

# **SEPTA Forward: Bus Revolution**

**Transit Talk: Frequency, Coverage, & Duplication**

# Agenda

- 1 Welcome
- 2 Frequency, Coverage, and Duplication
- 3 Q&A
- 4 Next Steps



# Meeting Goals

- **Overview of frequency, coverage, and duplication**
  - What we mean by it and why it is important
- **Understand potential tradeoffs**
  - How do choices around frequency, coverage, and duplication change service design
- **Share your ideas and thoughts**
  - Weigh in on different strategies for how SEPTA should balance frequency, coverage, and duplication

# Frequency and Coverage

# Network Design Tradeoffs

All transit agencies make tradeoffs to determine **where, when, and how often bus service should run**

These tradeoffs are made regardless of **how much resources are available**

A key tradeoff in network design is the **balance between frequency and coverage**

# Frequency and Coverage



## Frequency

**How often the bus comes**



## Coverage

**How many places  
people can access using transit**

# Why is frequency important?

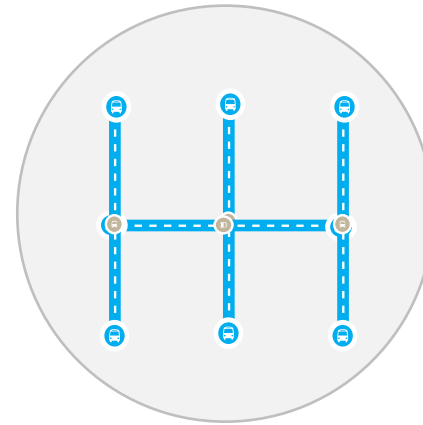
When service is more frequent, riders:



**Don't have to  
plan around a  
schedule**



**Wait for less  
time**



**Have easier  
transfers  
between  
services**



**Have more  
good options if  
something goes  
wrong**

# Why is coverage important?



For some people, transit is the only reliable mobility option



People cannot use transit when there is no service



There are often key destinations in places with less demand



Agencies want to provide access throughout their service area



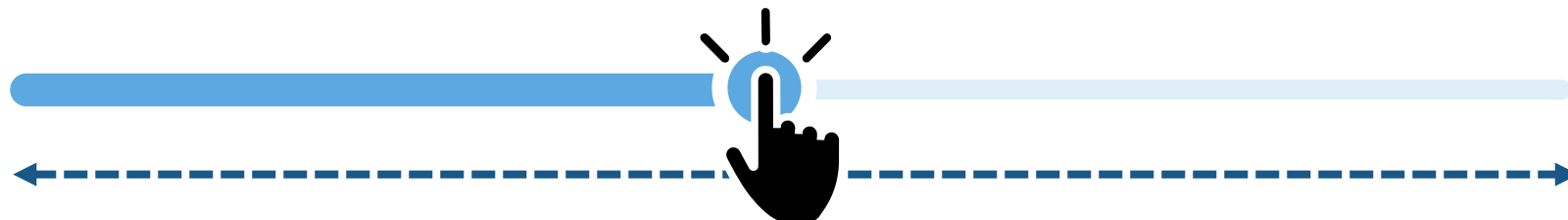
# What is the frequency & coverage tradeoff?

Providing frequency and coverage has costs



If a bus route operates more frequently, it costs more

If a transit network serves more places, it costs more



# What is the frequency & coverage tradeoff?

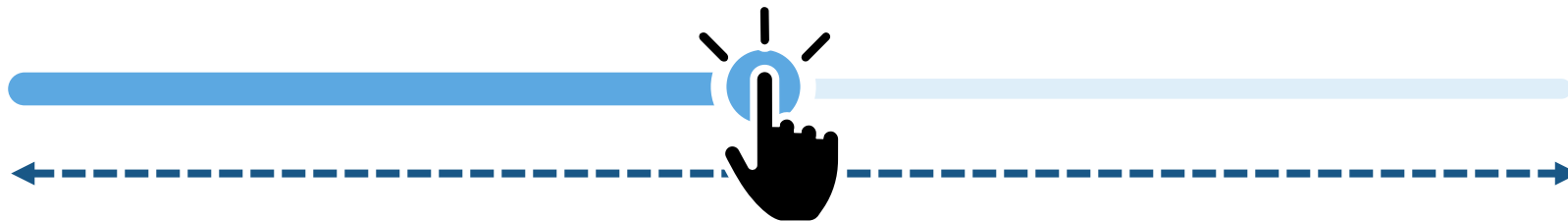
Therefore, all transit agencies **balance**

Providing more frequent service where:

- Demand for transit is high
- Transit can compete well with other modes, particularly automobiles

Providing more service coverage to:

- Provide access to key destinations in places with less demand for transit
- Serve the needs of people who rely most on transit
- Serve more communities within their service area



# What is the frequency & coverage tradeoff?

## Prioritizing Frequency

- Provides more frequent service on fewer routes
- Provides better service to a smaller area
- Creates better options for most riders
- Usually generates more ridership

## Prioritizing Coverage

- Provides less frequent service on more routes
- Provides access to more places
- More people have at least some access to transit
- Usually generates less ridership

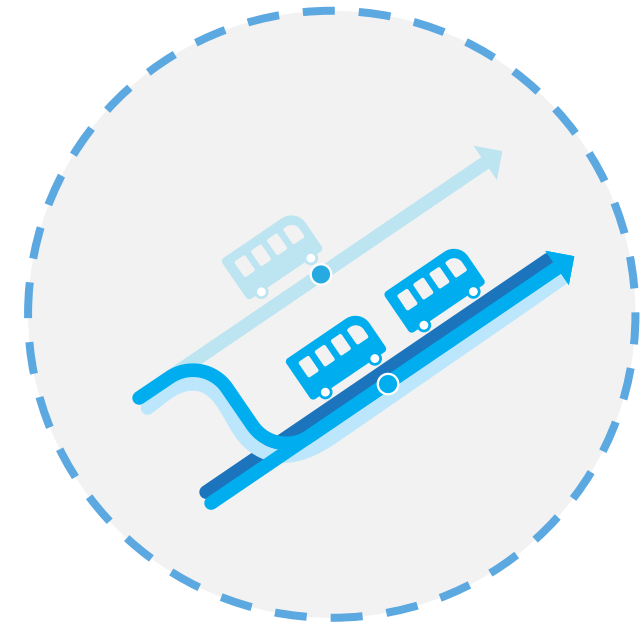
**Duplication**

# What is duplication?

**Effective transit networks provide people with **one or two great choices** for their trip.**

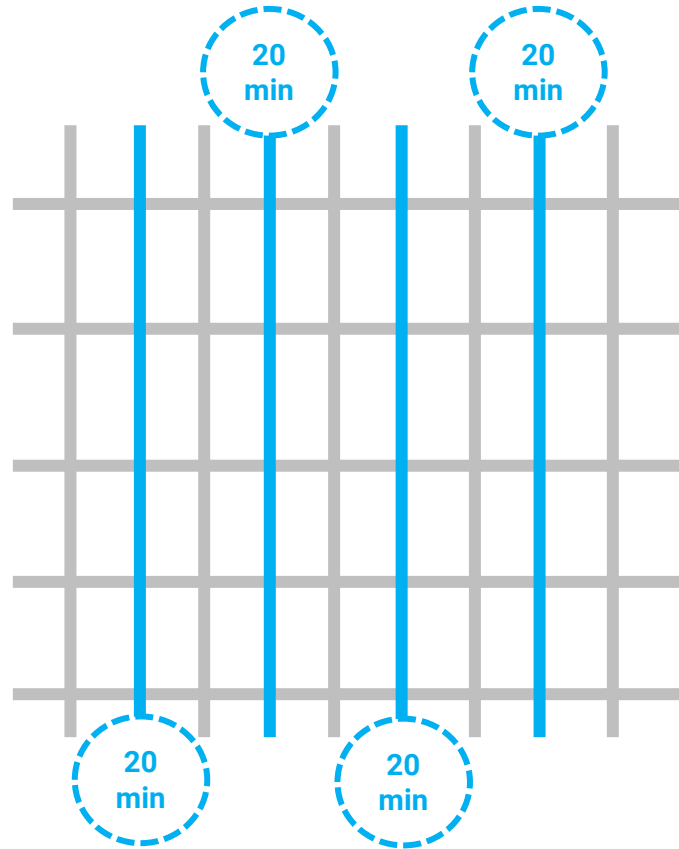
But many networks provide many more choices, each designed to meet the needs of a tailored market.

Typically, providing too many choices means all choices are mediocre for most riders.

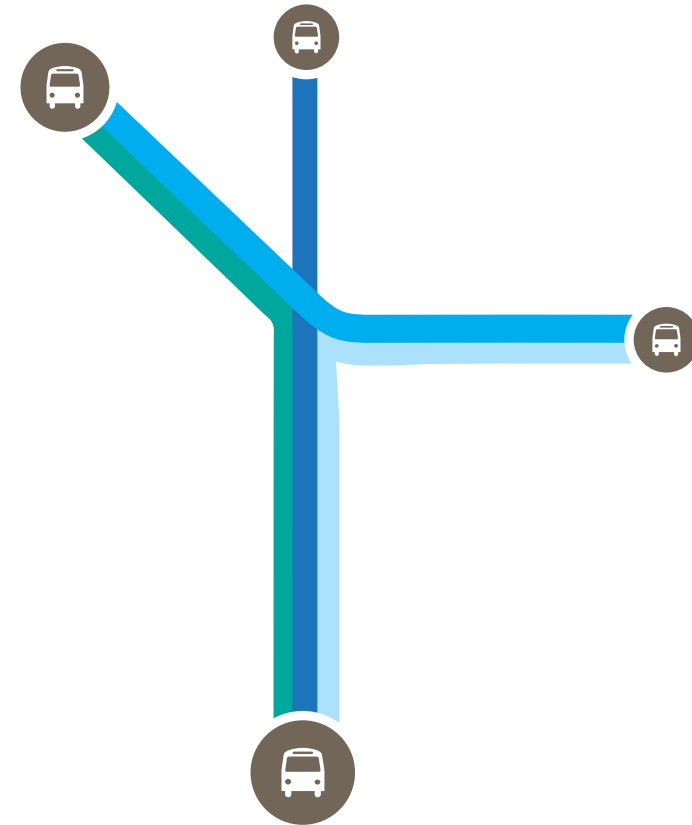


**This is duplication.**

# What are examples of duplication?

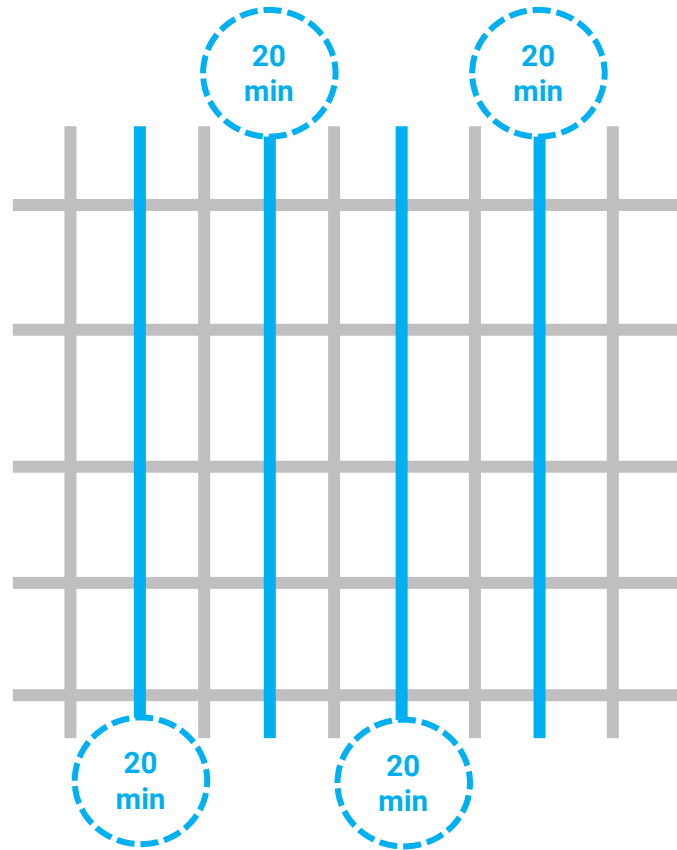


Many closely spaced bus routes that go to similar places



Many bus routes run on the same street, but then go to different places

# What are examples of duplication?

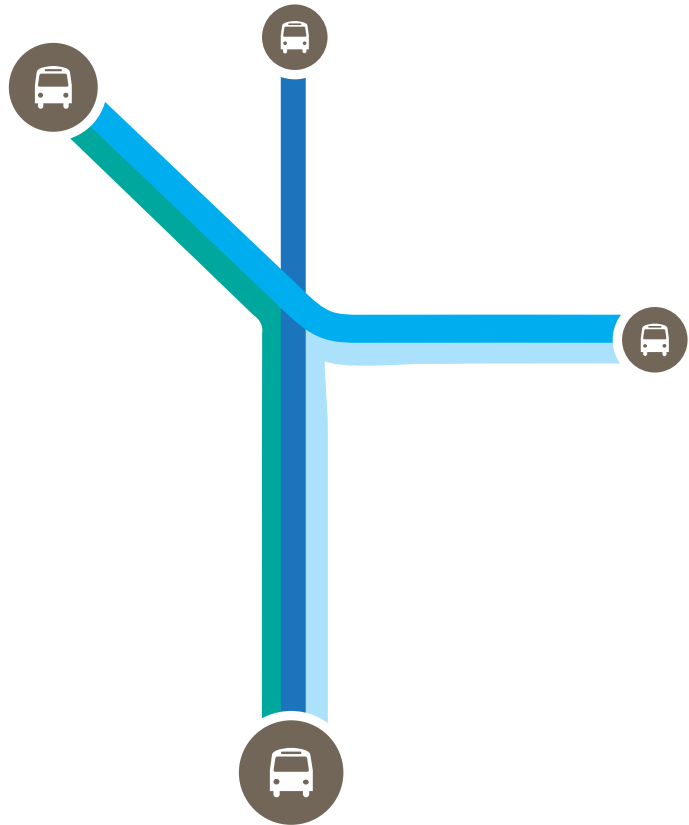


Many closely spaced bus routes that go to similar places

- Everyone has a very short walk to transit

- Everyone has access less frequent service
- More bus stops, but with fewer amenities

# What are examples of duplication?



Many bus routes run on the same street, but then go to different places

- Some people have a one-seat ride
- If there is a transfer fee, some people have a cheaper fare

- Everyone has access to less frequent service
- Service is confusing to understand
- Difficult to coordinate schedules on routes using the same streets
- Less reliable service, with more bus bunching



# What are the tradeoffs?

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A few great options are usually better than many mediocre options.

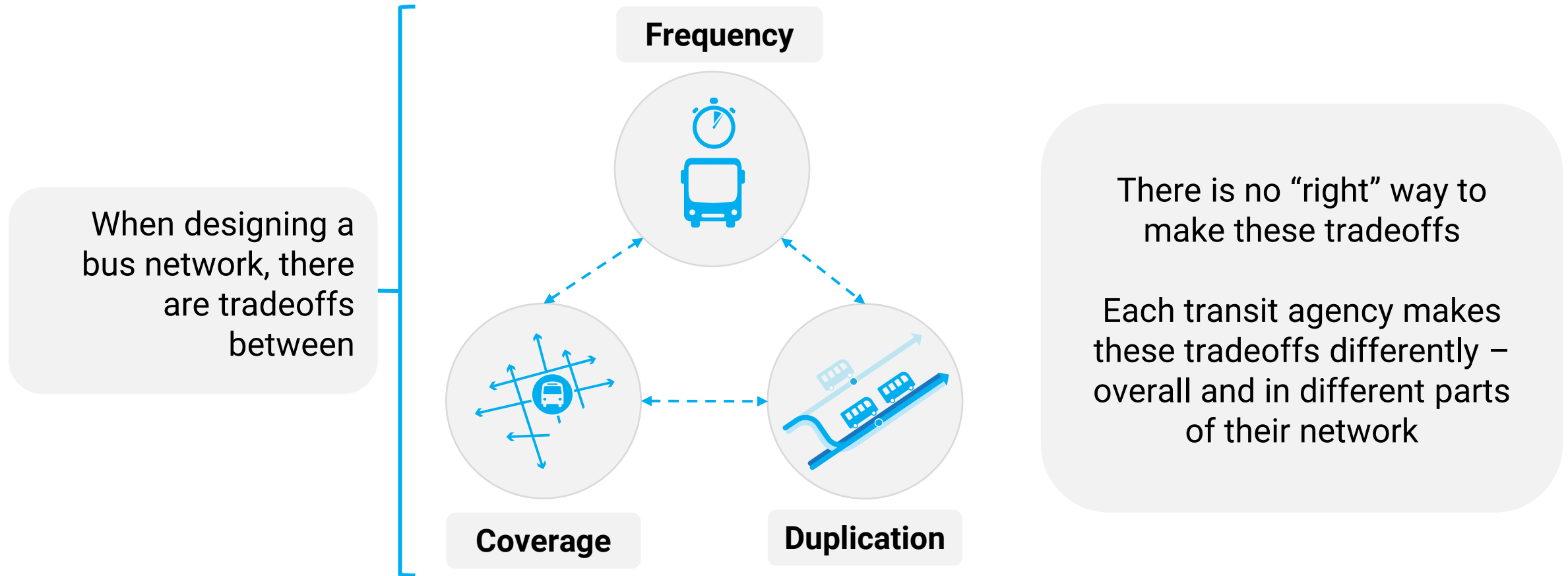
More duplication means less resources to provide frequency and coverage.

Many agencies reduce duplication as part of bus network designs - but there are tradeoffs.

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# Network Design Tradeoffs

# How Do Tradeoffs Work in Practice?



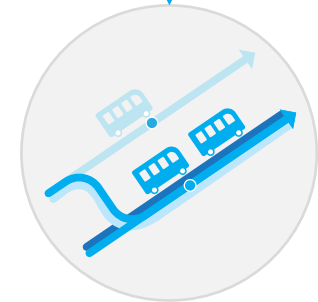
# Example: Urban Core

Transit works best in places with lots of residents and jobs

Most urban cores therefore have lots of transit

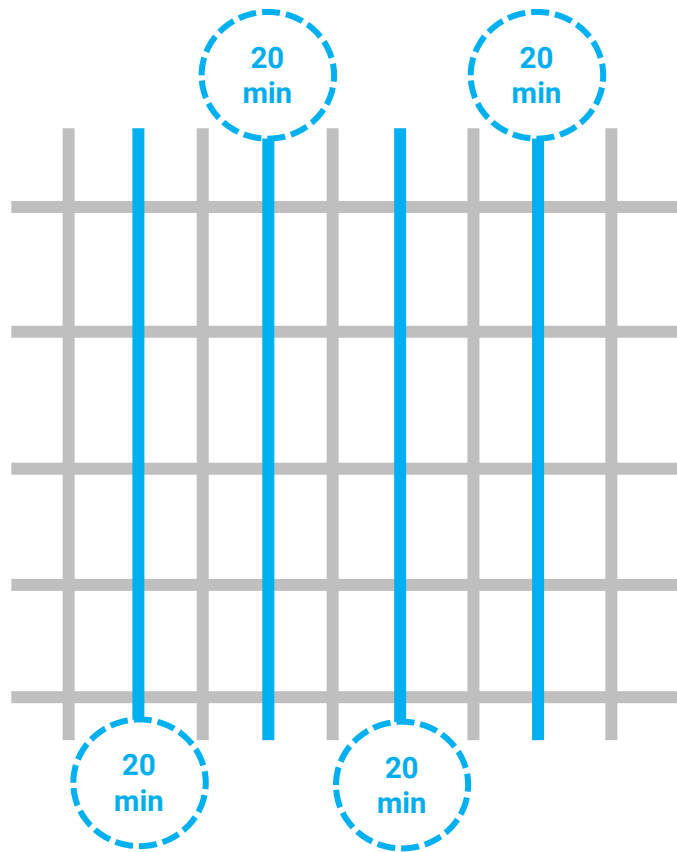
The primary trade off is often **Duplication vs. Frequency**

Frequency



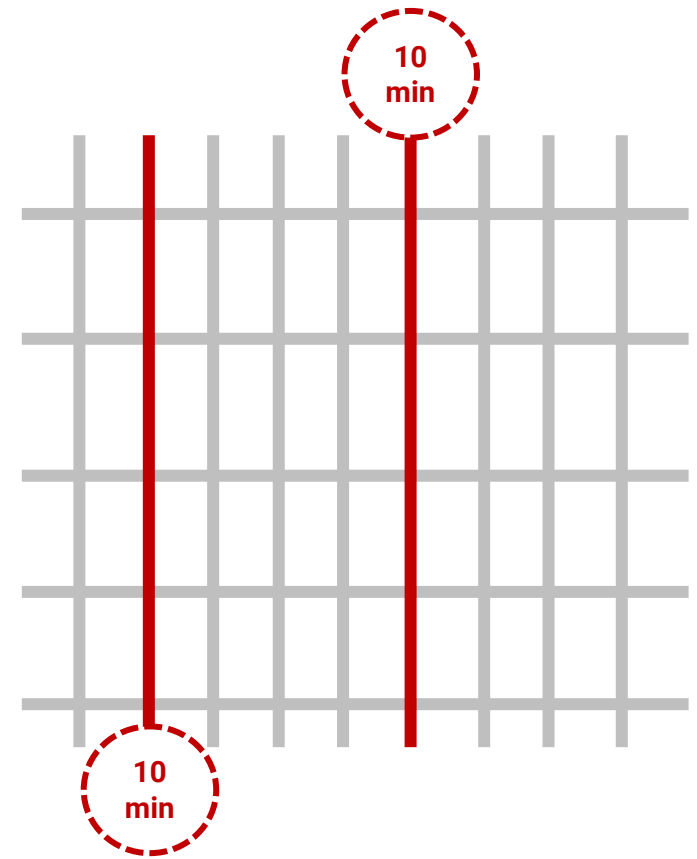
Duplication

# Example: Urban Core



More Duplication: Many closely spaced bus routes that go to similar places

Tradeoff:  
Duplication  
vs.  
Frequency



More Frequency: Fewer bus routes with higher frequency

# Example: Urban Core

## More Duplication: More bus routes with less frequency

- Everyone has a very short walk to transit
- Everyone has lower frequency service
- Many trips take longer

**Prioritizes very short walks**

Tradeoff:  
Duplication  
vs.  
Frequency

## More Frequency: Fewer bus routes with higher frequency

- Everyone has twice as frequent service
- Everyone saves time
- Some people have to walk up to five minutes more to access transit

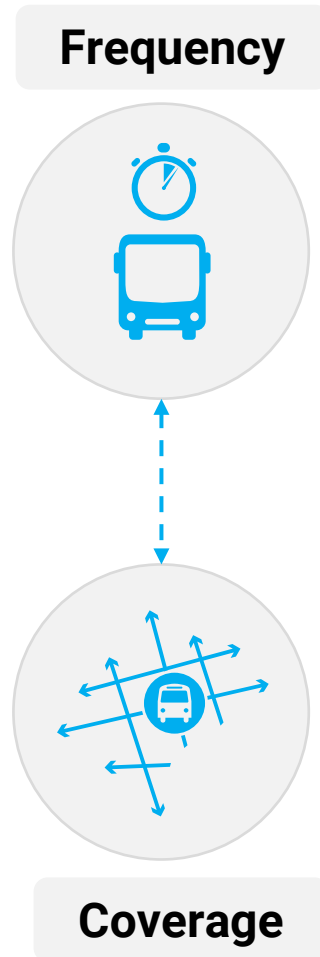
**Prioritizes faster trips**

# Example: Suburbs

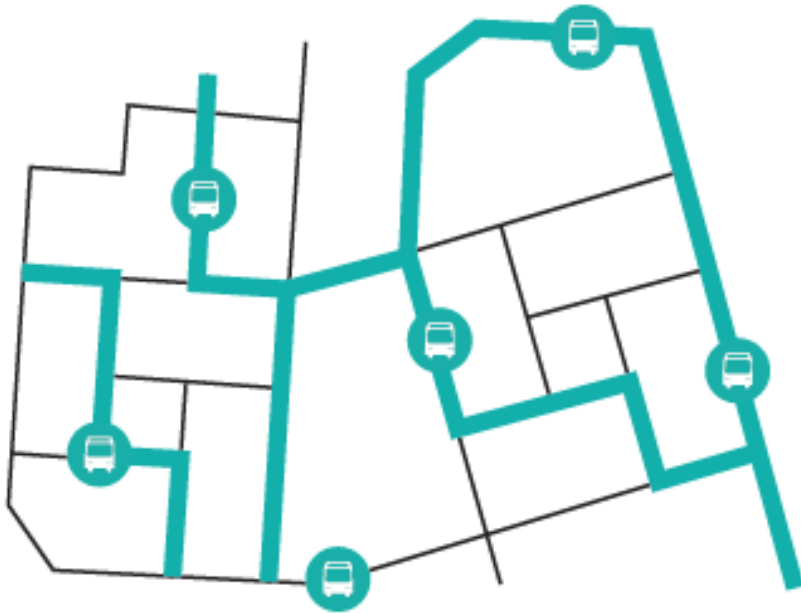
In suburbs, residents and jobs are often spread out across a much larger area

Some suburbs can support higher frequency service, while others have much less demand for transit

The primary trade off is often **Coverage vs. Frequency**

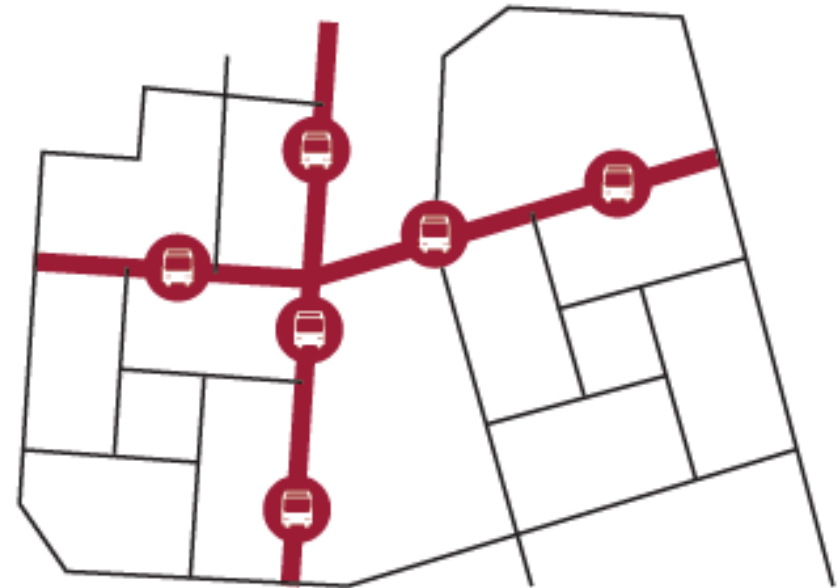


# Example: Suburbs



More Coverage: Buses Serving A Larger Area With Less Frequent Service

Tradeoff:  
Coverage  
vs.  
Frequency



More Frequency: Buses Serving A Smaller Area with More Frequent Service



# Example: Suburbs

## More Coverage: Buses Serving A Larger Area With Less Frequent Service

- More people and destinations have at least some transit access
- Everyone can access more places
- Trips require more planning and transfers are harder

**Prioritizes serving more places**

Tradeoff:  
Coverage  
vs.  
Frequency

## More Frequency: Buses Serving A Smaller Area with More Frequent Service

- Areas with highest demand have better service
- Trips require less planning and transfers are easier
- Some people and destinations do not have transit access

**Prioritizes providing better service where it is available**

**What does  
Frequency, Coverage, and Duplication  
look like in Southeast Pennsylvania?**

# City of Philadelphia



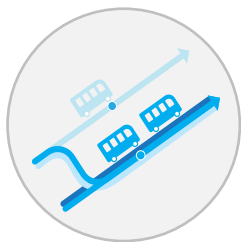
## Frequency: Moderate

- Large all-day 15-minute network
- Fewer routes operate at least every 10 minutes all day



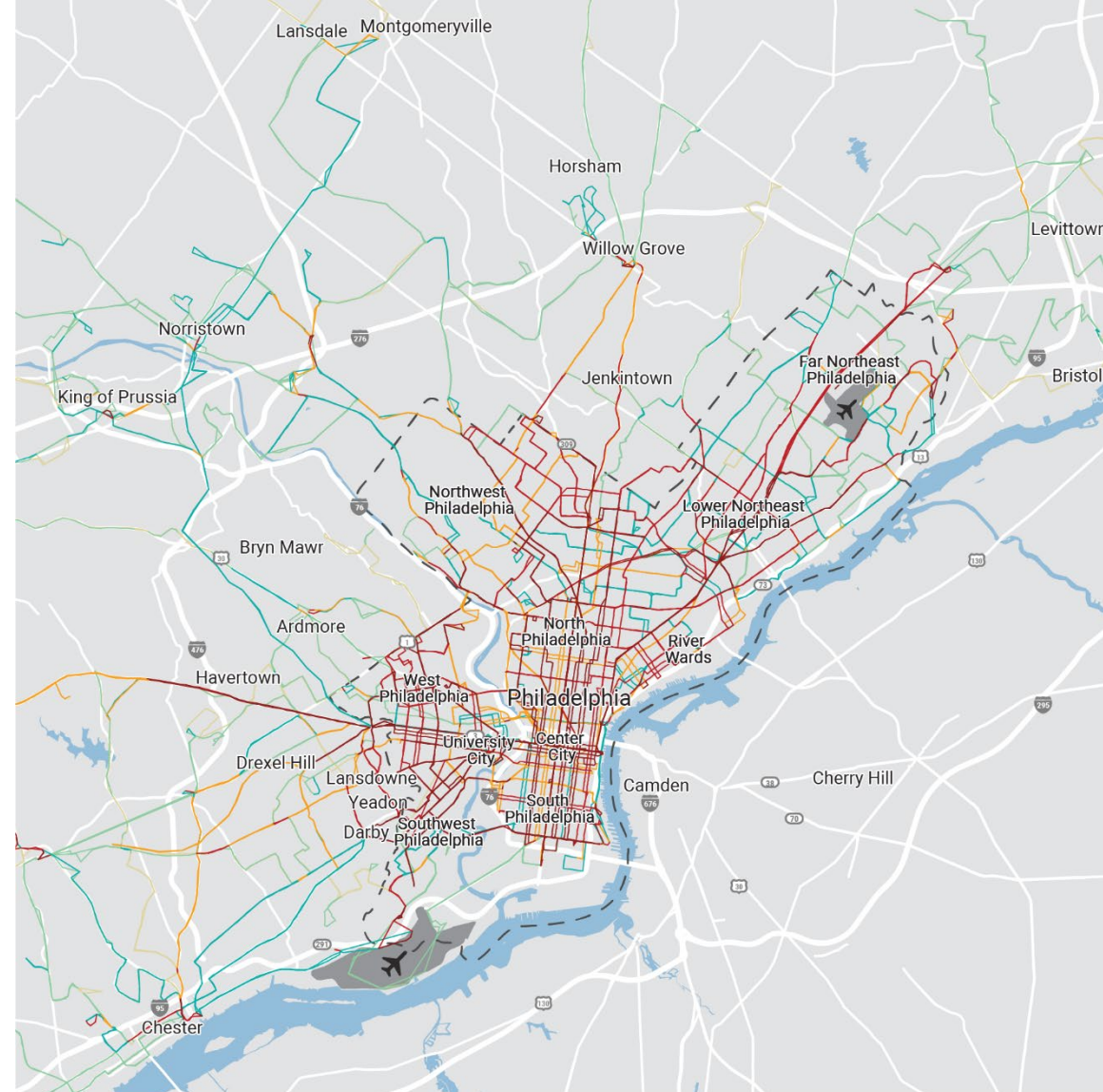
## Coverage: High

- Most places with transit demand have service



## Duplication: Very High

- Routes are spaced close together, especially in Center City, West Philly, North Philly, and South Philly



## Midday Service by Frequency

Weekday service between 9am and 3pm

### Service by Frequency

- 10 min. or less
- 11 - 15 min.
- 16 - 20 min.
- 21 - 30 min.
- 31 - 60 min.
- More than 60 min.



# Greater Philadelphia Area



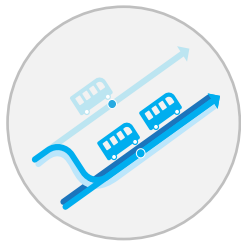
## Frequency: Moderate

- Less demand for frequent service
- Most routes operate every 30 minutes or less



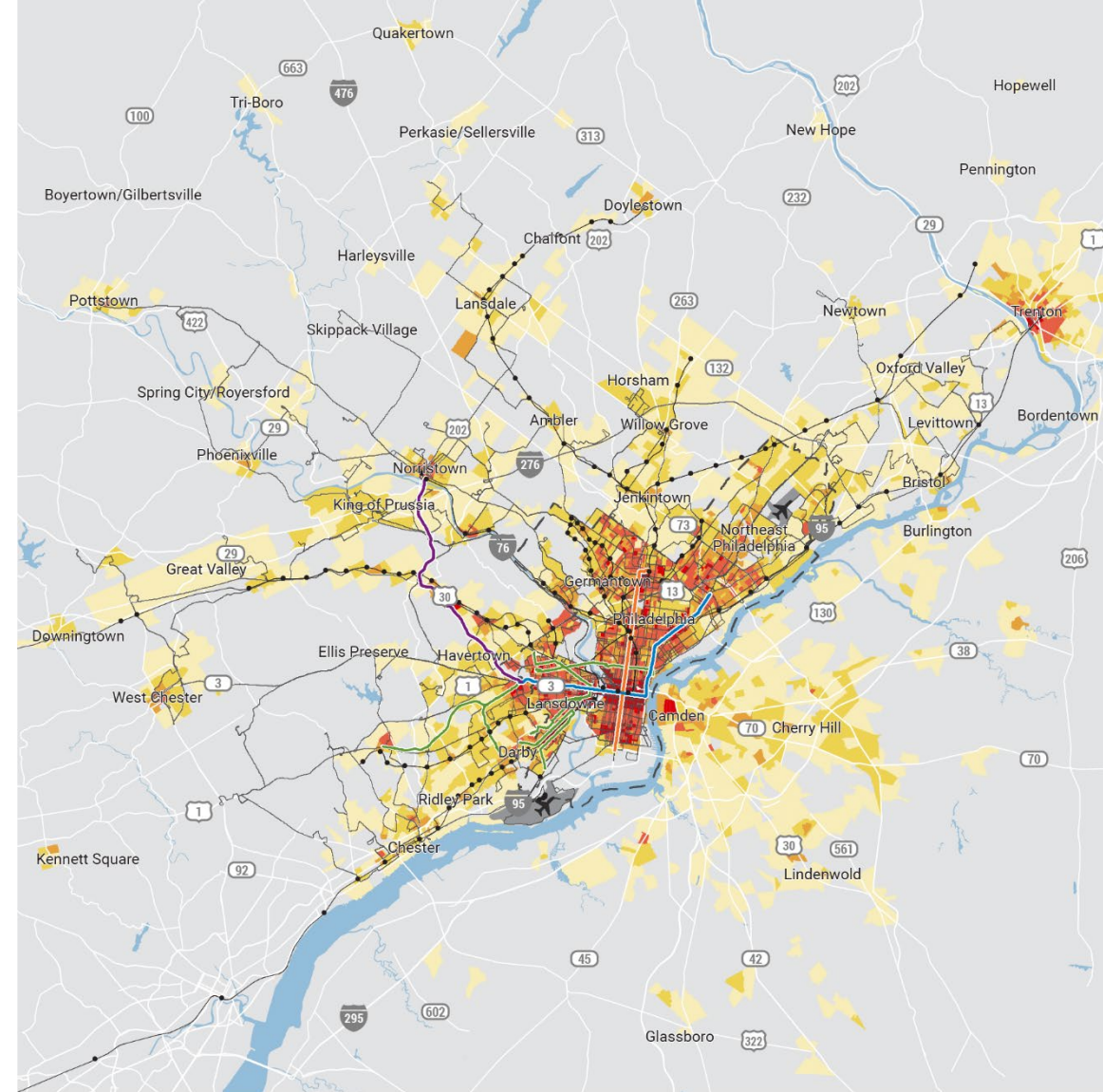
## Coverage: Moderate

- Most places with higher demand have service
- Some unserved destinations that could support bus service



## Duplication: Moderate

- Highest demand areas tend to have duplicative service



## Transit Demand

Estimated demand for transit services calculated by employment and adjusted population per acre

### Transit Frequency Demand



### Transit Routes

- SEPTA Rail
- SEPTA Bus
- SEPTA Trolley
- Market-Frankford Line
- Broad Street Line
- Norristown High Speed Line



# Choices and Trade-offs

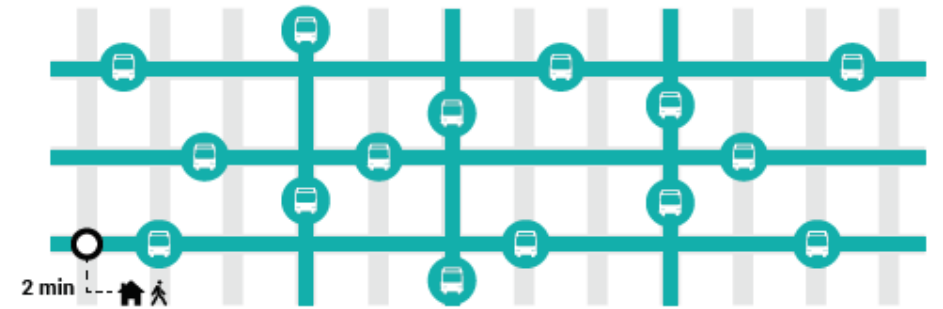
# What do you like best?

Fewer options with higher frequency?



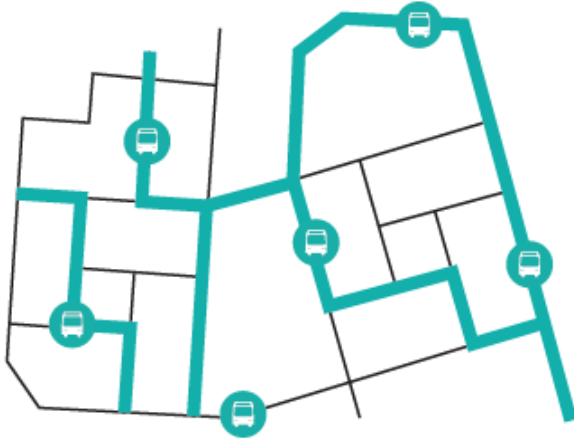
OR

More options with less frequency?



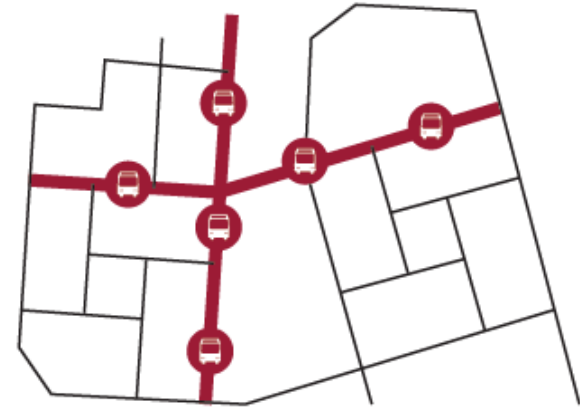
# What do you like best?

Buses serving a larger area with less frequent service?



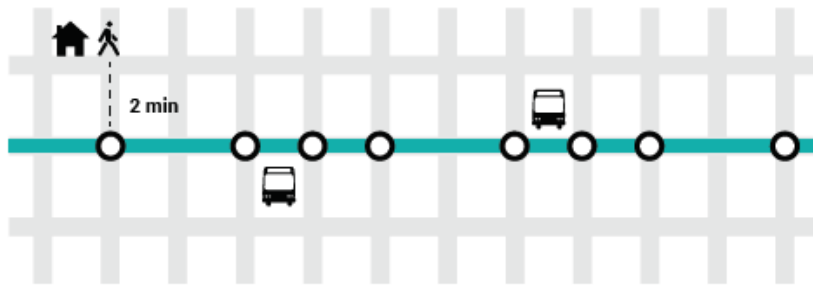
OR

Buses serving a smaller area with more frequent service?



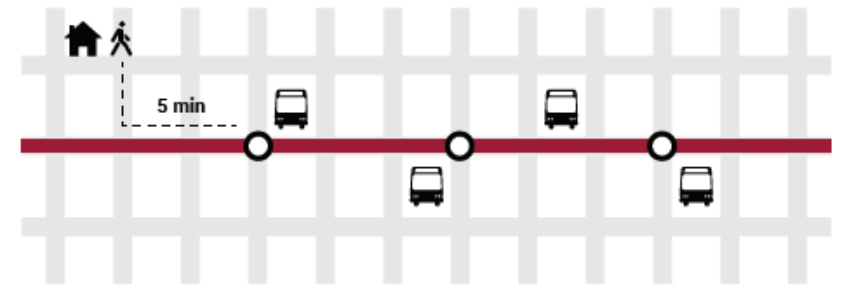
# What do you like best?

A shorter walk to a slower bus?



OR

A slightly longer walk to a faster bus?





# What do you like best?

A bus that takes an indirect path and is slower  
but stops closer to your destination?



OR

A bus that travels more directly and is faster, but  
stops a little bit further from your destination?



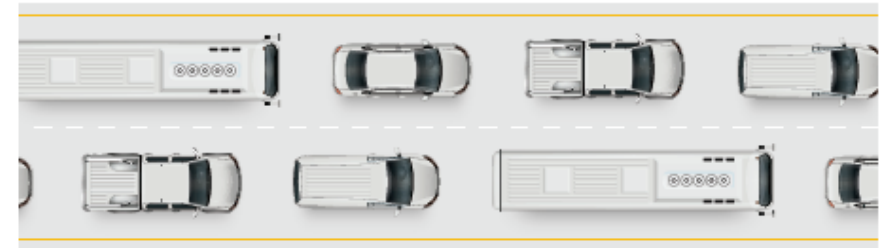
# What do you like best?

Buses should have their own travel lanes?



OR

Buses should share the road with cars and other vehicles?



# Questions & Answers

# **SEPTA Forward: Bus Revolution**

**Stay in touch!**

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