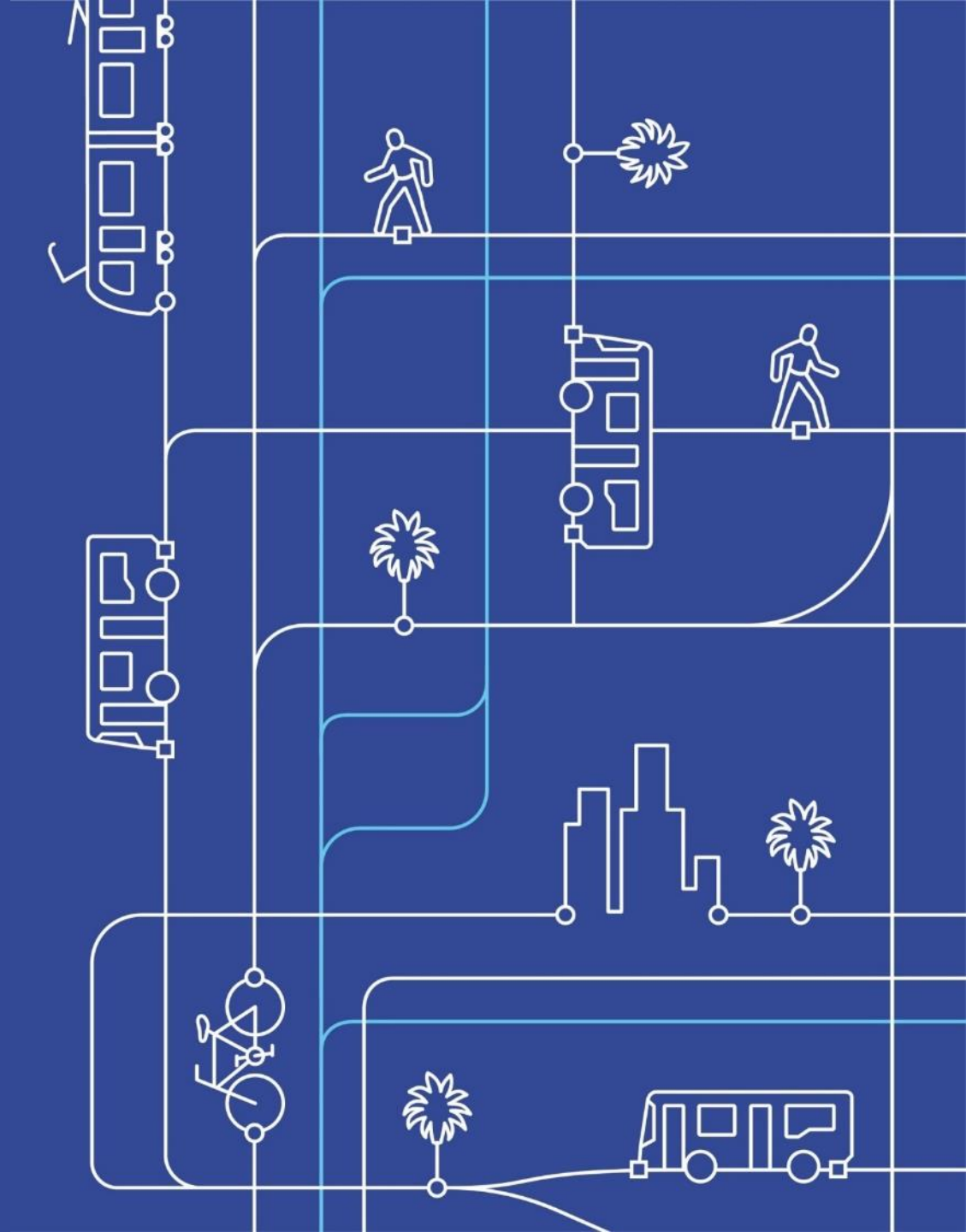
NEXTGEN Bus Study

Reimagining the Transit Network

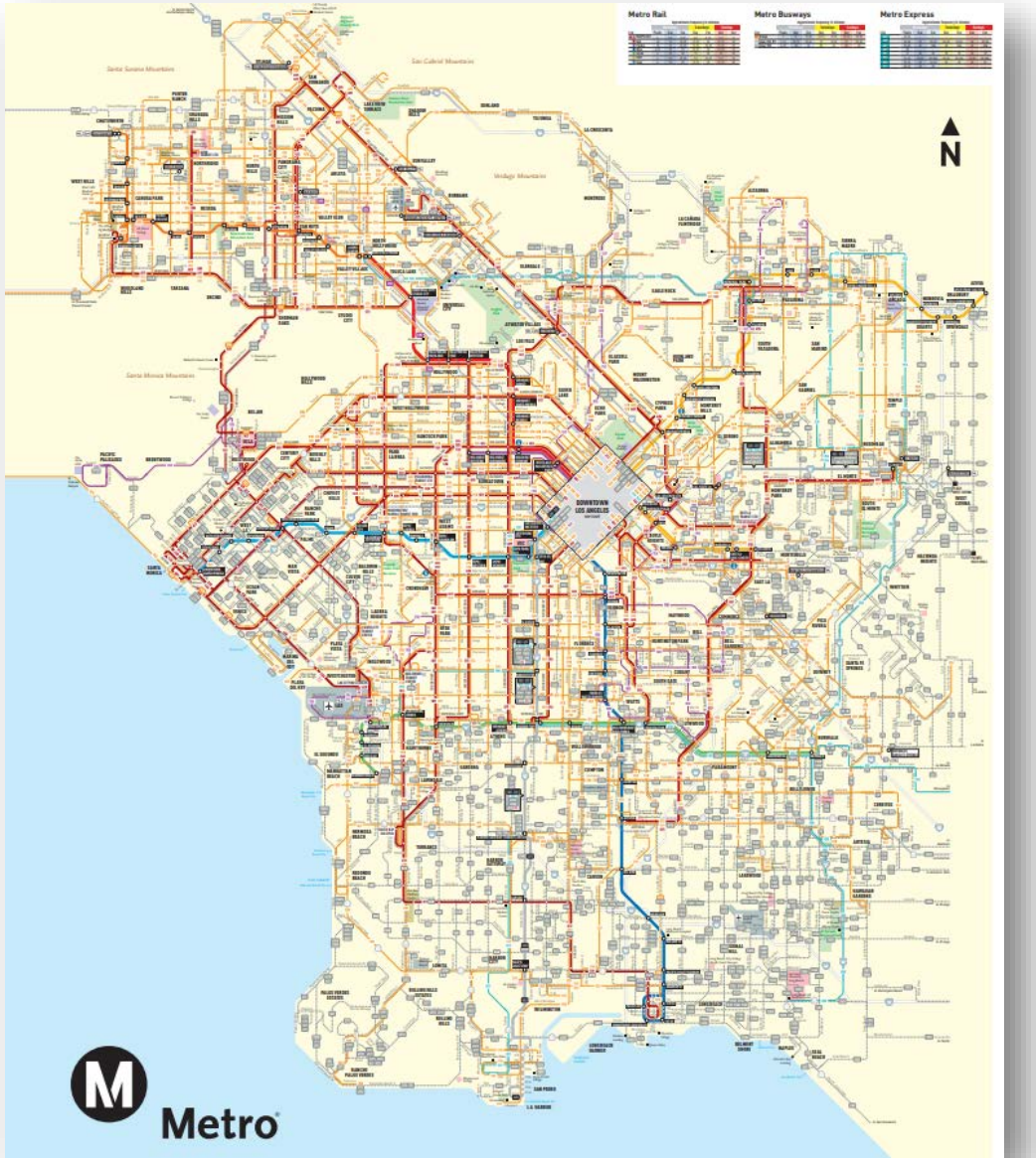
APTA Sustainability & Multimodal Workshop

07.31.19

Metro



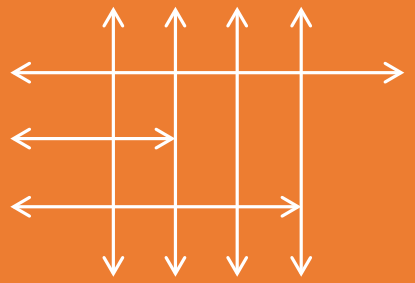
Metro System Overview



BUS	• 140 Lines/170 Routes • 2,300 buses • 14,000 stops • 800,000 weekday boardings • 7 million annual service hours • S1.2 billion annual operations
RAIL	• 4 Light Rail/2 Subway • 240 cars • 93 stations • 350,000 weekday boardings • 1.3 million annual service hours • $542 million annual operations

Despite an extensive network and continued investment in mass transit we've experienced over 20% decrease in ridership over the last 5 years.

So, what is NextGen?



A new bus network

Something for everyone

Why are we doing this?

Outdated bus network

It’s been 25 years since last redesign!
Travel patterns have changed

More People

1 million new residents

More places to go

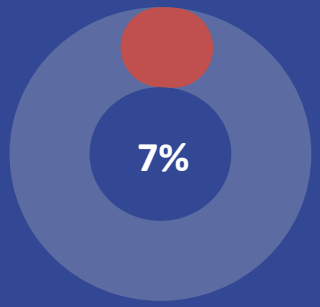
New destinations

More ways to get there

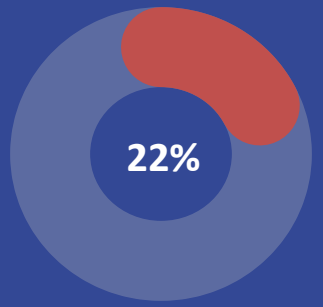
Transportation Network Companies, MicroMobility, shared vehicles

Four Types of Customers

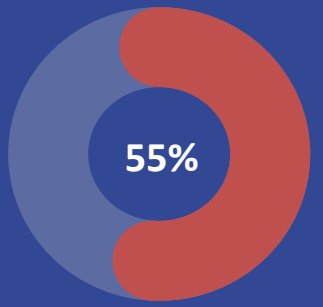
Frequent



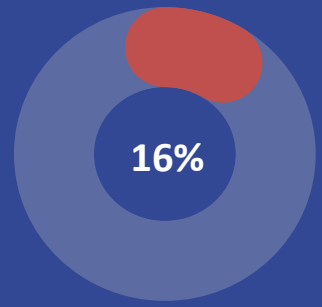
Occasional



Infrequent



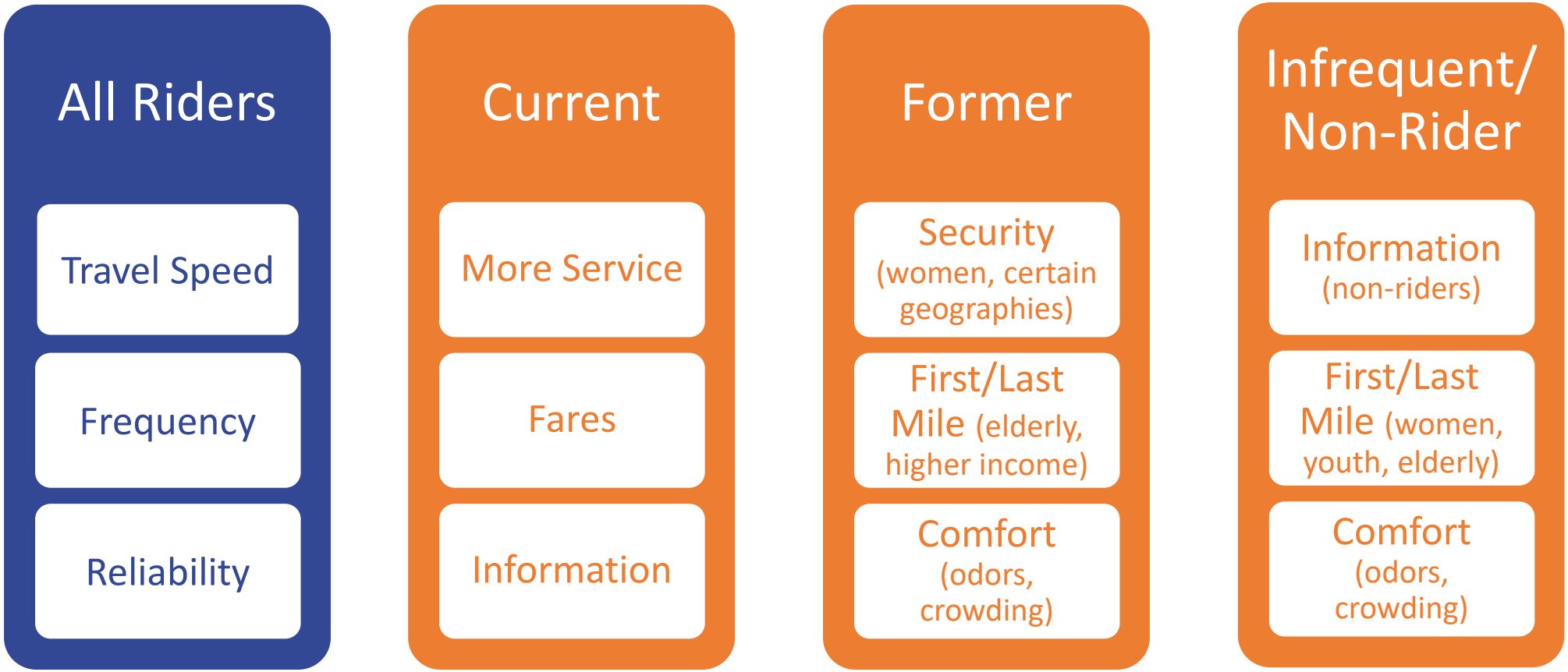
Non-Rider



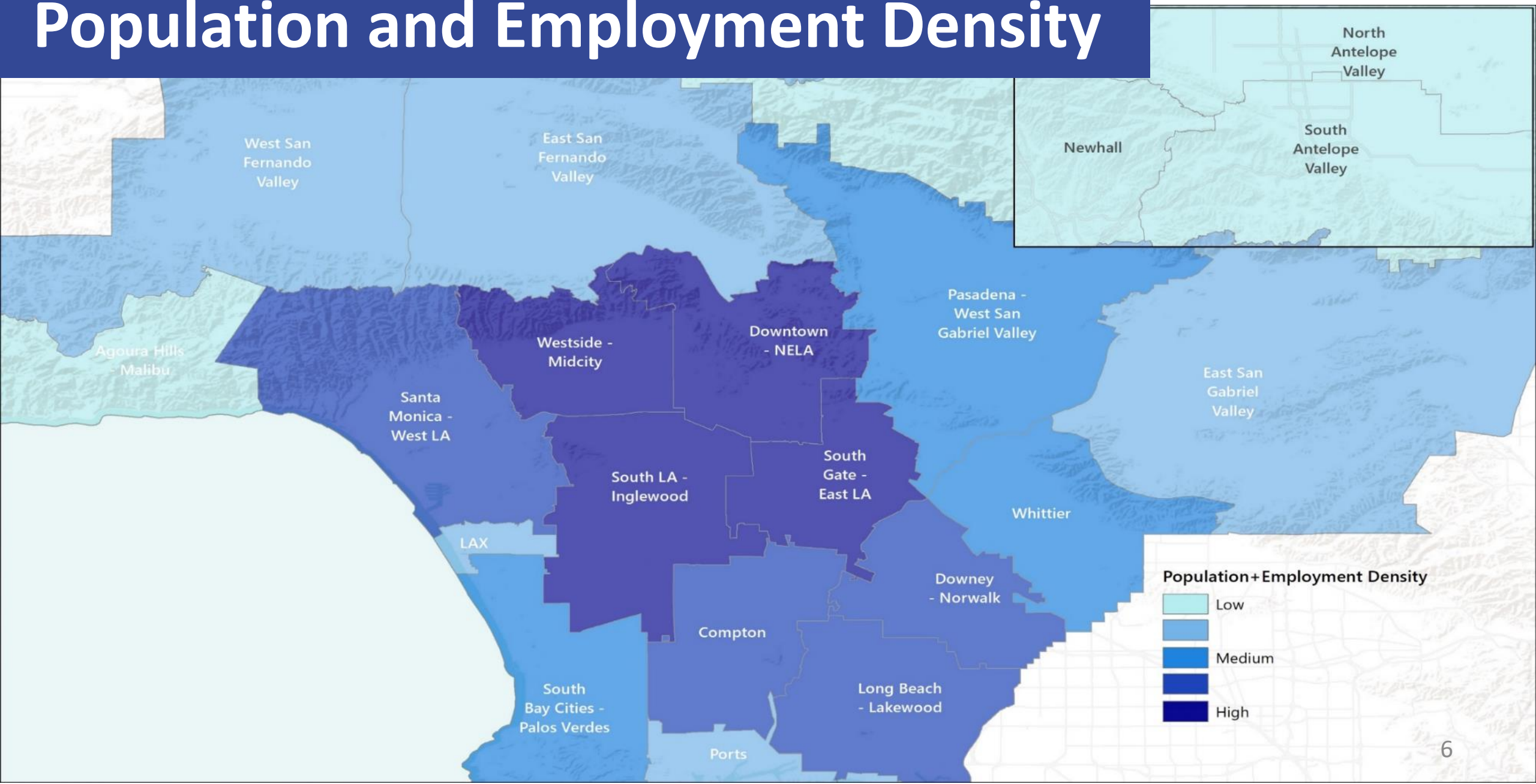
As a % of all LA County residents

If 1 in 4 non riders
used transit two times per month,
we would more than recoup
the lost ridership

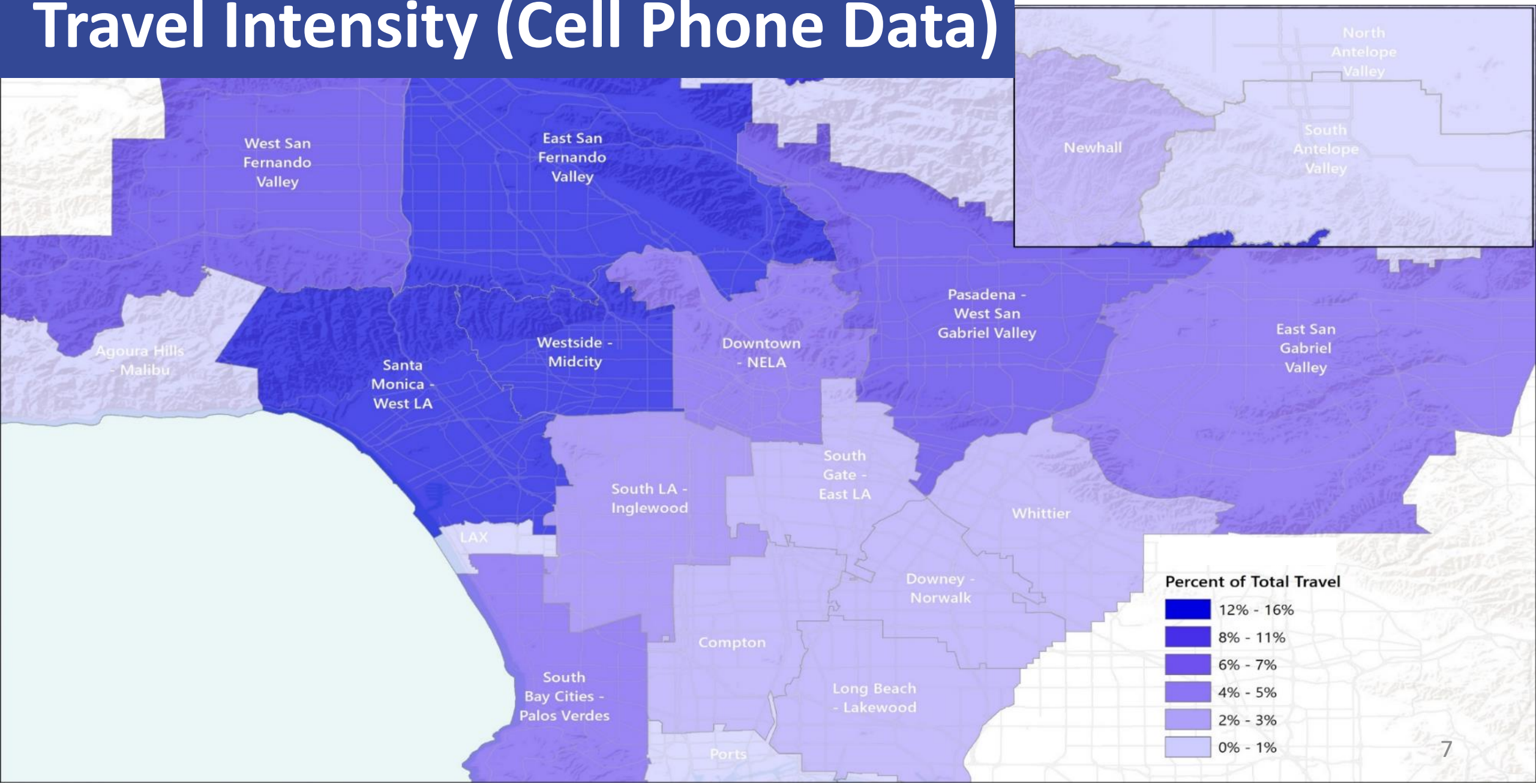
Service Parameters



Population and Employment Density

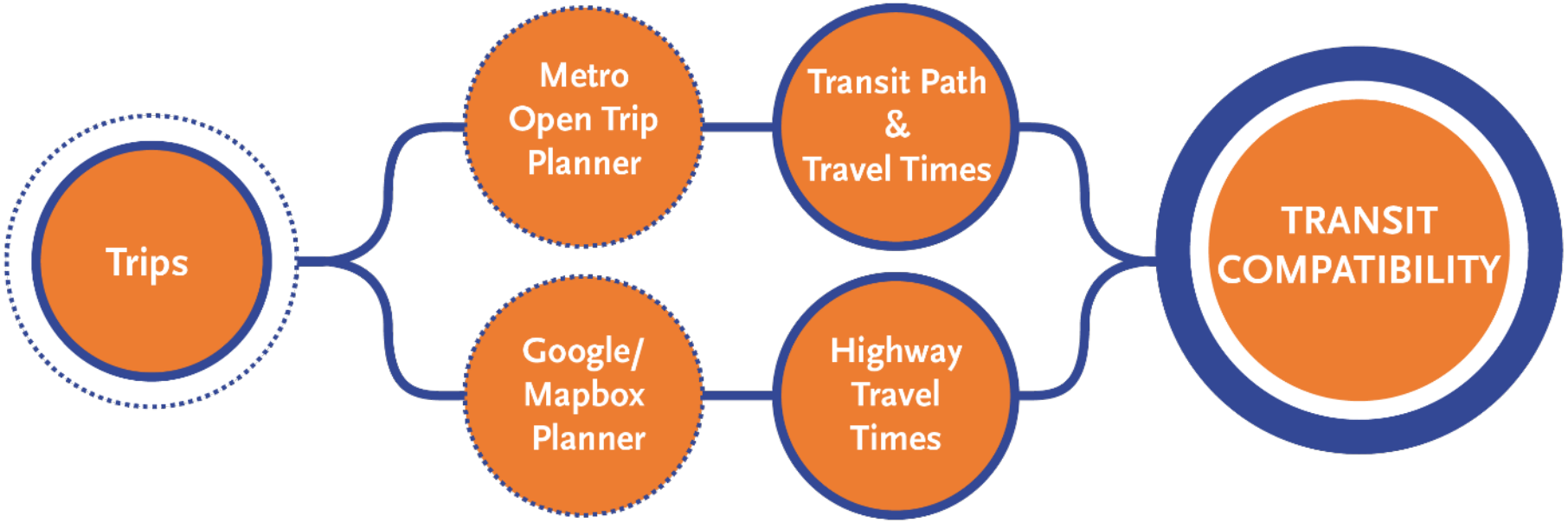


Travel Intensity (Cell Phone Data)



Competitiveness of Transit

1. Run trips from cell phone data through Metro Trip Planner to identify transit path and travel time;
2. Run trips from cell phone data through Google to calculate drive time;
3. Compare transit travel time to drive time.

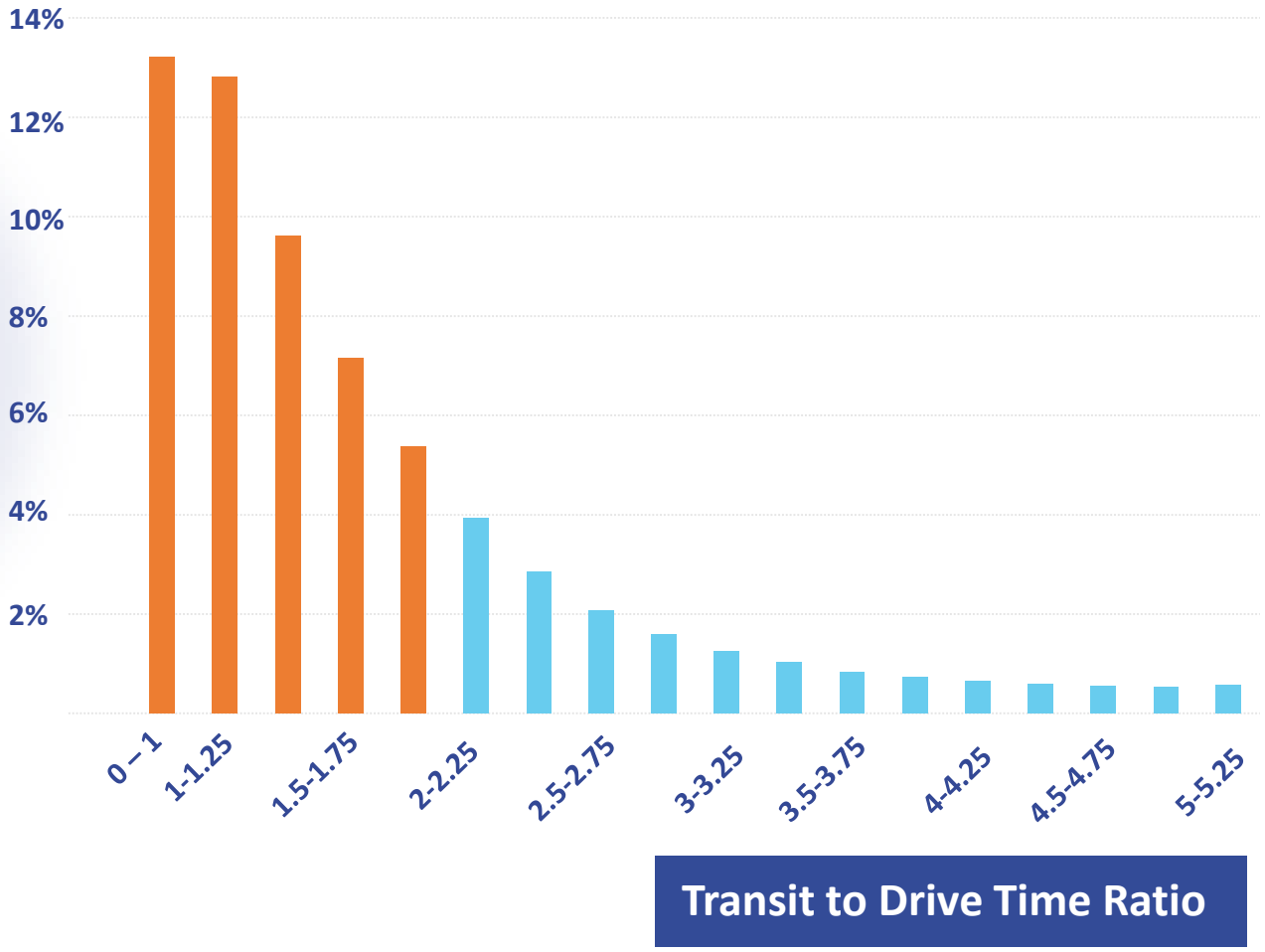


Competitiveness of Relative Travel Time

Travel Time Comparison with Auto

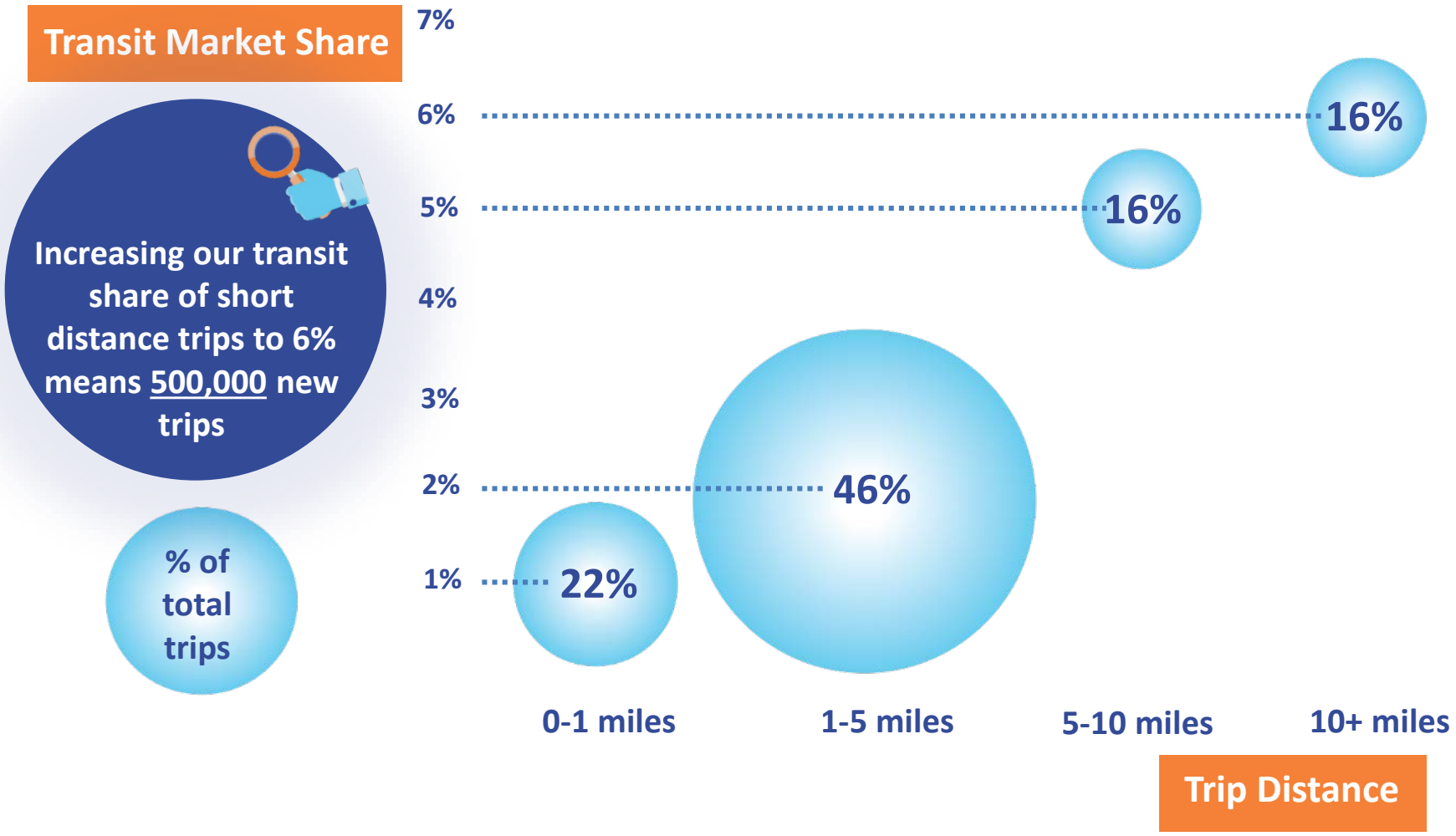
Transit Market Share

Transit is most competitive when no more than 2x slower than auto



Competitiveness and Market Potential

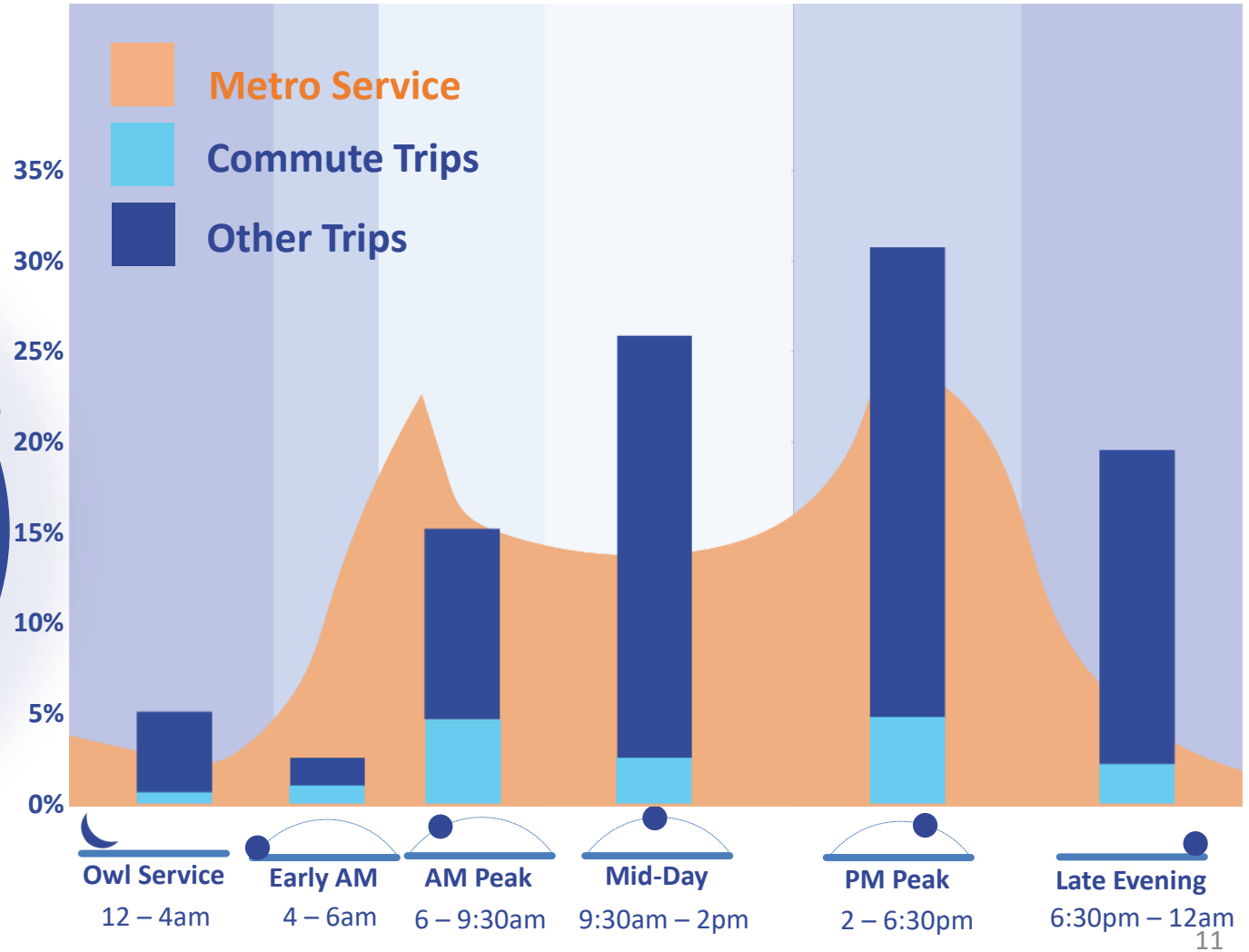
Transit Market Share by Distance & Percent of Total Trips



More Frequent Service for Non Commute Trips

Share of all trips and service by time of day

Current service does not match midday and evening travel demand.



Note: Bar chart shows data by time period while area plot shows hourly data

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Market Demand

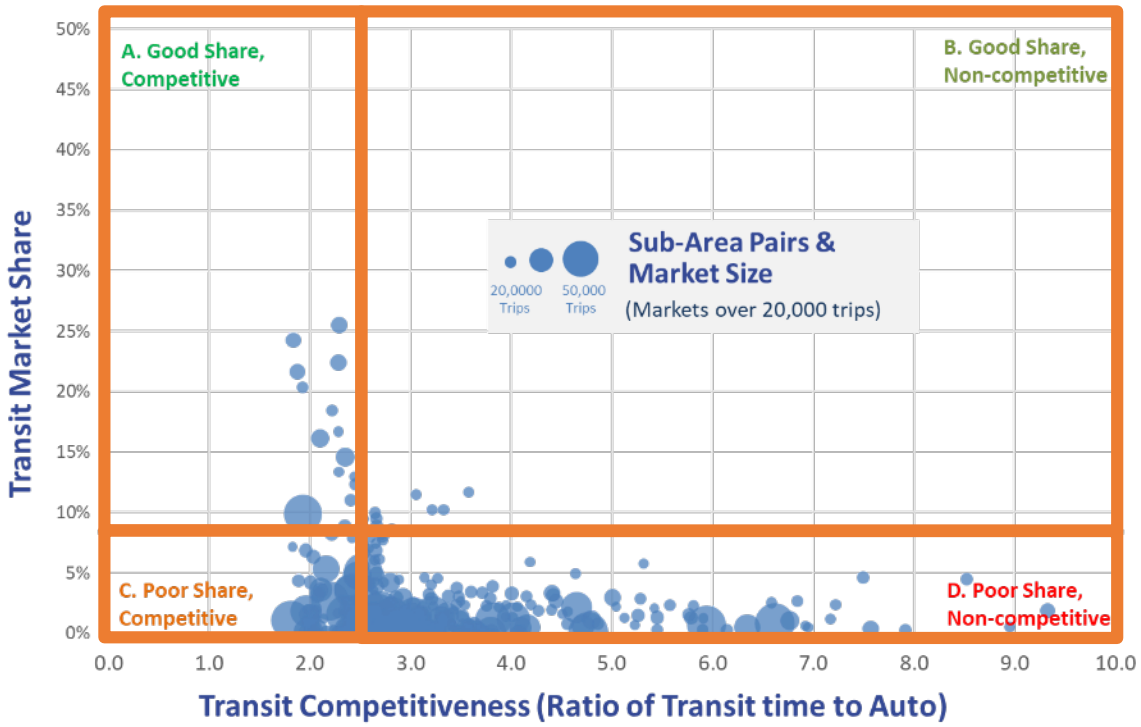
Diagnose the transit competitiveness of each origin to destination trip pair within LA County

A. Succeeding where we should be (can we optimize?)

B. Succeeding where we should not be (can we apply elsewhere?)

C. Not succeeding where we should be (how do we fix it?)

D. Not succeeding where we should not be (these areas are likely more suitable to other modes such as microtransit)



When is Travel Speed Important?

For Long Distance Trips: *10 to 12.5 Miles*

Travel Speed is the key factor for longer trips.

30% of time
getting to/from transit

e.g. 10 mins

70% of time
on-board transit

e.g. 25 mins

When is Frequency Important?

For Short Distance Trips: *0 to 2.5 Miles*

Frequency is the key factor for shorter trips.

50% of time
getting to/from transit

e.g. 10 mins

50% of time
on-board transit

e.g. 10 mins

Now that we know this,
it's time to design a new network

…in 18 months!

Creating *NextGen*

Strategies

Increase frequency on routes serving short travel patterns to reduce wait time

Create express routes on corridors serving long travel patterns to reduce travel time

Create dire… …transfers and travel time

Consolidate… …romising markets

For Short Distance Trips: *0 to 2.5 Miles*

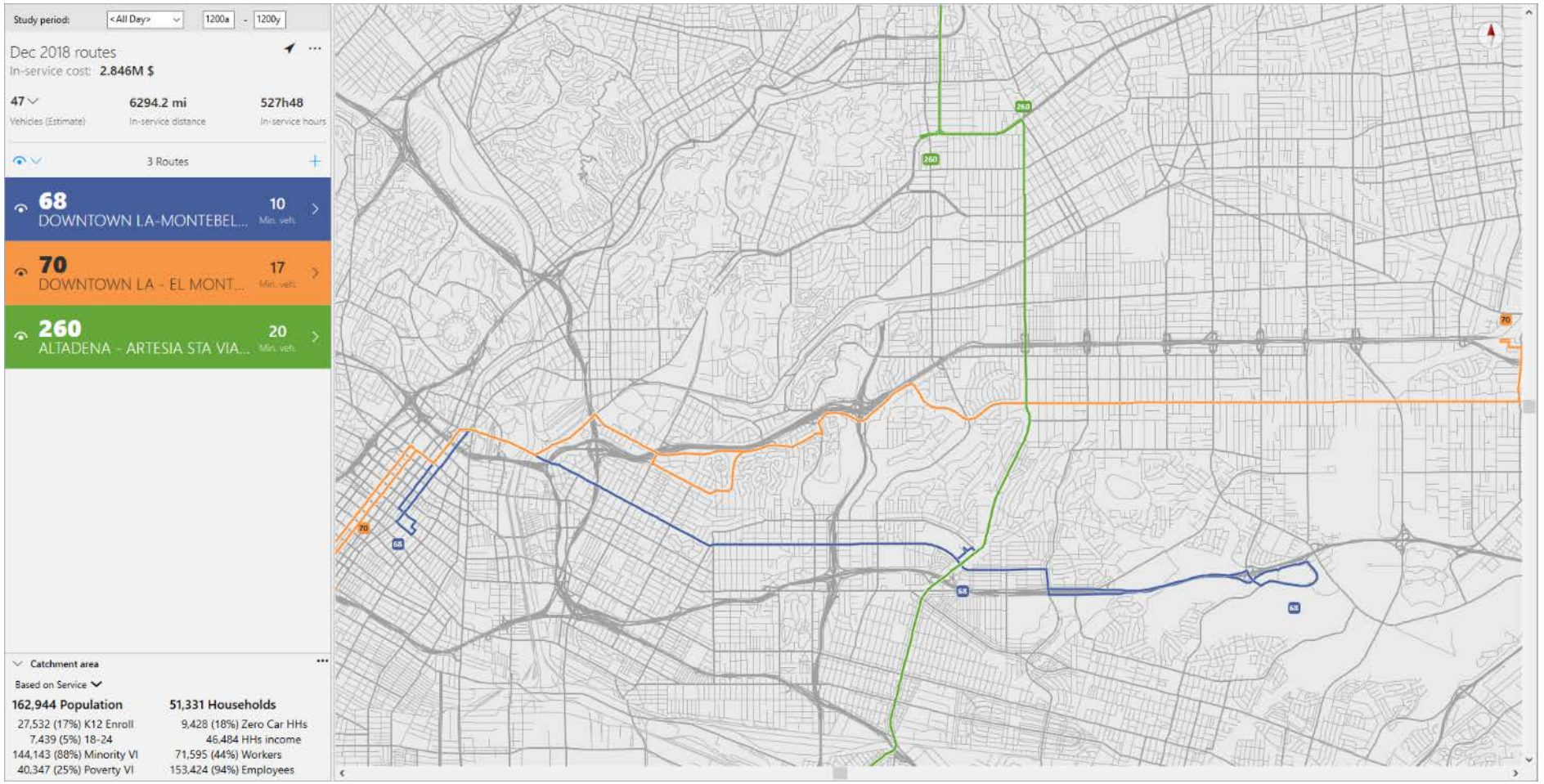
For Long Distance Trips: *10 to 12.5 Miles*

Wait Time

NextGen must be cost neutral +/- 10%

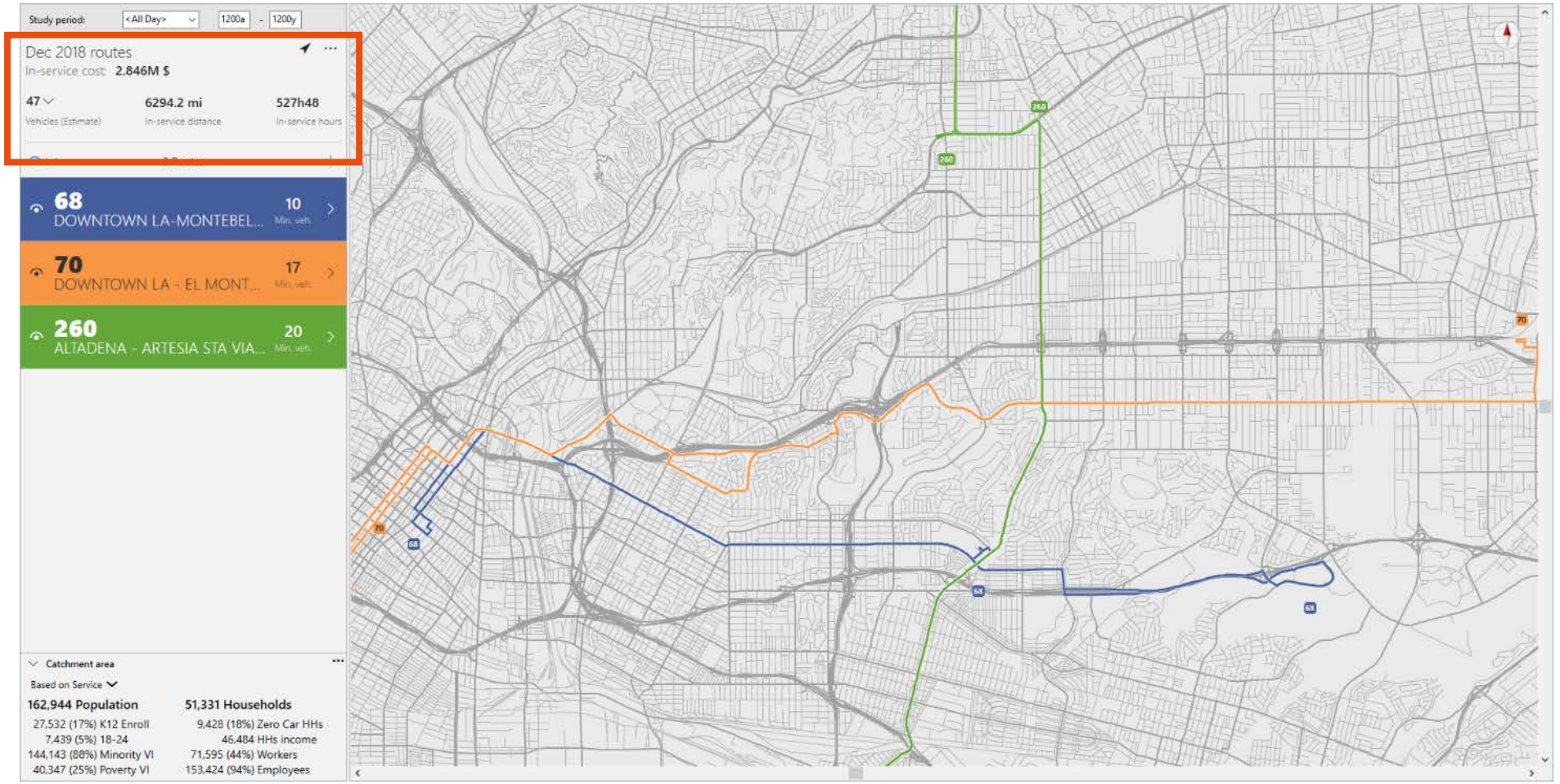
Creating *NextGen* with *NetPlan*

Start from current network



Creating *NextGen* with *NetPlan*

Analyze current state - Costs



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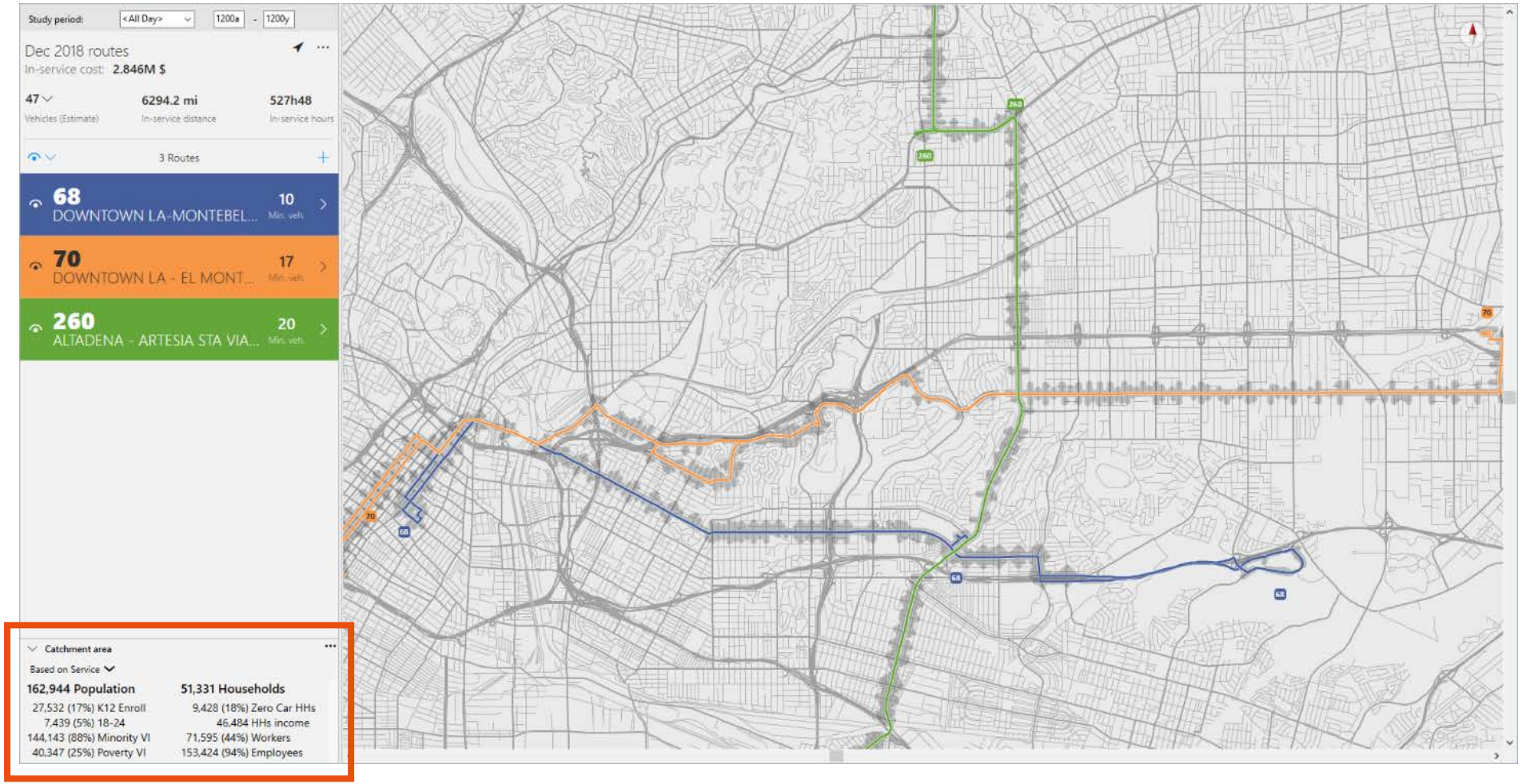
Analyze current state - Catchment area



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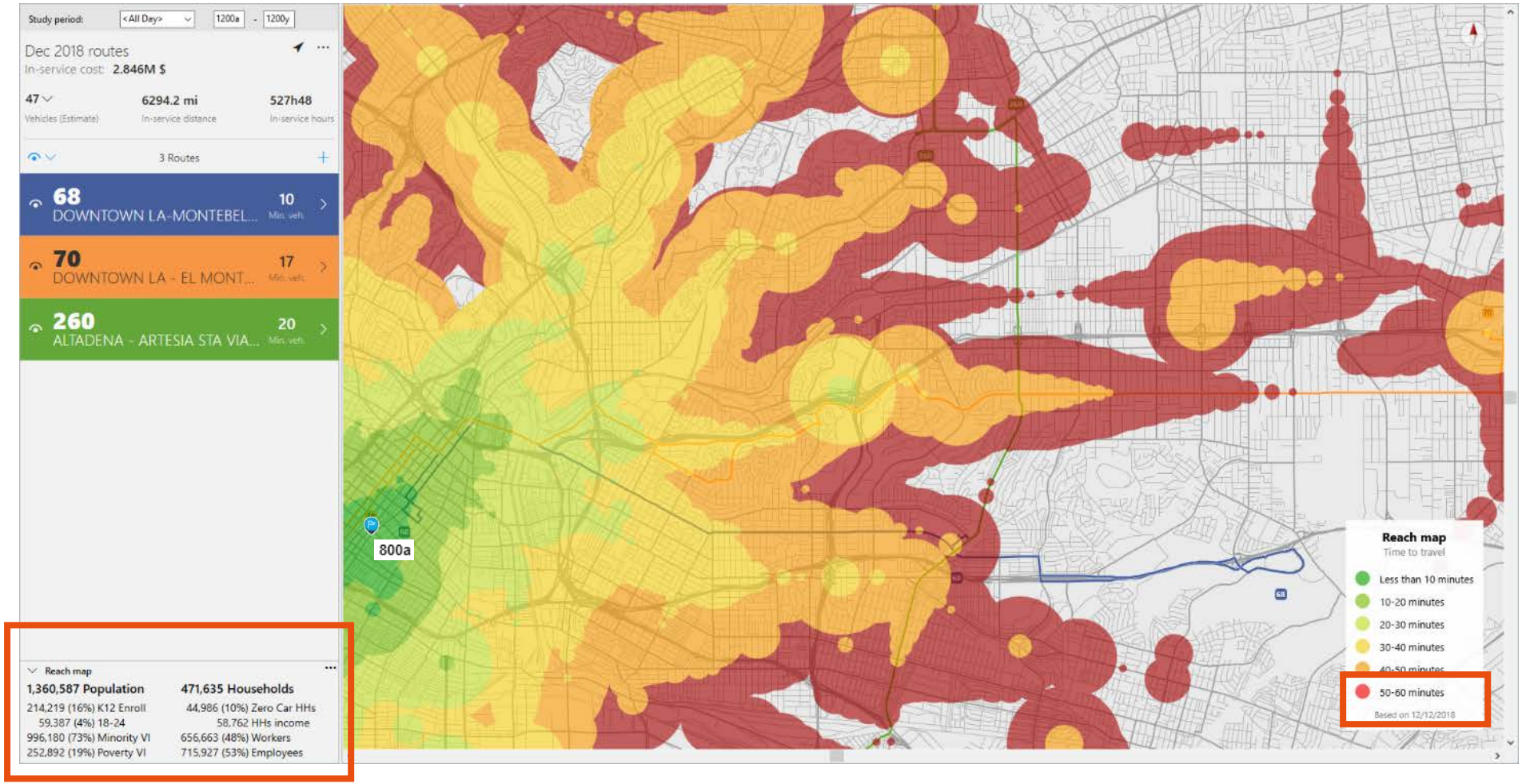
Analyze current state - Passenger travel times



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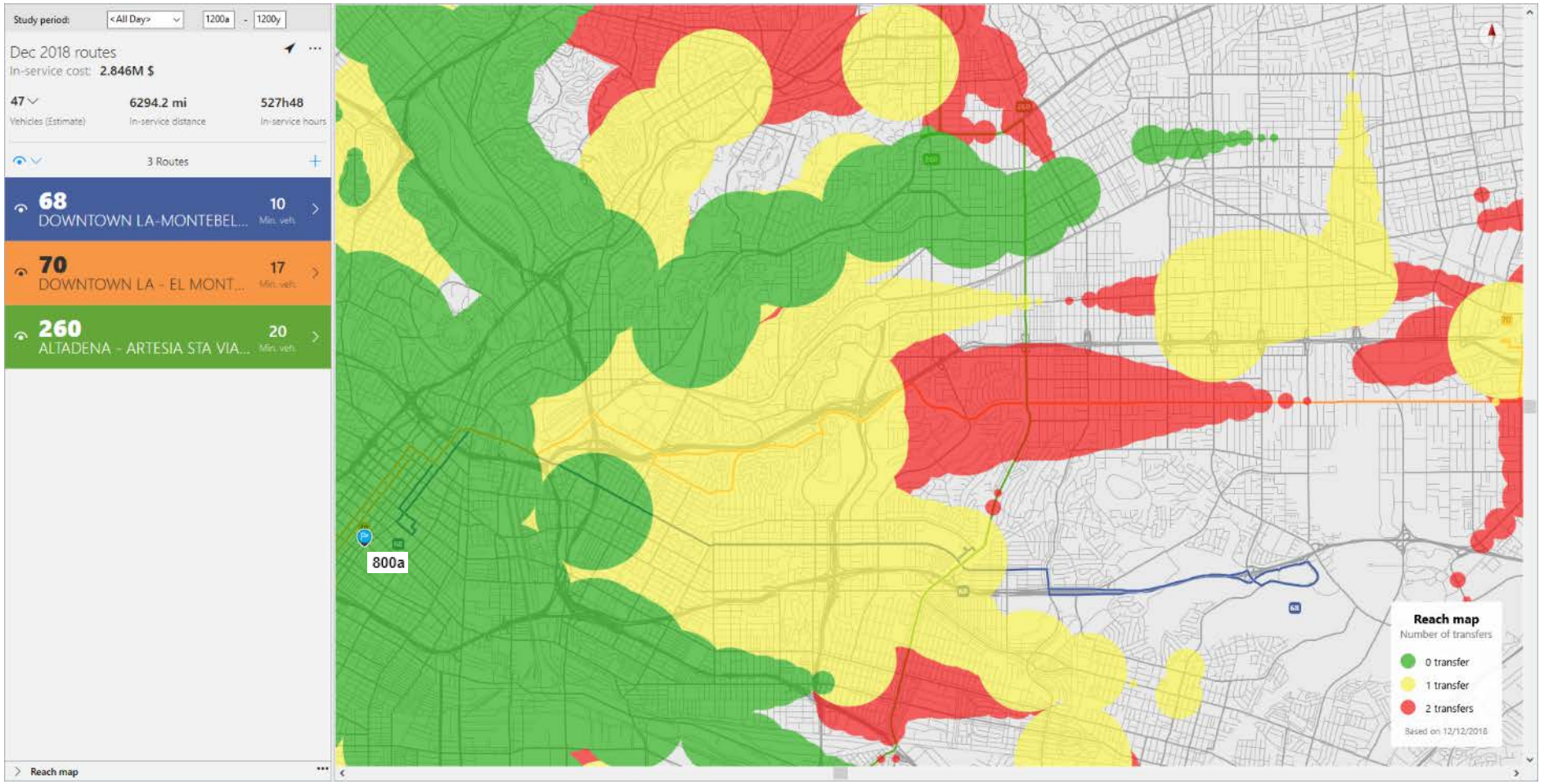
Analyze current state - Passenger transfers



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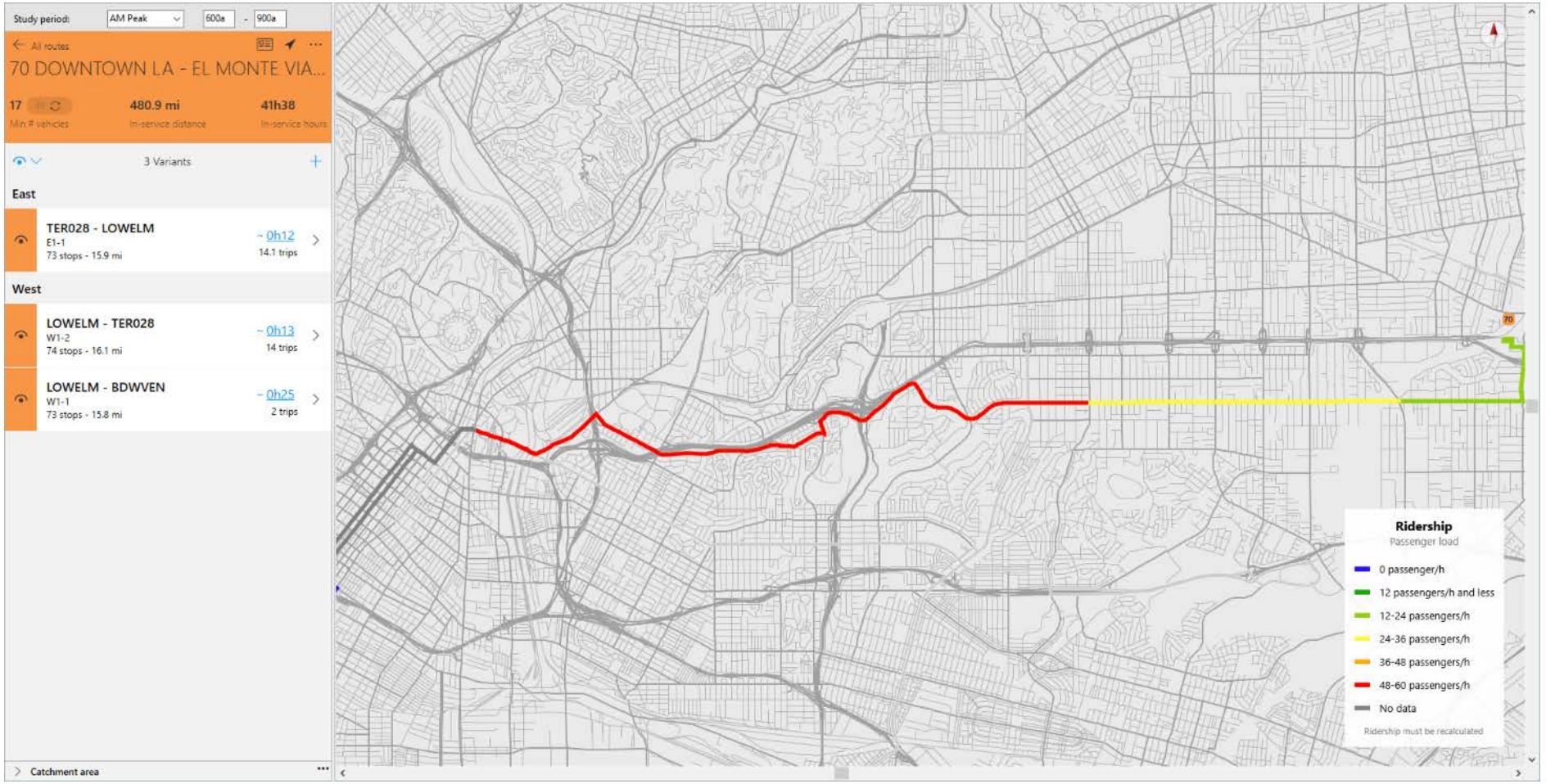
Analyze current state - Ridership



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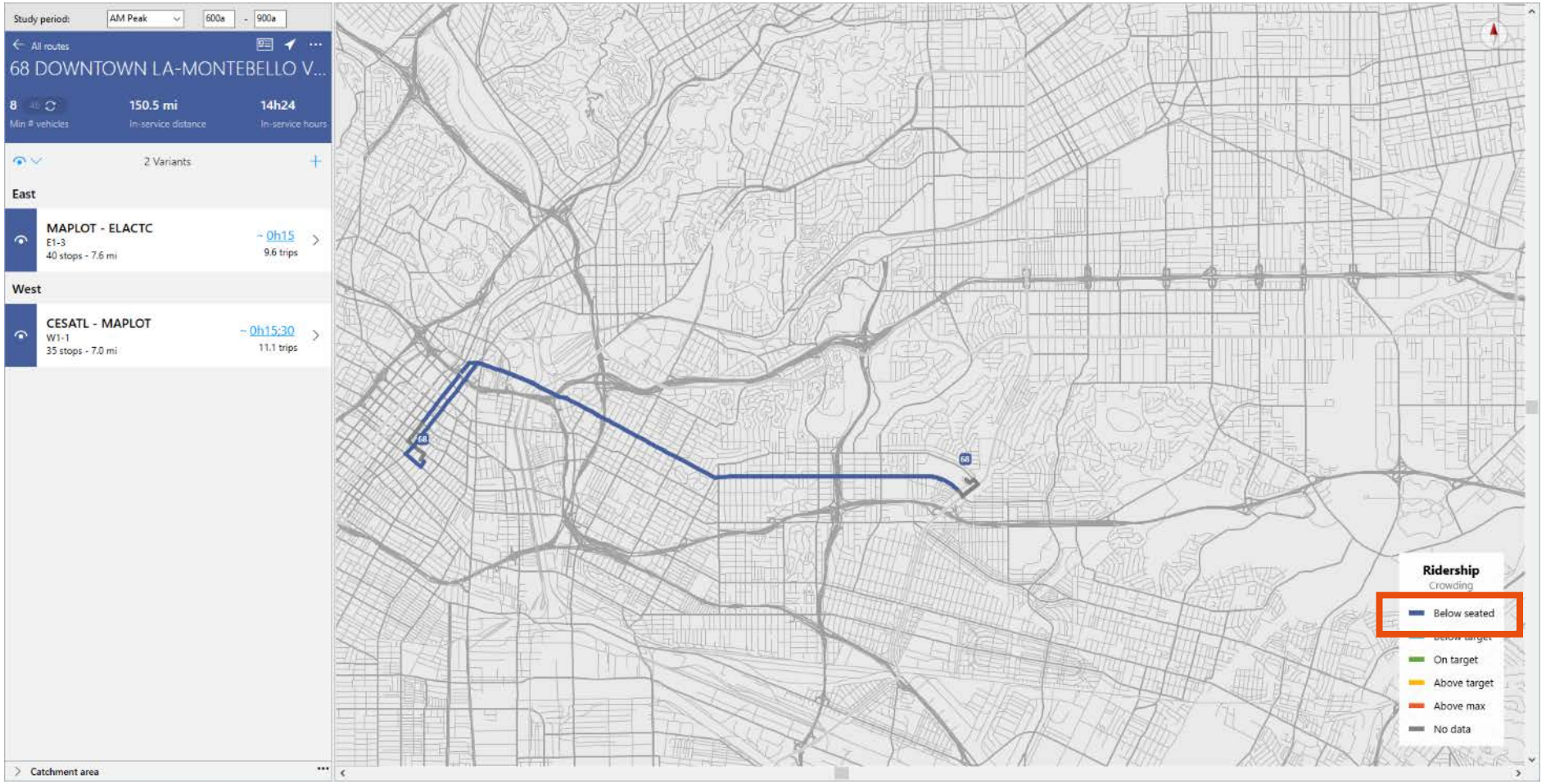
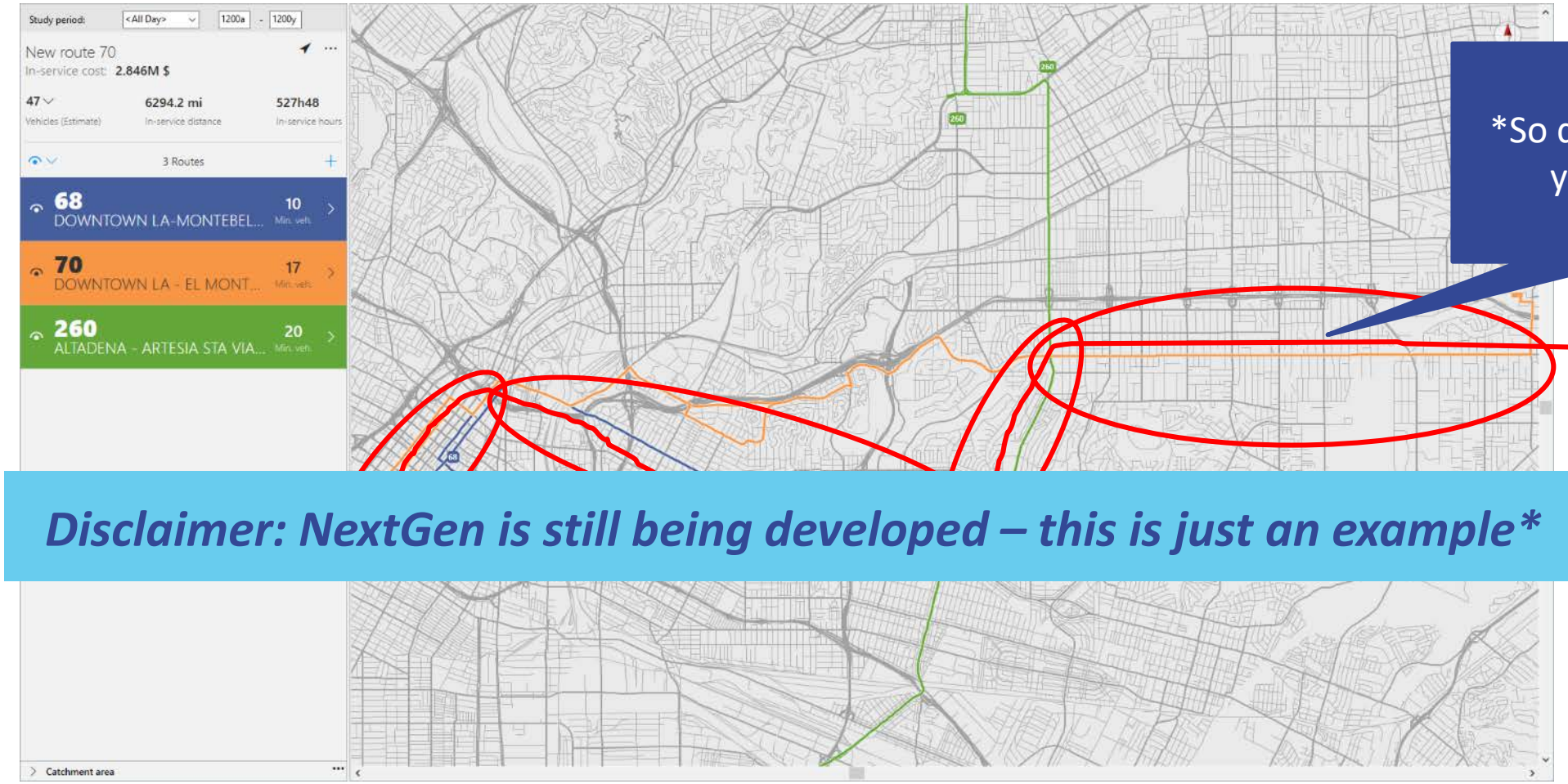
Analyze current state - Crowding



Creating *NextGen* with *NetPlan*

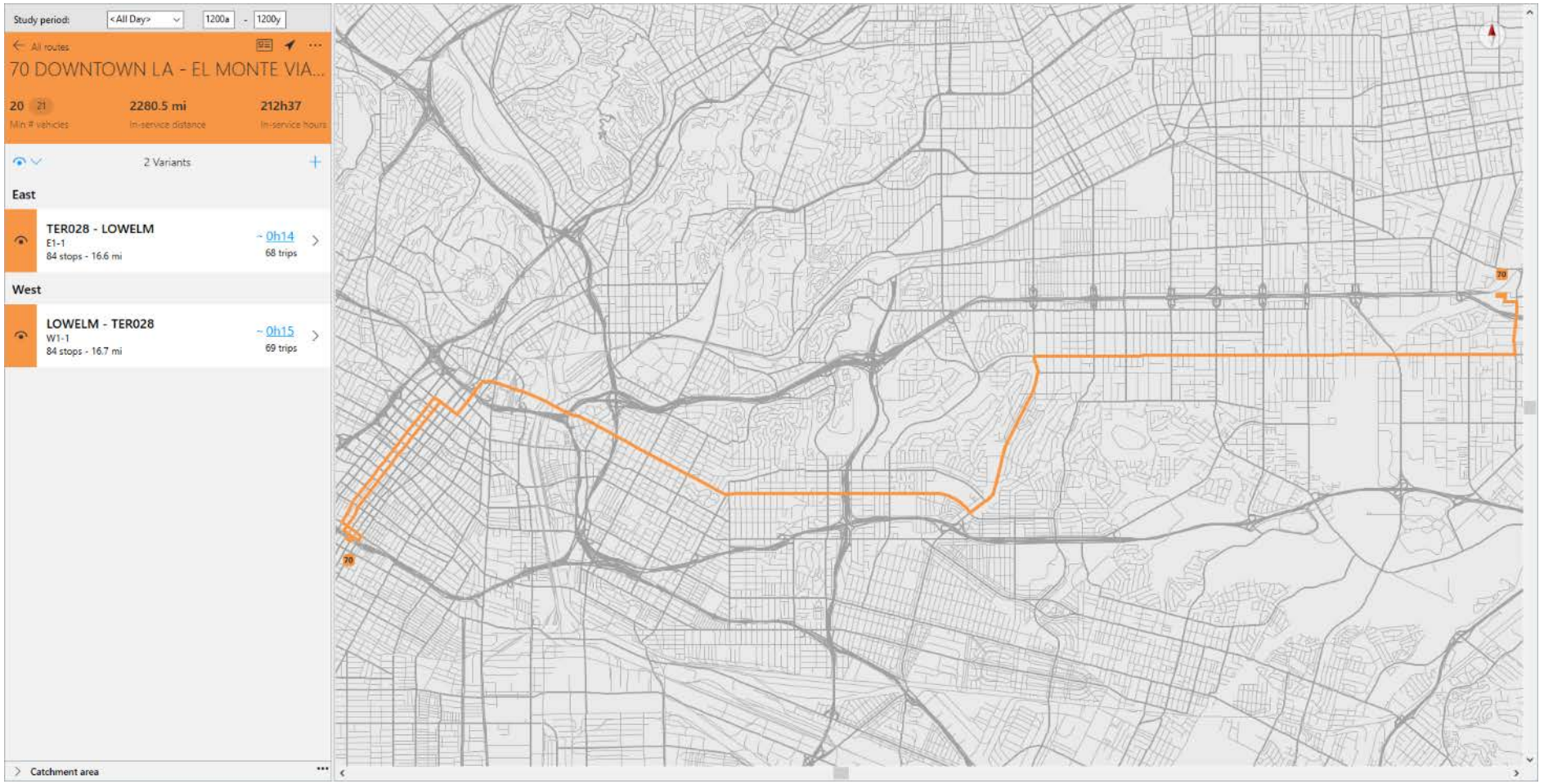
Build network scenarios - Consolidate low ridership routes



Disclaimer: NextGen is still being developed – this is just an example*

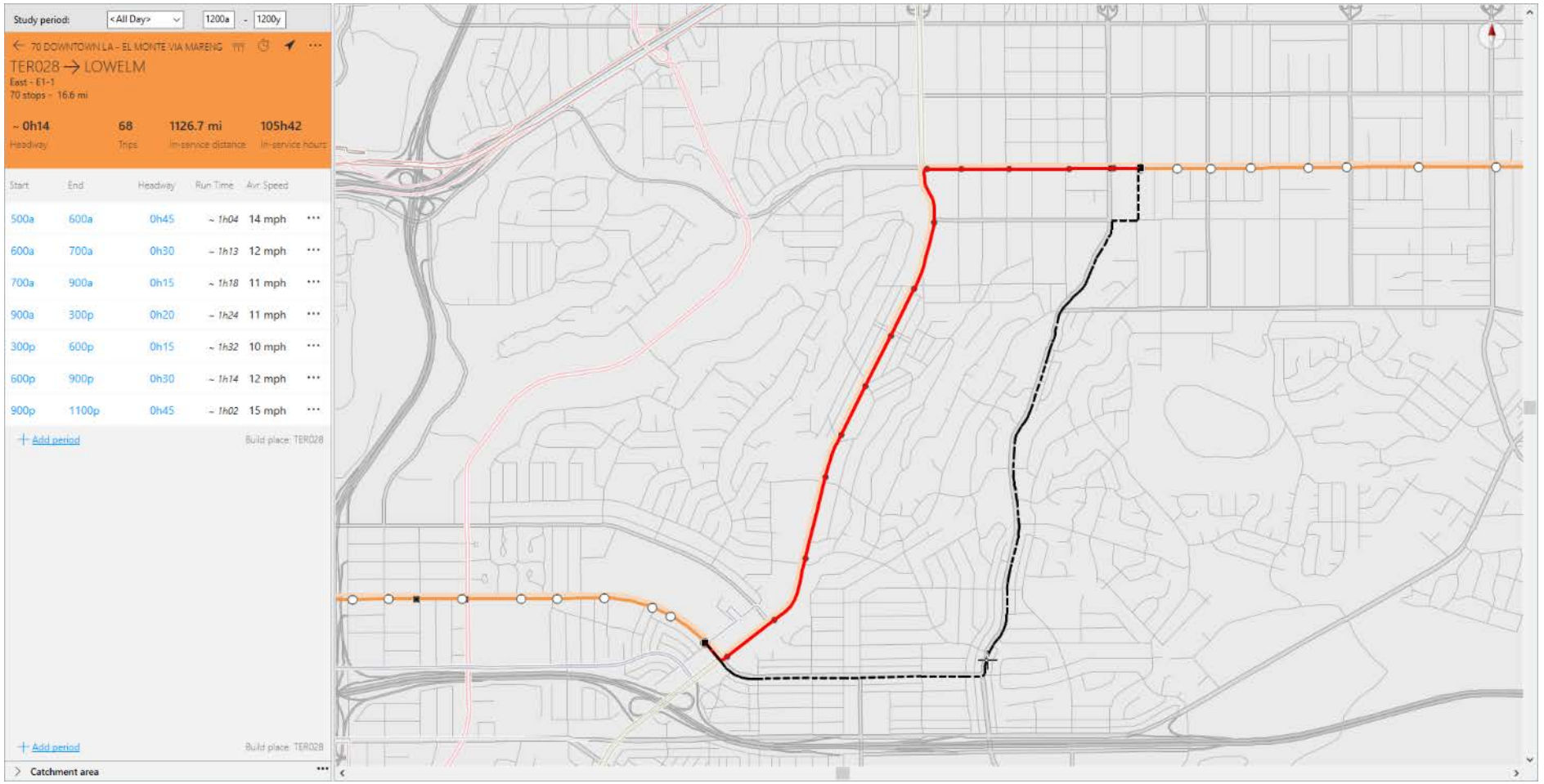
Creating *NextGen* with *NetPlan*

Build network scenarios - Combine segments of existing routes



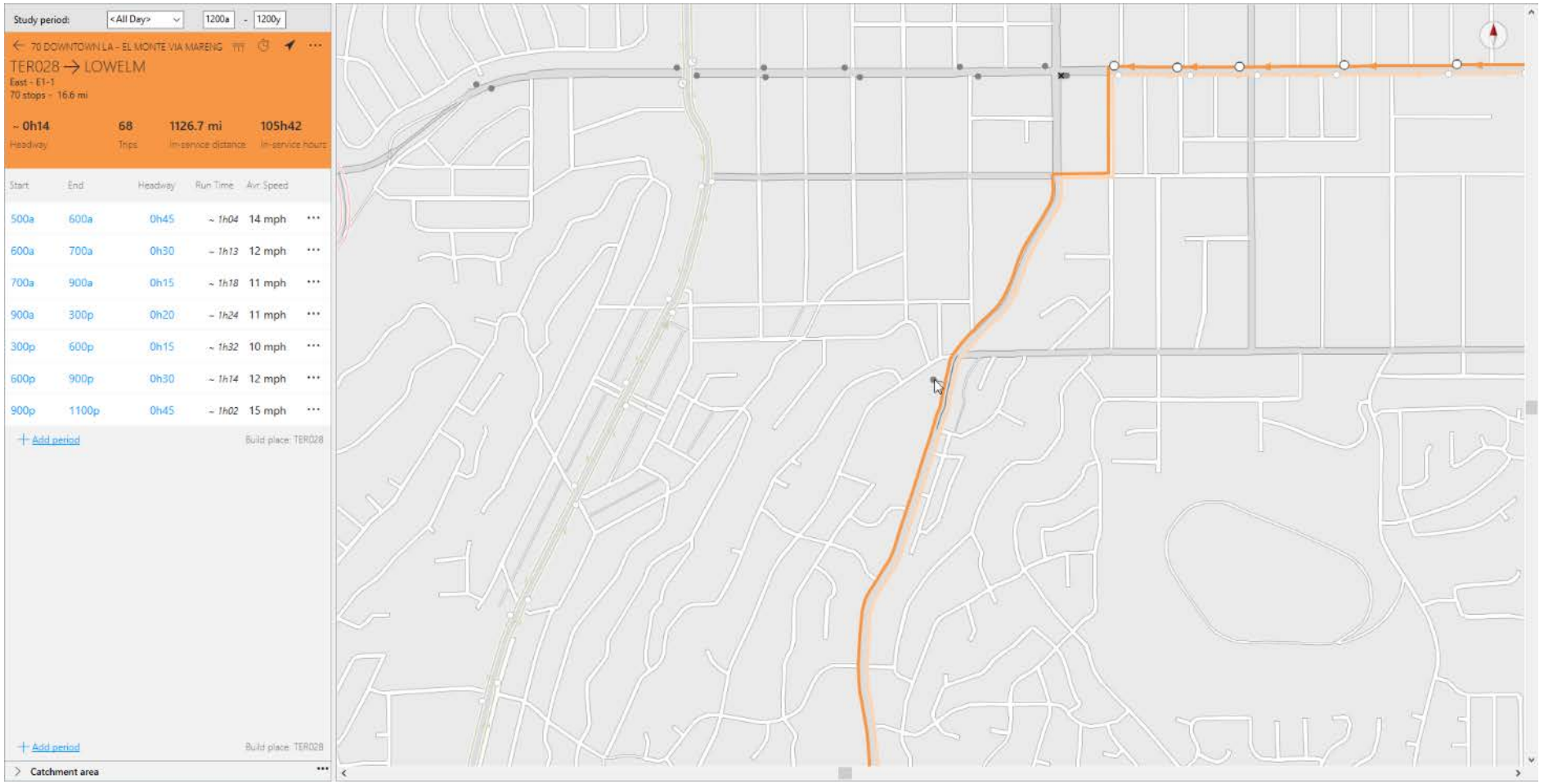
Creating *NextGen* with *NetPlan*

Build network scenarios - Modify route paths



Creating *NextGen* with *NetPlan*

Build network scenarios - Create new stops



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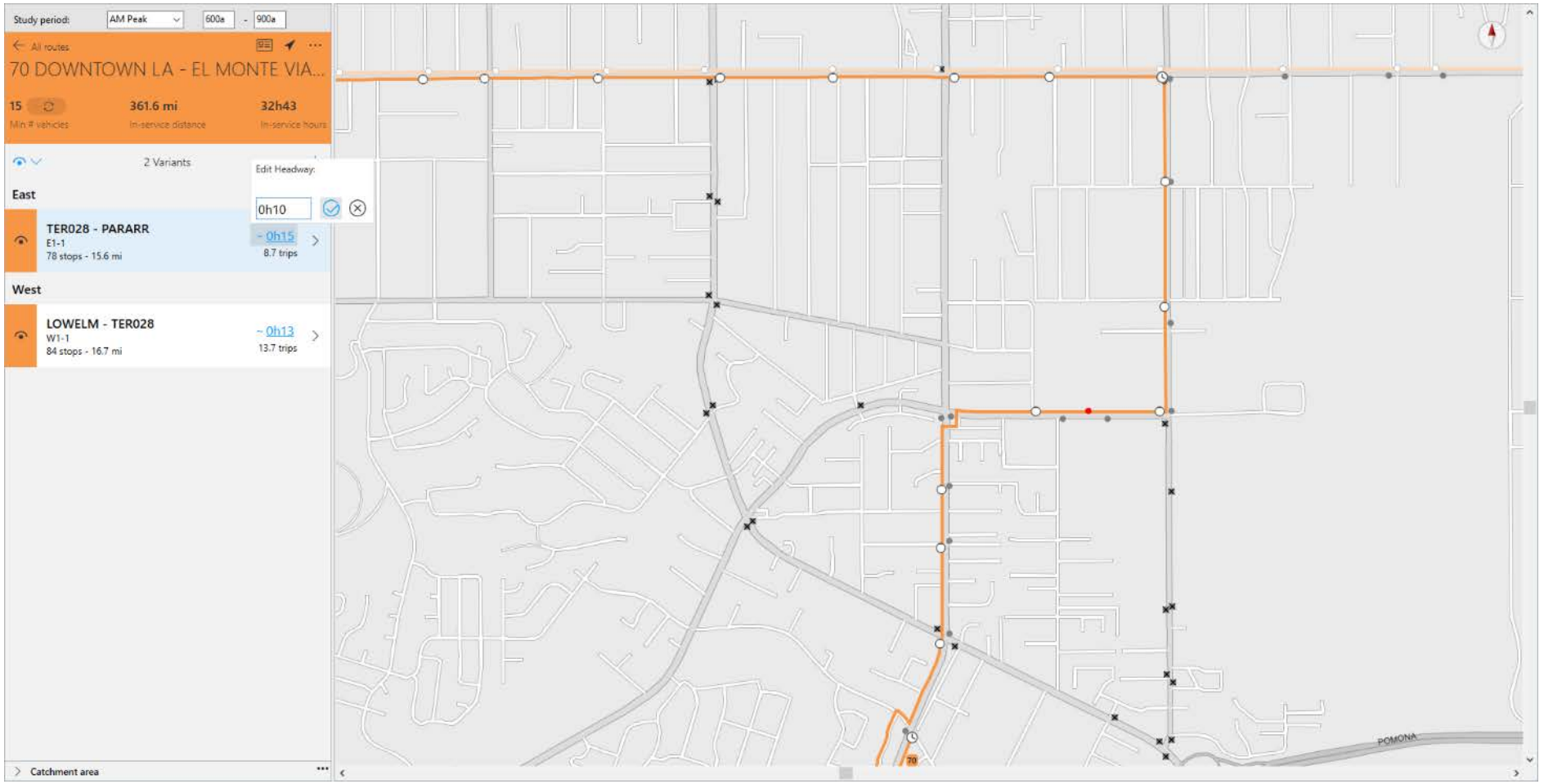
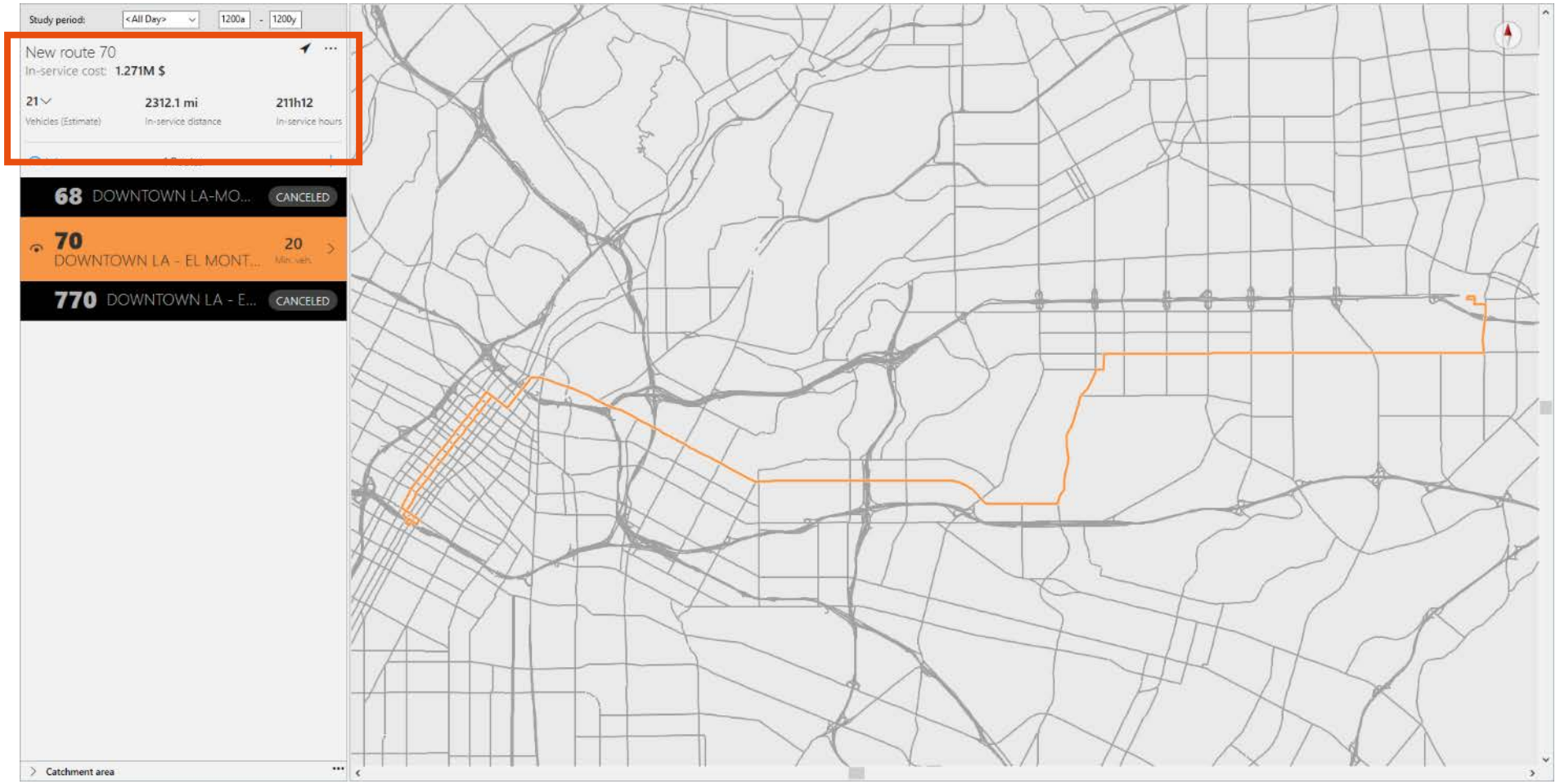
Build network scenarios - Adjust service levels and run times



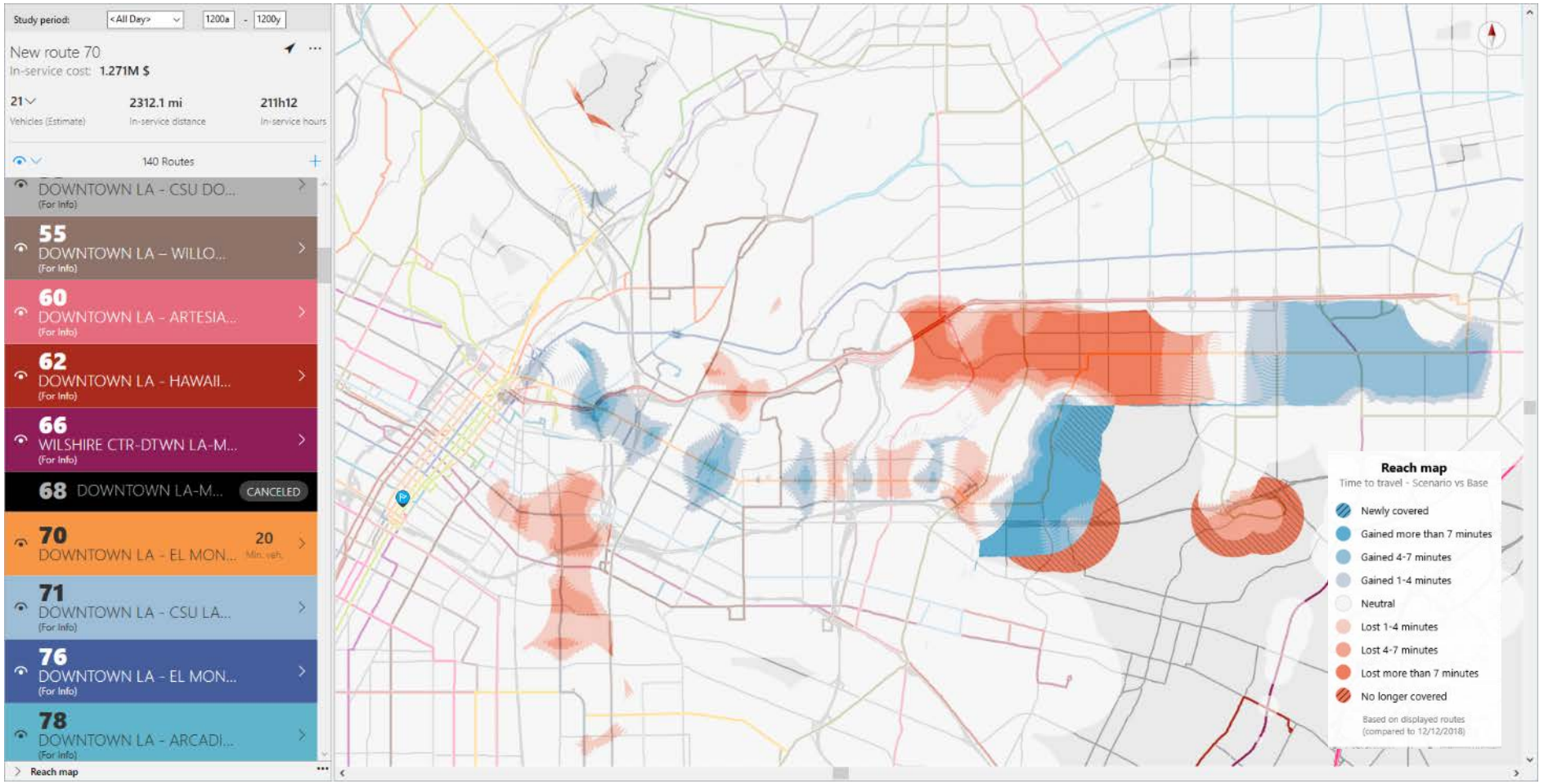
Creating *NextGen* with *NetPlan*

Build network scenarios - New route 70!



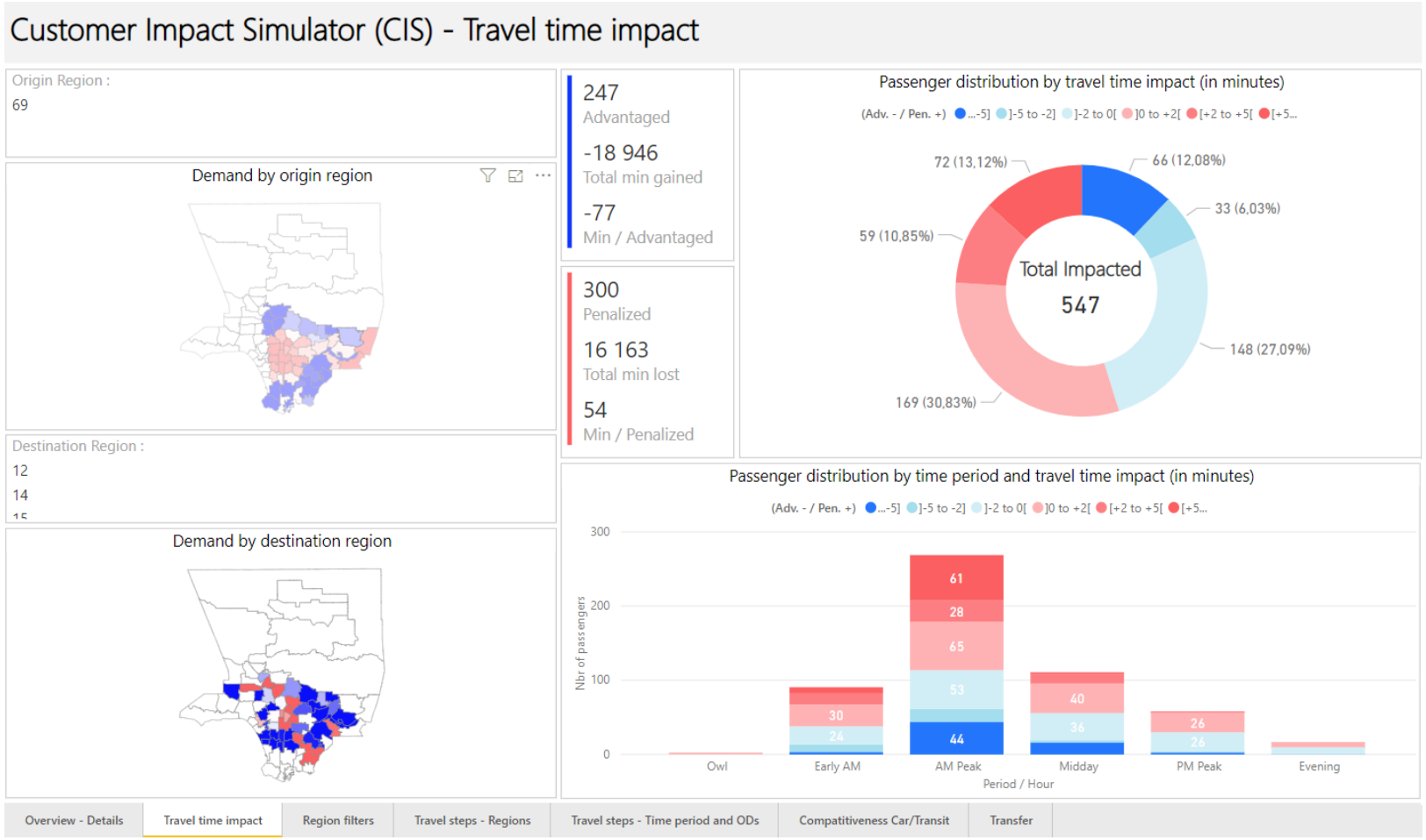
Creating *NextGen* with *NetPlan*

Build network scenarios - Analyze impact on passengers



Creating *NextGen* with *NetPlan*

Combine scenarios and analyze global impact



Conclusion

Data is a great source of insight when redesigning a new network

- *Needs to be combined with customer outreach*

LA Metro is focusing resources on favorable markets to increase ridership without increasing costs

Advanced planning tools can help quickly evaluate costs in a more precise way

- *Also estimate impact on customers based on travel patterns*

Thank You

Metro