

# Multiplex urban fingerprints for bicycle network planning

NetSci, Burlington, VT, May 29, 2019

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@natera

with:  
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Michael Szell  
Gerardo Iñiguez



Department of  
Network and  
Data Science

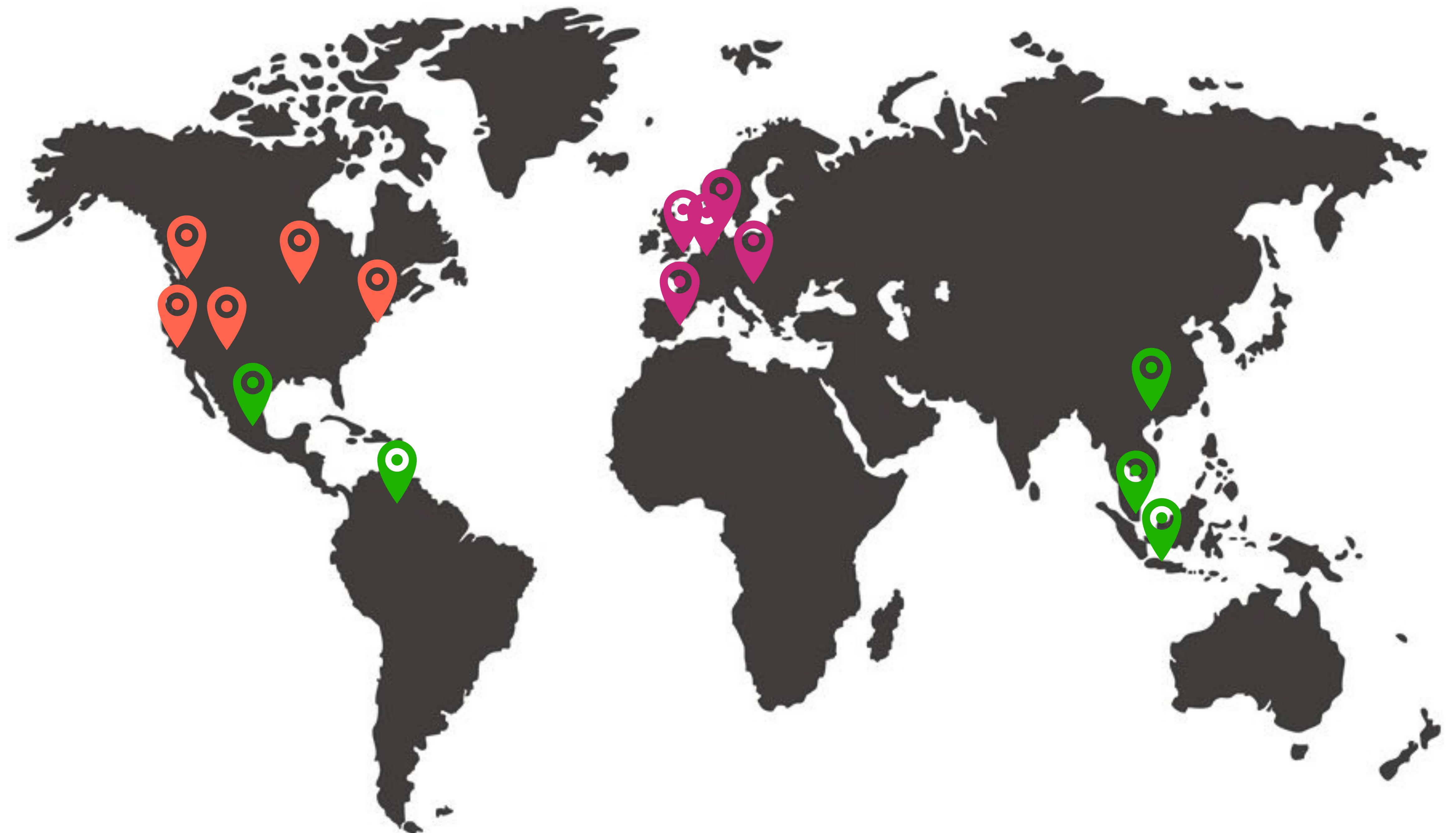
CENTRAL  
EUROPEAN  
UNIVERSITY

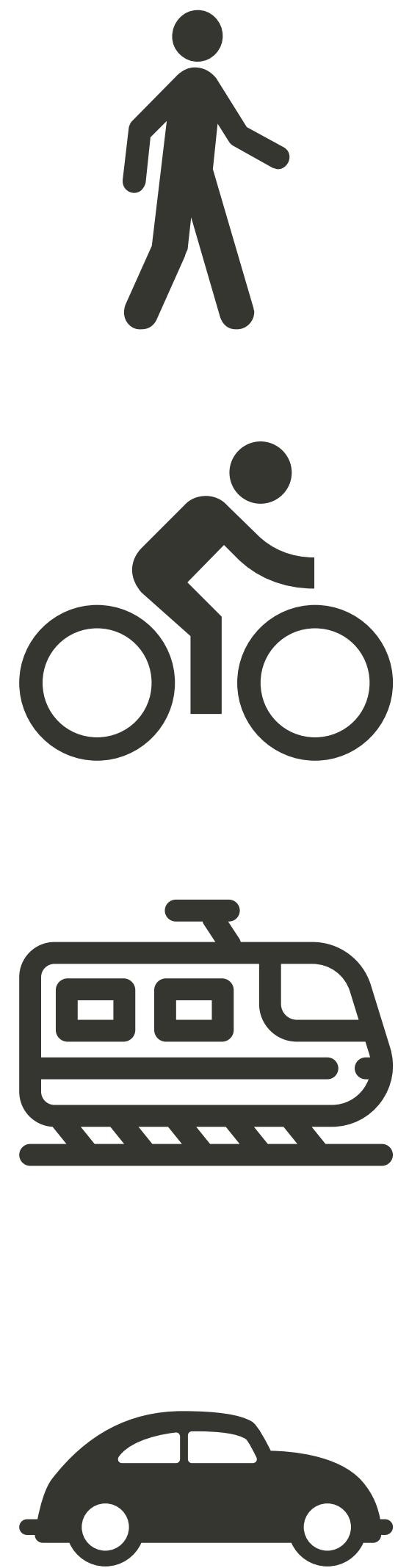


“first we shape the cities –  
then they shape us.”

Jan Gehl

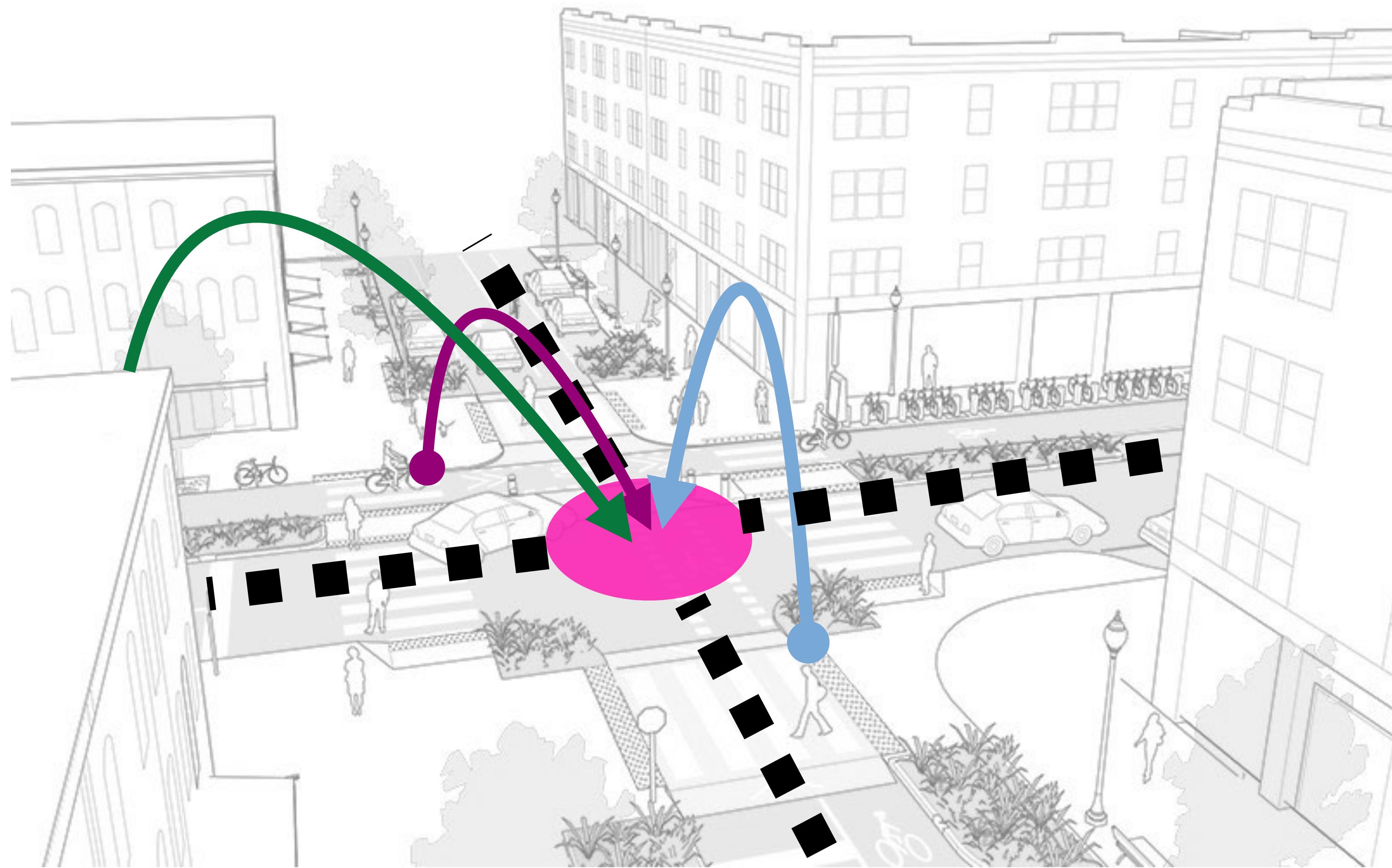
**data\_**

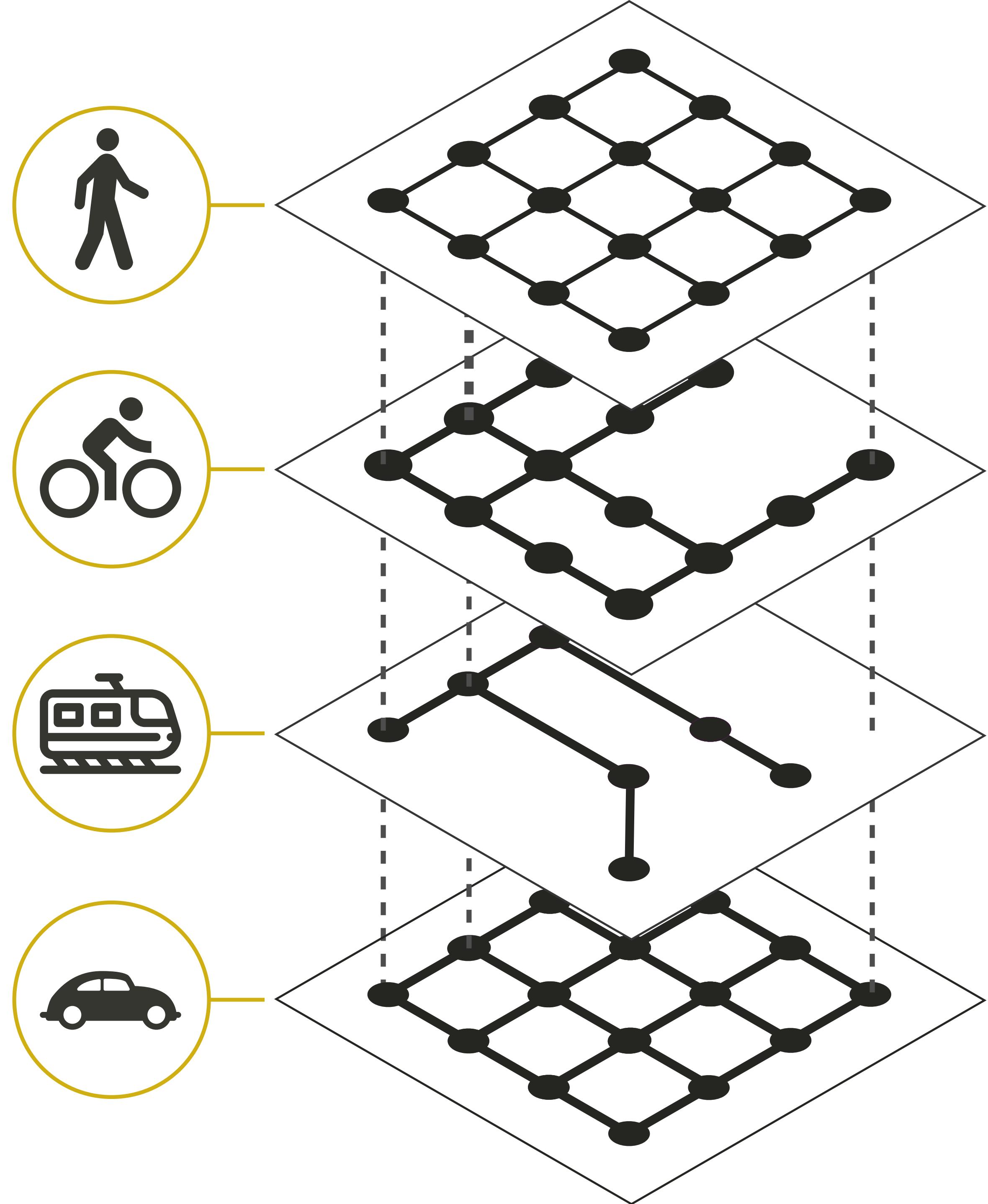


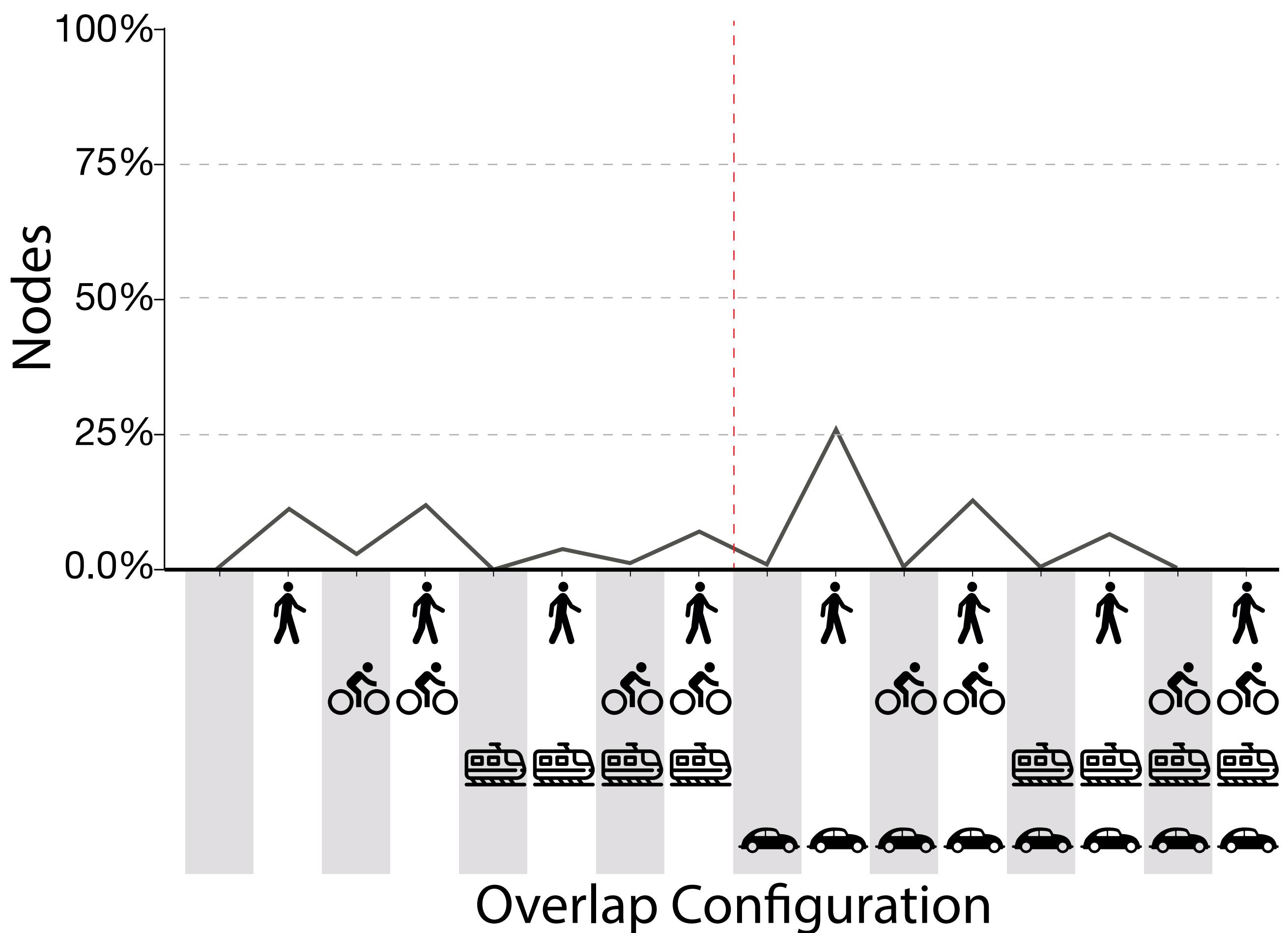
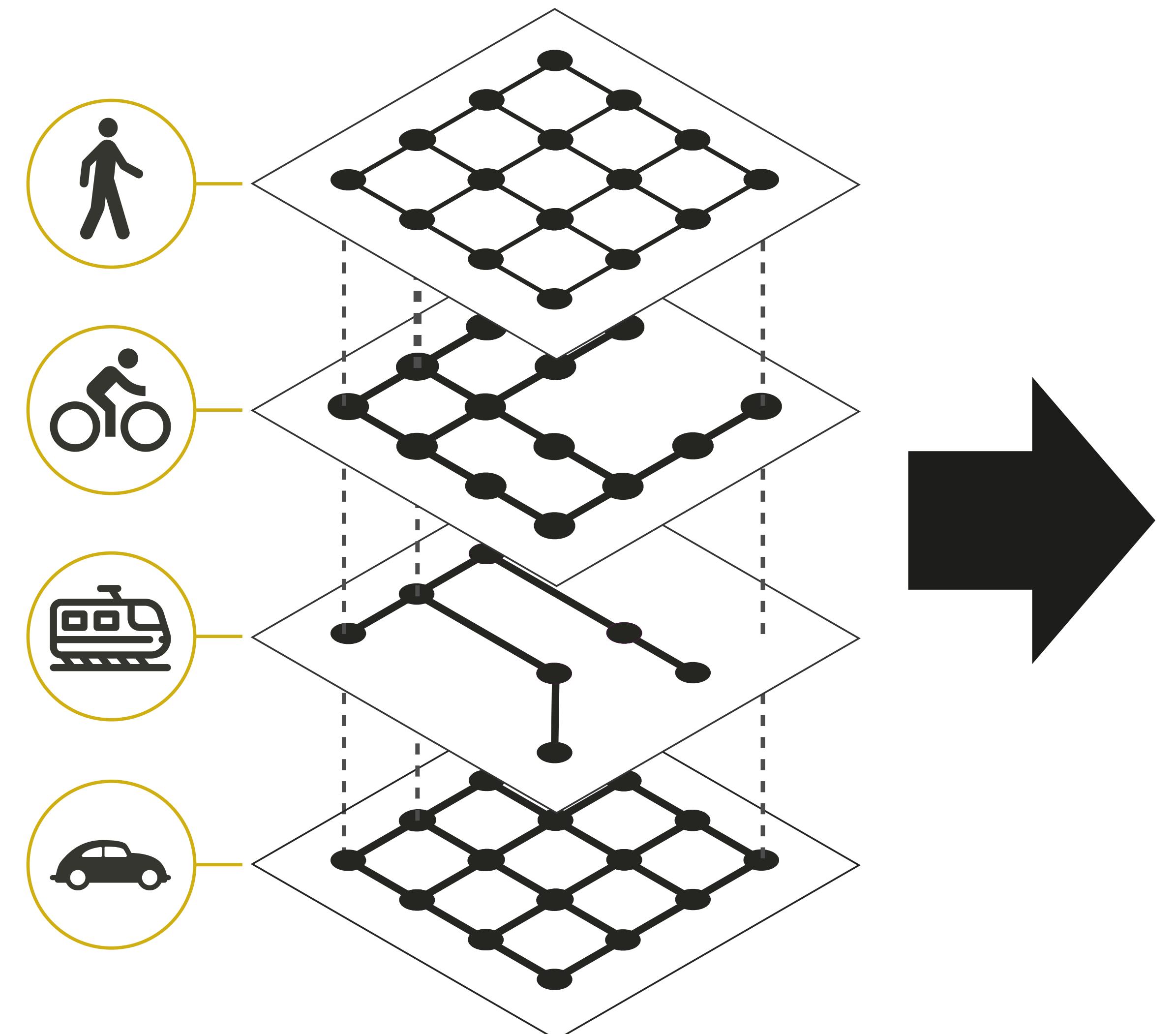


Avenue Hostel

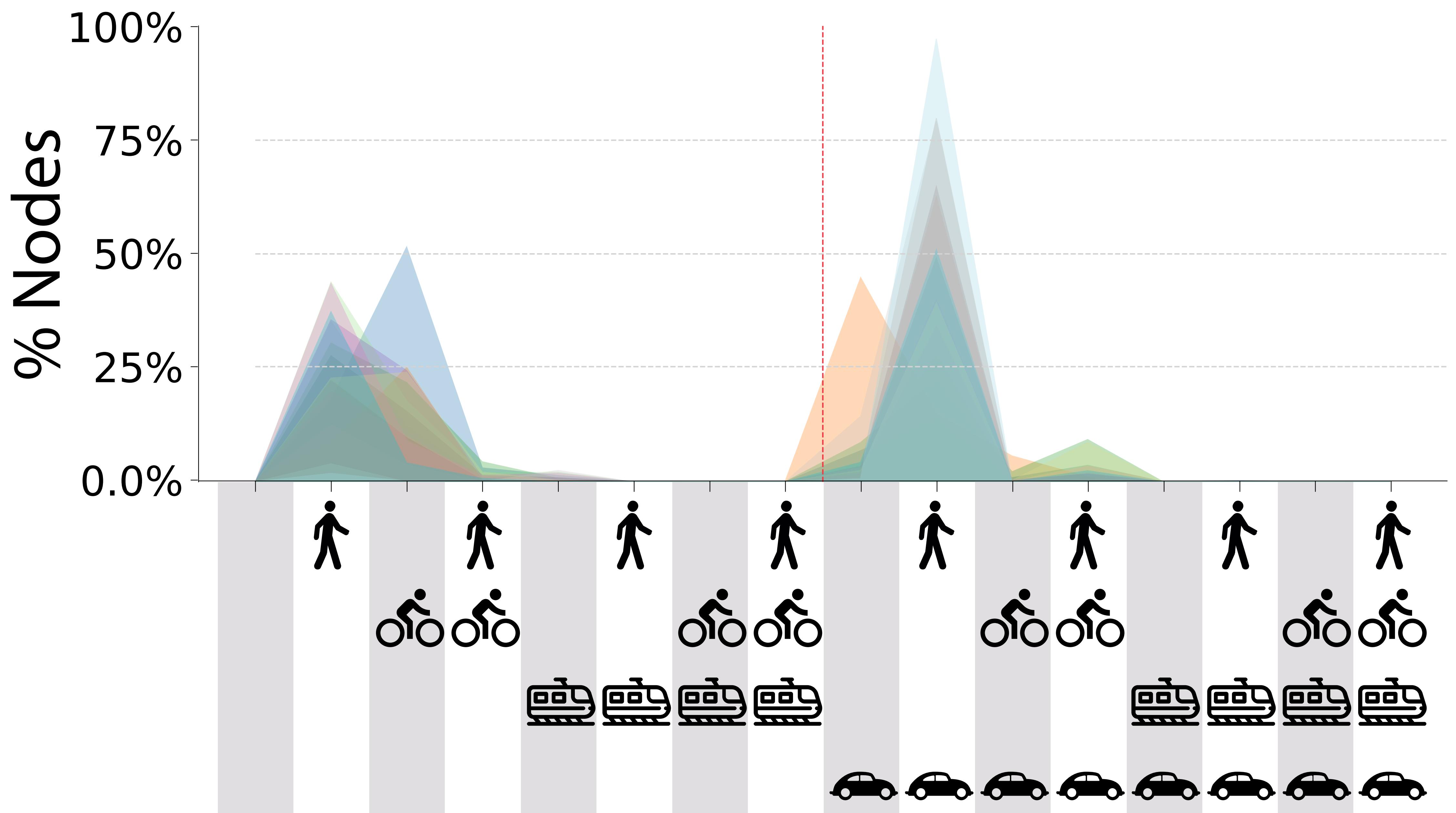
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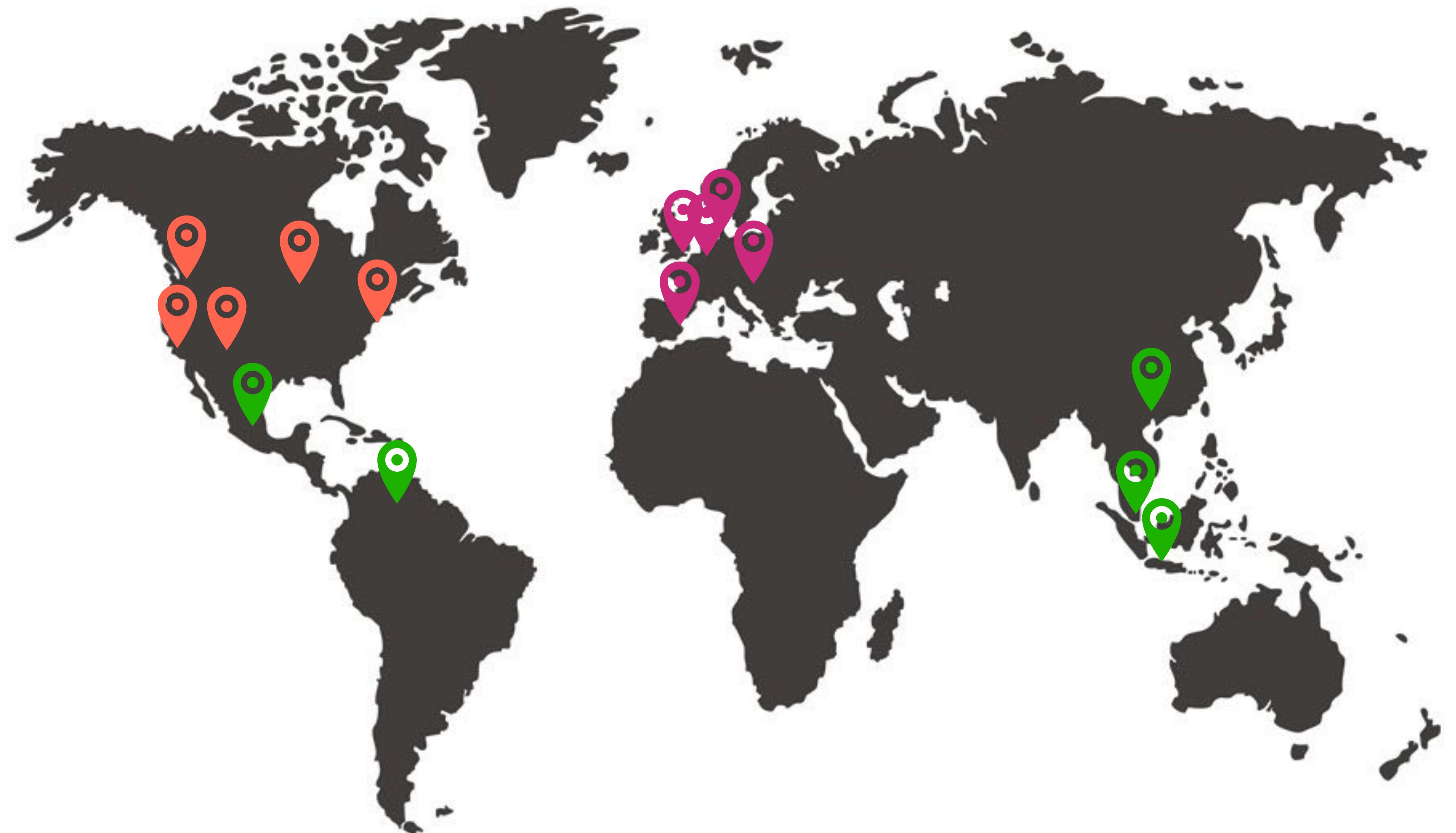




# actual\_status

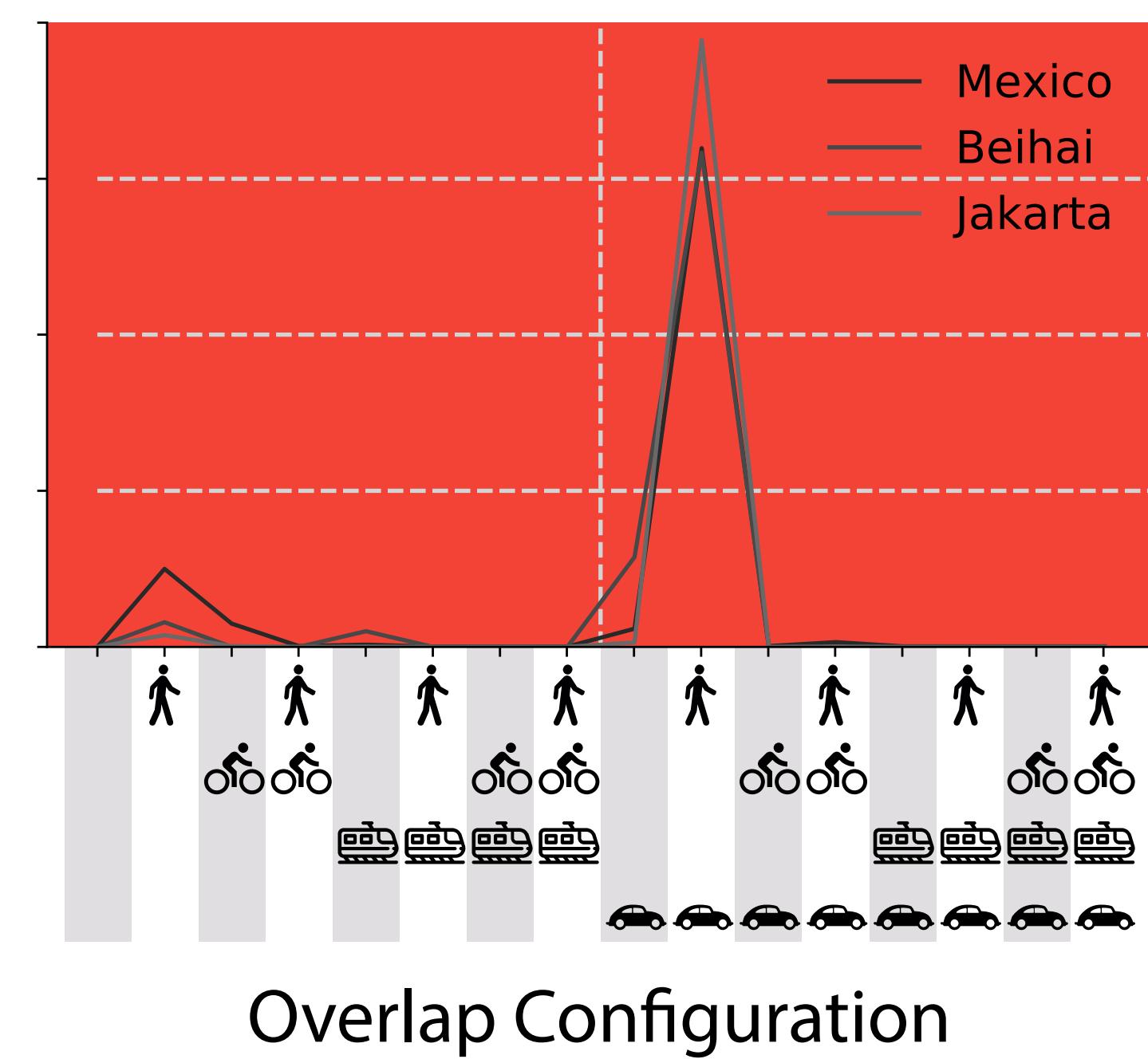
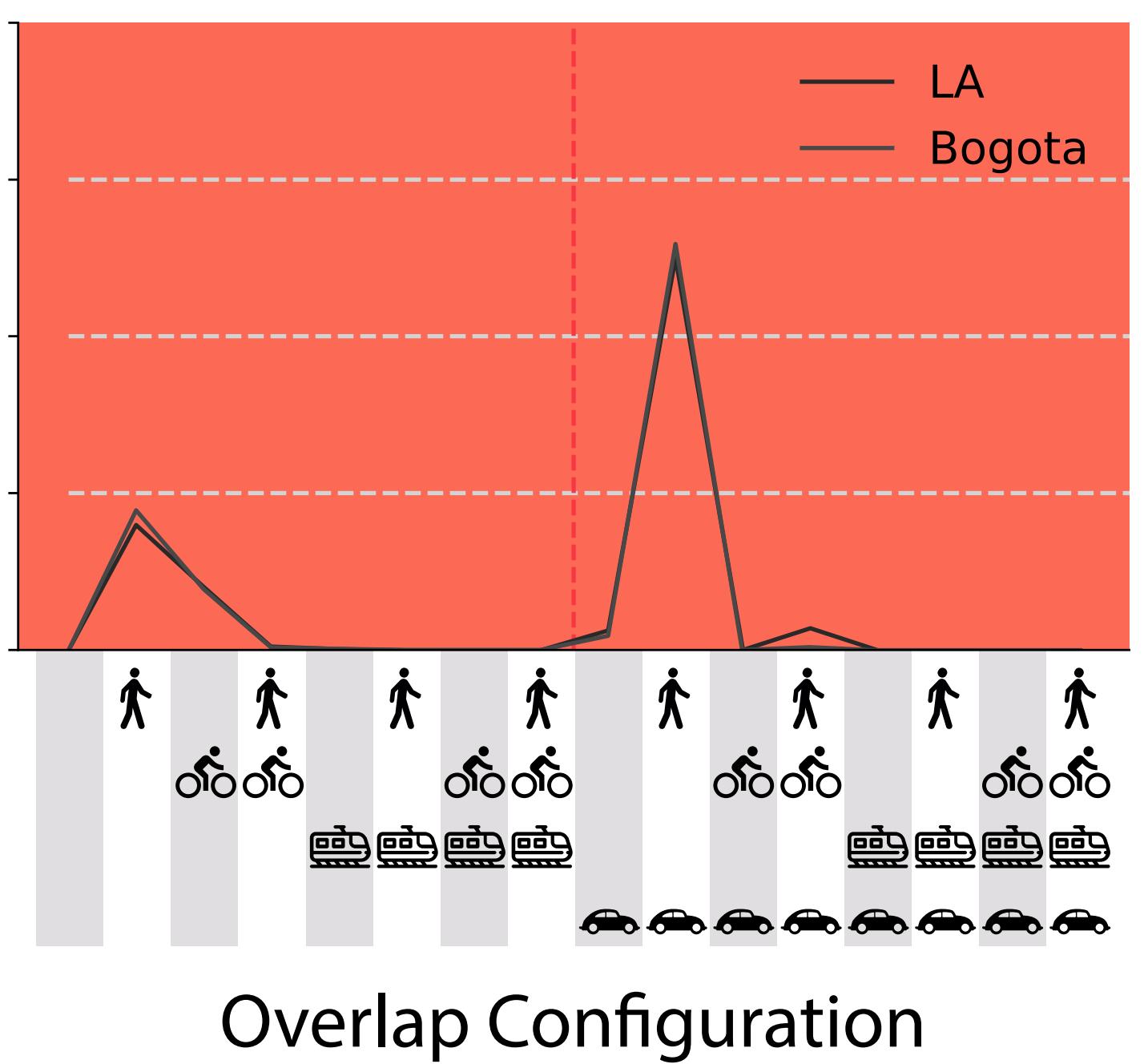
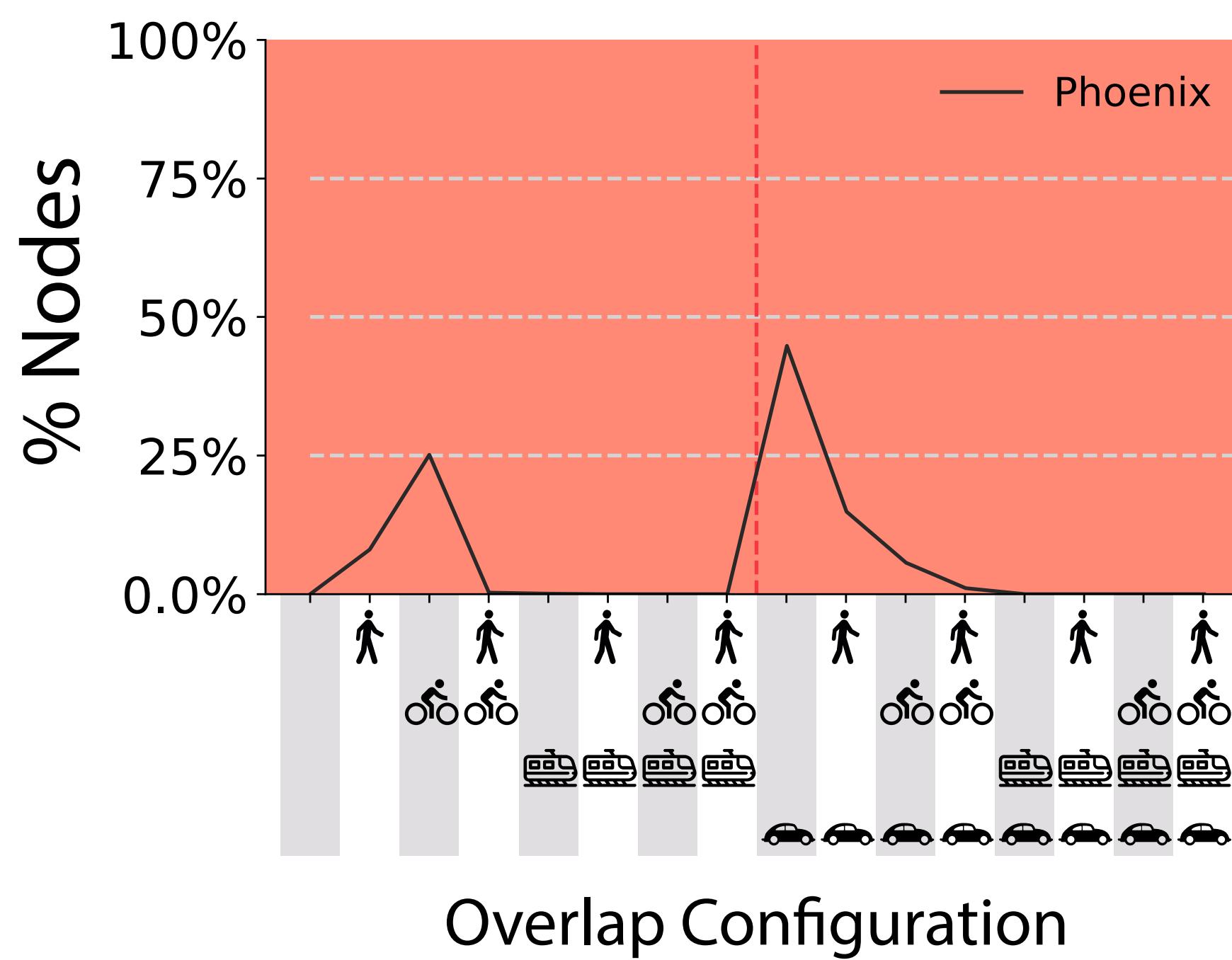
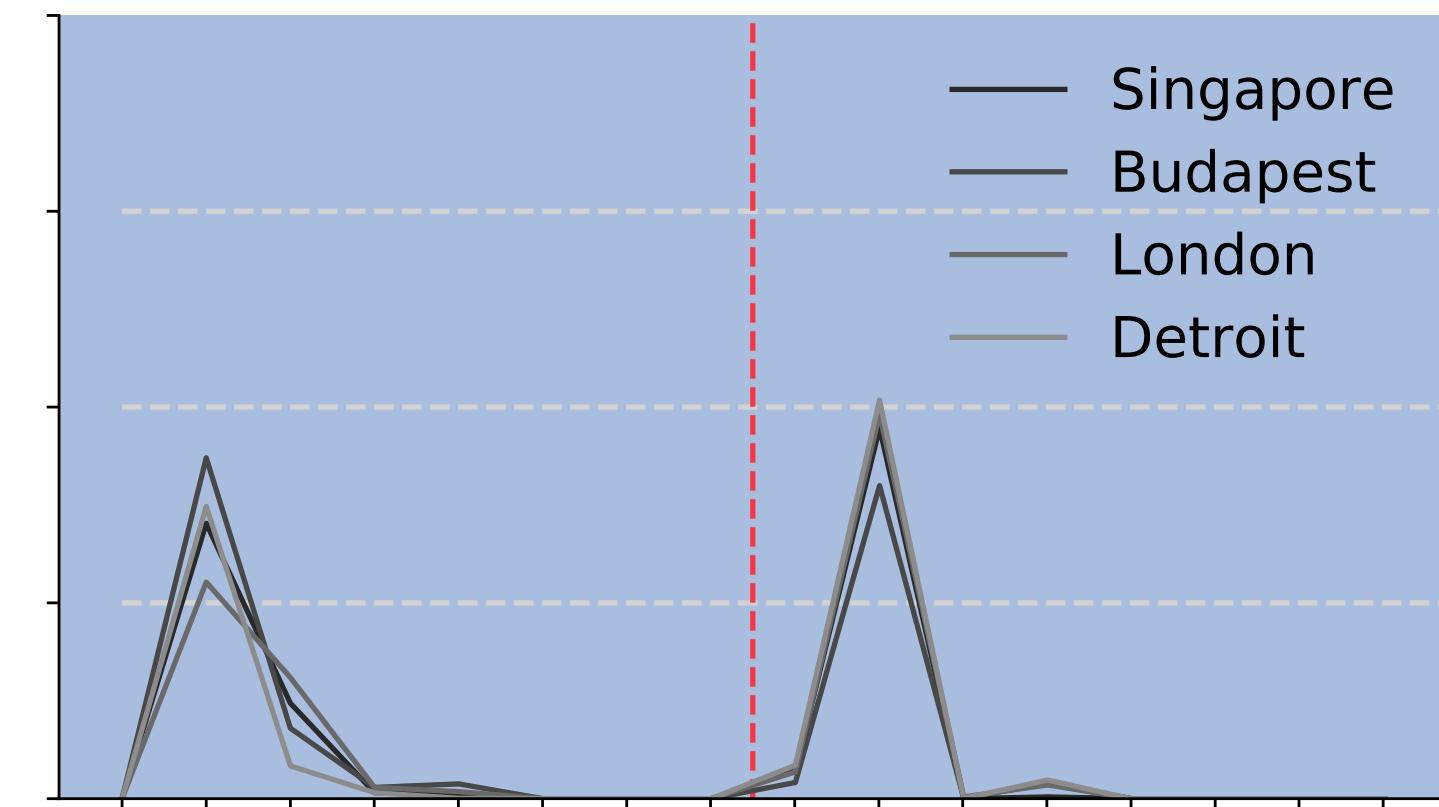
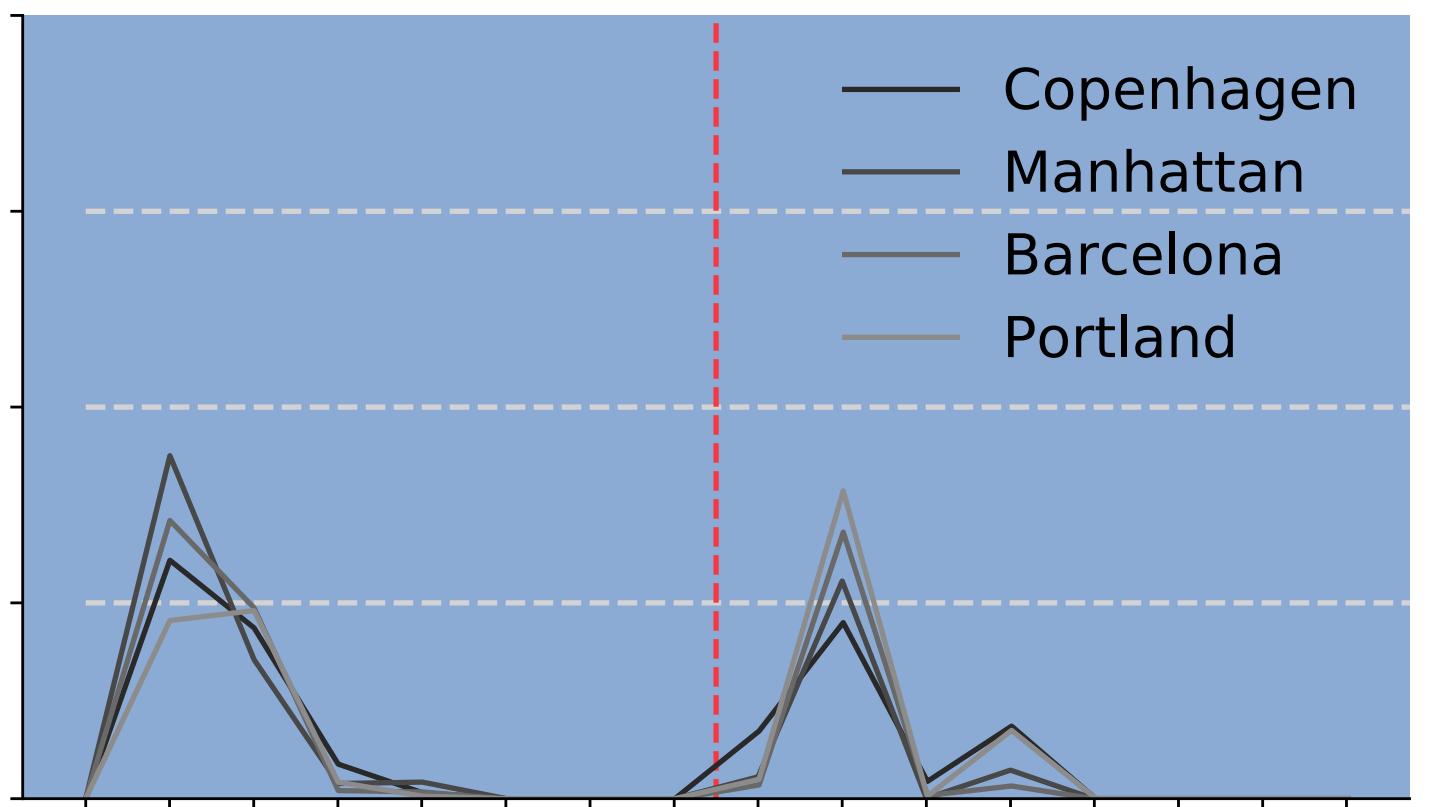
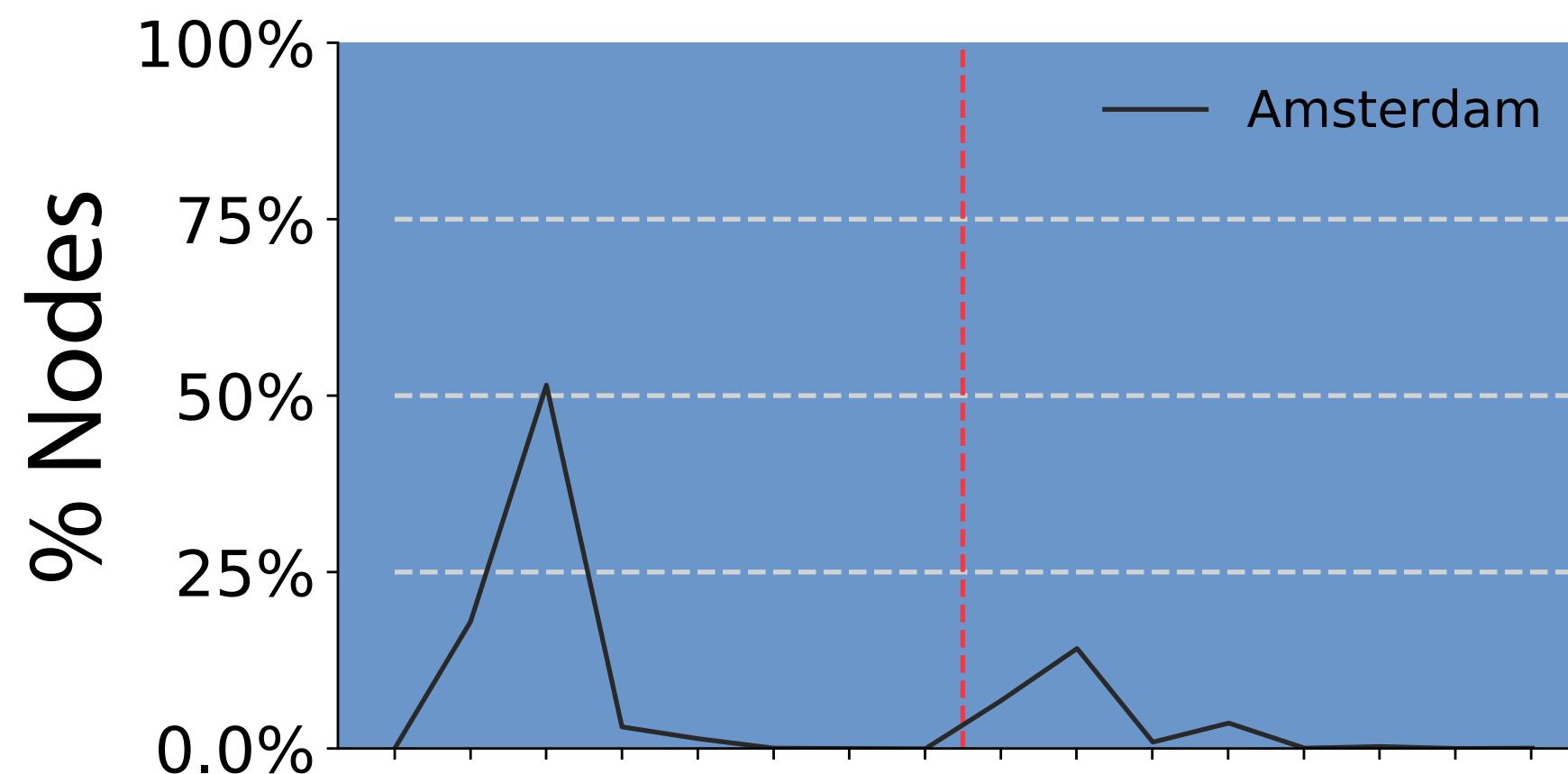


# Overlap Profile





# Overlap Census



# closer\_look

# Copenhagen

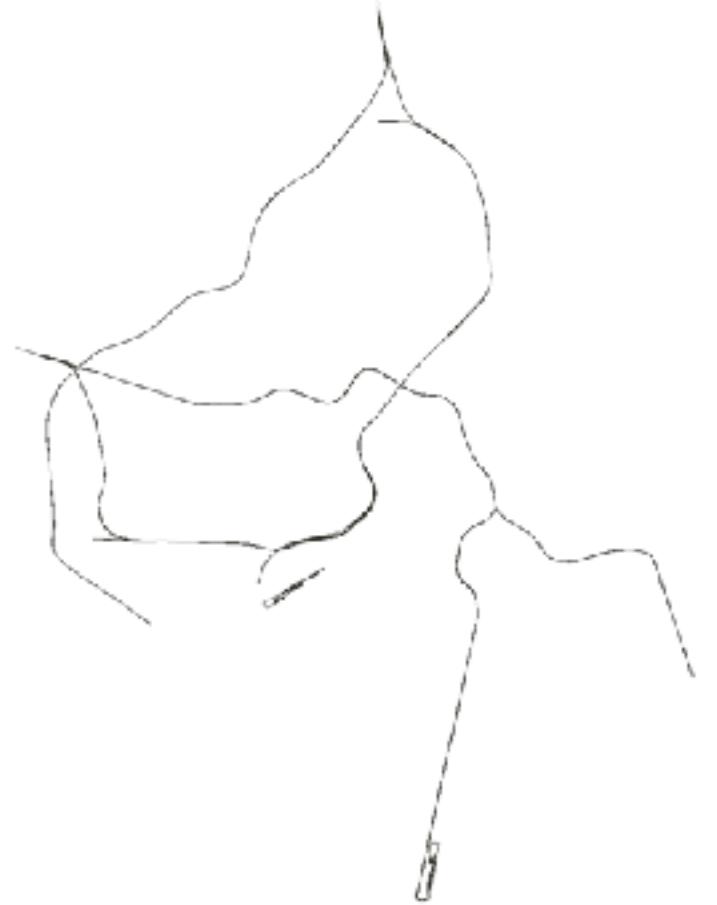
Pedestrian



Bike



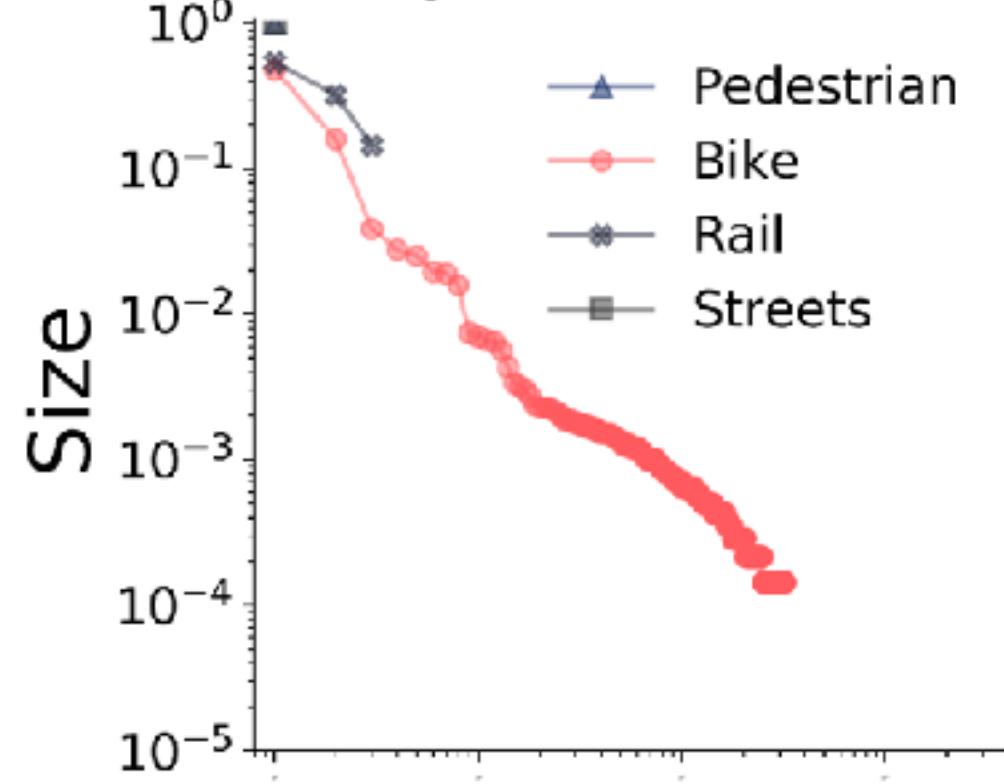
Rail



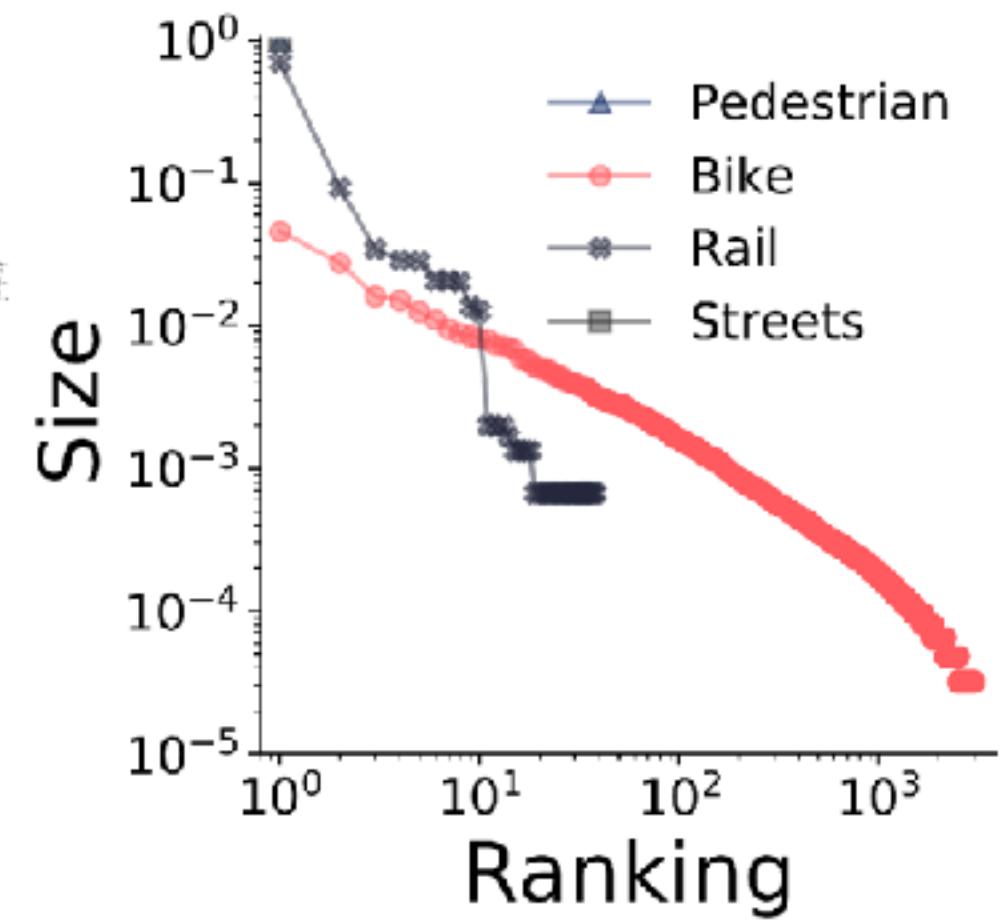
Streets



Components

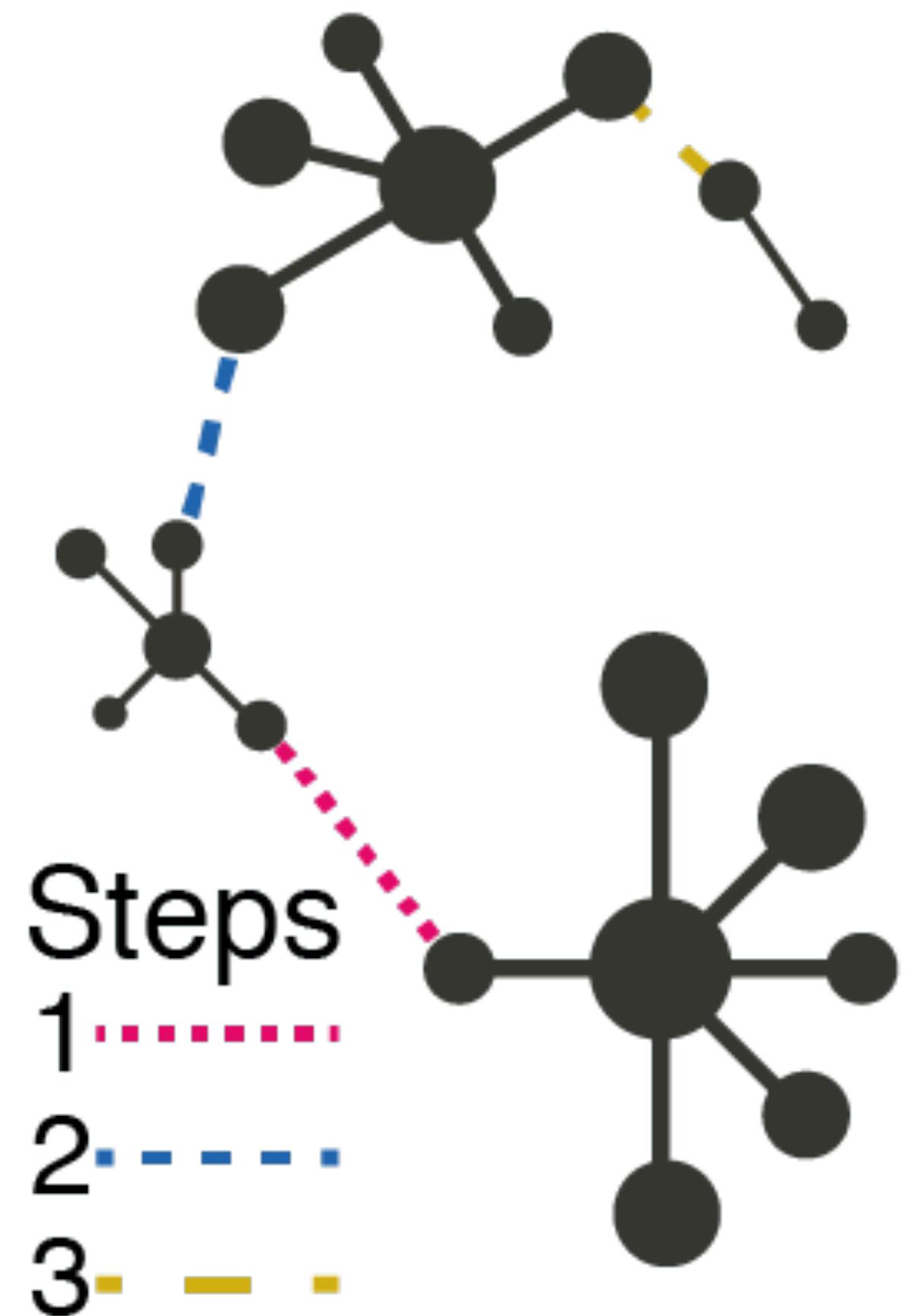


# London

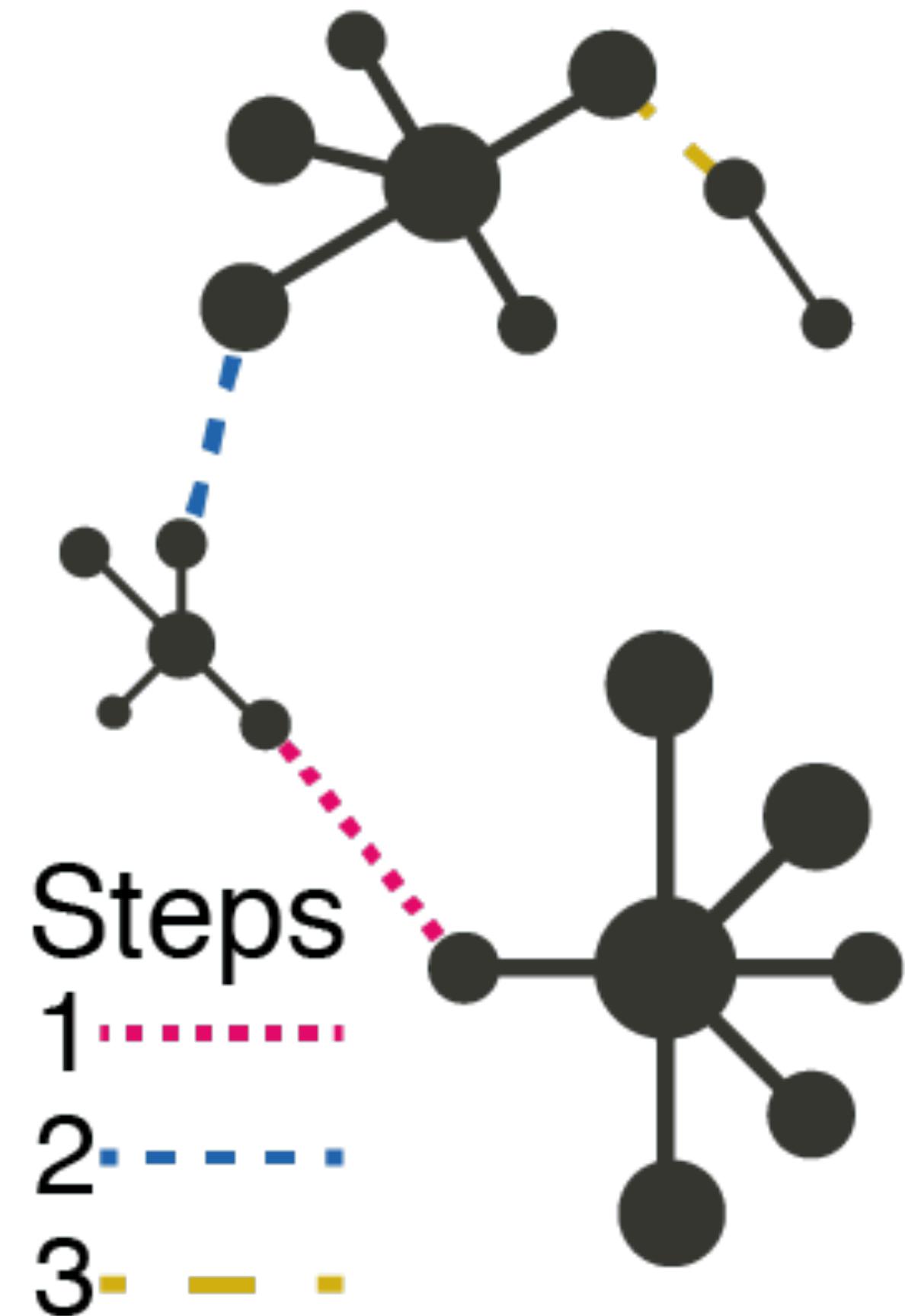


# **consolidate\_network**

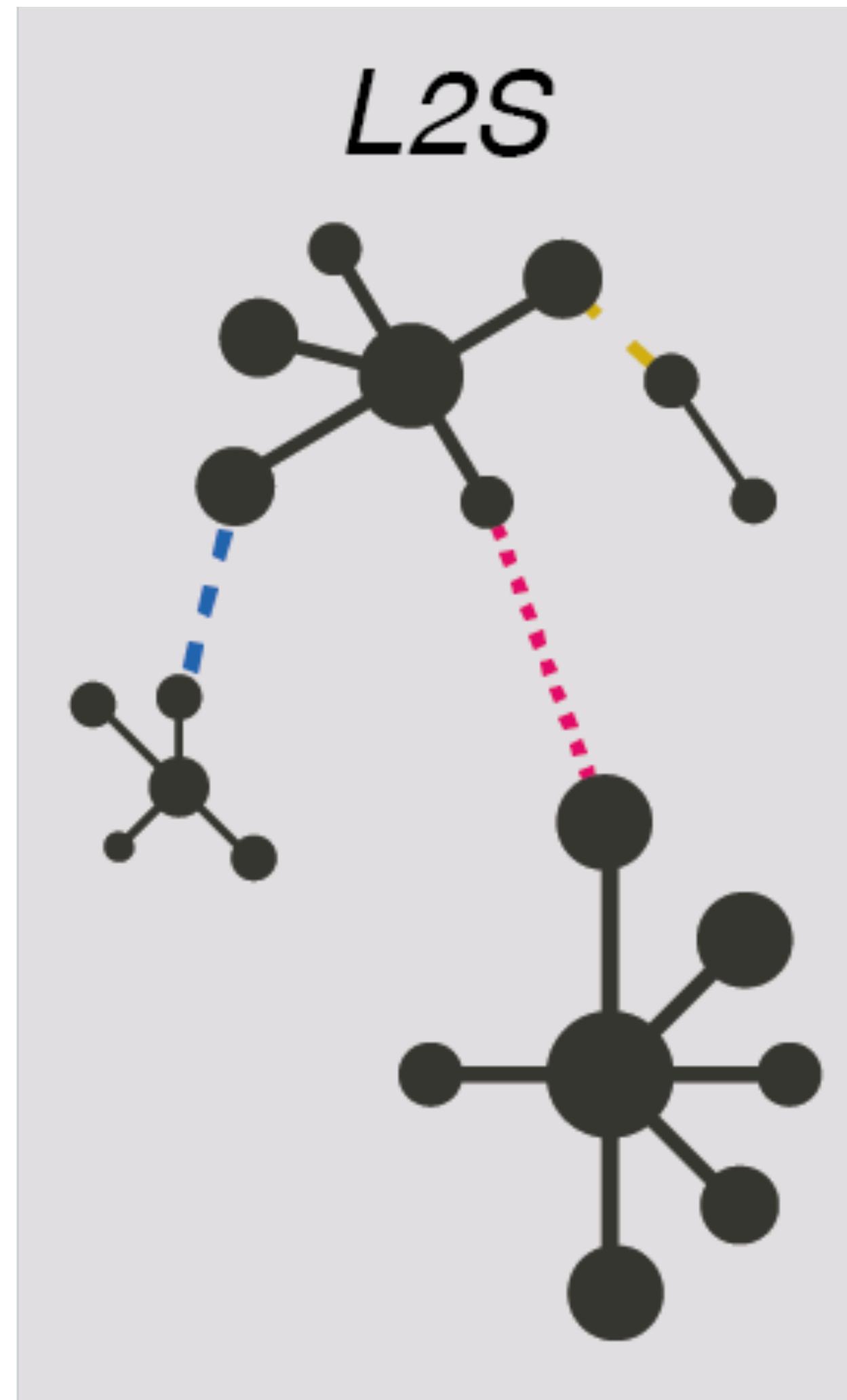
*L2C*



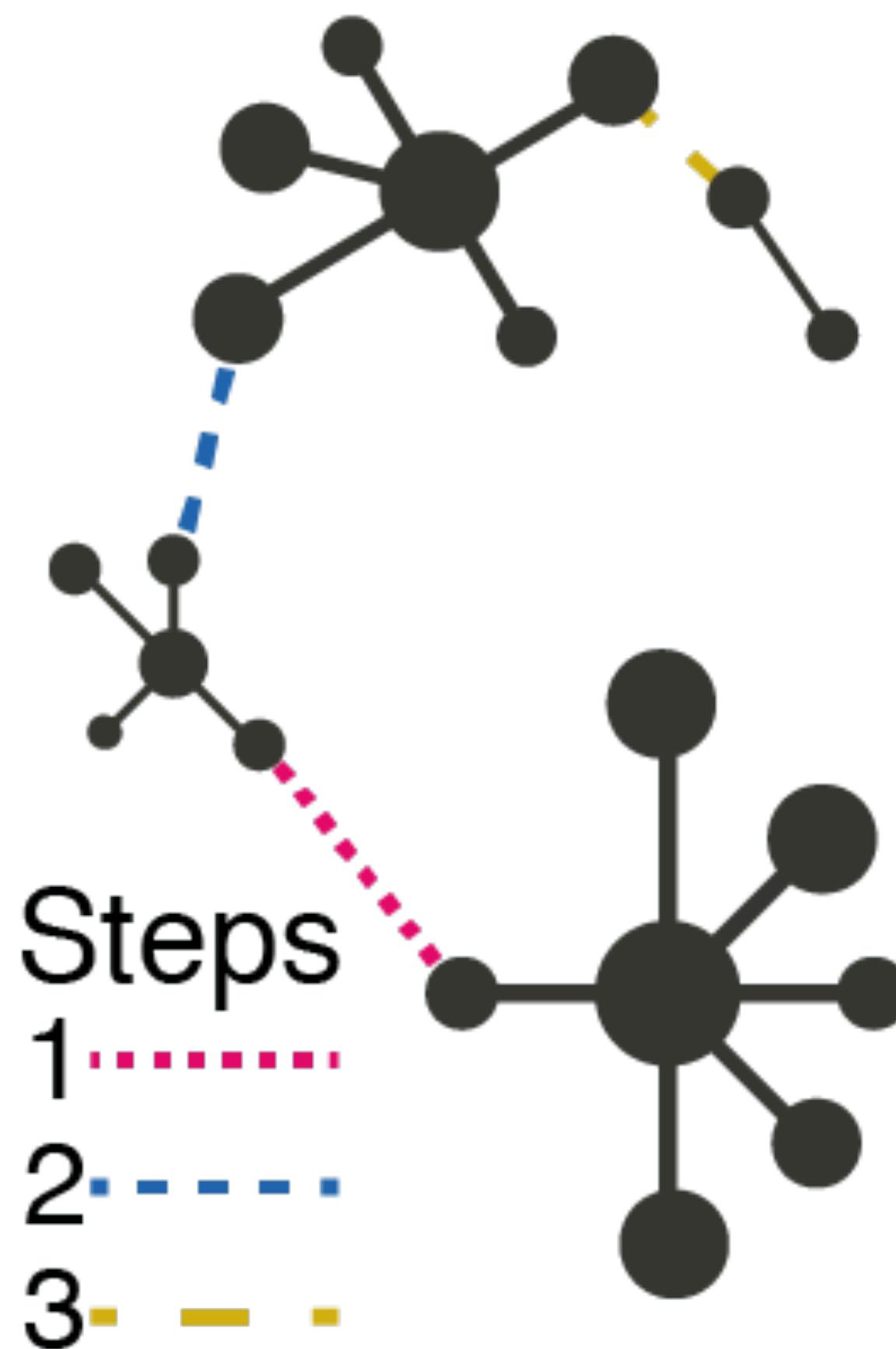
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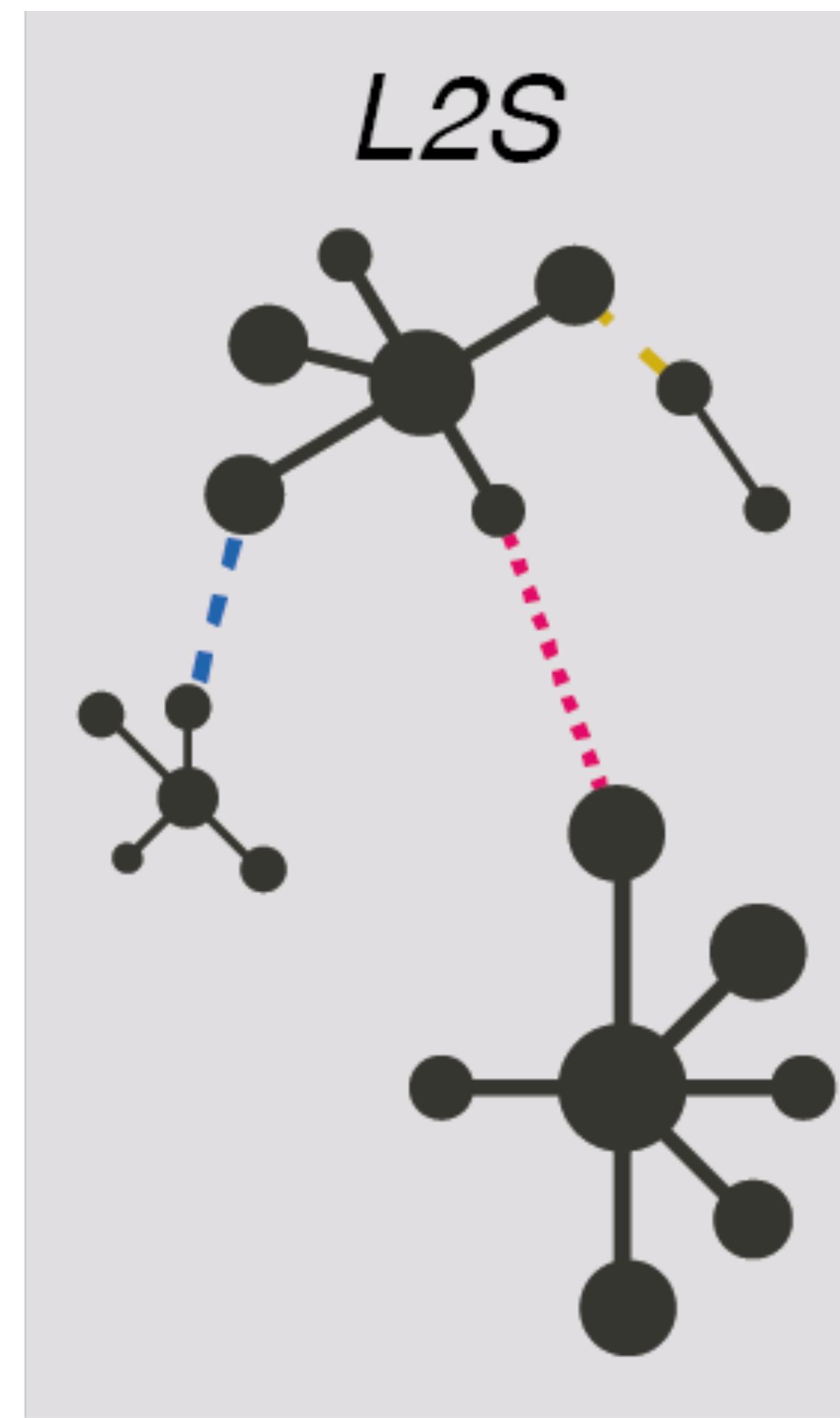
*L2S*



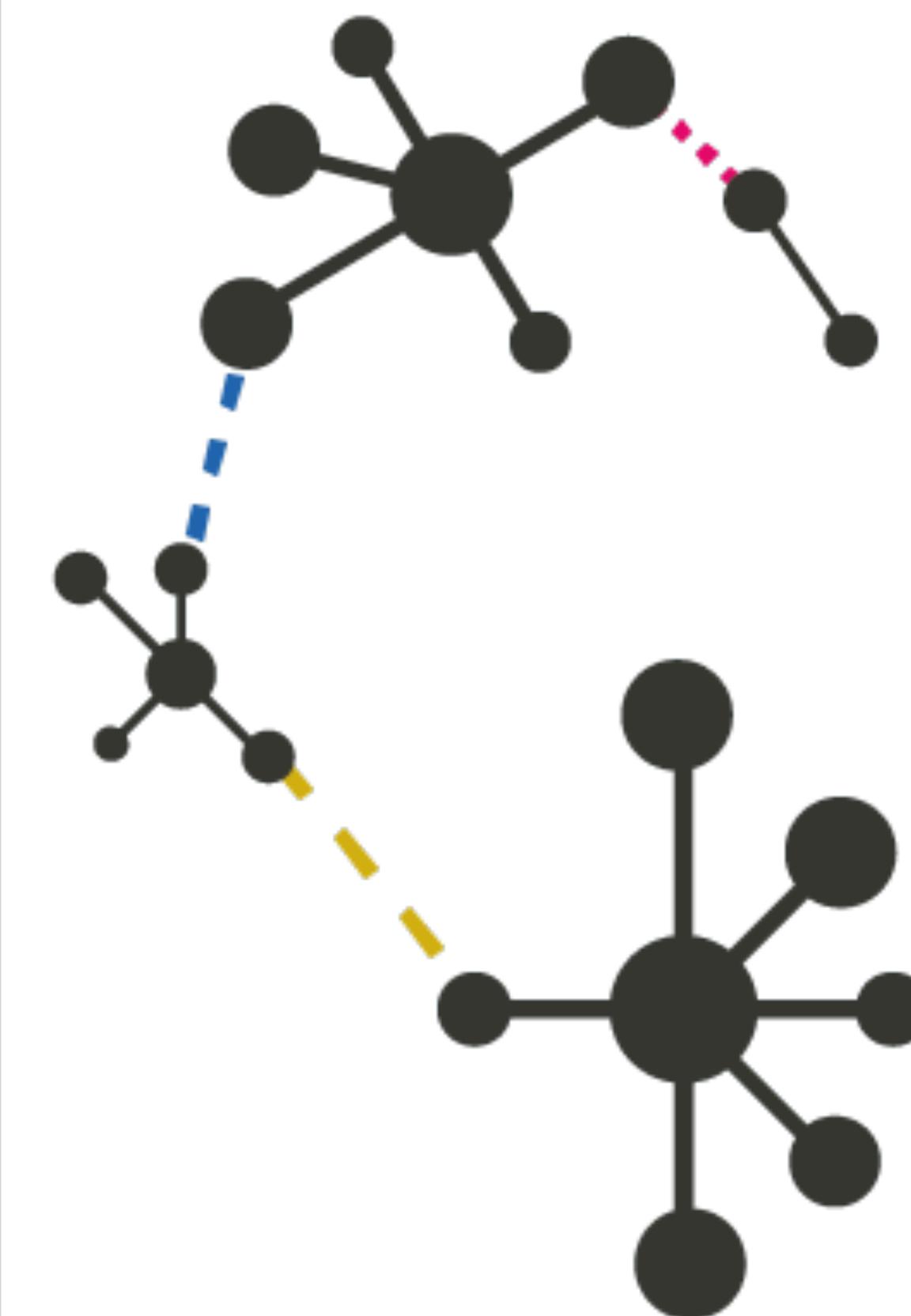
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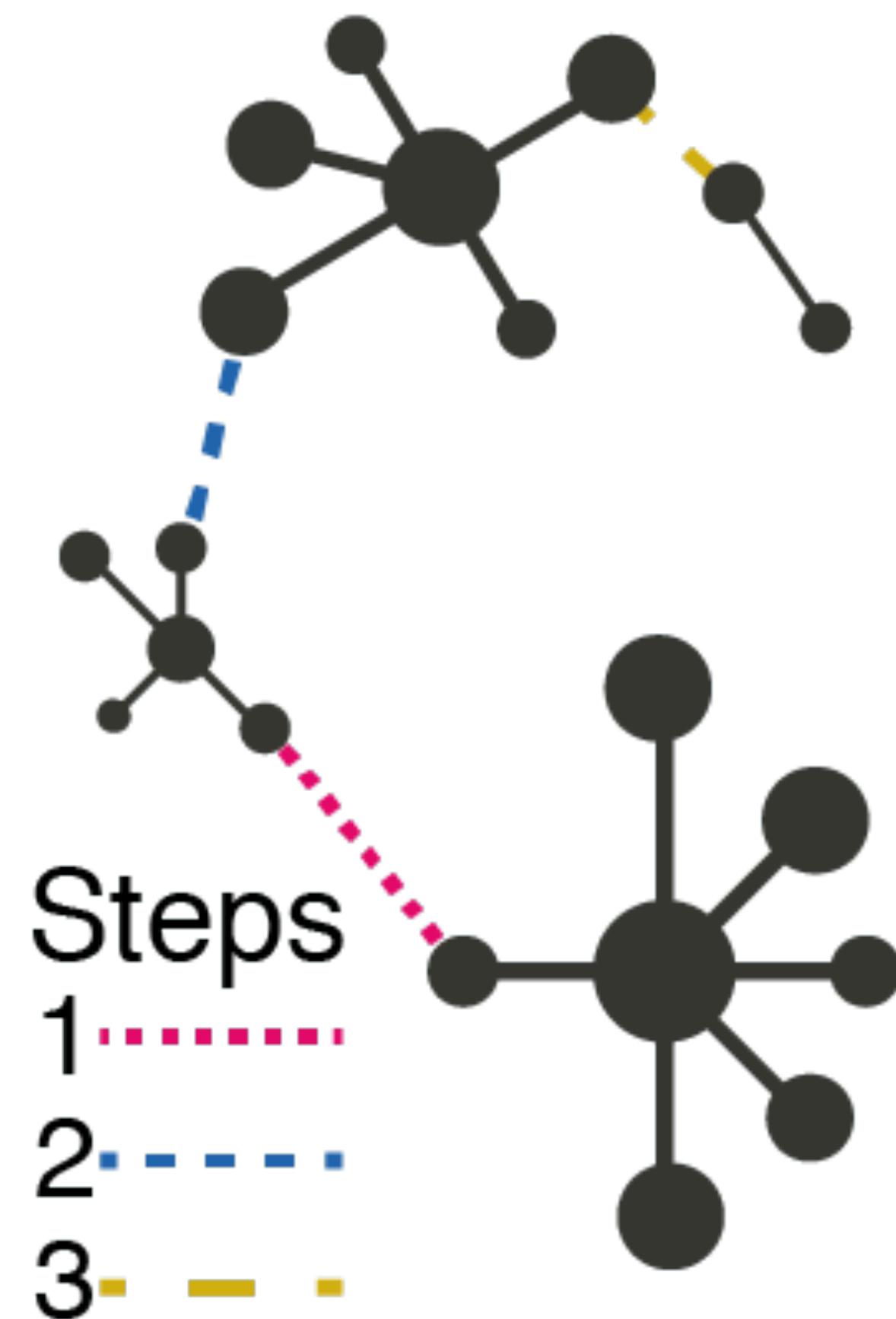
*L2S*



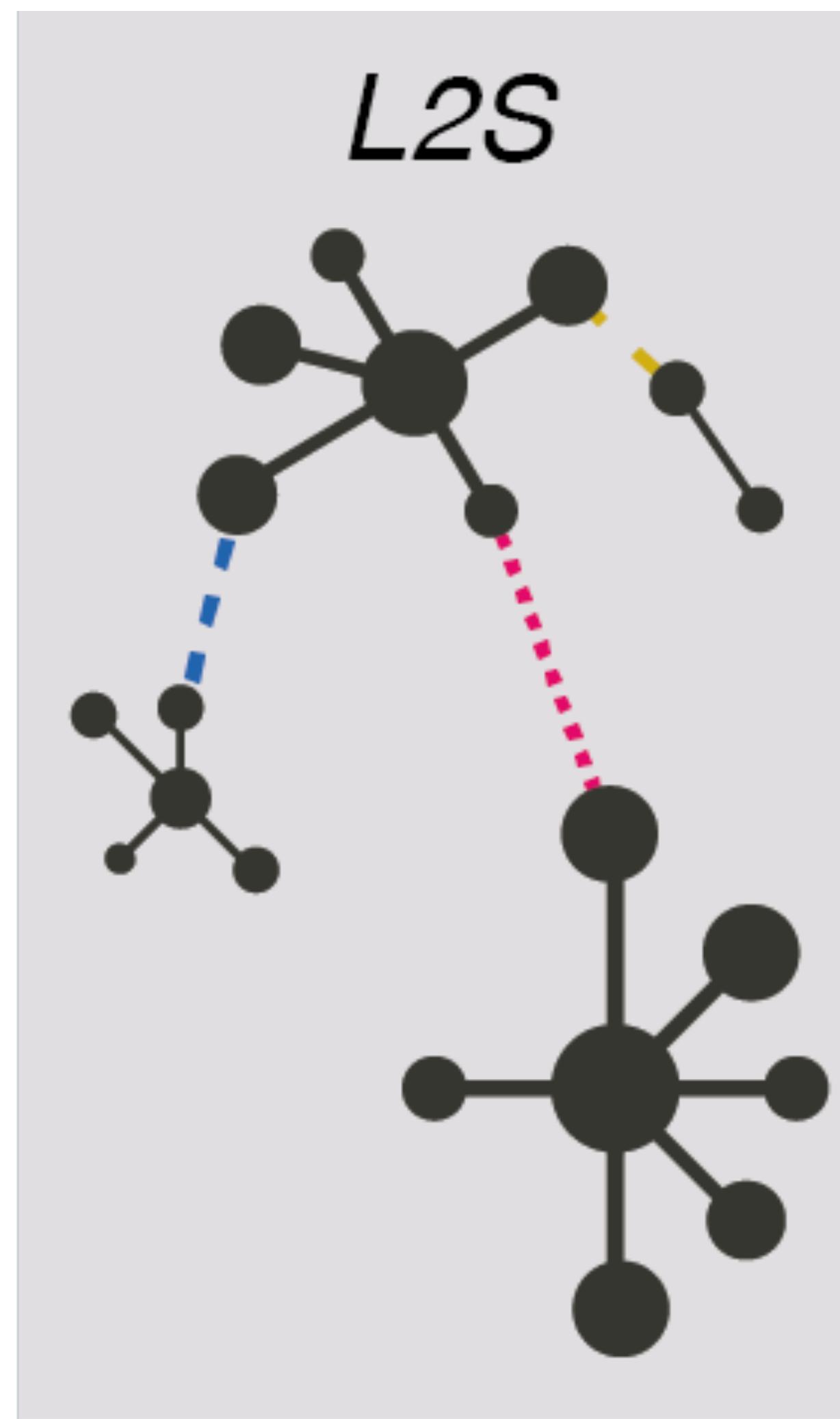
*CC*



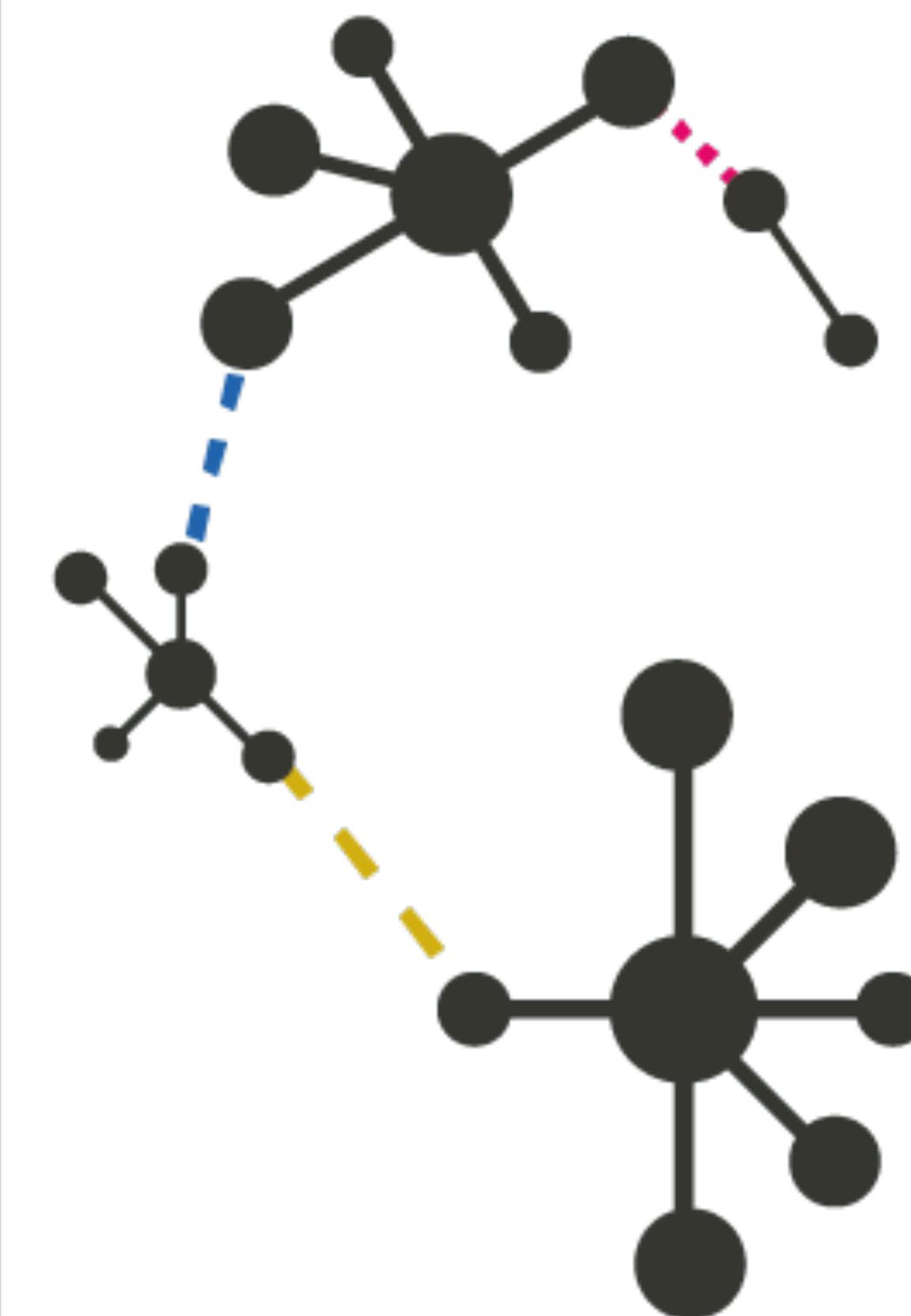
*L2C*



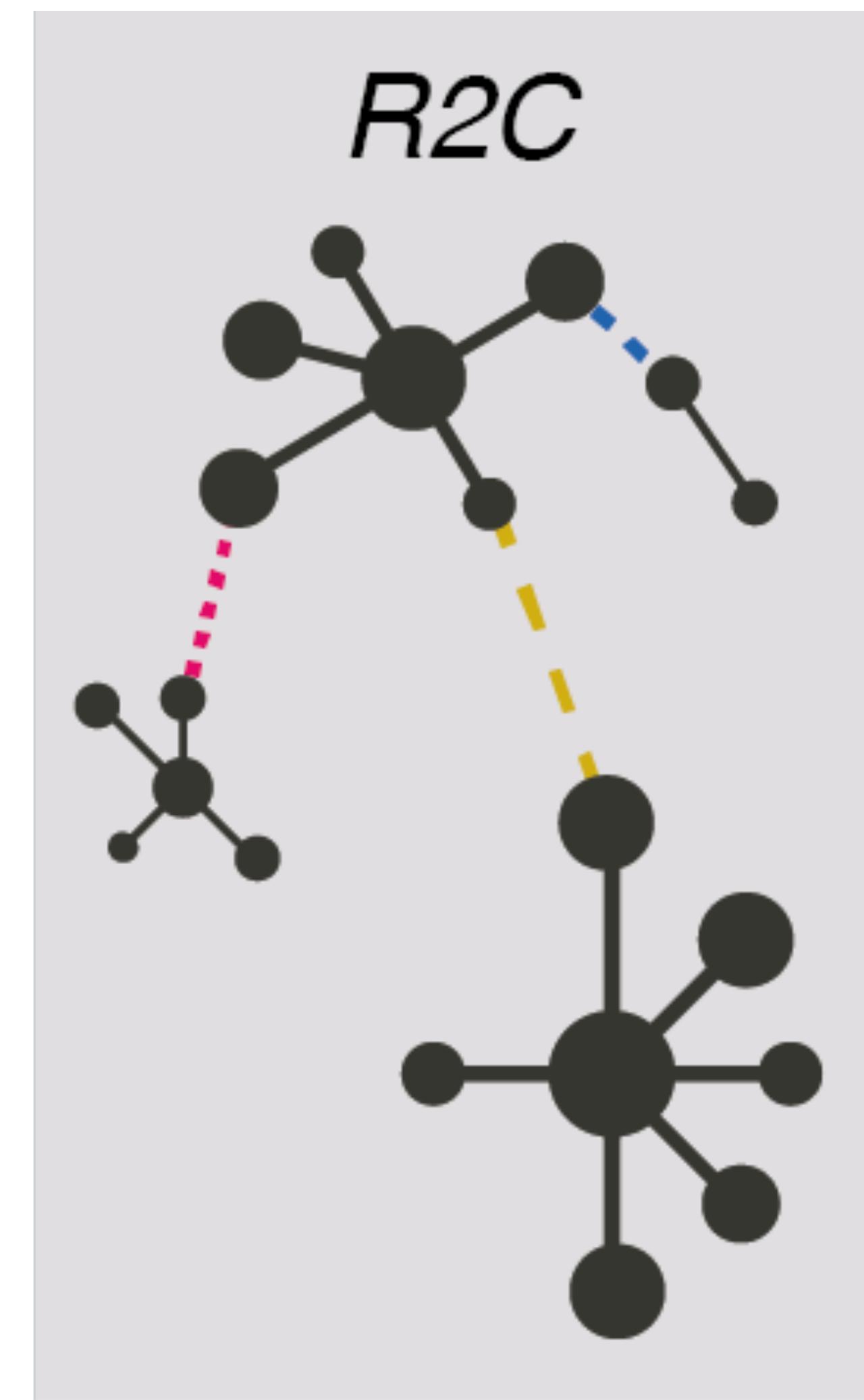
*L2S*



*CC*

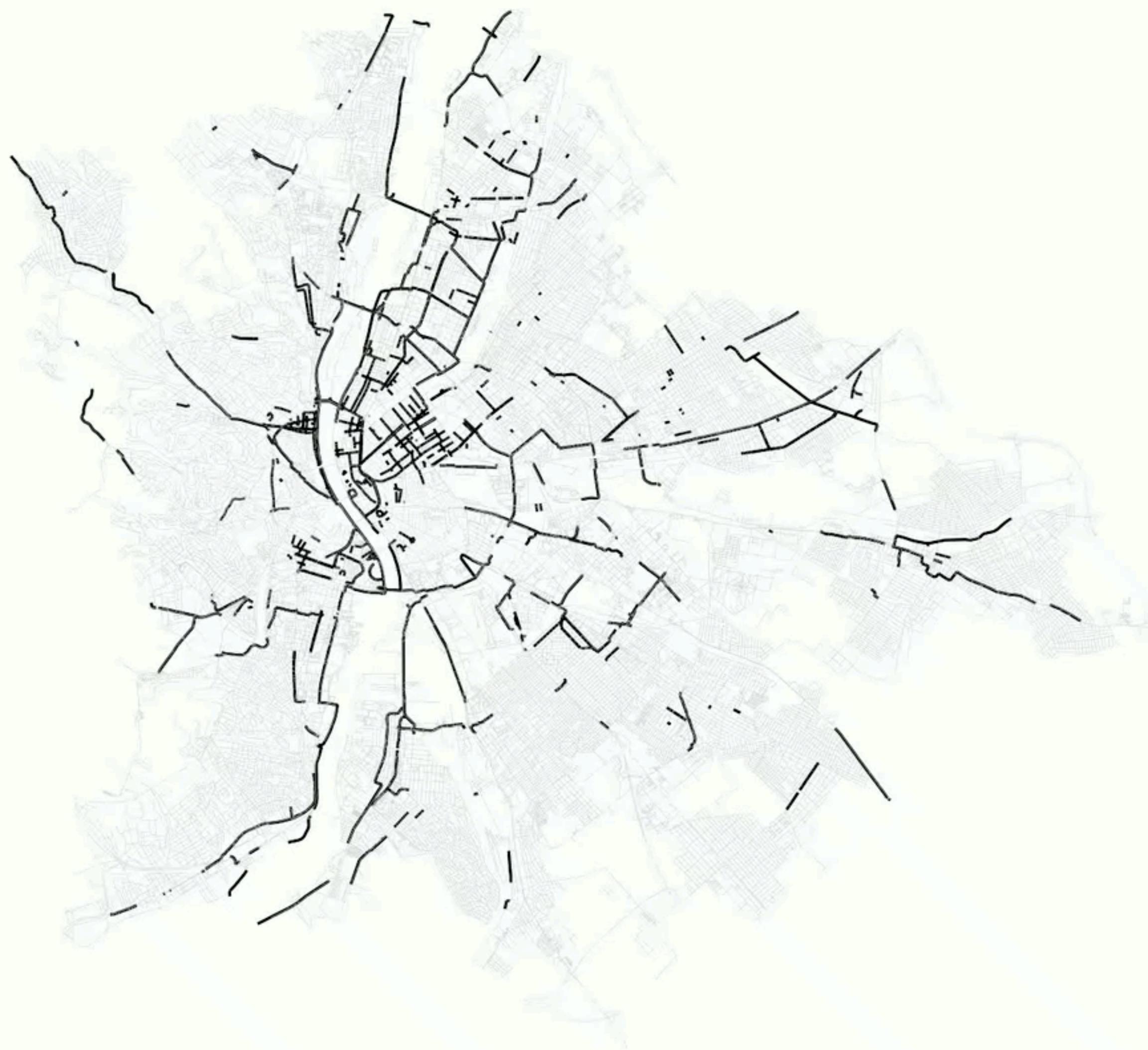


*R2C*

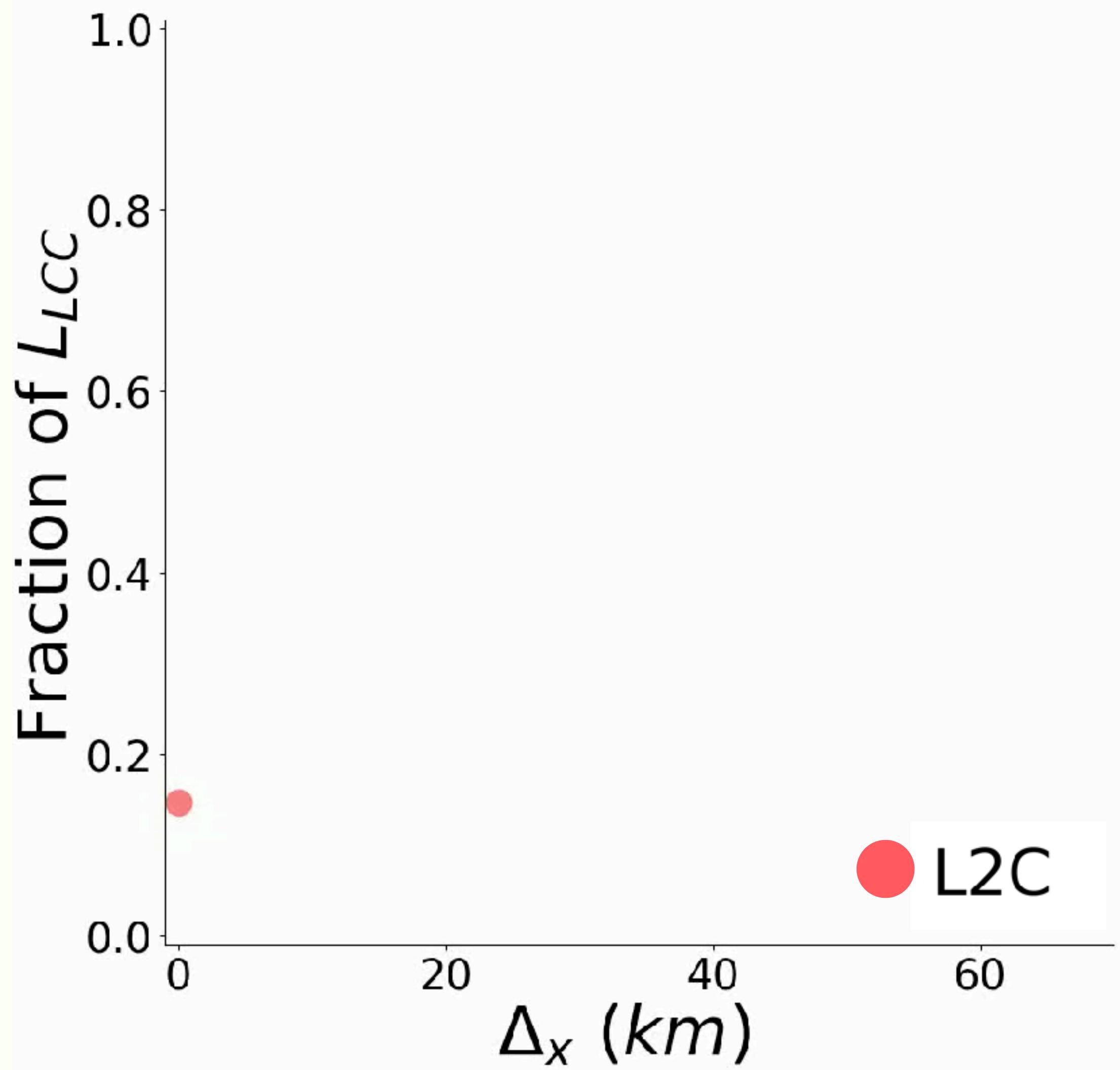


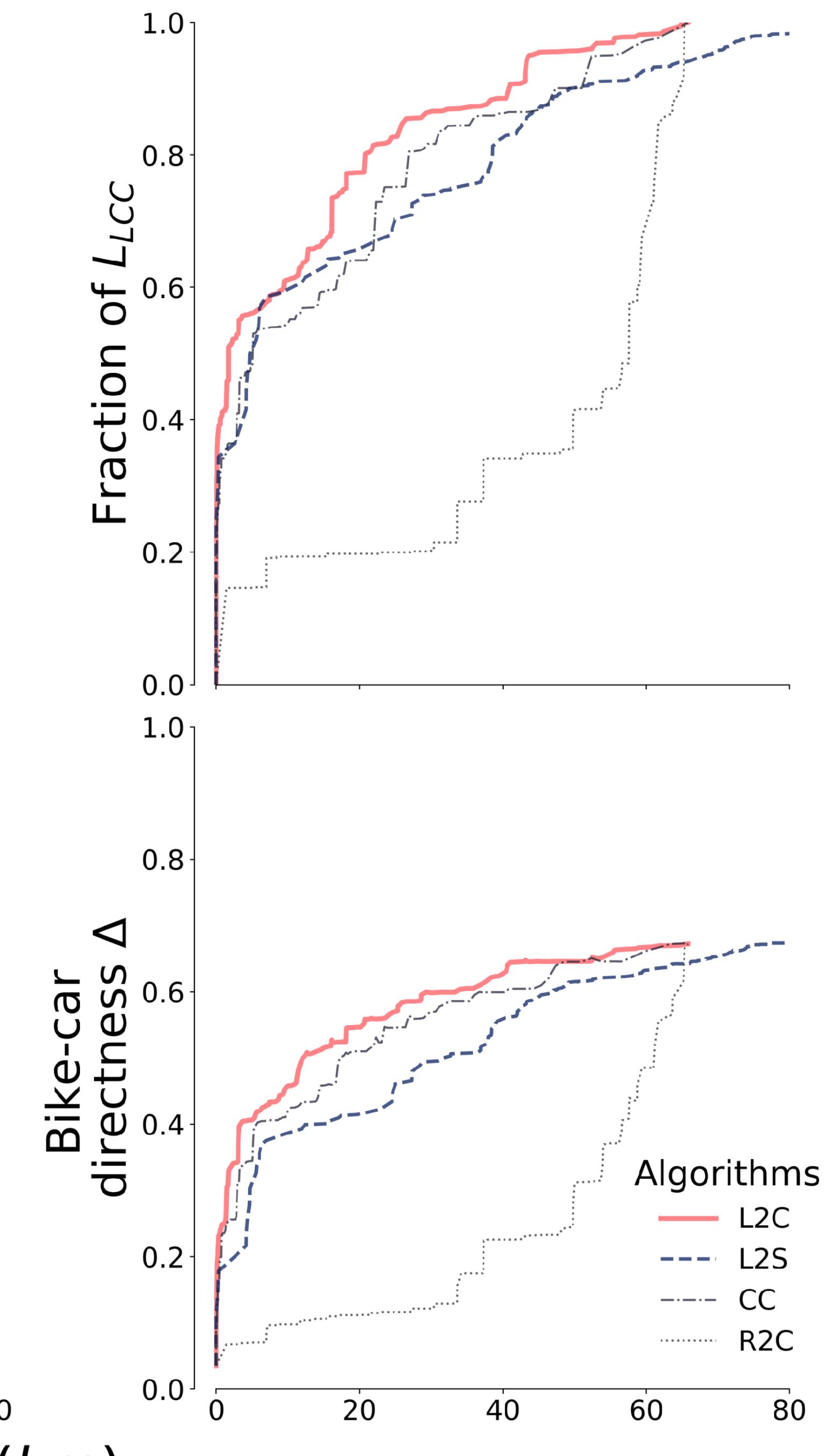
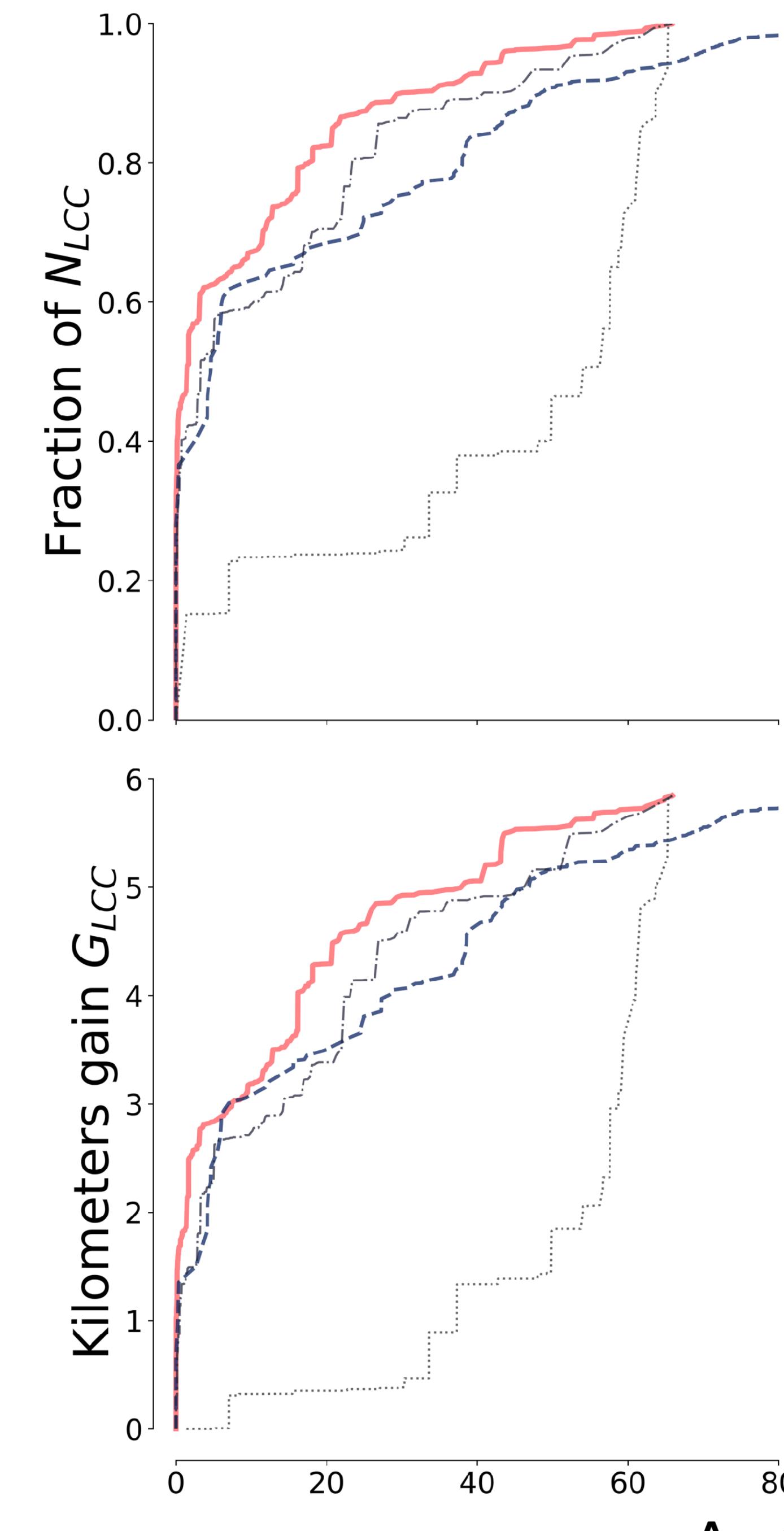
# BUDAPEST

Cumulative  $\Delta_x = 0.0 \text{ km}$  |  $81.88 \text{ km}$  in LCC | Bicycle layer 14.61% connected

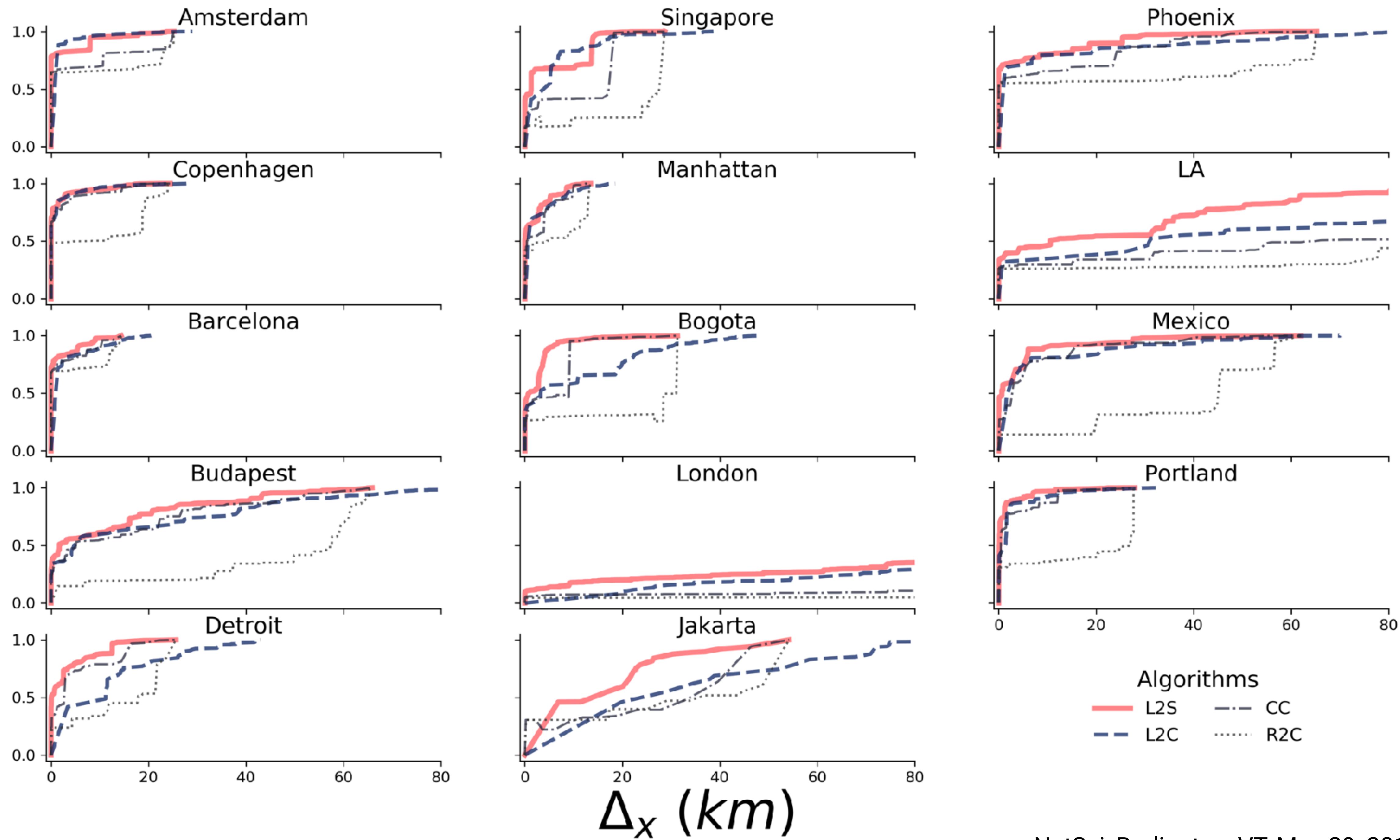


# KM Increase per invested $\Delta_x$



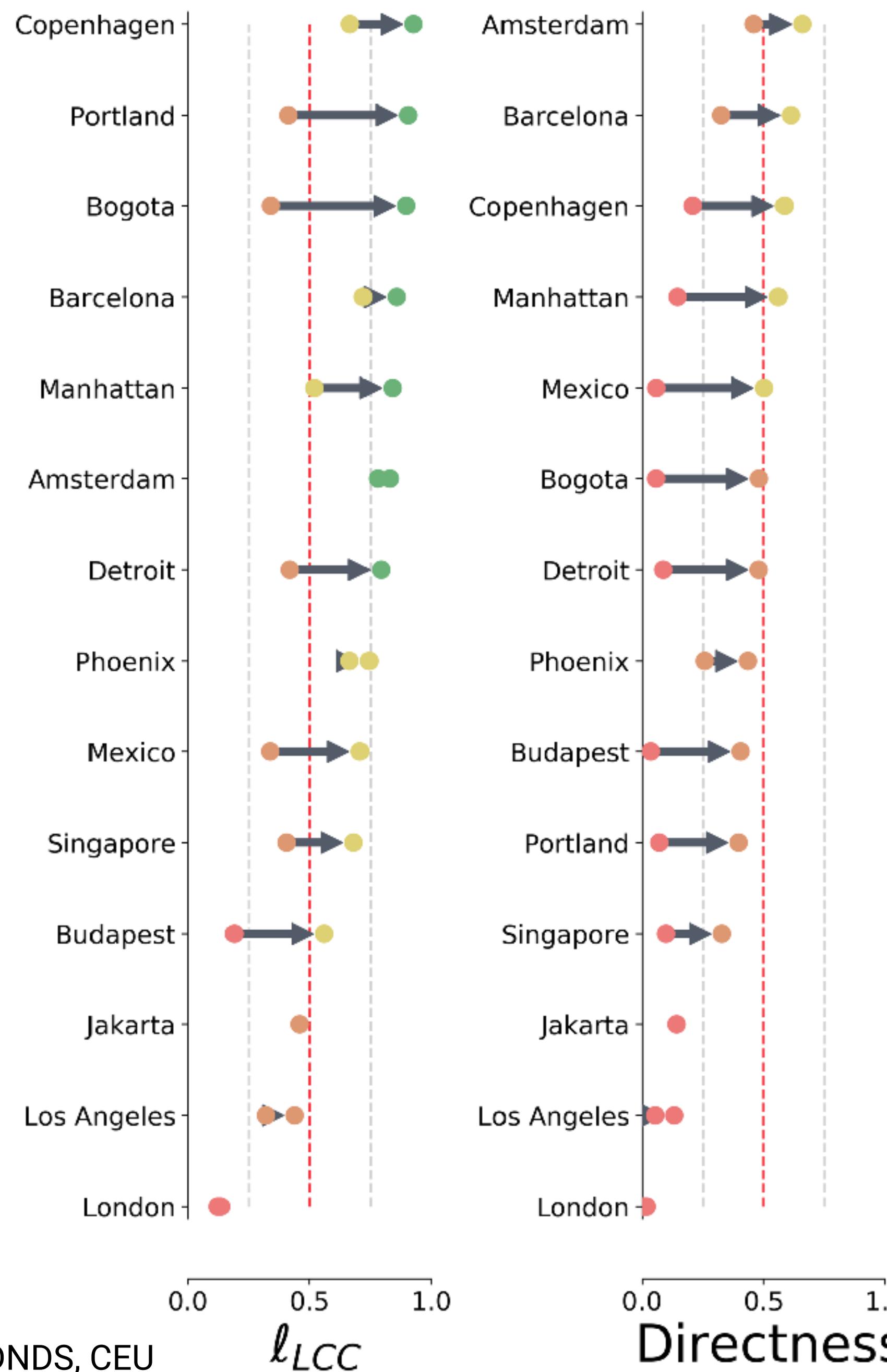


Fraction of  $L_{LCC}$

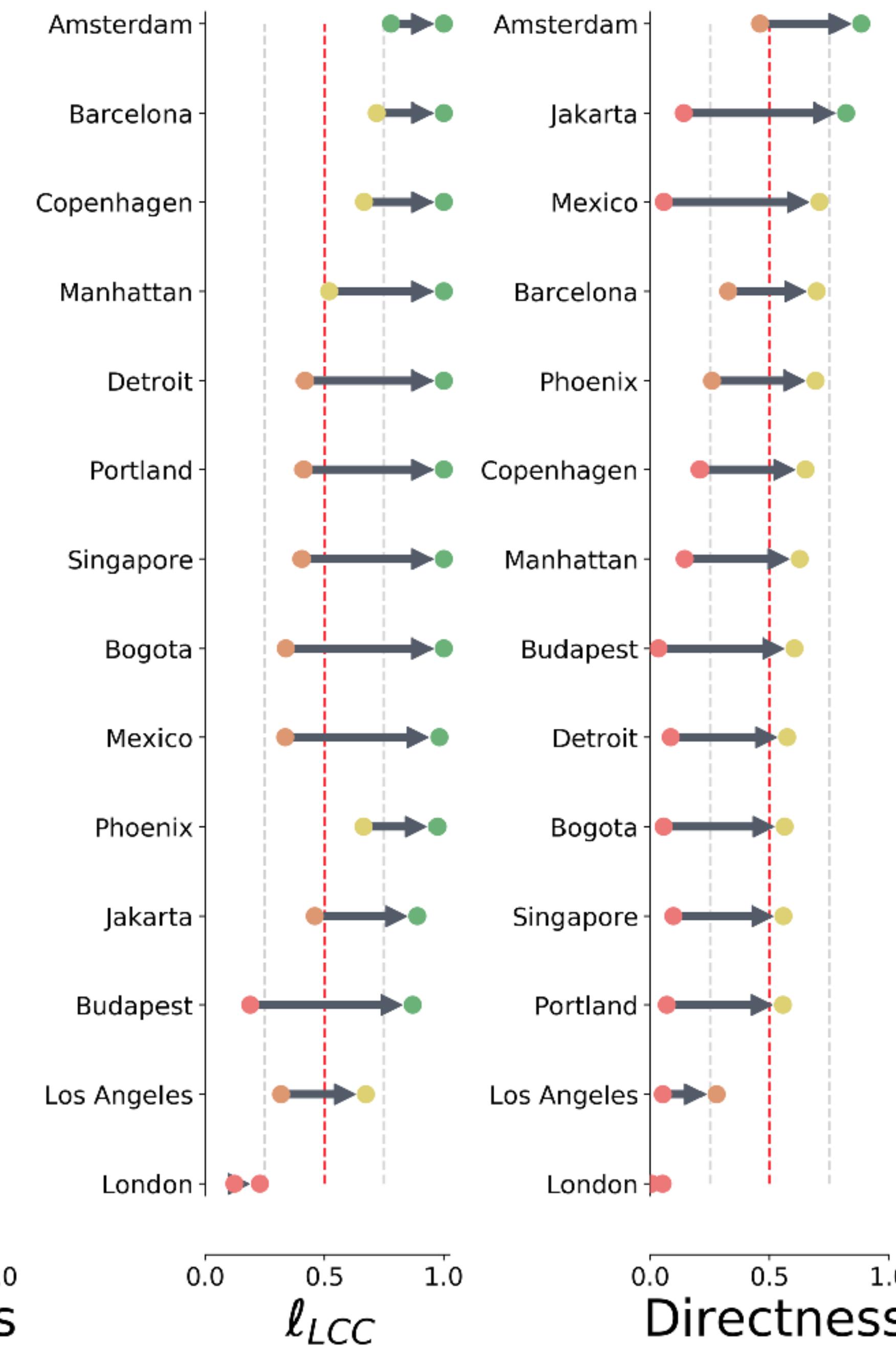


# **cities\_improvement**

## *5km investment*



## *35km investment*



# **take\_away**

# urban\_fingerprints

# **urban\_fingerprints**

# **fragmented\_infrastructure**

**urban\_fingerprints**

**fragmented\_infrastructure**

**small\_focalized\_investment**

**urban\_fingerprints**

**fragmented\_infrastructure**

**small\_focalized\_investment**

**budget\_dependance**

**urban\_fingerprints**

**fragmented\_infrastructure**

**small\_focalized\_investment**

**budget\_dependance**

**every\_city\_improvable**

# thank\_you

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