Madison Metro Network Design Study Kickoff

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Daniel Costantino, Jarrett Walker + Associates

Who Are We? Why Are We here?

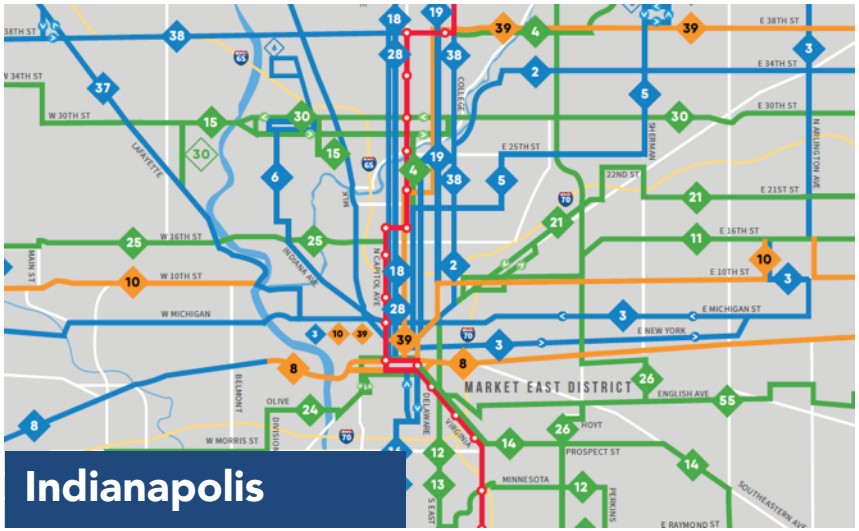
JARRETT WALKER + ASSOCIATES

Let's think about transit

We foster clear conversations about transit, leading to confident decisions.

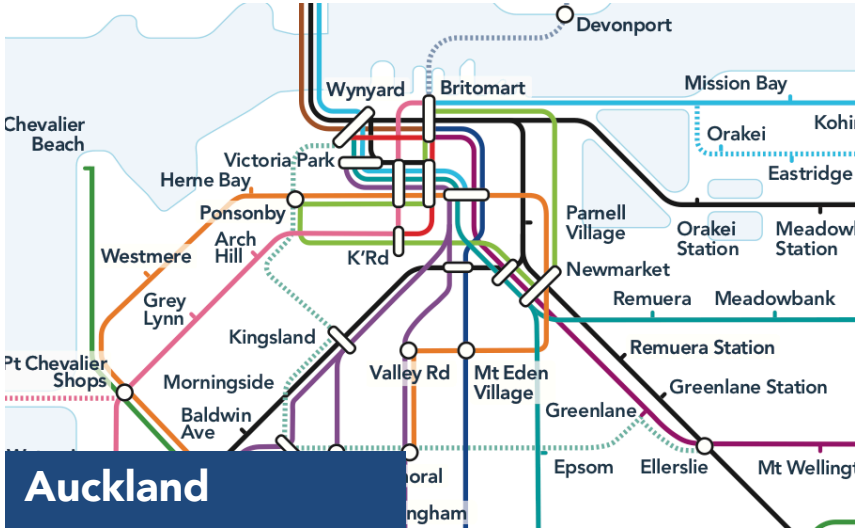
Completed redesigns that are better serving local goals

Houston



Indianapolis

Richmond



Auckland

HUMAN TRANSIT

How Clearer Thinking about Public Transit Can Enrich Our Communities and Our Lives

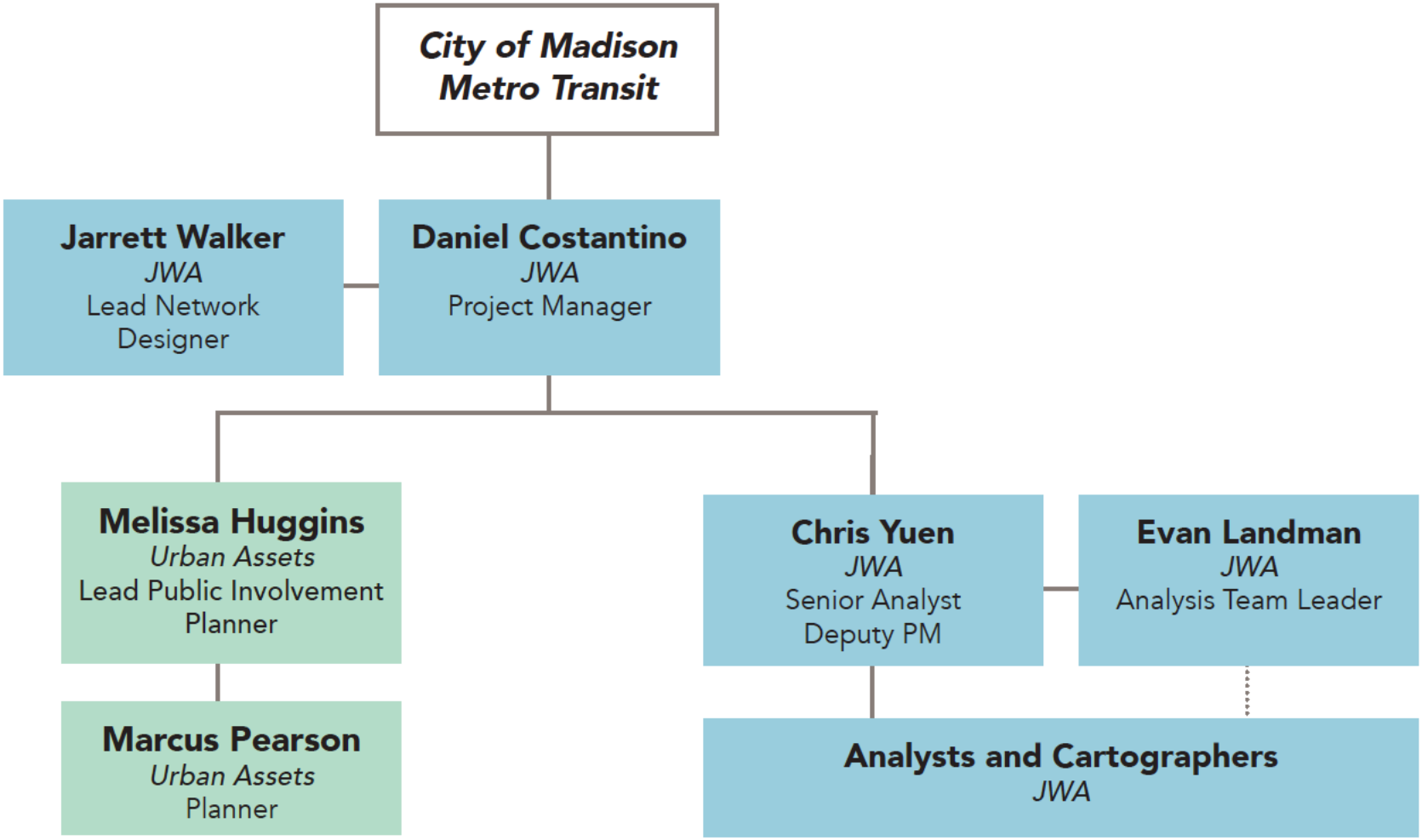
Jarrett Walker

You are the experts on your communities and their goals.

We're the experts on network redesign studies.

So let's fuse those two kinds of expertise!

Our team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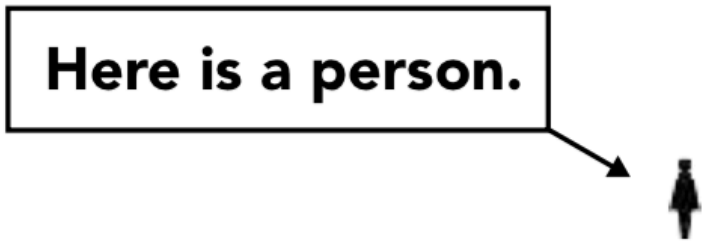
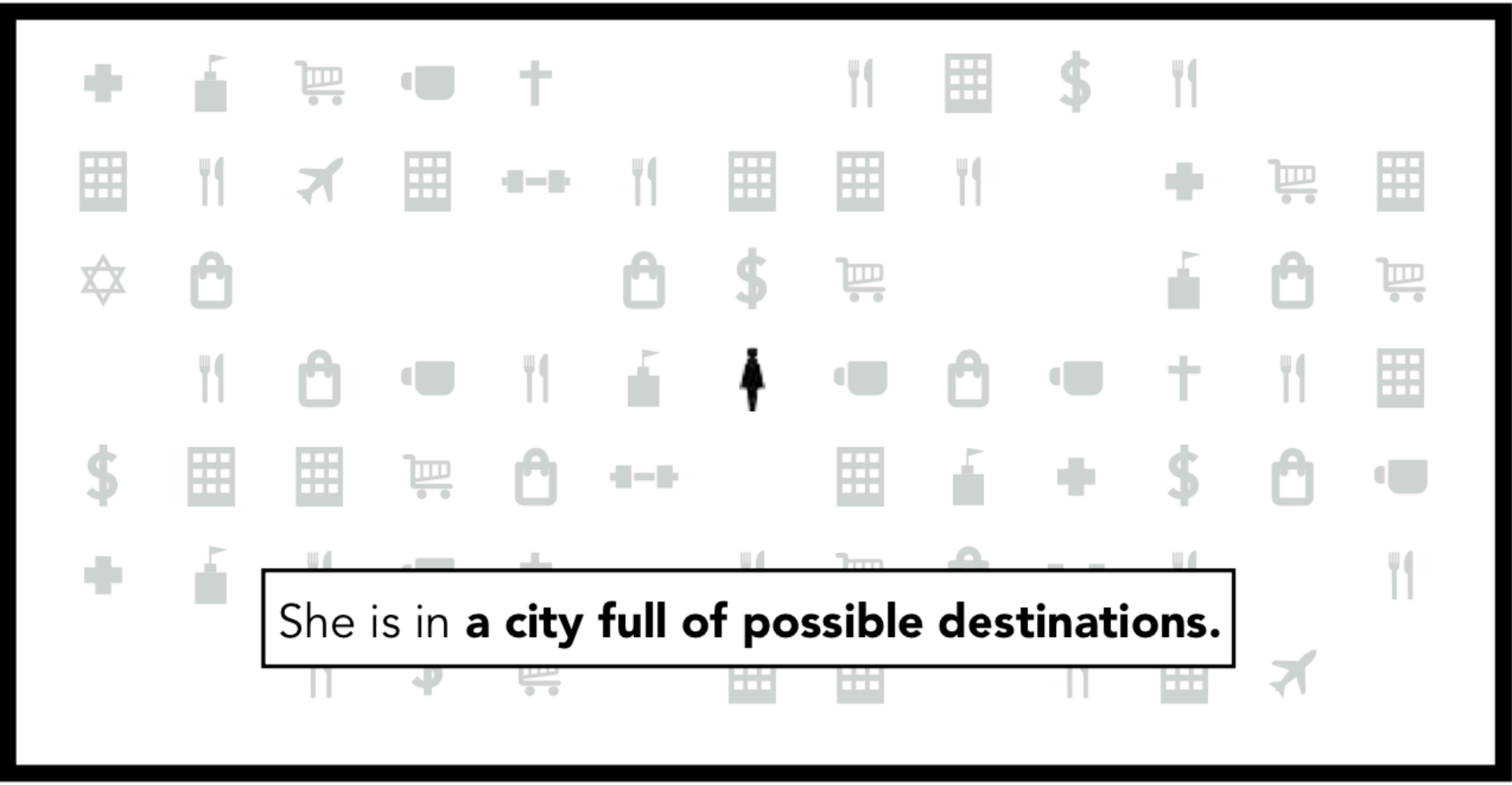
Analysts and Cartographers
JWA

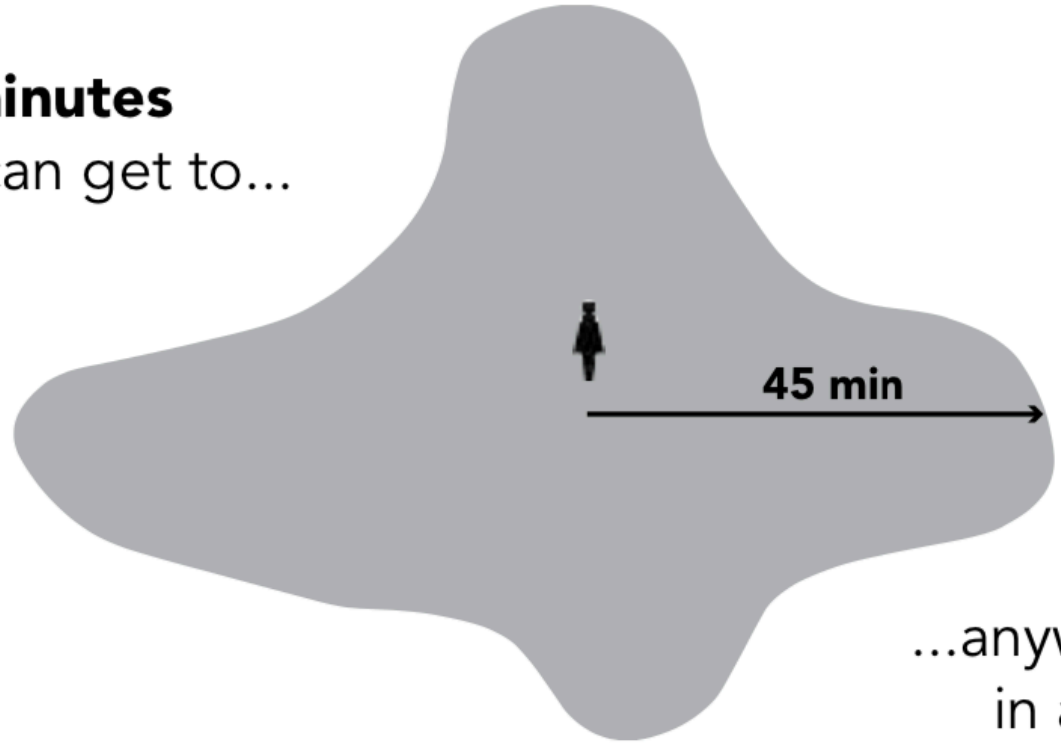
The wall around your life.

What is access?


Here is a person.

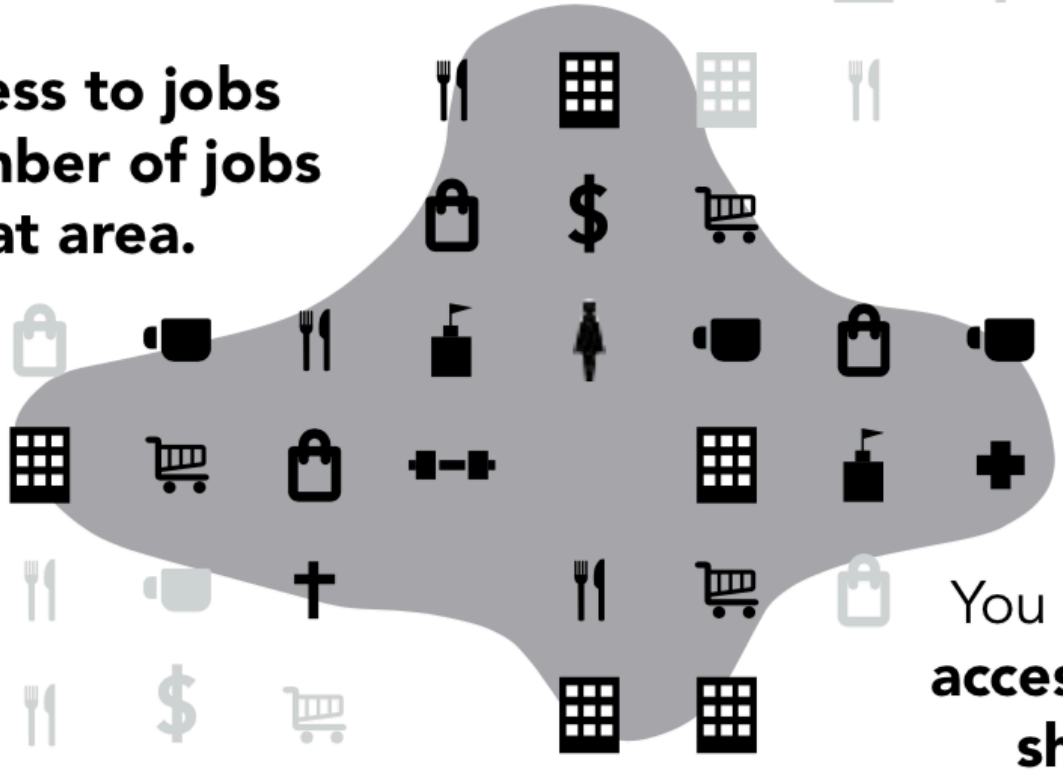

She is in **a city full of possible destinations.**

In **45 minutes**
she can get to...



...anywhere
in a **certain area.**

Her **access to jobs** is the **number of jobs in that area.**



You can also look at **access to education, shopping,** etc.

Access is the essence of how network design affects ridership

When a transit network maximizes access, this increases the likelihood that the service is useful for any particular trip.

Maximizing access by transit also improves:

- Access to economic opportunity.
- Personal freedom.
- Value of investments in a walkable community.
- Functionality of the city.

Visualizing Access

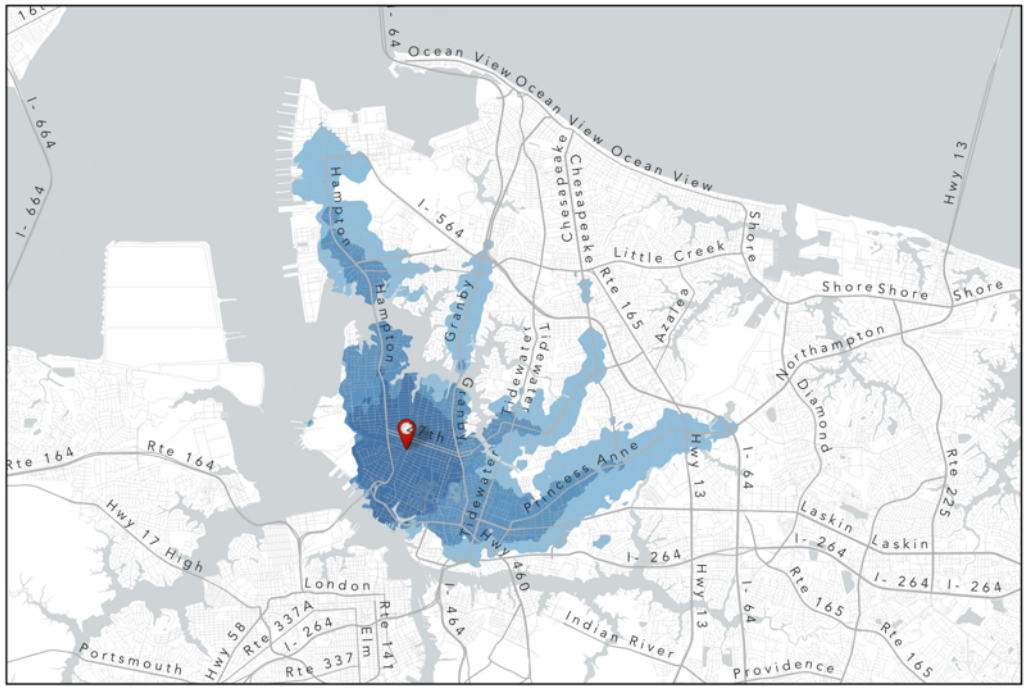
An example from Norfolk, Virginia

How far can I travel in 30, 45, and 60 minutes from

Ghent

at noon on a weekday?

Existing Network



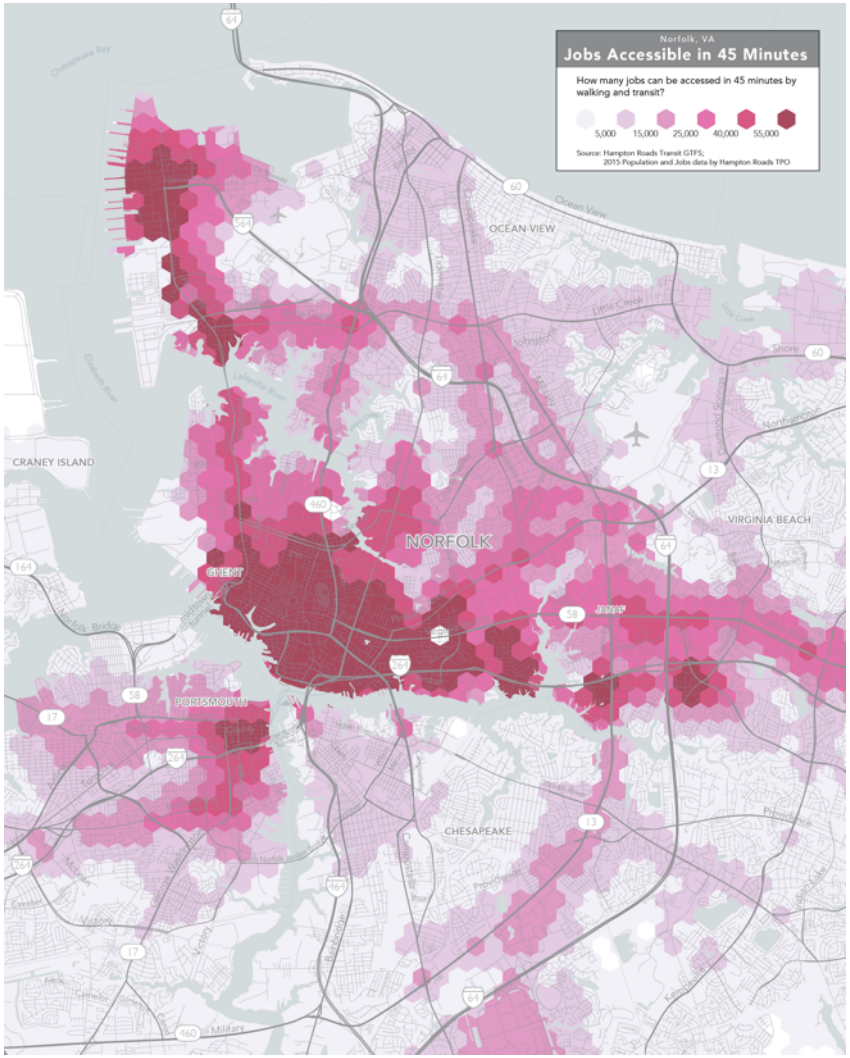
	in 30 minutes	in 45 minutes	in 60 minutes
Population Accessible	40,070	69,280	109,860
Jobs Accessible	26,670	47,190	91,130

Estimates based on 2015 TAZ population and jobs data

The number of jobs reachable is a measure of access.

We could also count other kinds of destinations.

Access by Zone



Each zone is colored by the access from that zone.

Now we can say: *The average Norfolk resident can reach 30,000 jobs in 45 minutes.*

Can and should we make that better?

How transit expands access.

The most efficient access-expanding service is

- Frequent
- Reasonably fast and reliable.
- Available when you need it (span of service)

… focused where there are many people and activities that can benefit.

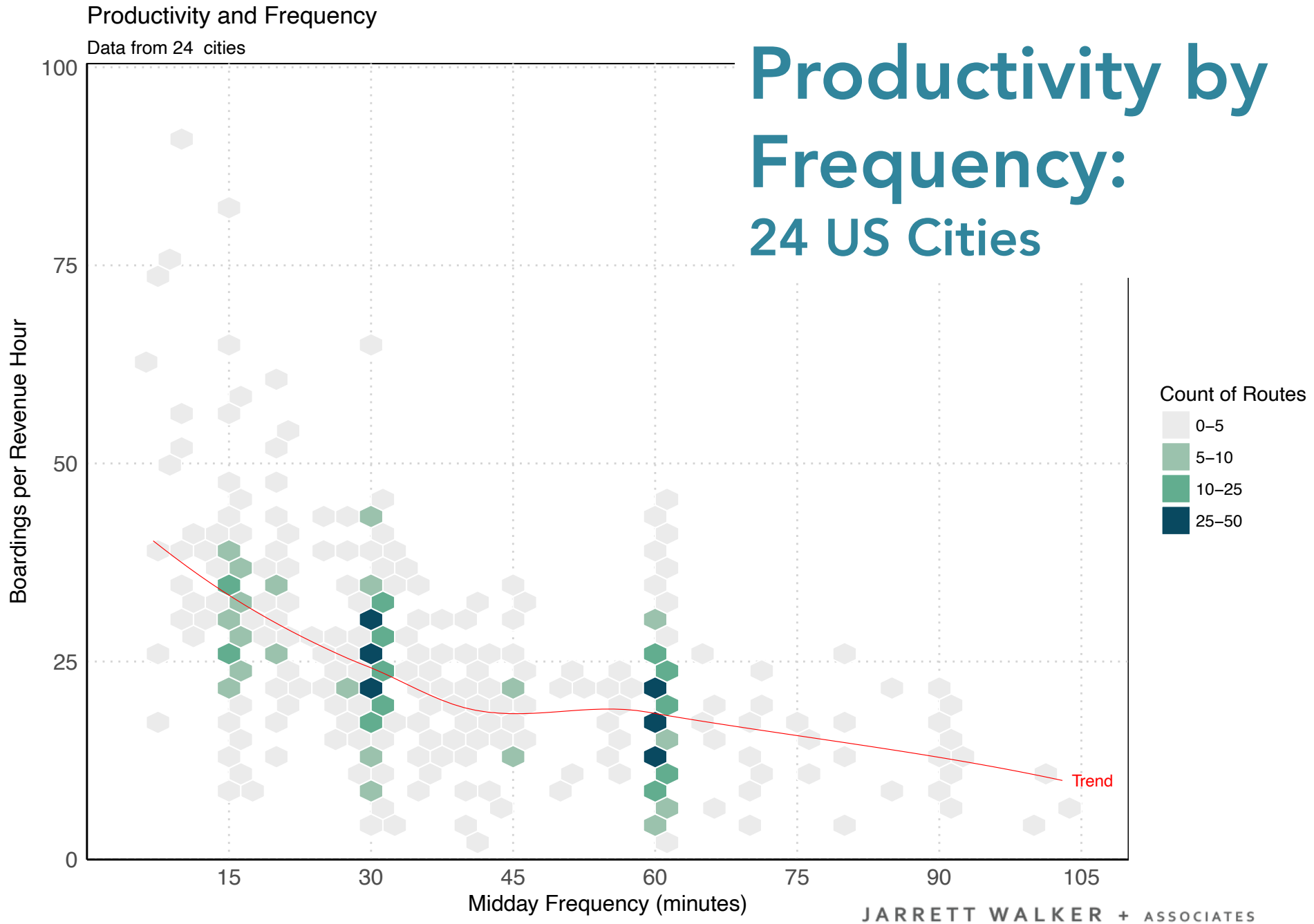
Why Frequency Matters

Speed and reliability matter, but frequency is often the most neglected element.

Frequency is a "cubed" benefit:

- Go when you want to go.
- Make connections easily, to get to more places.
- Less risk of being stranded by a disruption.

Productivity by Frequency:
24 US Cities



But …

- To get the best average access and aim for the highest possible ridership, you have to focus the best service where the highest possible number of people can use it.

- Let's explore how some basic geometric facts about a community's layout impact how much access transit can provide.

Density

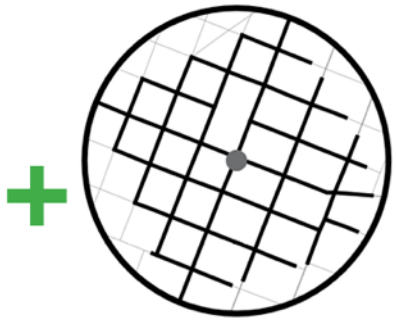
DENSITY *How many people, jobs, and activities are near each potential transit stop?*

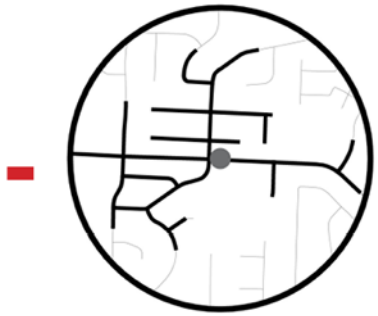
\+ Many people and jobs are within walking distance of transit.

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

Walkability

WALKABILITY *Is it possible to walk between the stop and the activities around it?*





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

Linearity

LINEARITY *Can transit run in reasonably straight lines?*

\+ A logical transit line is a direct path between any two destinations on it.

\- Destinations located off the straight path force transit to deviate, discouraging those who want to ride through and increasing cost.

Proximity

PROXIMITY *Does transit have to traverse long gaps?*

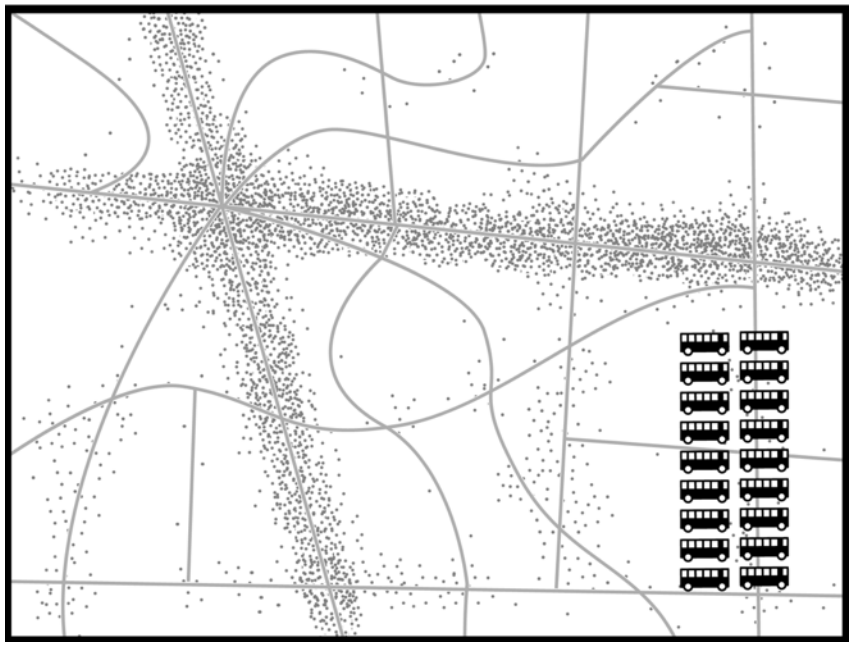
\+ Short distances between many destinations are faster and cheaper to serve.

\- Long distances between destinations means a higher cost per passenger.

The ridership-coverage tradeoff

What is transit trying to do?

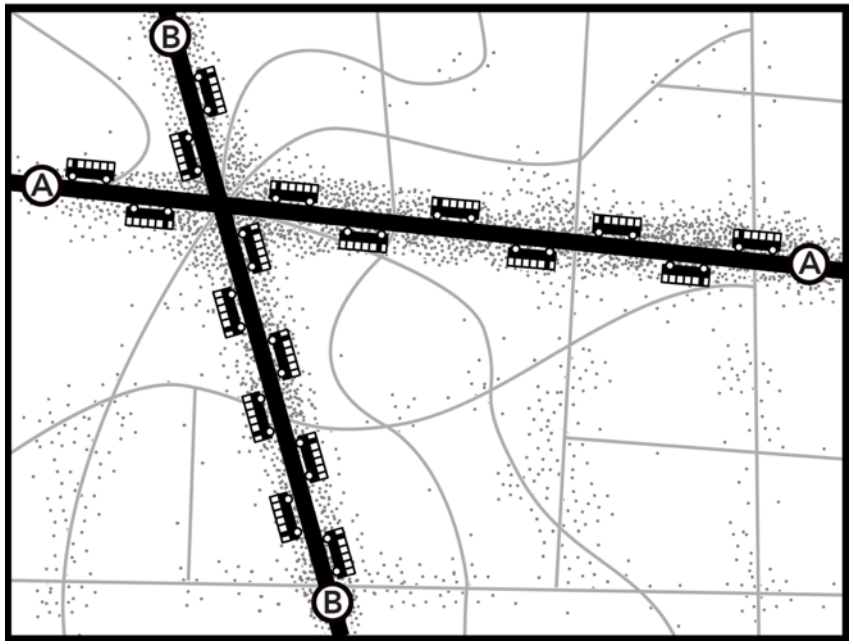
Different Goals, Different Service



Imagine you had 18 buses to serve this fictional town.

Dots are the locations of residents and jobs.

Ridership Goal



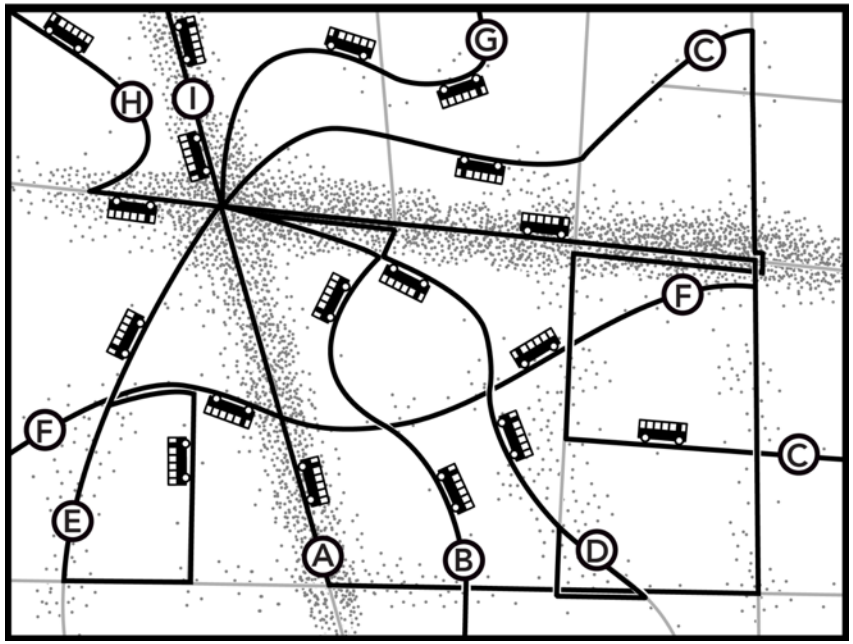
The Ridership Goal

Maximum access for the greatest possible number of people

But:

- *not available for everyone*
- *not necessarily available to all the people who need it most.*

Coverage Goal

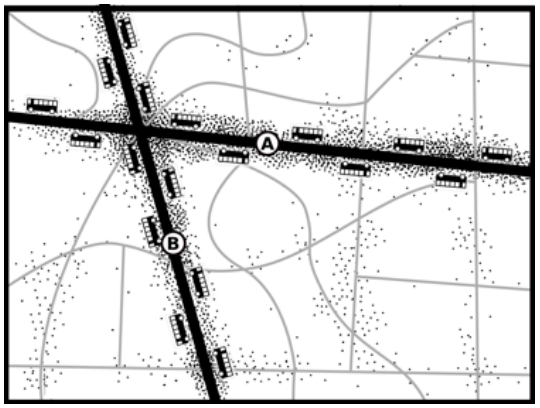


The Coverage Goal

Some service near everyone, a baseline level of access everywhere.

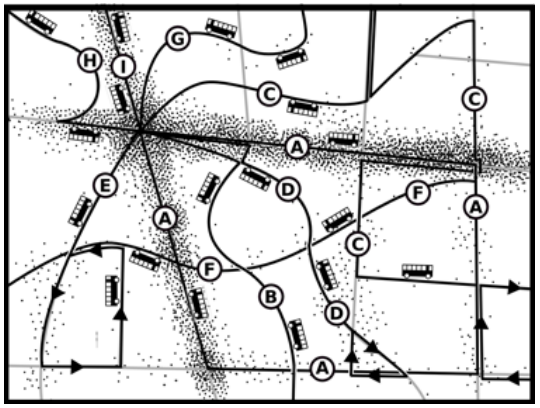
But it's unlikely to be useful for many people and trips.

Why both goals matter



Ridership Goal

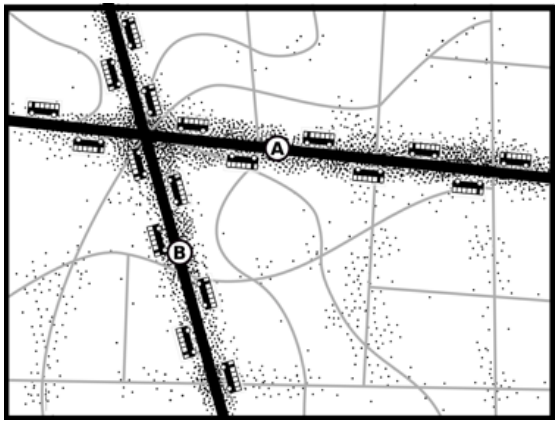
- Maximum <u>average</u> access to opportunity.
- Lowest subsidy per passenger.
- Support dense and walkable development.
- Emissions reduction.
- Reduction in vehicle miles traveled.

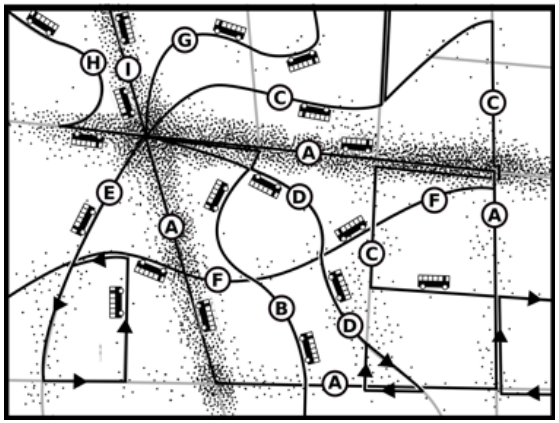


Coverage Goal

- Some service near <u>every</u> home and job.
- Baseline level of access available everywhere.
- Service to every member city or electoral district.

This tradeoff is unavoidable.

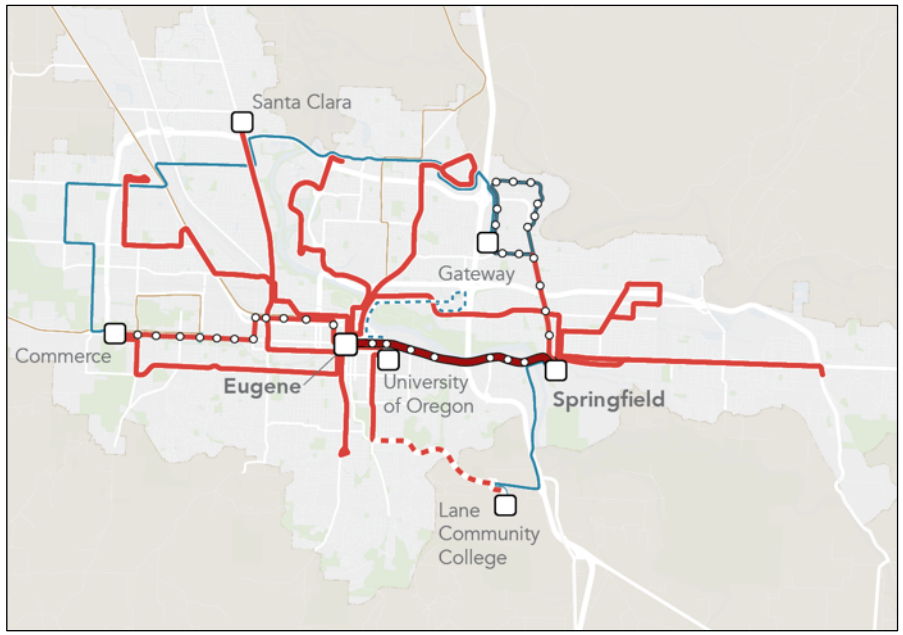




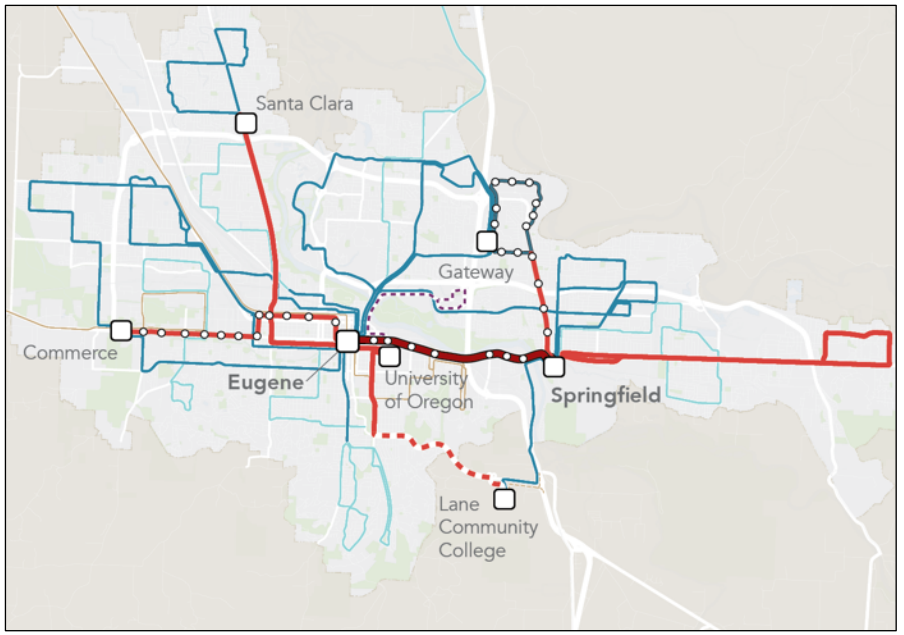
But you CAN choose a deliberate balance point on the spectrum between these goals. ("Devote ___% of our resources to the ridership goal and ___% to the coverage goal.")

Ridership vs. Coverage in a real place: Eugene, Oregon

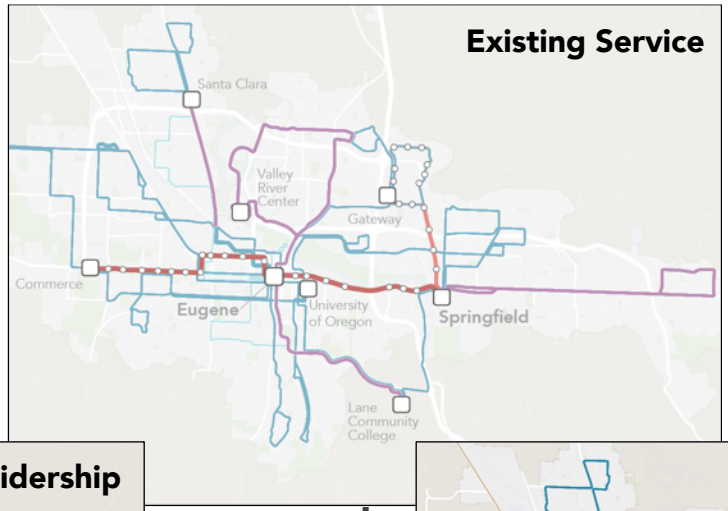
Higher Ridership

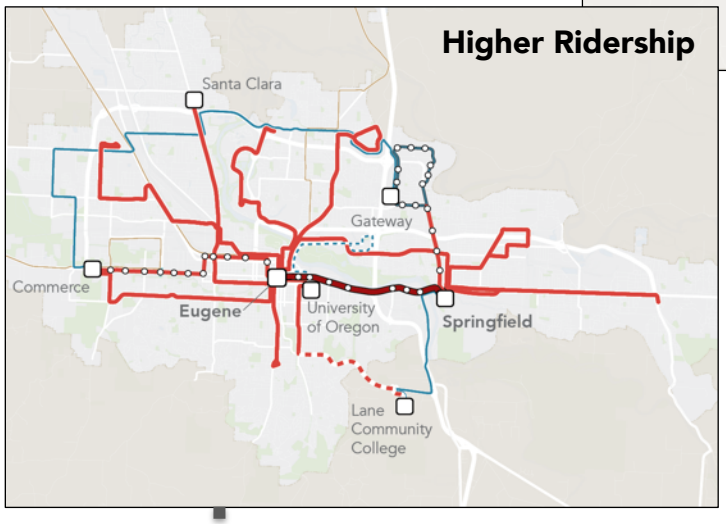


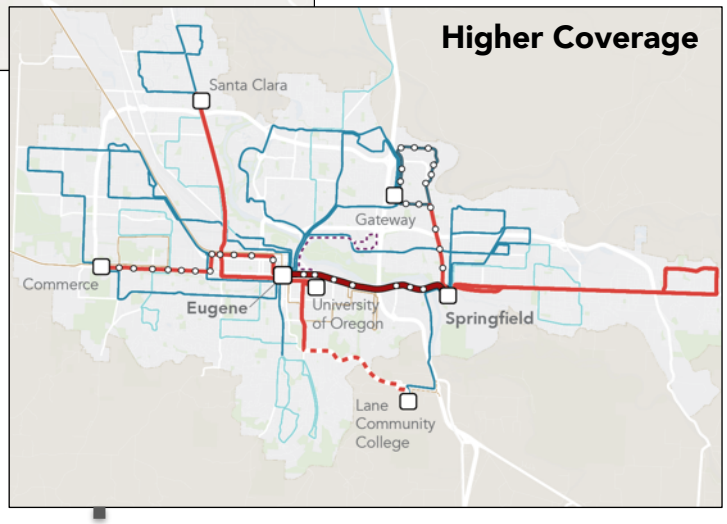
Higher Coverage



Compared to Existing Service







90% Ridership
10% coverage

65% Ridership
35% coverage

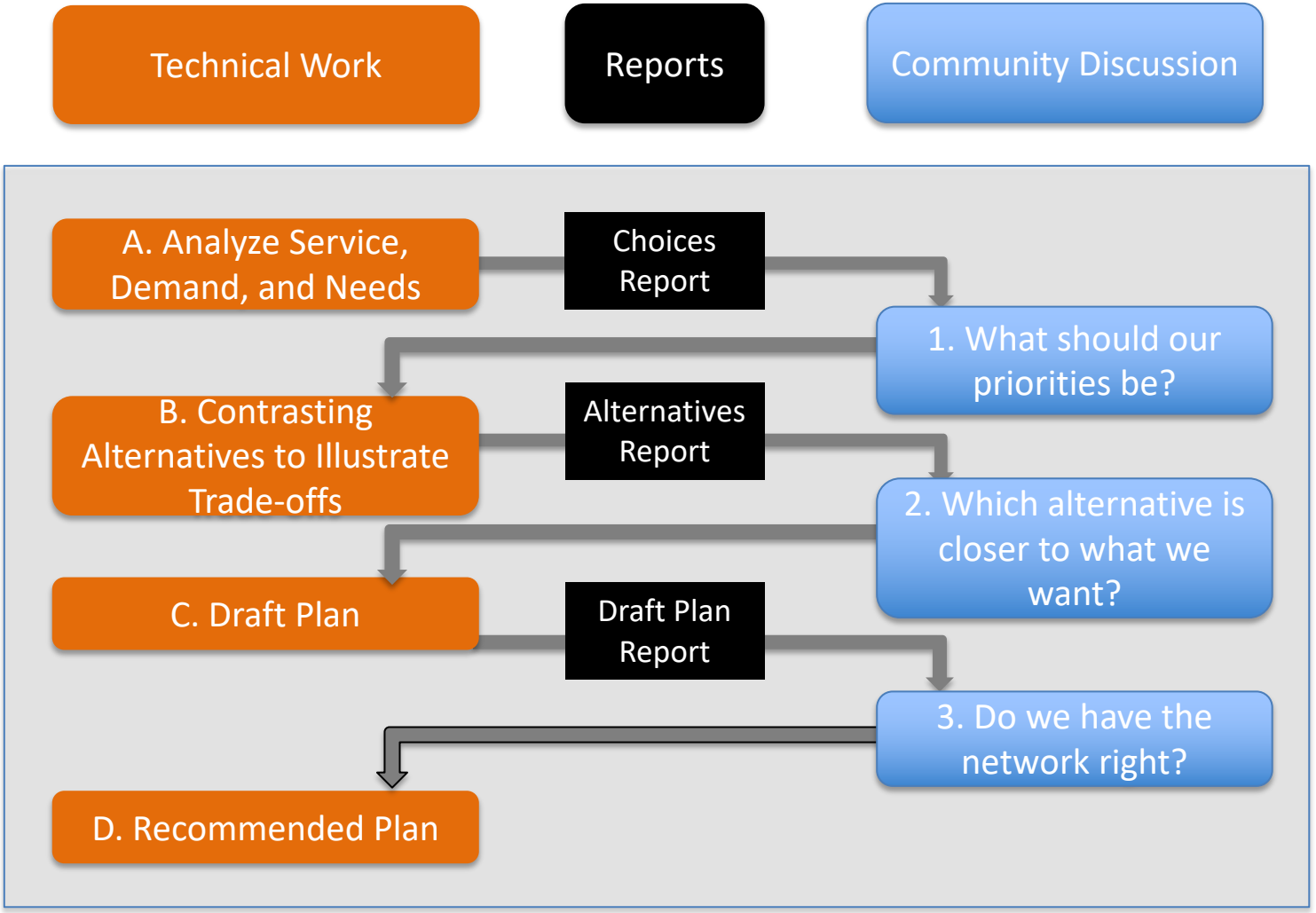
60% Ridership
40% coverage

Ridership — *Coverage*

JARRETT WALKER + ASSOCIATES

Project flow and timeline

Flow


Technical Work
Reports
Community Discussion
A. Analyze Service, Demand, and Needs
Choices Report
1. What should our priorities be?
B. Contrasting Alternatives to Illustrate Trade-offs
Alternatives Report
2. Which alternative is closer to what we want?
C. Draft Plan
Draft Plan Report
3. Do we have the network right?
D. Recommended Plan

Timeline:

Phase 1 (Fall 2020 – Winter 2021)

Oct – Dec 2020
Analyze Service, Demand, and Needs

Dec 2020
Choices Report

Jan-Feb 2021
What should our priorities be?

Phase 2 (Spring – Summer 2021)

Mar – May 2021
Alternatives to Illustrate Trade-offs

May 2021
Alternatives Report

June – July 2021
Which alternative is closer to what we want?

Phase 3 (Fall 2021)

Aug – Sep 2021
Draft Plan

Sep 2021
Draft Plan Report

Oct – Nov 2021
Did we get the plan right?

Nov – Dec 2021
Recommended Plan

January 2022
Final Plan Report

We appreciate your time and participation today and going forward.

Thanks!