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# A Planning Tool for Public Transport Analysis

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## Study's objectives

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**Understanding** travellers is essential in Transportation Planning and Design.

**Identify** and **quantify** the factors that affect the public transport users' behaviour.

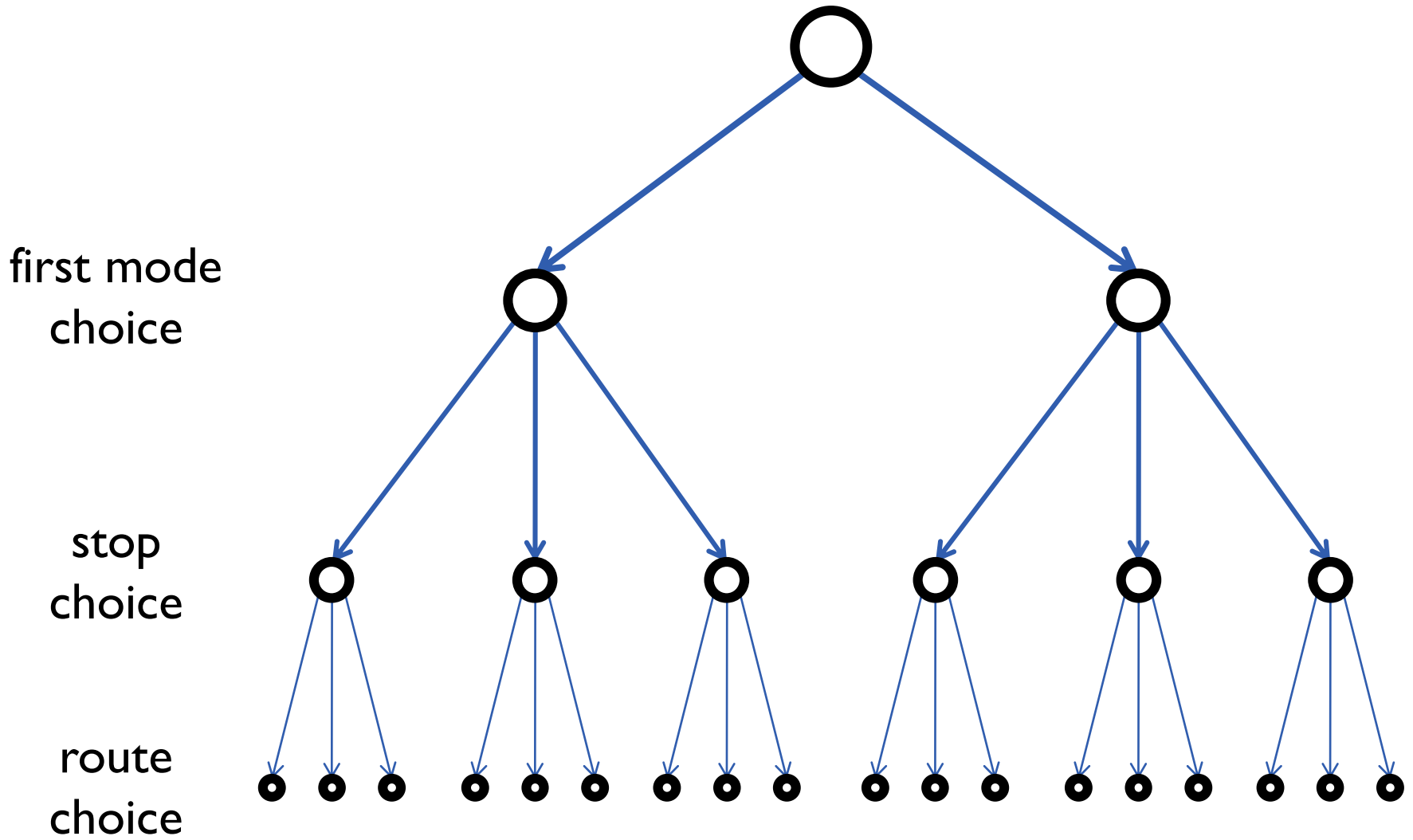
**Explore** differences across modes, in multi-modal public transport networks.

**Propose** an integrated framework to model travel decisions on public transport networks.

**Enhance** transportation planning tools, with more detailed behavioural considerations.

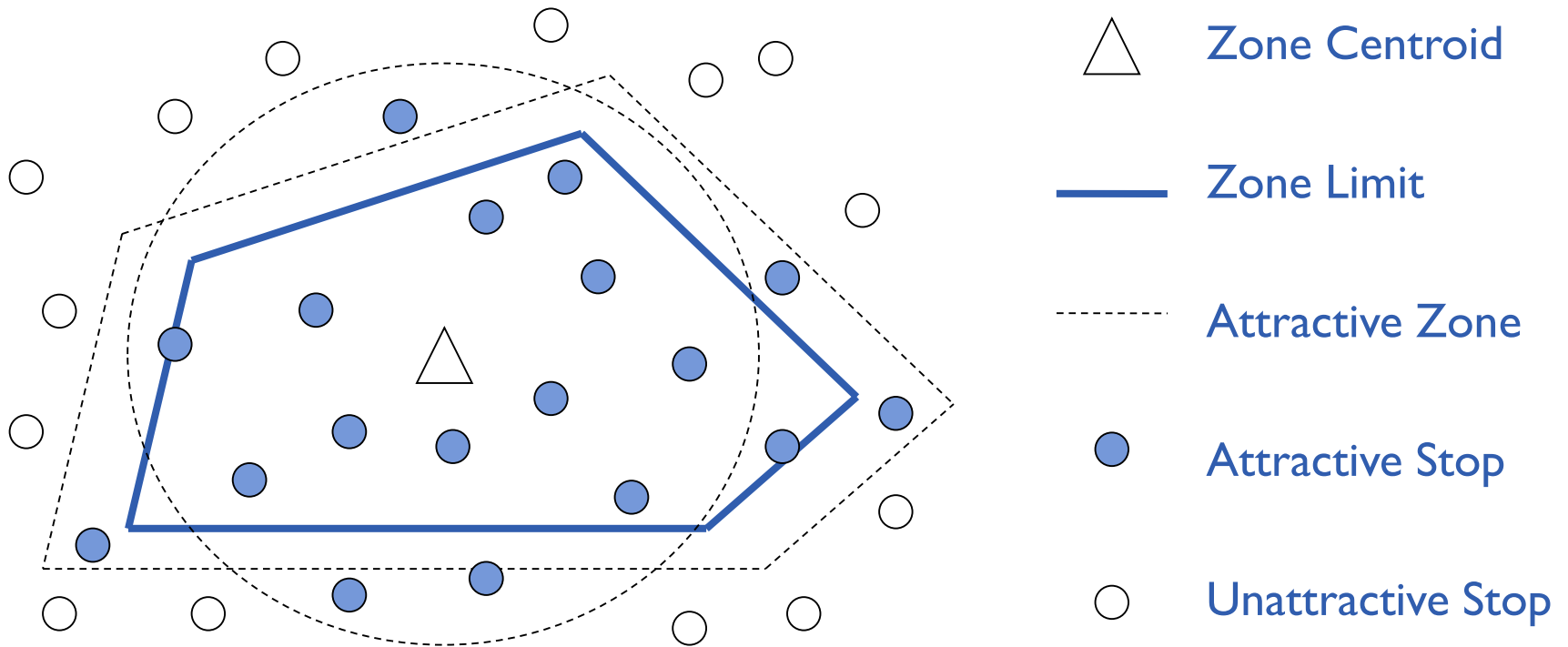
# Behavioural Framework

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# Stop choice

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The bus stops are chosen based on the distance from the centroid and other environment variables

# Route choice strategies

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Choosing a itinerary



Choosing an hyper-path



considering common lines



## Choice modelling in public transport

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Traditional mode/route choice models usually consider only tangible variables related to the level of service.

travel time

fare

number of transfers

These models are sometimes refined including socio-economic variables of the travellers.

**But there is so much more!**

## Choice modelling in public transport

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Some people follow different criteria when deciding how to get from one point to another:

the fastest way

the cheapest way

avoid walking

avoid transferring

But most consider **many** factors at the same time, depending on their preferences and information!

## What do people take into account?

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### Fare

In-vehicle time	travel time
Waiting time	components
Walking time	
Number and types of transfers	transfer
Transfer stations layout	experience
Transfer stations infrastructure	
Mean occupancy	comfort and
Possibility of not boarding	crowding
Possibility of getting a seat	
Route distance	topological
Number of stations	variables
Route topology	



# Application to Transantiago



## Marginal rates of substitution

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Variable	Consider Common Lines
In-vehicle time	USD 1.07 per hour
Waiting time	USD 2.06 per hour
Access walking time	USD 3.27 per hour
Transfer walking time	USD 2.16 per hour
Egress walking time	USD 1.23 per hour
Bus-bus transfer	USD 0.57 per transfer
Bus-Metro transfer	USD 0.33 per transfer
Metro-Metro transfer	USD 0.14 per transfer
Occupancy	USD 0.12 per pax/m <sup>2</sup>
Travelling seated	USD 0.08 per leg
Not boarding	USD 0.08 per vehicle

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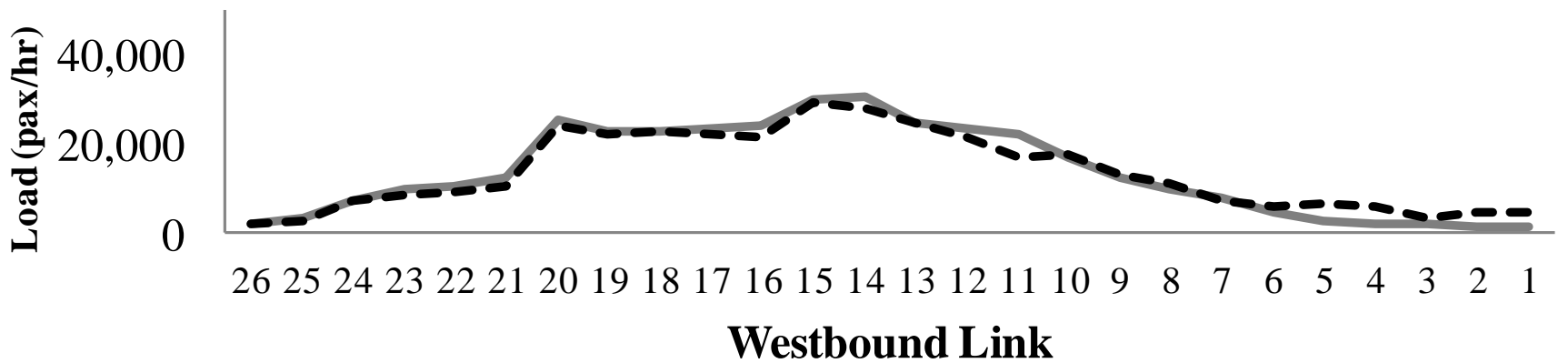
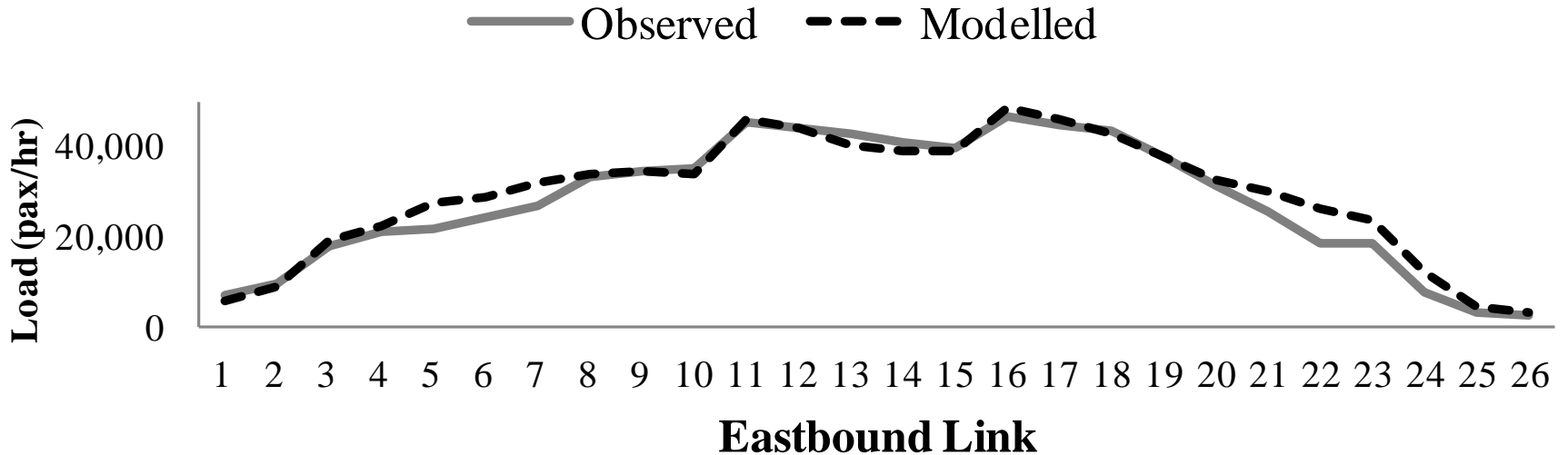
# Planning tools

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## Application to a tactical/strategic planning tool



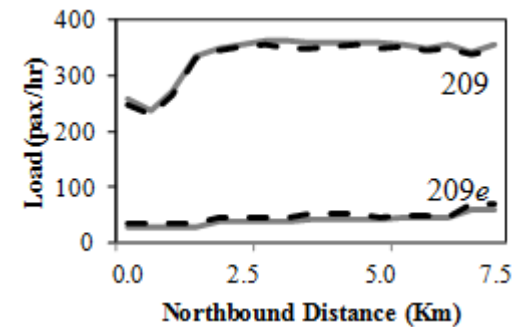
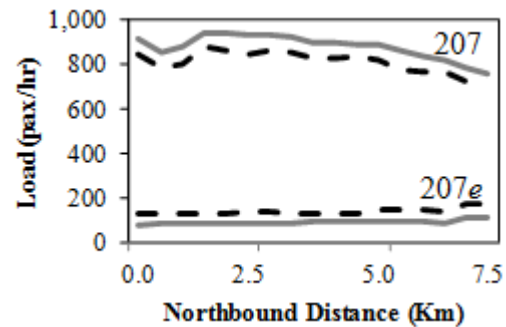
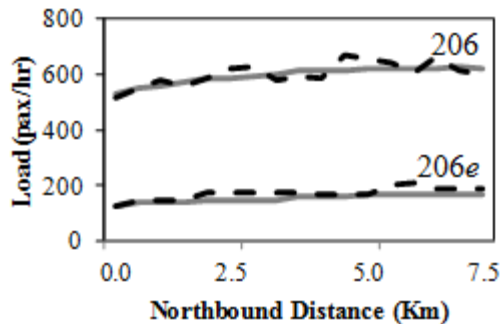
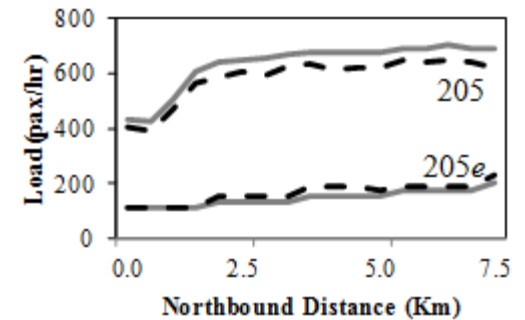
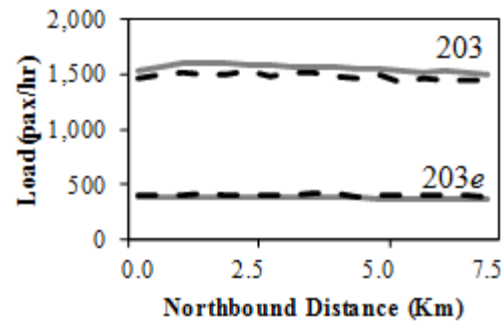
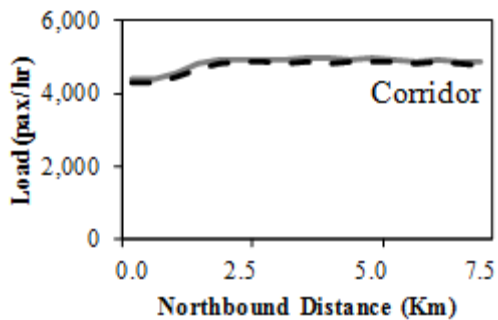
# Planning tools



Metro Line I

# Planning tools

— Observed    - - - Modelled



Santa Rosa bus corridor

# Planning tools

## Application to a trip planning tool

De dónde  
Avenida Jaime Guzman Errazuriz, R6

Para dónde  
Incahuasi 1624, Las Condes

Buscar

93 min

110 min

111 min

Tiempo de viaje : 93 min

2 min  
espera: 2 min

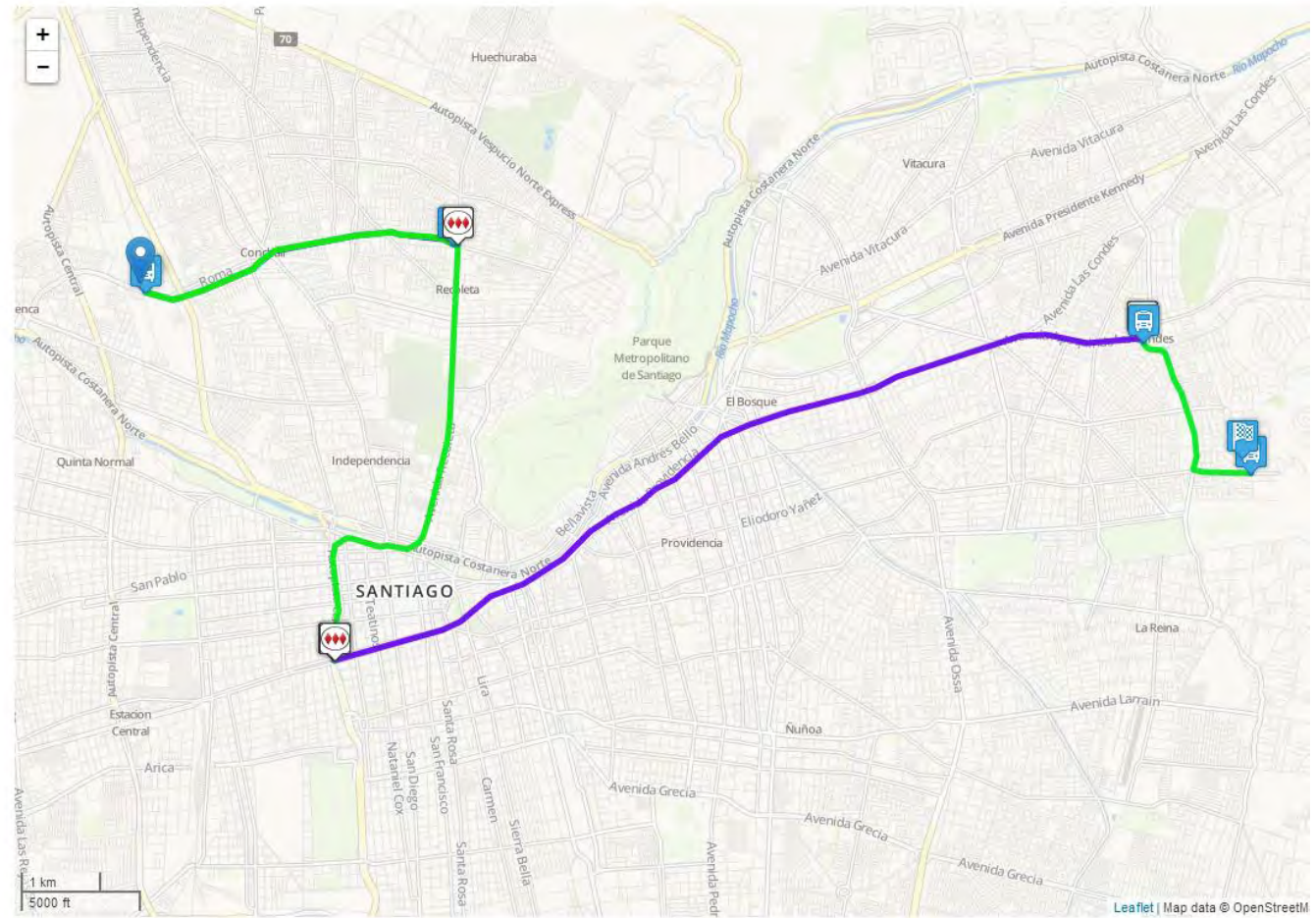
PB29

18 min

PB44

2 min  
espera: 1 min

101  
107c  
107





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