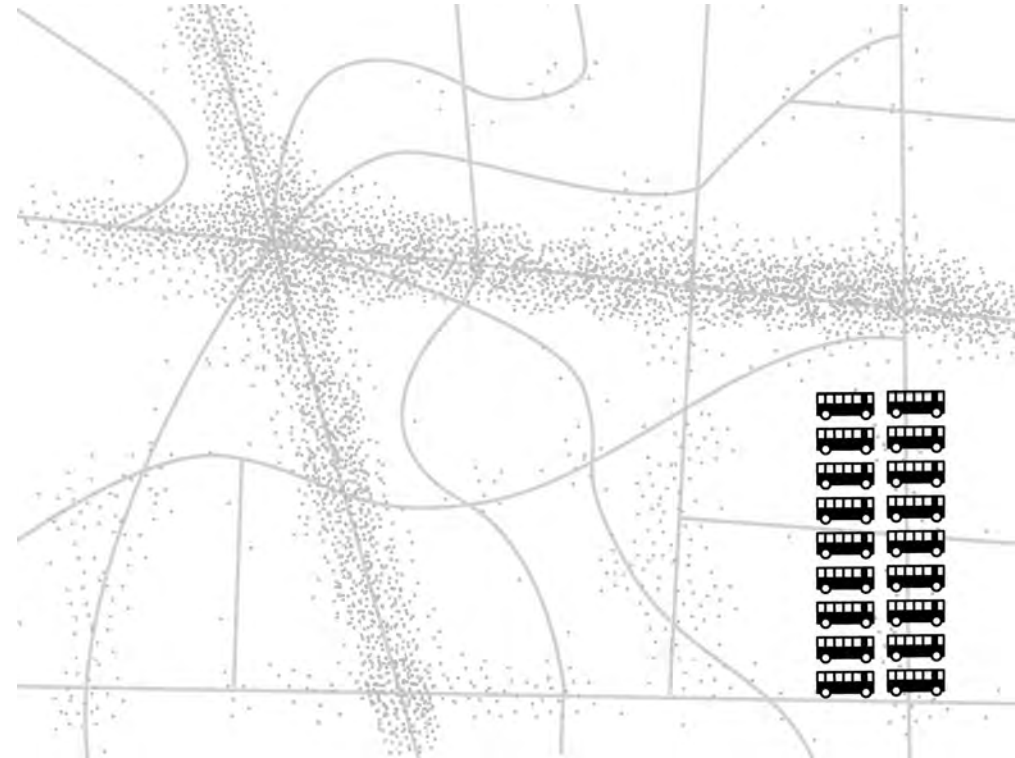
Access for many or Something for all?

# How should a transit agency allocate its resources?

Fictional Urban Area

Dots = residents and jobs

You have 18 buses



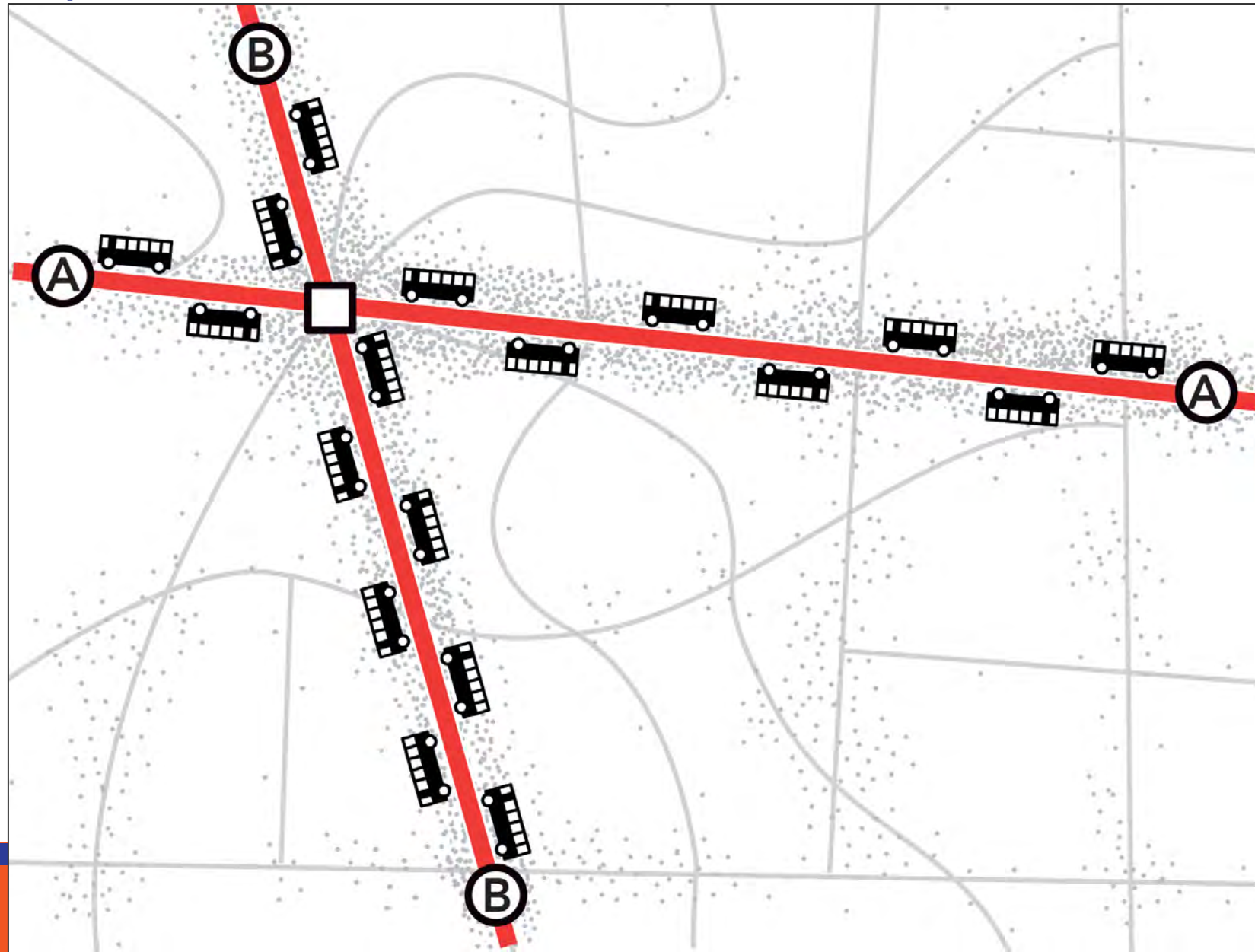
# Ridership Goal “Frequent Network”

Think like a business,  
*choosing which markets you  
will enter.*

High frequency for high  
ridership places, but no  
service elsewhere.

Performance Measure:  
*Productivity*

Ridership relative to cost





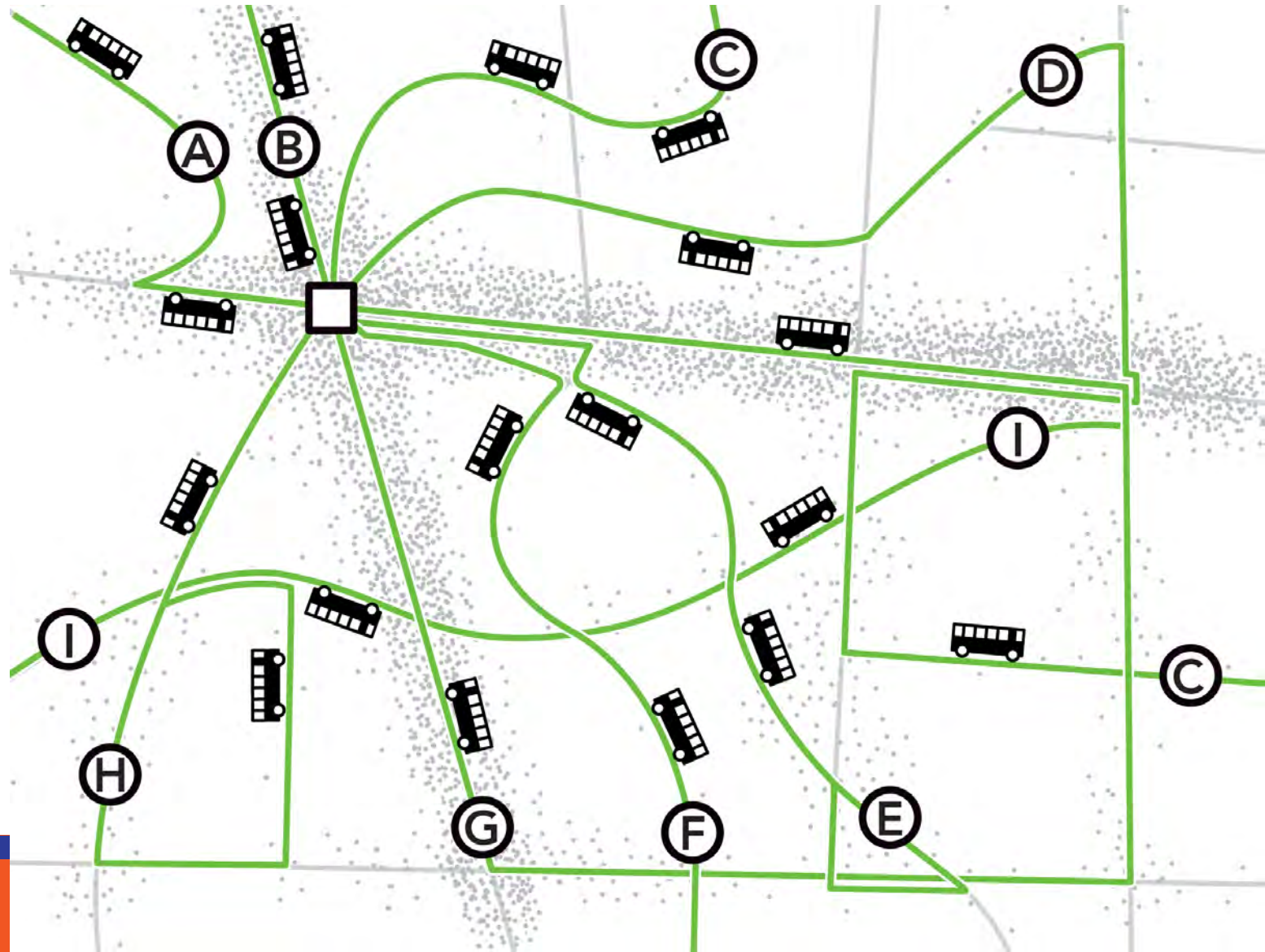
# Coverage Goal “Some service for everyone”

Go everywhere, even those in expensive-to-serve places.

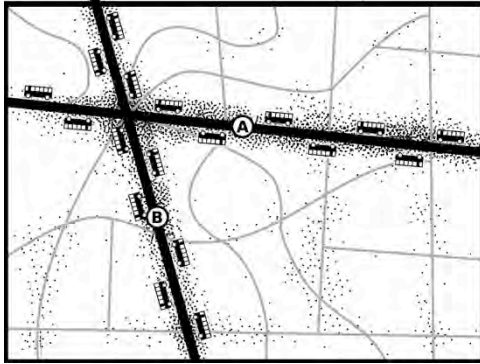
Low frequency.

Performance Measure:  
*Coverage*

% of population and jobs near  
any service

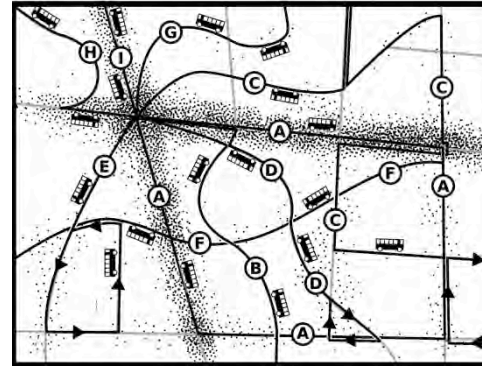


# Both goals are important, ... but they lead opposite directions!



*“Think like a business.”*

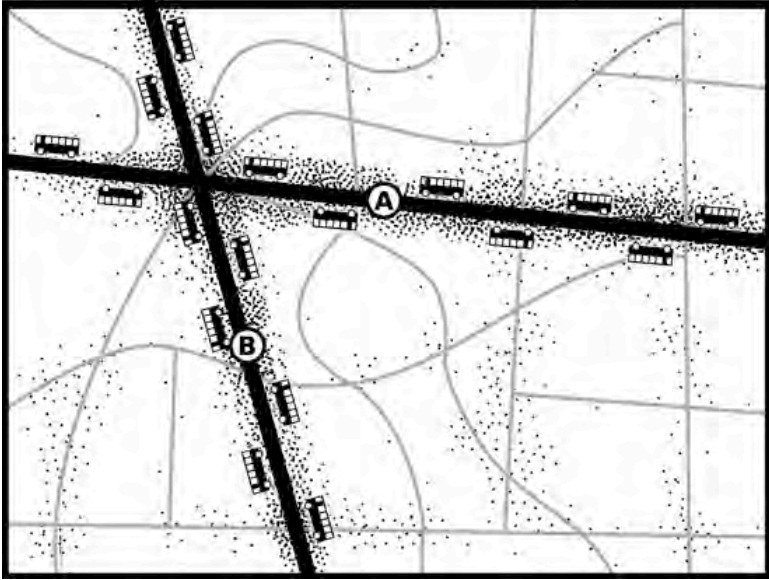
- Focus where ridership potential is highest.
- Supports dense redevelopment.
- Environmental benefits
- Congestion benefits
- Maximum job access.



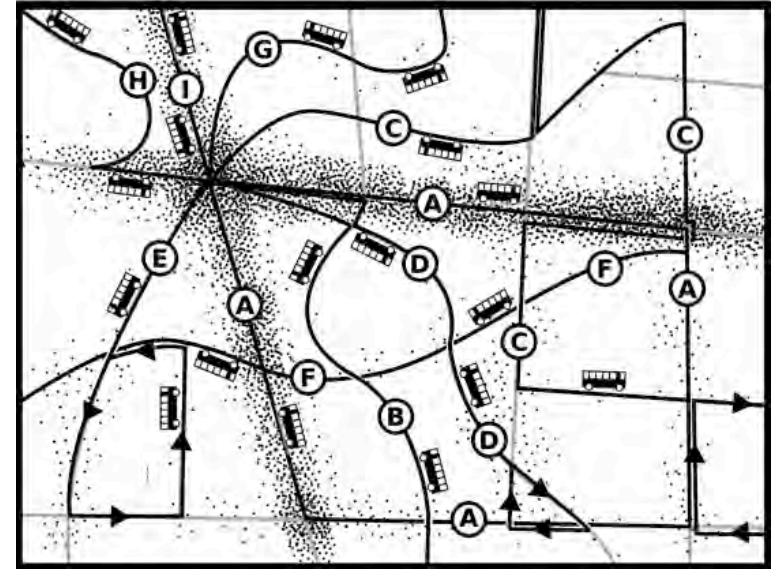
*“Access for all”*

- Services for suburban, hard-to-serve areas, despite low ridership.
- Lifeline access for everyone
- Political equity: Service to every neighborhood or electoral district.

So it helps to choose a point on the spectrum ...



Ridership Goal

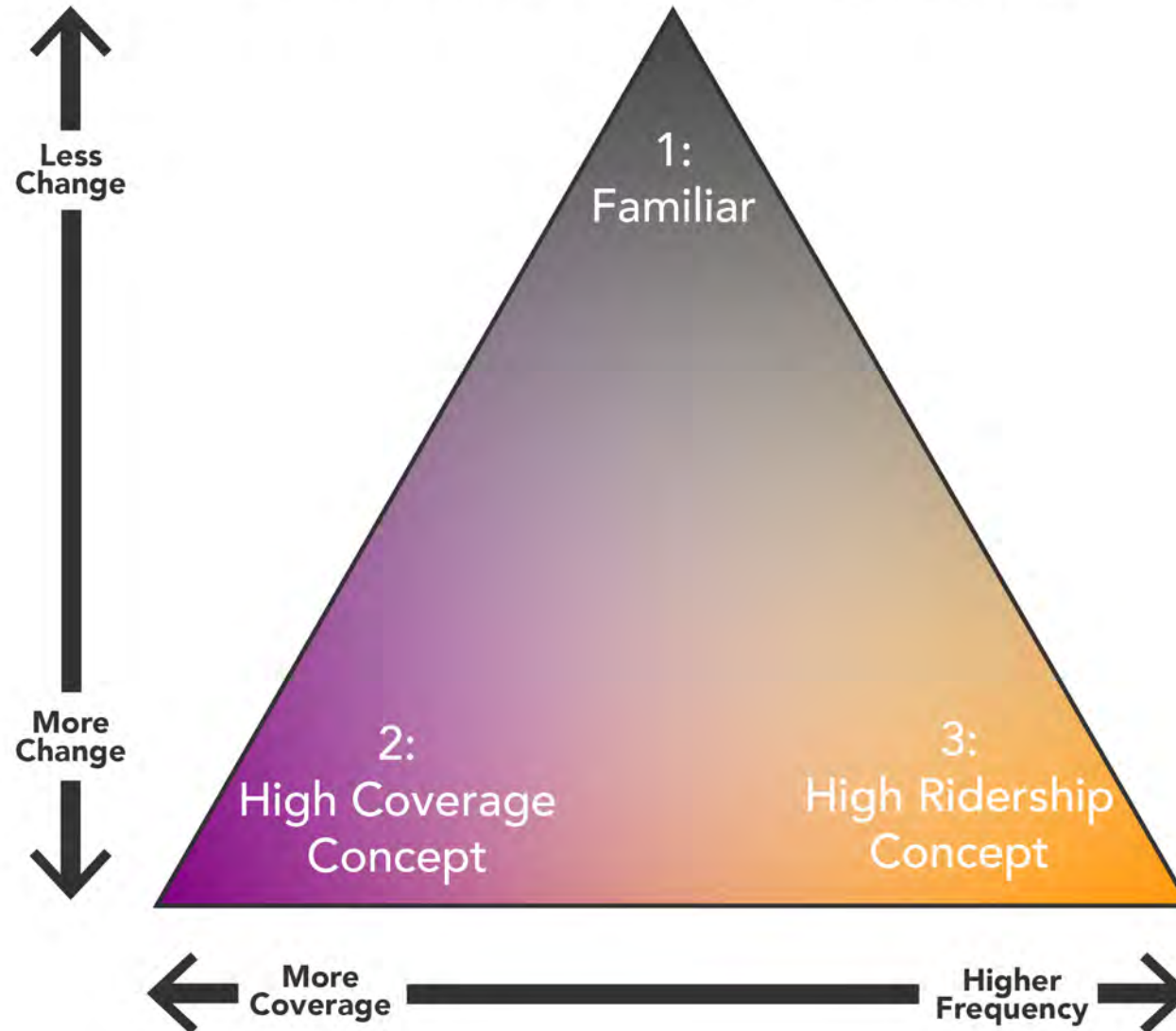


Coverage Goal

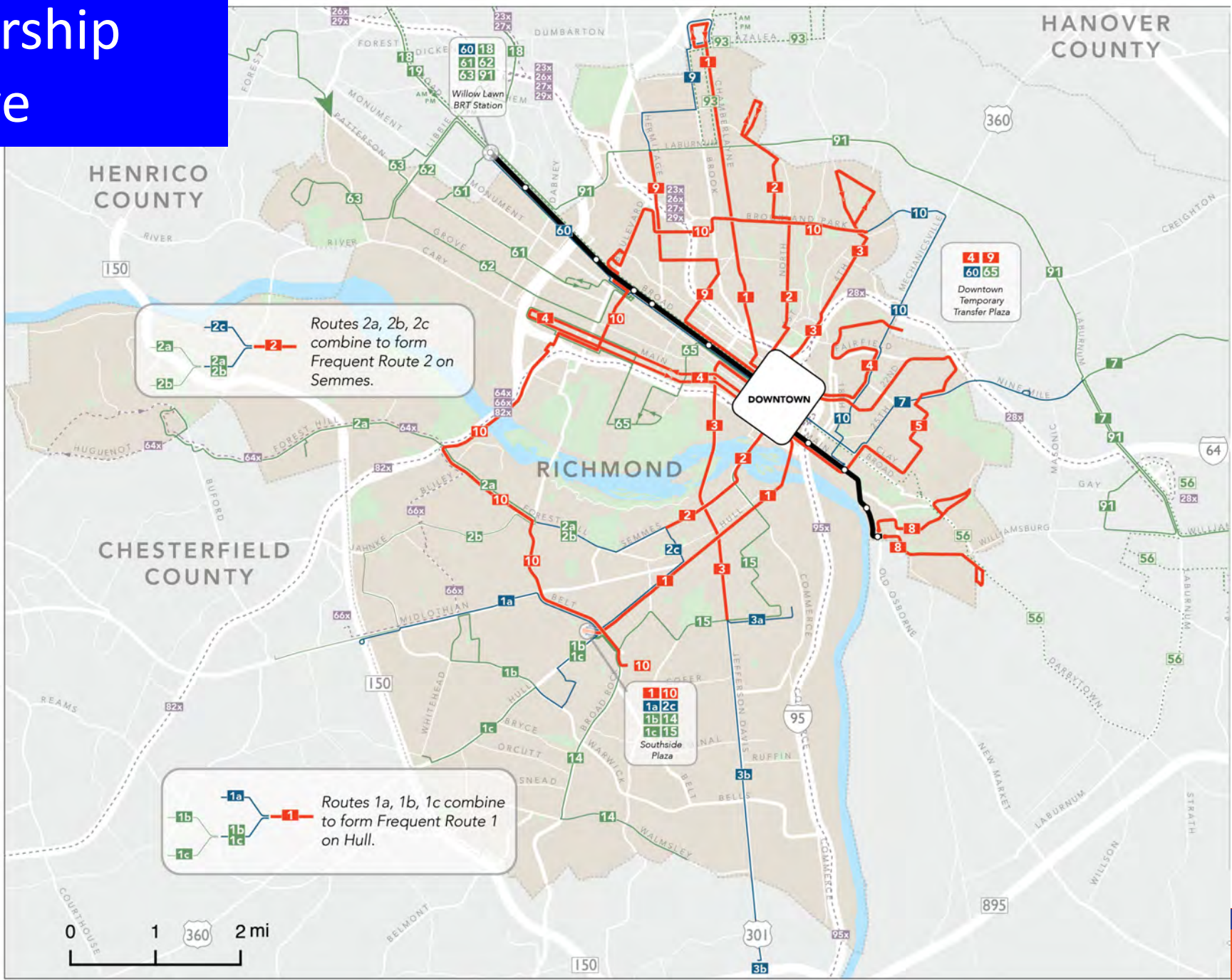




# Spectrum of Choices for Richmond's Transit Network



# High-Ridership Alternative



- 15 min
- 30 min
- 60 min

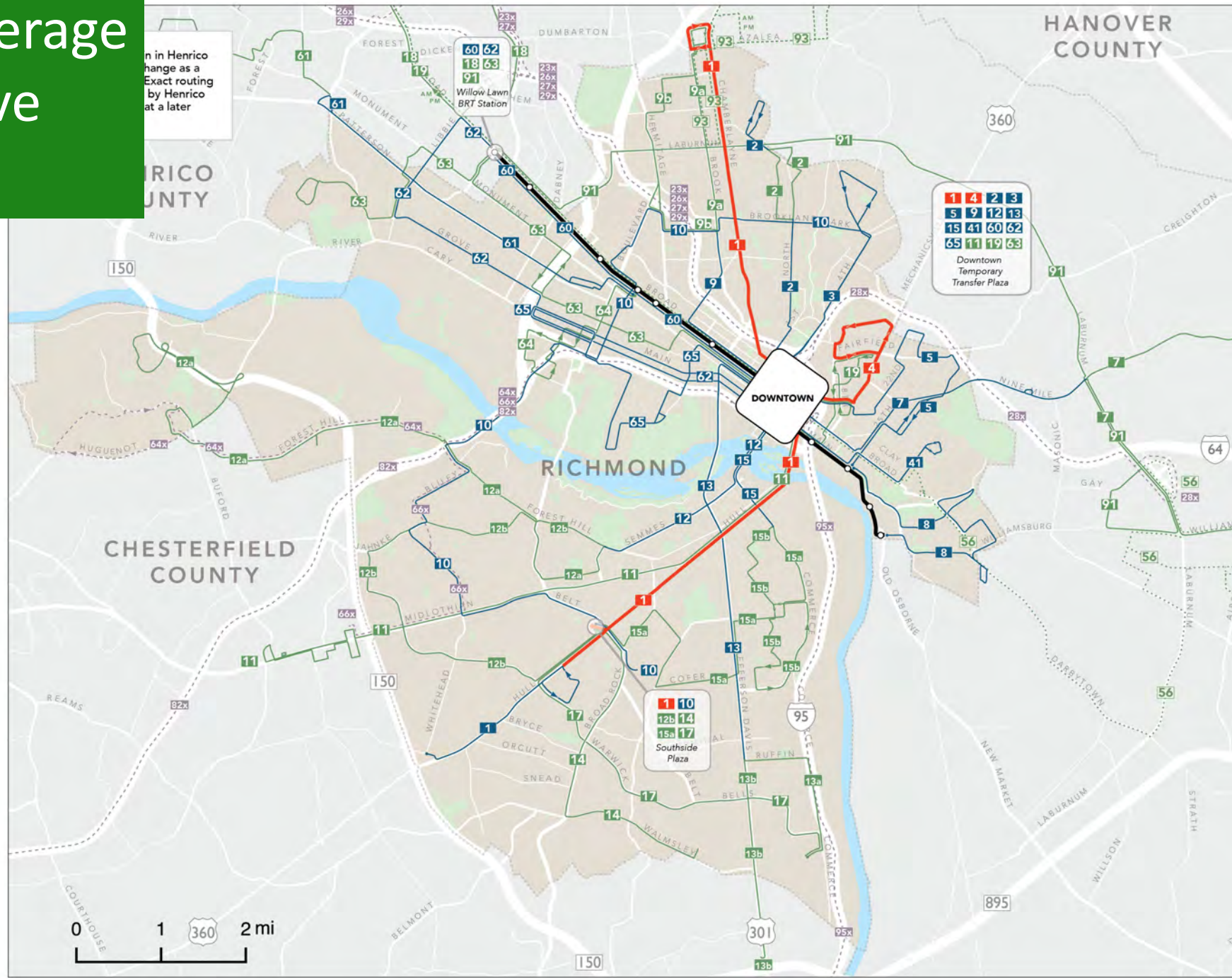
**80%** of service pursues goal of **RIDERSHIP**

**20%** of service pursues goal of **COVERAGE**



# High-Coverage Alternative

Change in Henrico  
 routing as a  
 Exact routing  
 by Henrico  
 at a later



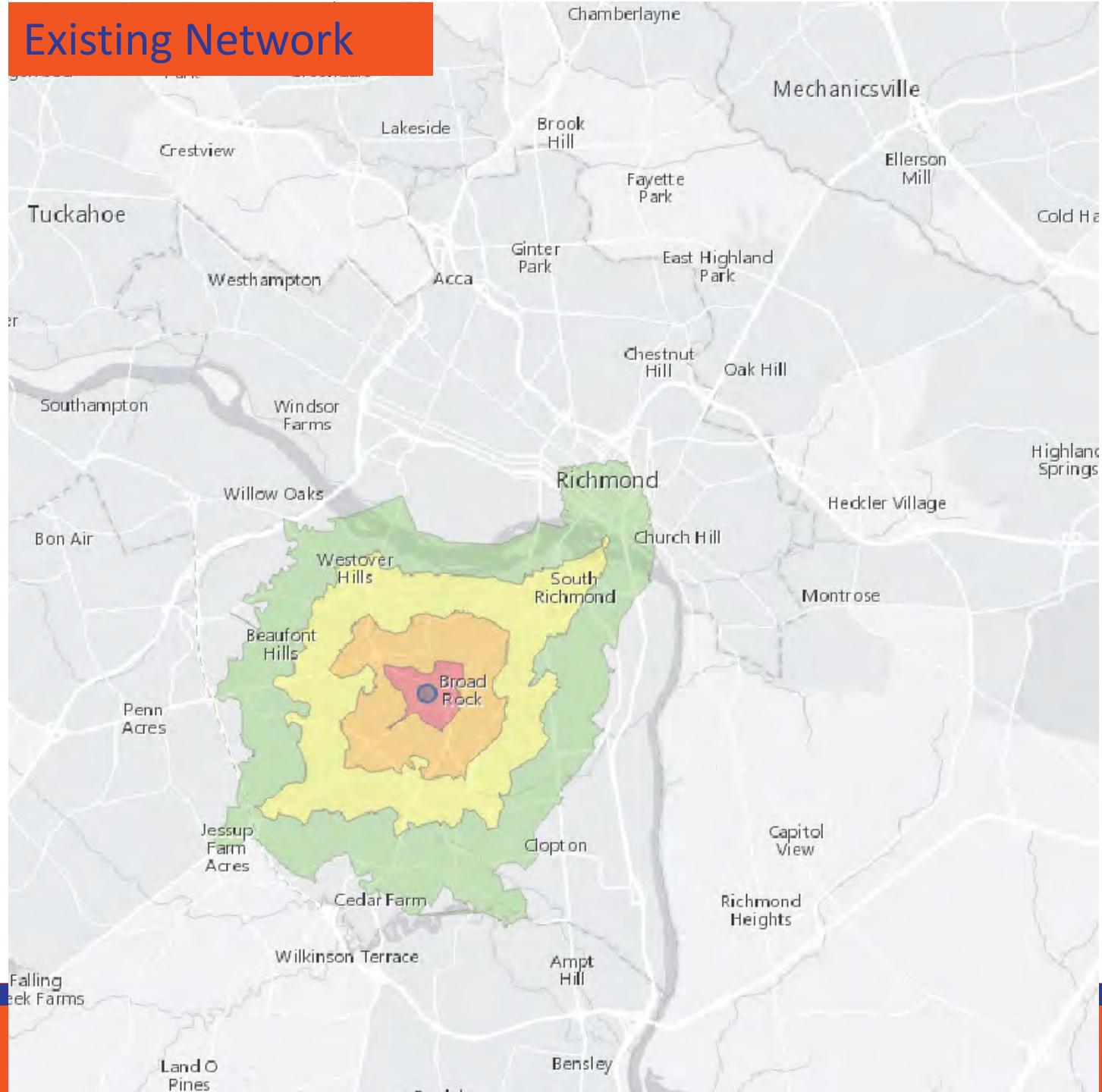
- 15 min
- 30 min
- 60 min

**50%** of  
 service pursues goal of  
**RIDERSHIP**

**50%** of  
 service pursues goal of  
**COVERAGE**

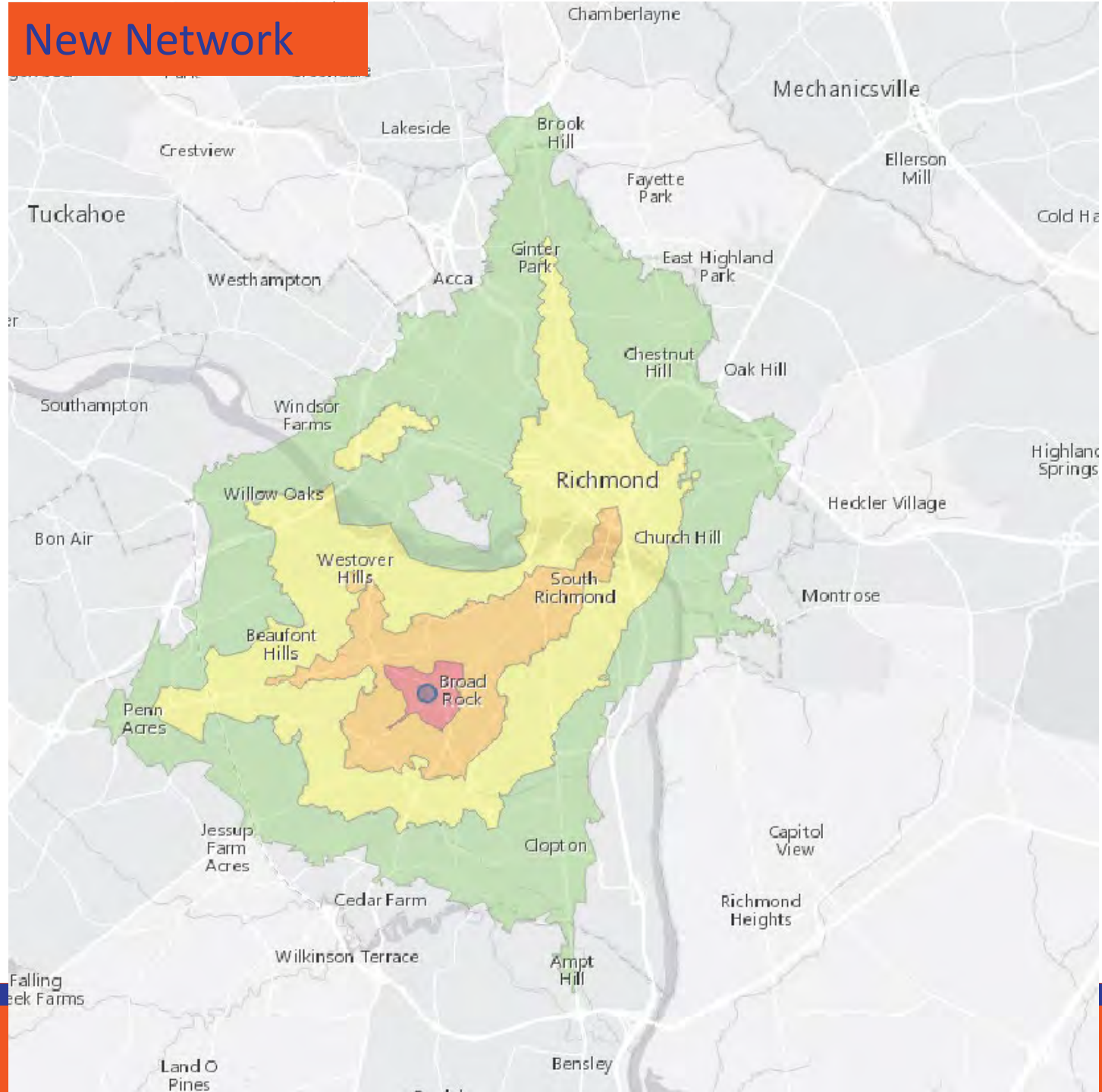


# Existing Network



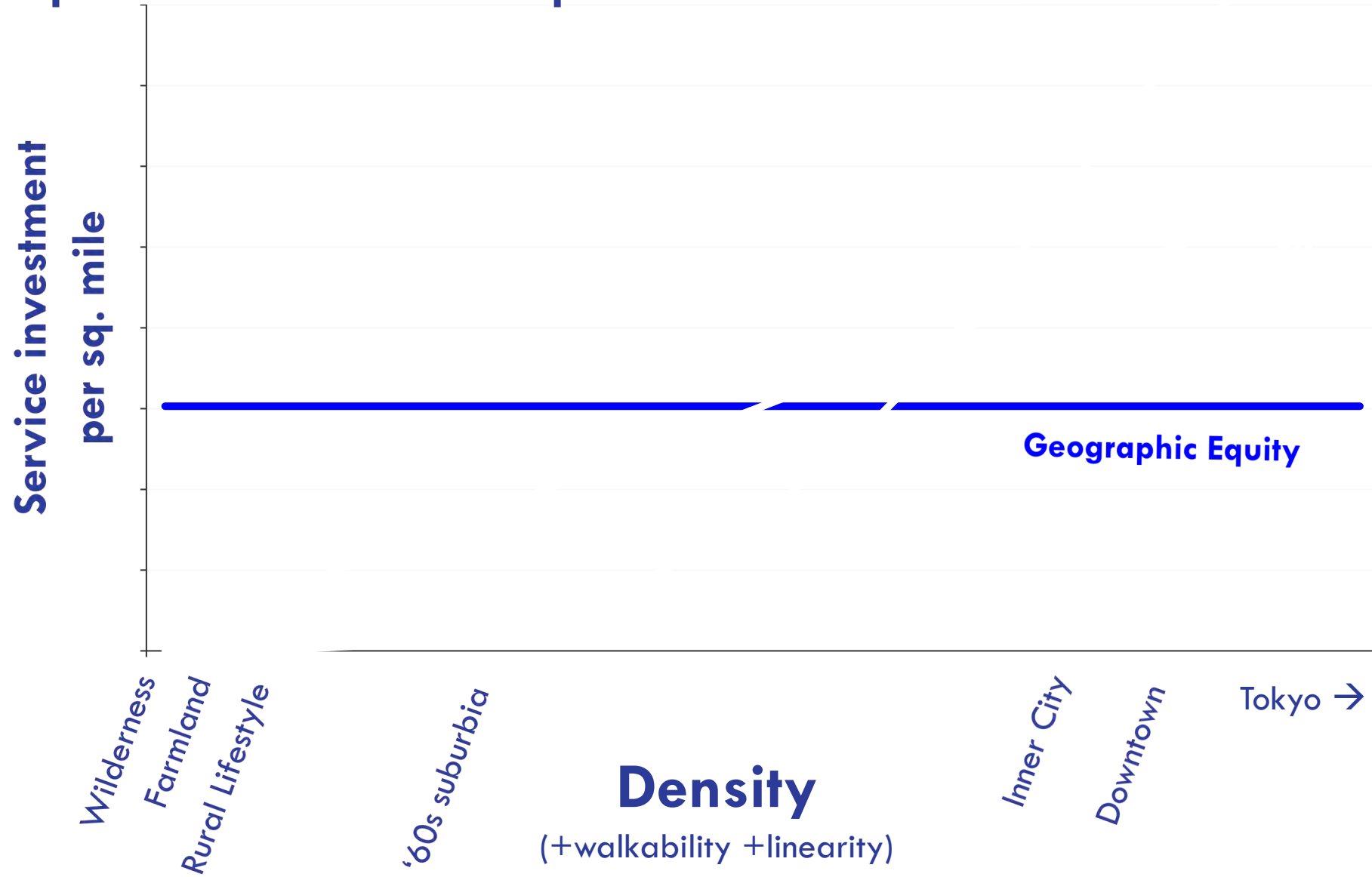


# New Network

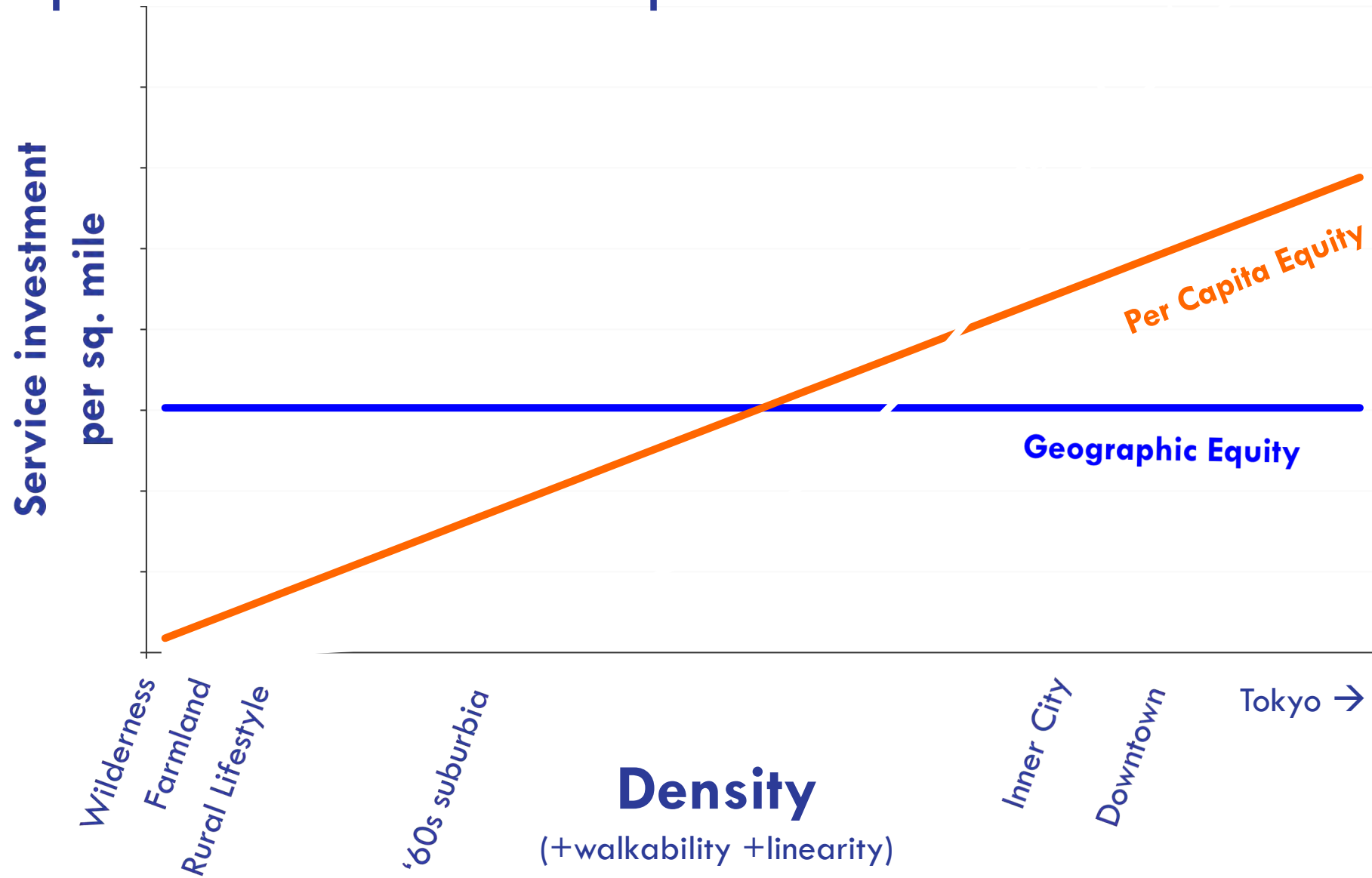


Regional consensus often  
cannot meet core demands

# Transit can never be perceived as equitable

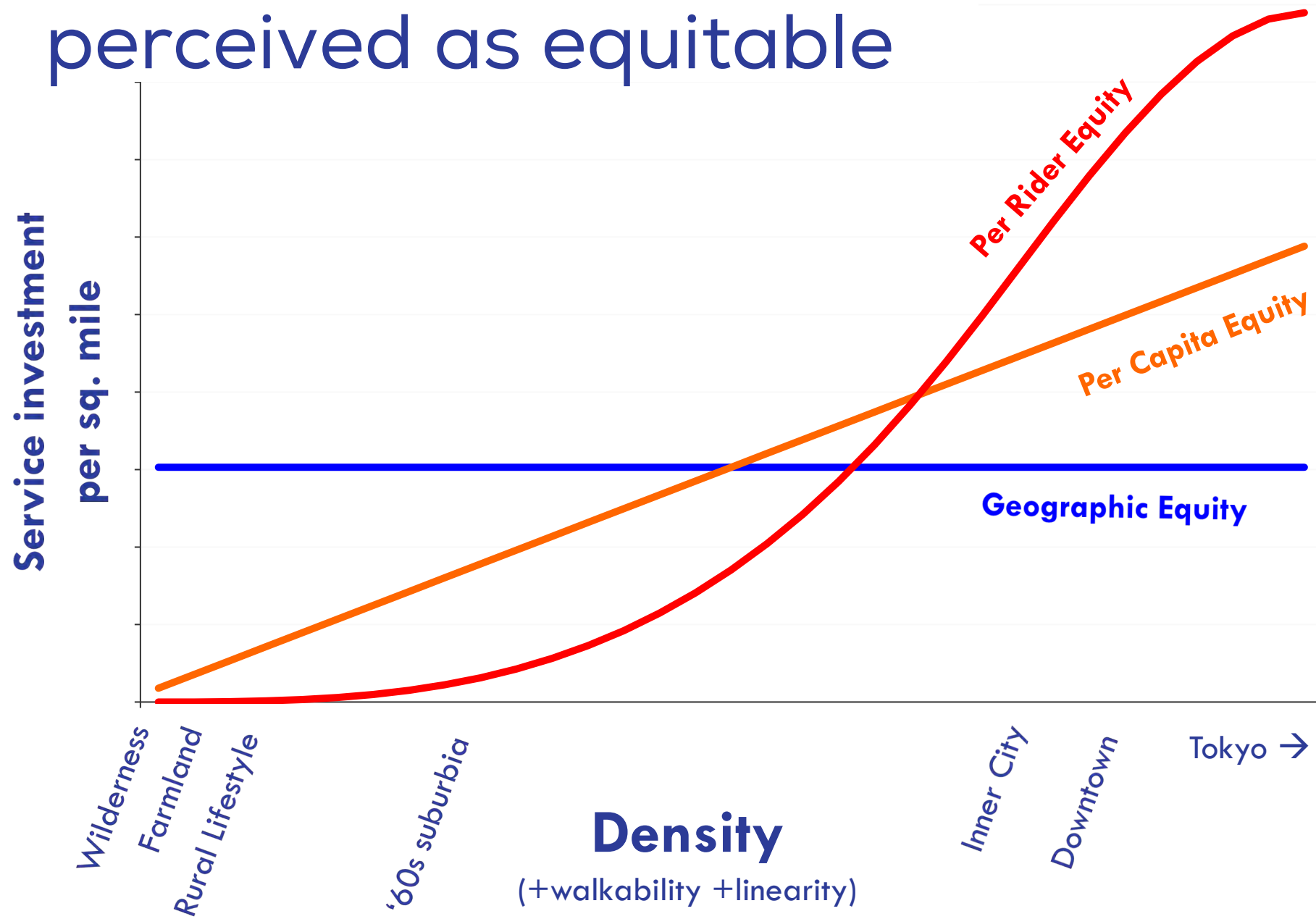


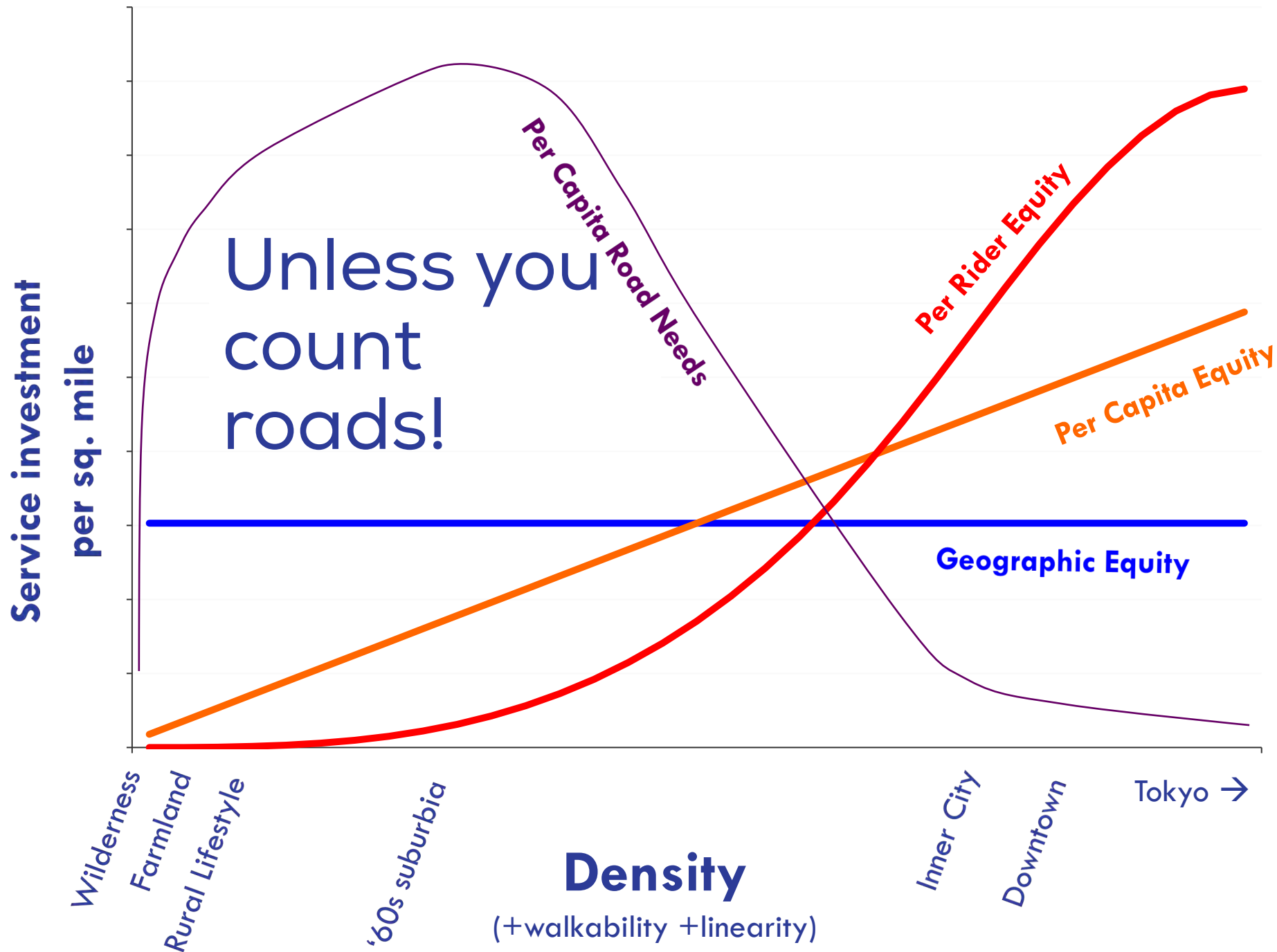
# Transit can never be perceived as equitable





# Transit can never be perceived as equitable





Unless you  
count  
roads!

**Density**  
(+walkability +linearity)



# There is no such thing as a citywide or regionwide transit policy

- ... unless it begins by exploring how parts of the city are different and require different solutions, including non-transit solutions, including cars!
- Debating transit policy across a diverse city turns into “my neighborhood vs. yours.”
- Seek the larger fairness across all modes.



# Beyond Class Conflict



# Challenge binary thinking:

## “Choice Rider”

“Make him leave the car in the driveway.”



## “Dependent or Captive Rider”

“Has to use transit no matter how bad it is.”

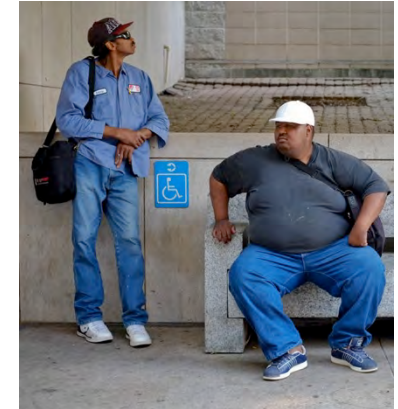


# Challenge binary thinking:

“Choice Rider”



“Dependent or Captive Rider”



It's a spectrum!



People are all in different situations, with different options, so incremental improvements will change their choice.

# So who are “transit dependent” people?

They use transit before others will ...

They know it from the inside ...

**Early Adopters**  
**Pioneers**



# Transit thrives on *diversity*, not *specialization*

Beware of:

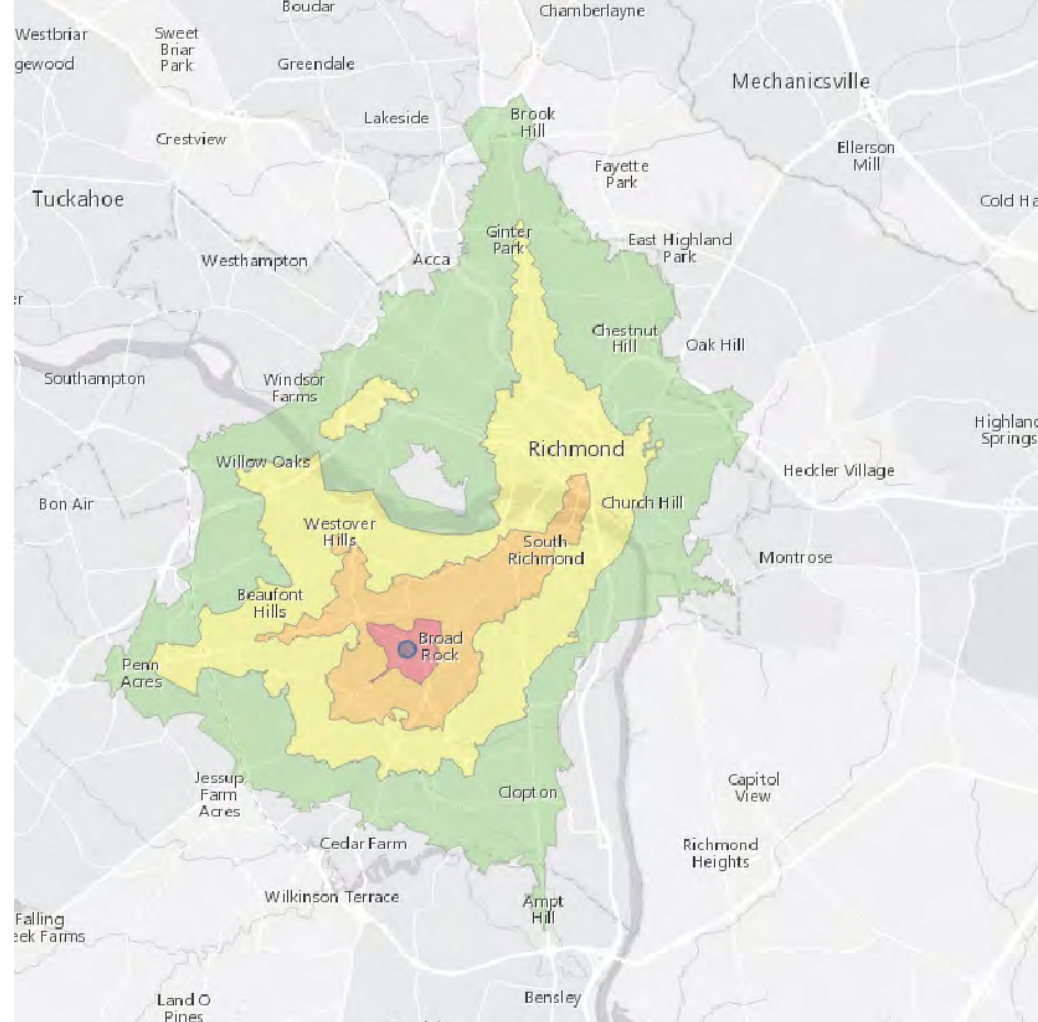
- Elites telling you how to “win” their ridership
- Specialized advocates telling you what their people need
- Symbolic transit that “supports” development





## The best transit for everyone isn't necessarily the ideal thing for

- you
- people you know, or
- *any particular group.*



But it is the path to *Abundant Access.*

# 2012 and 2017 Plan Goals

- Improving overall mobility and transportation options
- Providing geographic equity
- Supporting improved capital facilities
- Encouraging transit-supportive land use
- Providing positive impacts on air quality

# 2012 and 2017 Plan Goals

- Ridership:
  - Improving overall mobility
  - Encouraging transit-supportive land use
  - Providing positive impacts on air quality
- Coverage:
  - Improving transportation options
  - Providing geographic equity
- Other
  - Supporting improved capital facilities (Civility-Luxury Trade-off)

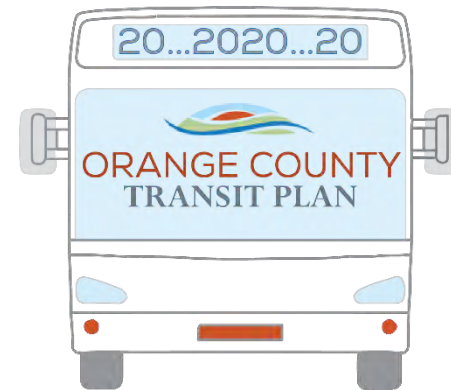
# Thoughts on OCTP Goals

- Don't finalize your goals too early
- Consider evaluating geographic equity across all transportation investment (transit, roads, other modes).
- Carefully consider your balance between ridership/coverage goals
  - Use the scenarios process to consider different outcomes from different points on the spectrum
  - Set a policy about how you budget your resources (e.g. 60% Ridership and 40% Coverage)

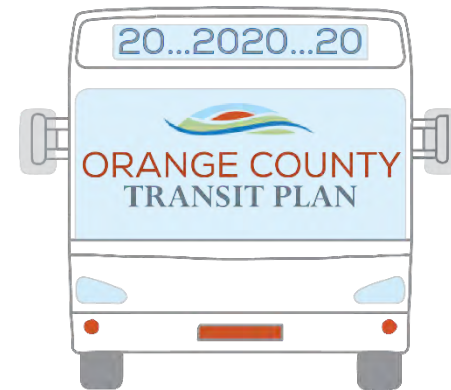


# Thoughts, Questions, Discussion

Thank you!



**MORE SLIDES!**



# Technology Will (NOT) Save uS!

Technology never changes geometry!

# What kind of certainty?

People don't like buses.

**Subjective**

Transit use is higher in denser places.

**Empirical**

A car takes up at least 50 sq ft.

**Geometric**





# Geometry bats last:



## Problem

## Solution

Emissions  
Efficient Use of Energy



Electric  
Vehicles

Efficient use of Human Labor  
Safety



Autonomous  
Vehicles

Efficient Use of Space (in  
dense cities)



Big Vehicles  
(Transit)



# It's about Space

- Technology never changes geometry!

Much worse,  
really! Induced  
demand!



Bus

Private Car

Uber/Lyft Car

Driverless Car

Driverless Bus?

# **Common Transit Fallacy: Technology Love**



# The Tourist's Fallacy

1. Go somewhere.
2. See something you love.
3. Buy one and take it home.
4. Discover that you don't enjoy it in daily life the way you enjoyed it *as a tourist*.





Does technology matter at all?  
Yes, at the extremes ...

1. Frequency
2. Span
3. Speed
4. Reliability
5. Capacity

These two are about how long you spend stopped and what can get in your way.







Isn't this the question?





# Focusing on choosing vehicles and technologies

...

- ... is easy because everyone has reactions to vehicles ...
- ... is a false analogy with choosing personal vehicles.
- ... presumes that people care about the vehicle more than about their freedom.



## Technology as Goal

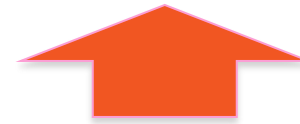
1. What a great vehicle!



2. Where should we run it?

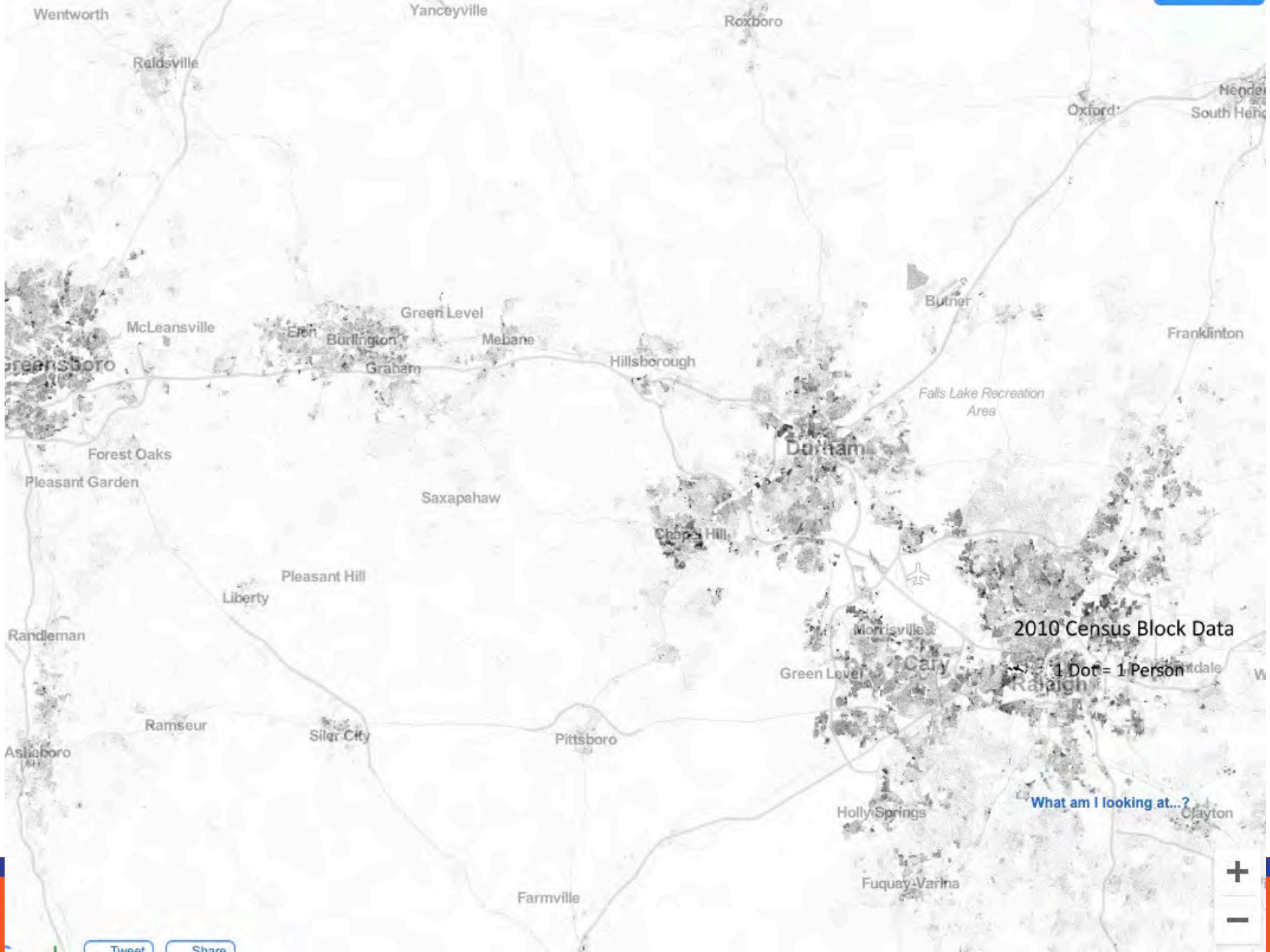
## Technology as Tool

2. What vehicle best provides that?



1. How can we maximize freedom?





Wentworth

Yanceyville

Roxboro

Reldsville

Oxford

Hender  
South Henc

Greensboro

McLeansville

Eron

Burlington

Green Level

Mebane

Hillsborough

Butner

Franklinton

Forest Oaks

Pleasant Garden

Saxapahaw

Durham

Falls Lake Recreation  
Area

Chapel Hill

Pleasant Hill

Liberty

Randleman

2010 Census Block Data

1 Dot = 1 Person

Green Level

Morrisville

Cary

Raleigh

Asheboro

Ramseur

Siler City

Pittsboro

What am I looking at...?

Holly Springs

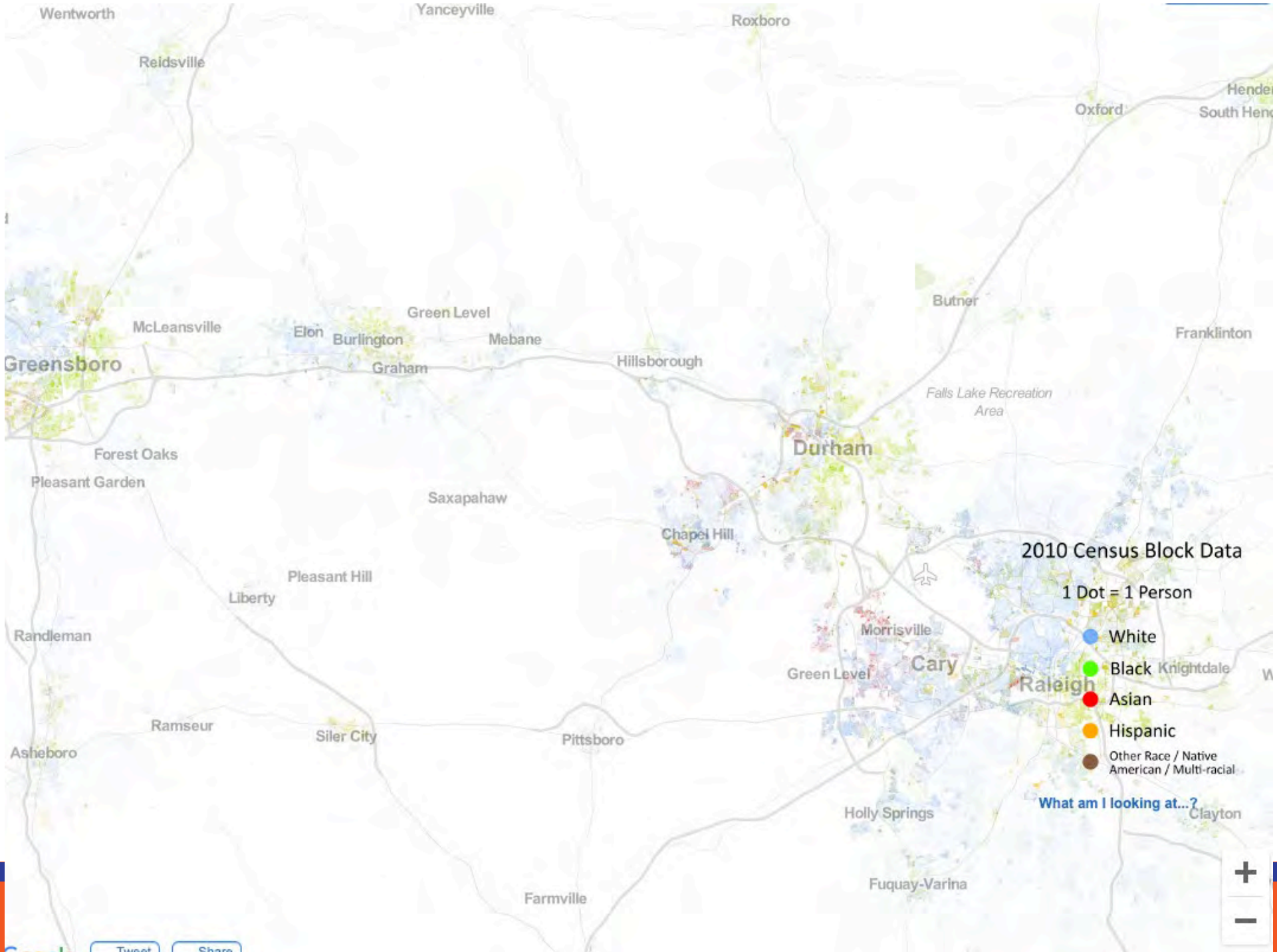
Clayton

Fuquay-Varina

Farmville

Tweet Share





2010 Census Block Data

1 Dot = 1 Person

- White
- Black
- Asian
- Hispanic
- Other Race / Native American / Multi-racial

What am I looking at...?

