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Mobility as a Service

Ralf Frisch, Solution Director MaaS

PTV MaaS Modeller –
Case Study: Barcelona

What is MaaS?

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“Micro Transit.
On Demand Services.
Shared Vehicles.
Intermodal.

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BERLKÖNIG

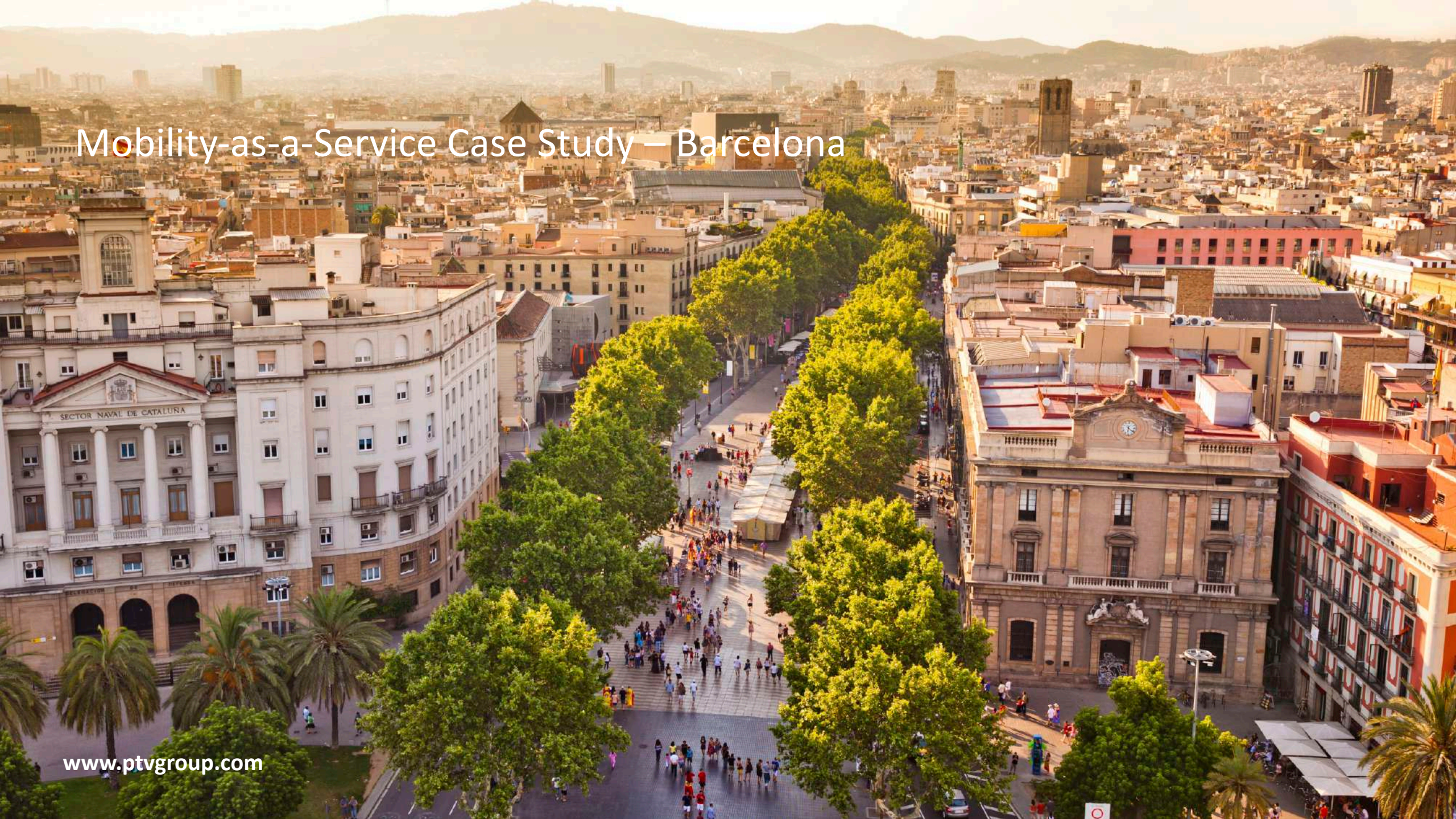
The new on-demand ride sharing service in Berlin.



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CAUTION
BerlKönig

Mobility-as-a-Service Case Study – Barcelona



www.ptvgroup.com

Transportation Model

- **Research Project:**

  PTV Group & CARNET Virtual Mobility Lab Barcelona

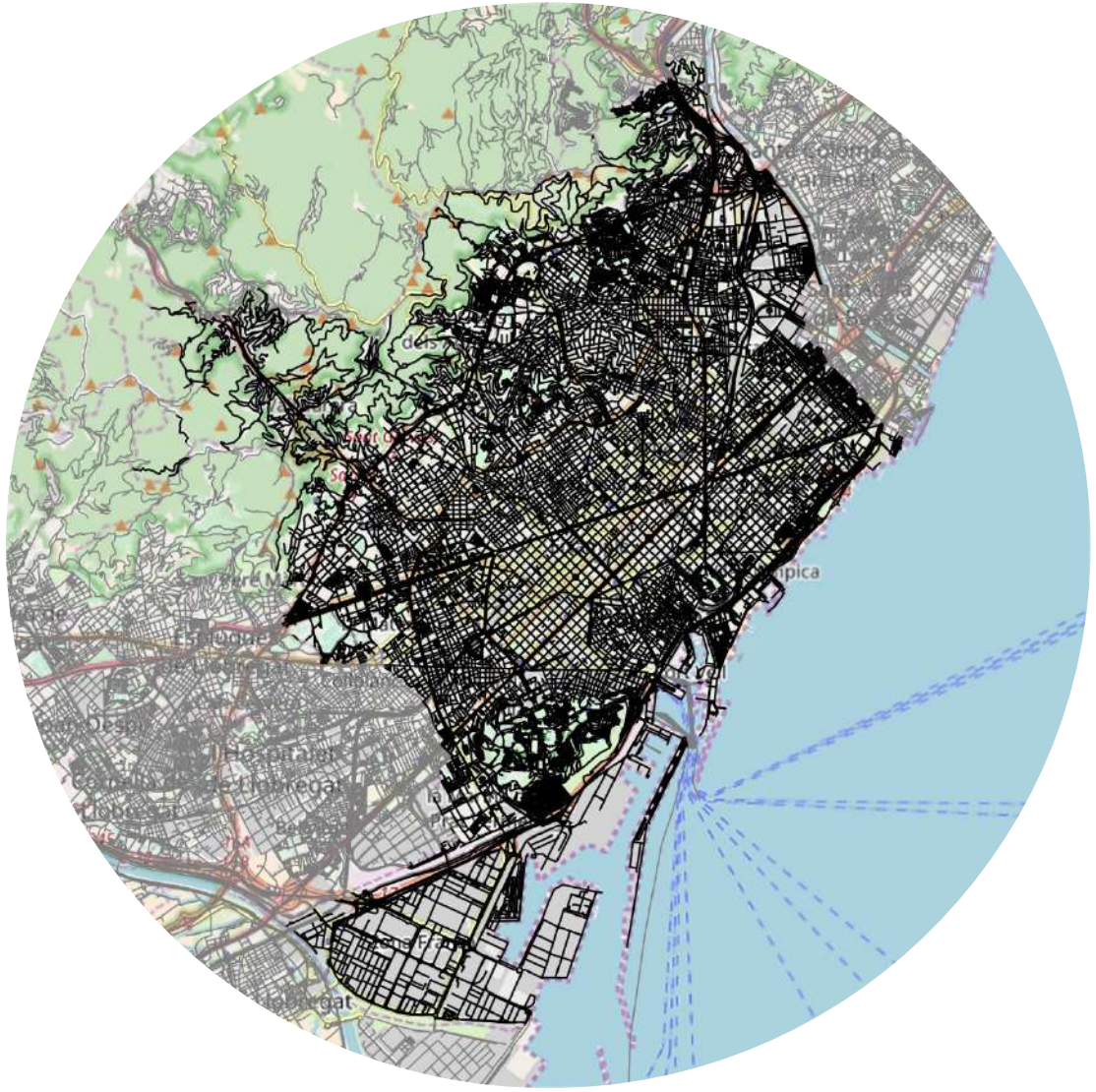
- **Data:**

  KINEO

- **Network:**

  HERE Network

  (provided by PTV Traffic Data)

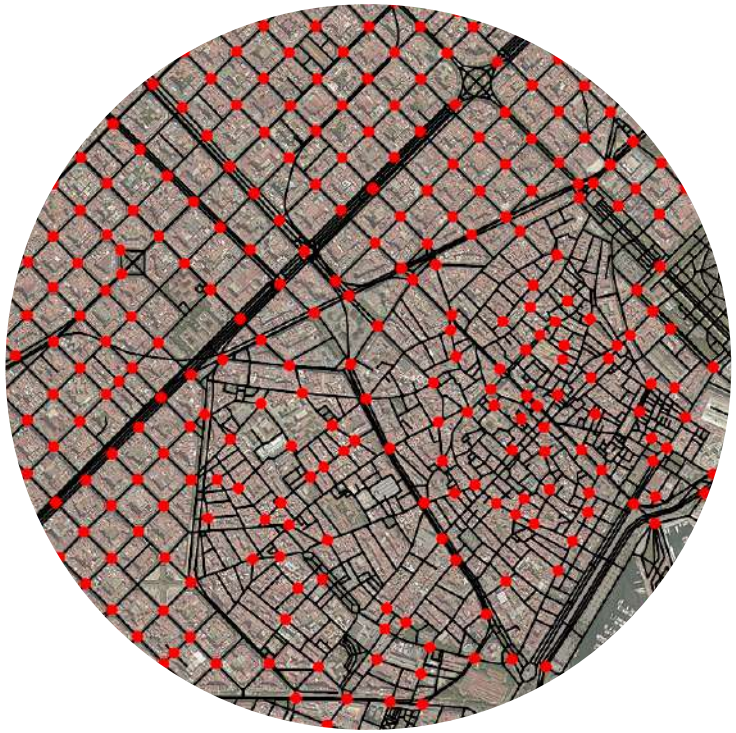


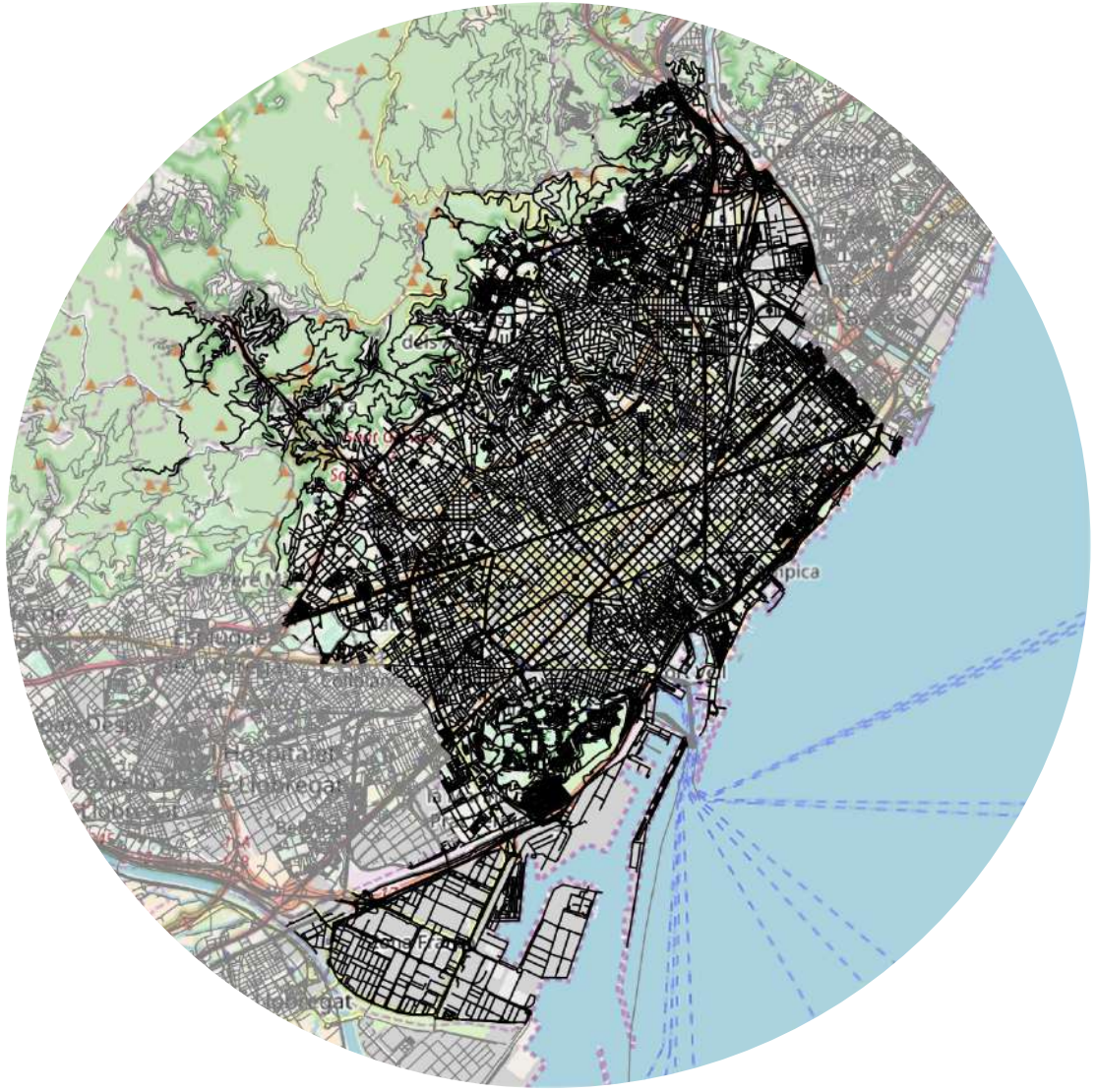
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Modelling Details

- **Pick-Up/Drop-Off Points (PUDOs):**

  2904 PUDOs in Barcelona

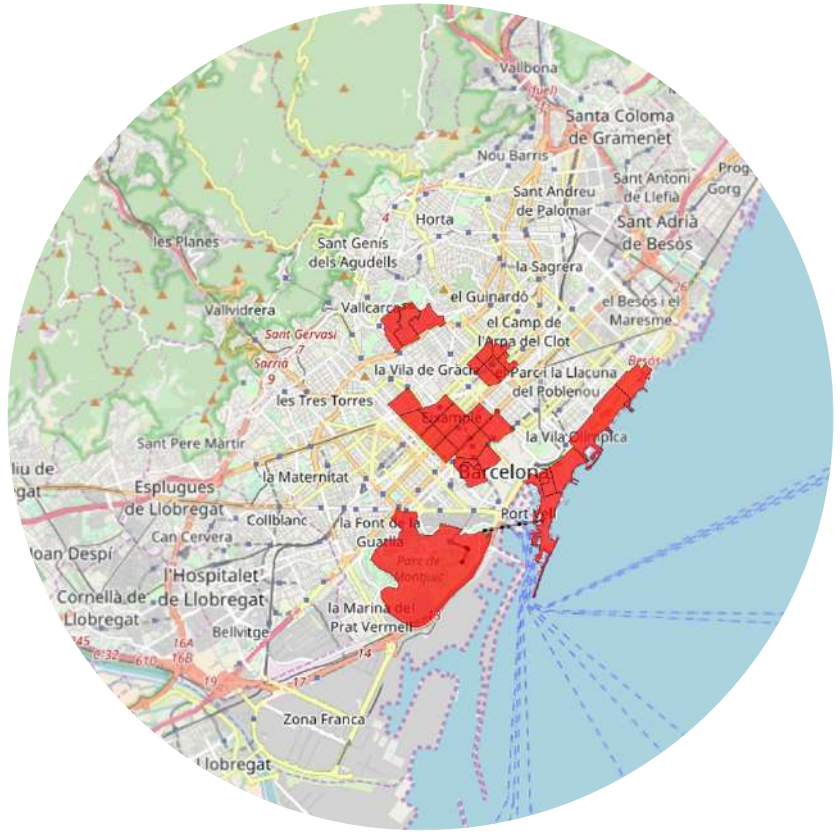


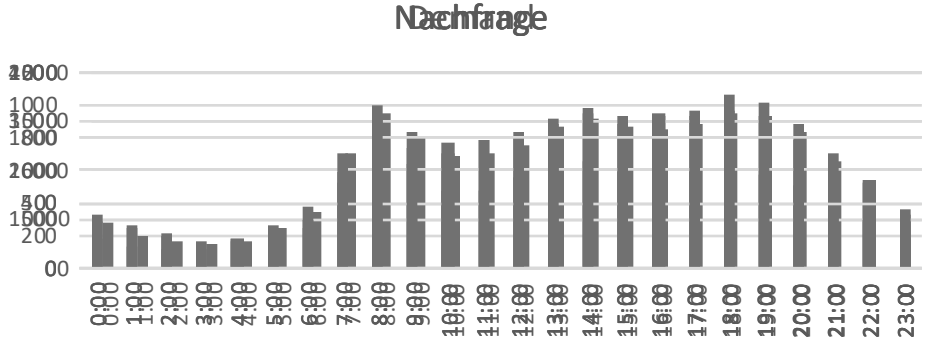


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MaaS Scenarios

1. Scenario **Barcelona**
2. Scenario **Center**
3. Scenario **Sightseeing**
4. Scenario **Bad PT**





~ 15,000 Passengers/Day (25% double requests)

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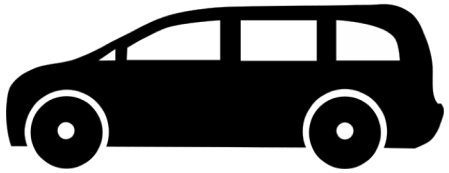
MaaS Specification

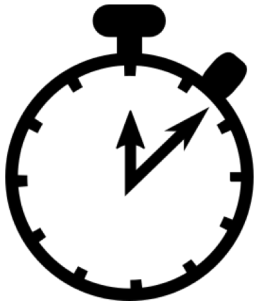
- Uniform vehicle pool:

  7 Seaters (1 Driver + 6 Passengers)

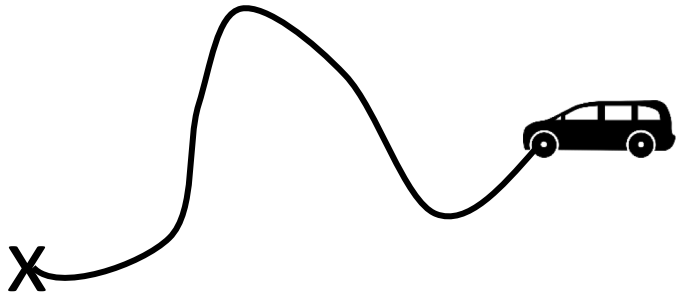
- Pre-booking time 1 min
- Maximum wait time 10 min
- Pickup/Dropoff time 60 s
- Detour specification (incl. wait time):
  - Minimal acceptable detour time: 15 min
  - Detour factor: 1.6









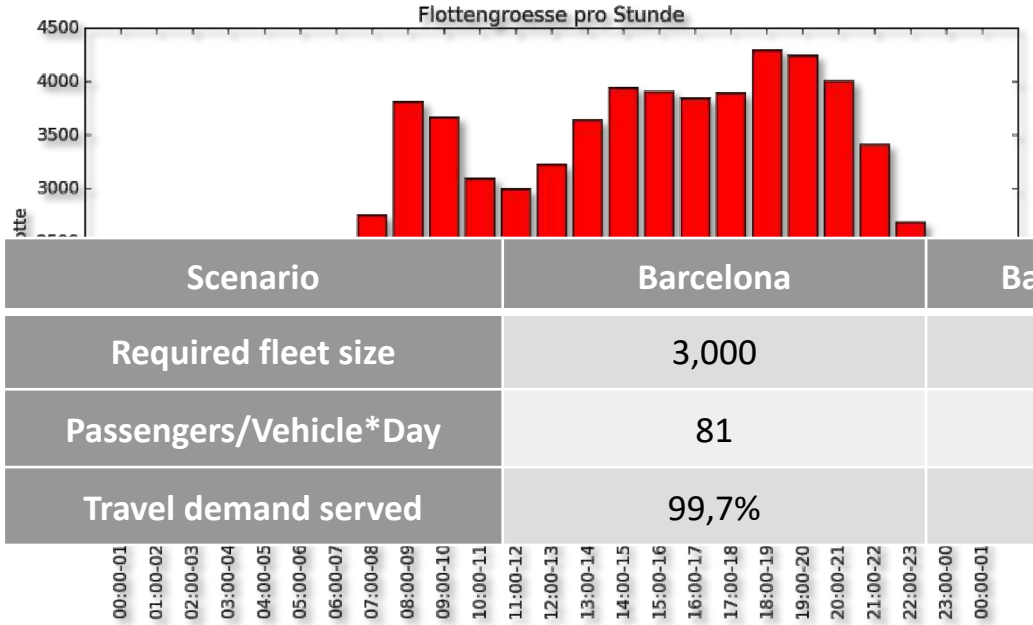


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Vehicle Fleet

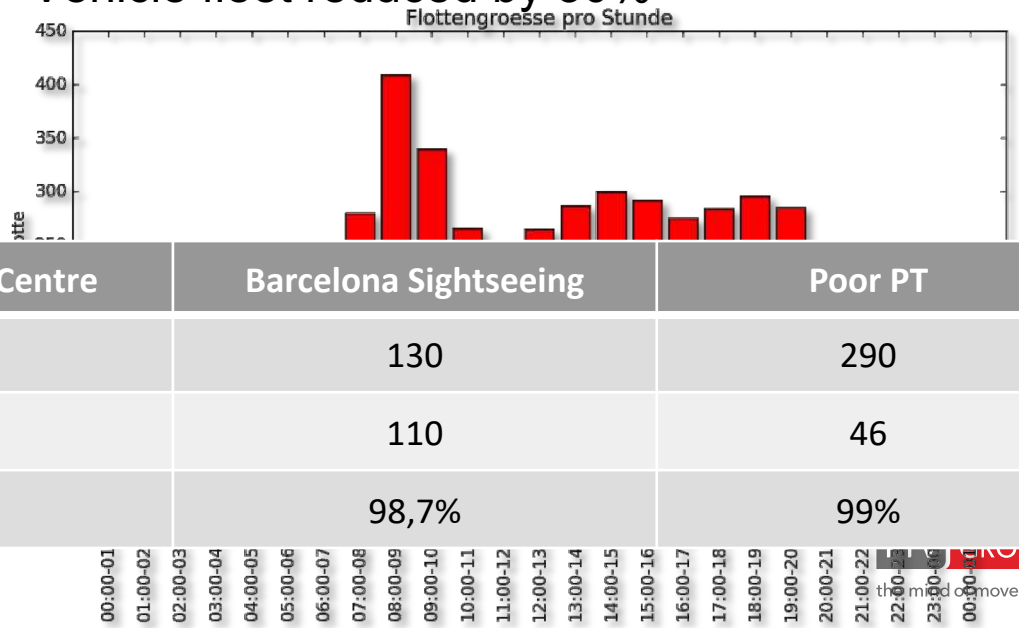
Scenario	Barcelona	Barcelona City Centre	Barcelona Sightseeing	Poor PT
Required fleet size	4,299	720	190	409
Passengers/Vehicle*Day	57	72	79	34
Travel demand served	100%	100%	100%	100%

Barcelona



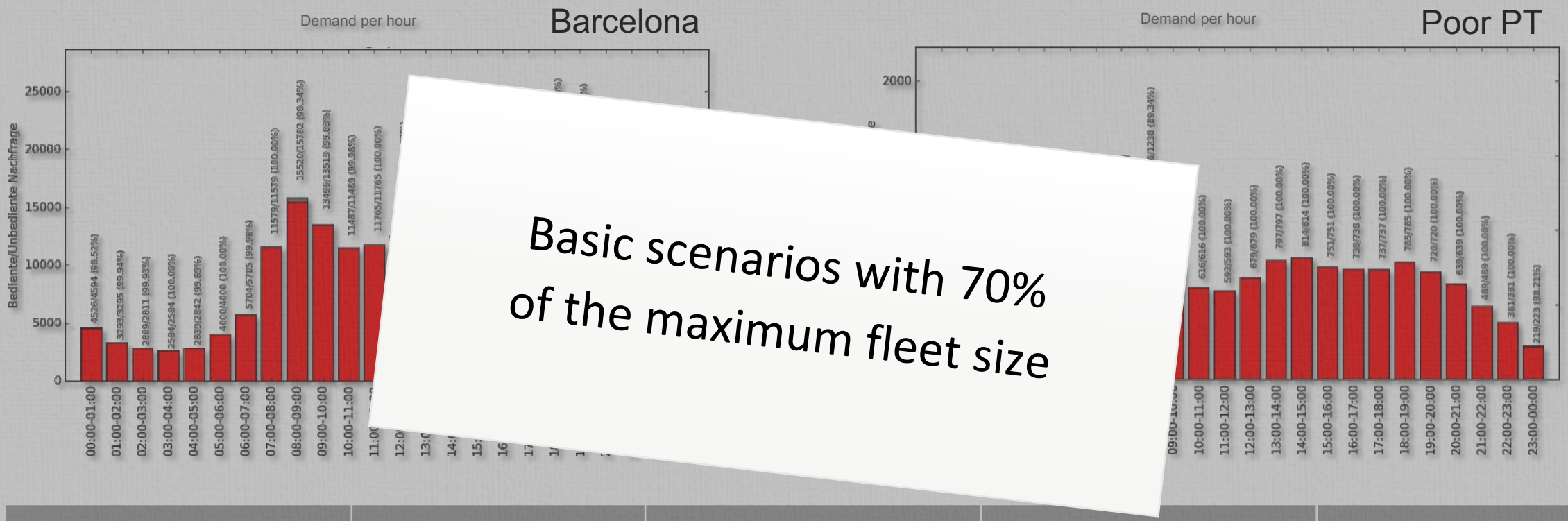
Bad PT

Vehicle fleet reduced by 30%



Scenario	Barcelona	Barcelona City Centre	Barcelona Sightseeing	Poor PT
Required fleet size	3,000	500	130	290
Passengers/Vehicle*Day	81	104	110	46
Travel demand served	99,7%	99,8%	98,7%	99%

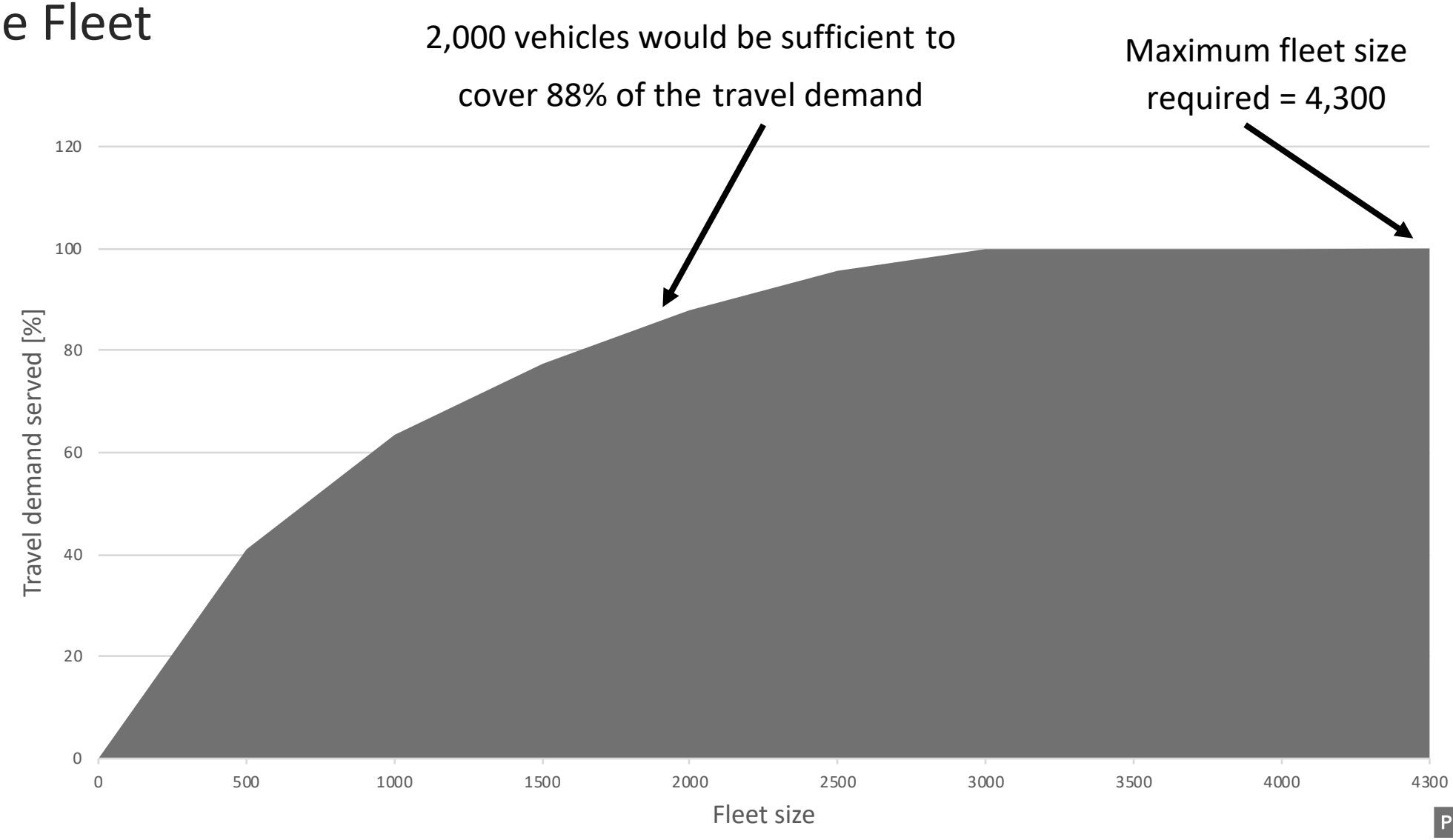
Vehicle Fleet



Basic scenarios with 70% of the maximum fleet size

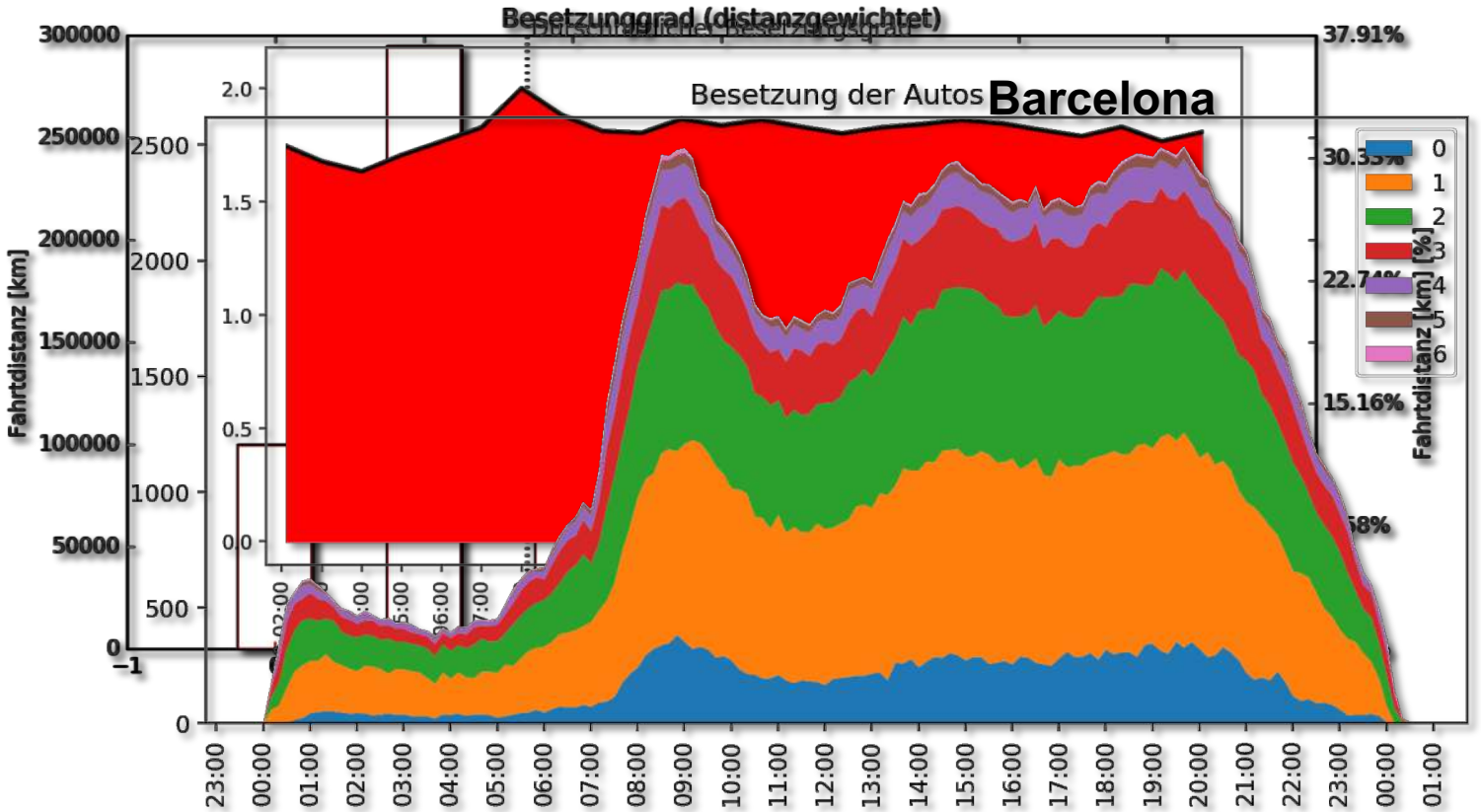
Scenario	Barcelona	Barcelona City Centre	Barcelona Sightseeing	Poor PT
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Passengers/Vehicle*Day	81	104	110	46
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Vehicle Fleet



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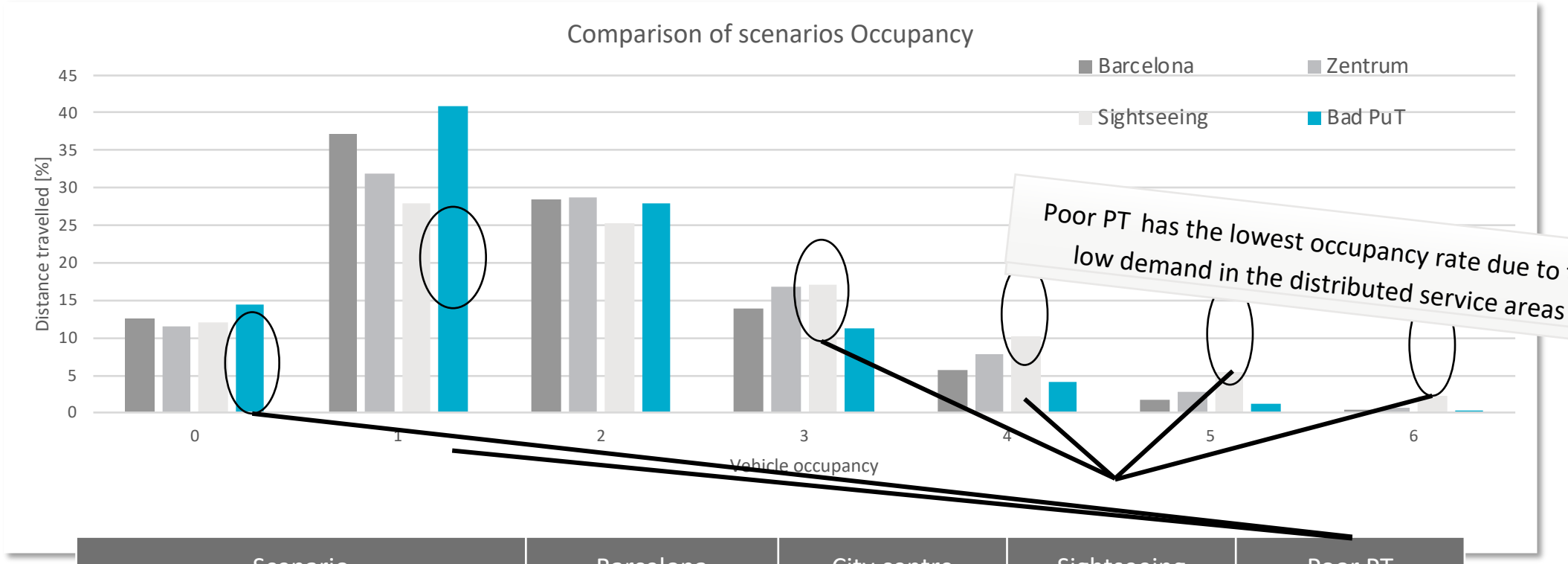
Occupancy Rate



Scenario	Barcelona	City centre	Sightseeing	Poor PT
Ø Occupancy rate	1,69			
Pooling potential	50%			
Trips with more than 4 passengers	2,1%			

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Occupancy rate – scenario comparison



Scenario	Barcelona	City centre	Sightseeing	Poor PT
Ø Occupancy rate	1,69	1,88	2,10	1,53
Pooling potential	50%	57%	60%	45%
Trips with more than 4 passengers	2,1%	3,4%	7,4%	1,2%

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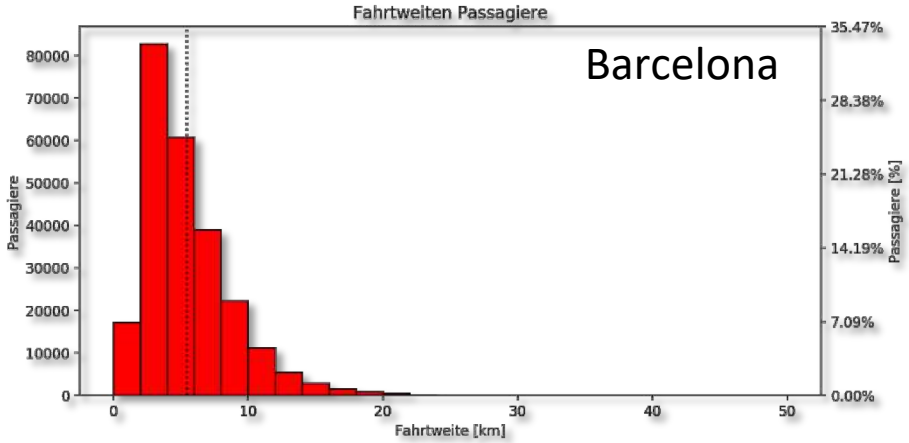
Passenger-based KPI‘s

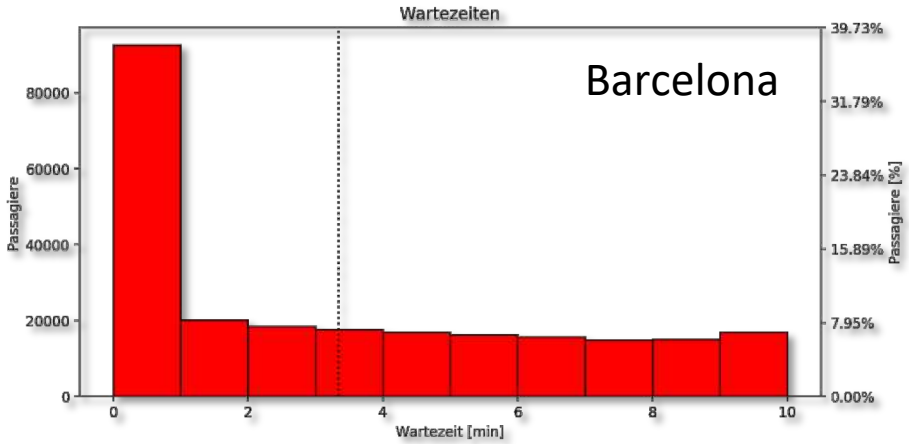
Scenario	Barcelona	City centre	Sightseeing	Poor PT
Passengers served (%)	99,7%	99,8%	98,7%	99,0%
Ø Waiting time [min]	3,3	3,3	3,6	3,2
Ø Walking distance [m]	174,9	154,9	174,9	251,1
Ø Travel time [min]	20,2	16,9	18,8	25,5
Ø Travel distance [mi]	3,4	2,7	3,0	5,5
Ø Detour time [min]	6,5	6,4	6,6	5,9

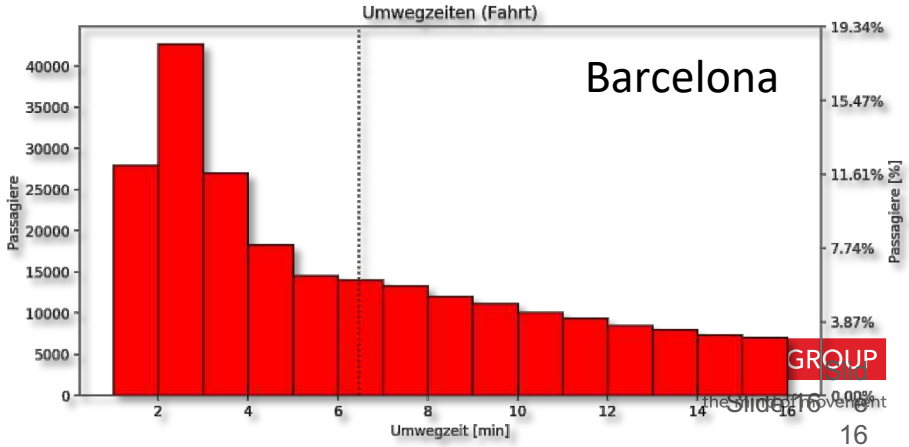
Ø additional travel time compared to the direct route

~ 10 min

Time spent searching for parking !!!



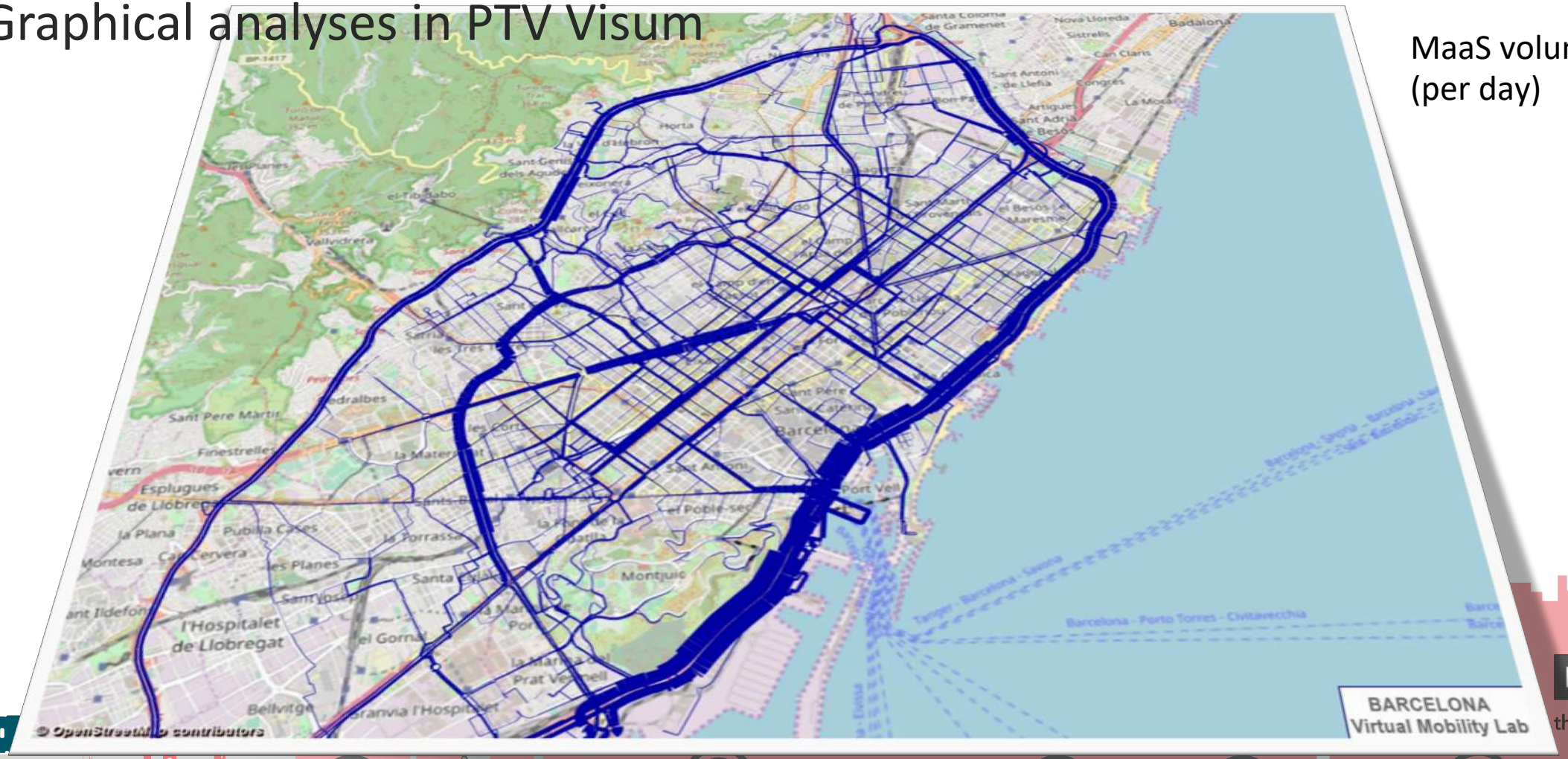




Scenario Barcelona
Scenario poor PT

Graphical analyses in PTV Visum

MaaS volumes
(per day)

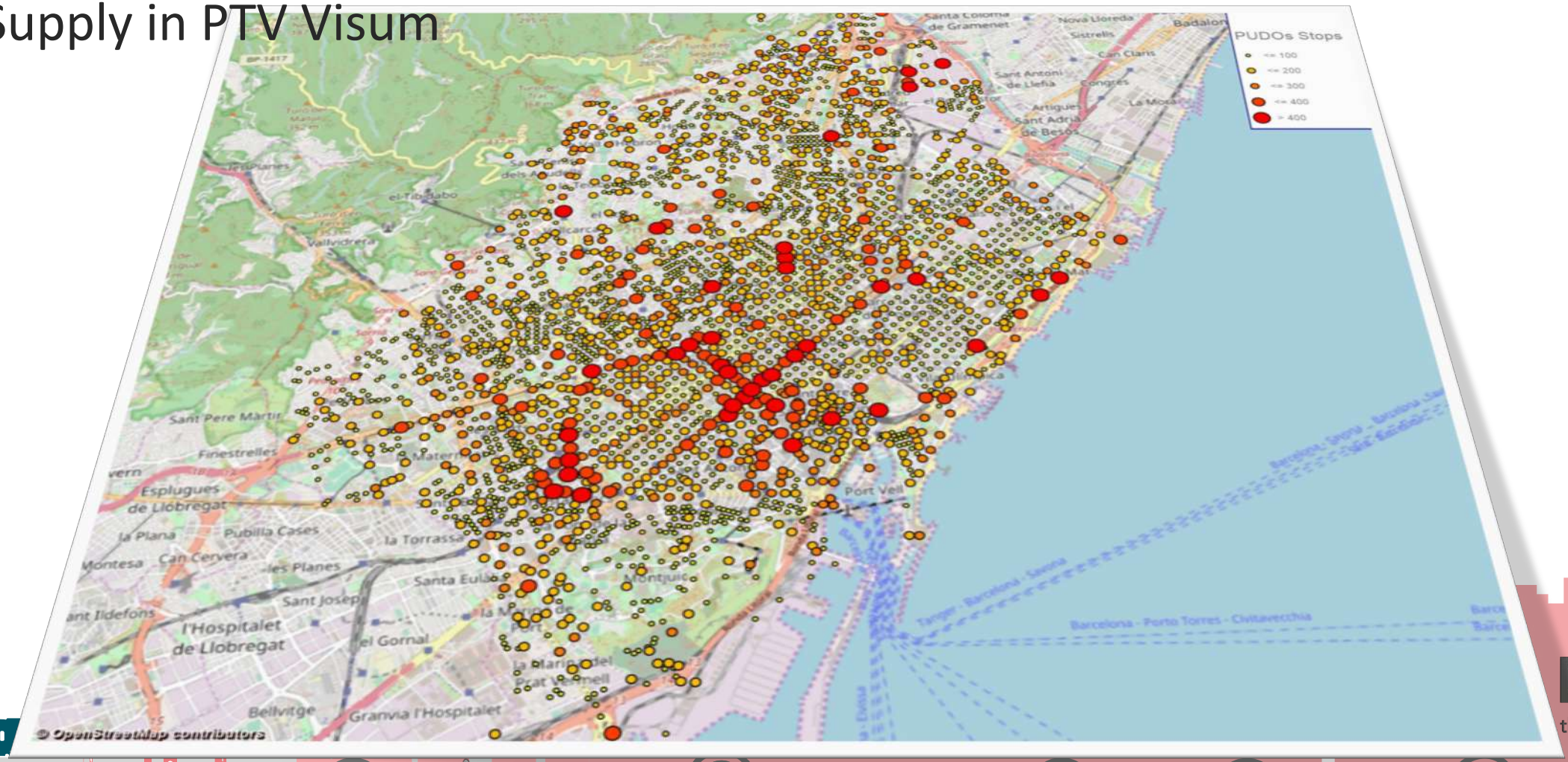


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Scenario Barcelona

PUDO Stops

Supply in PTV Visum



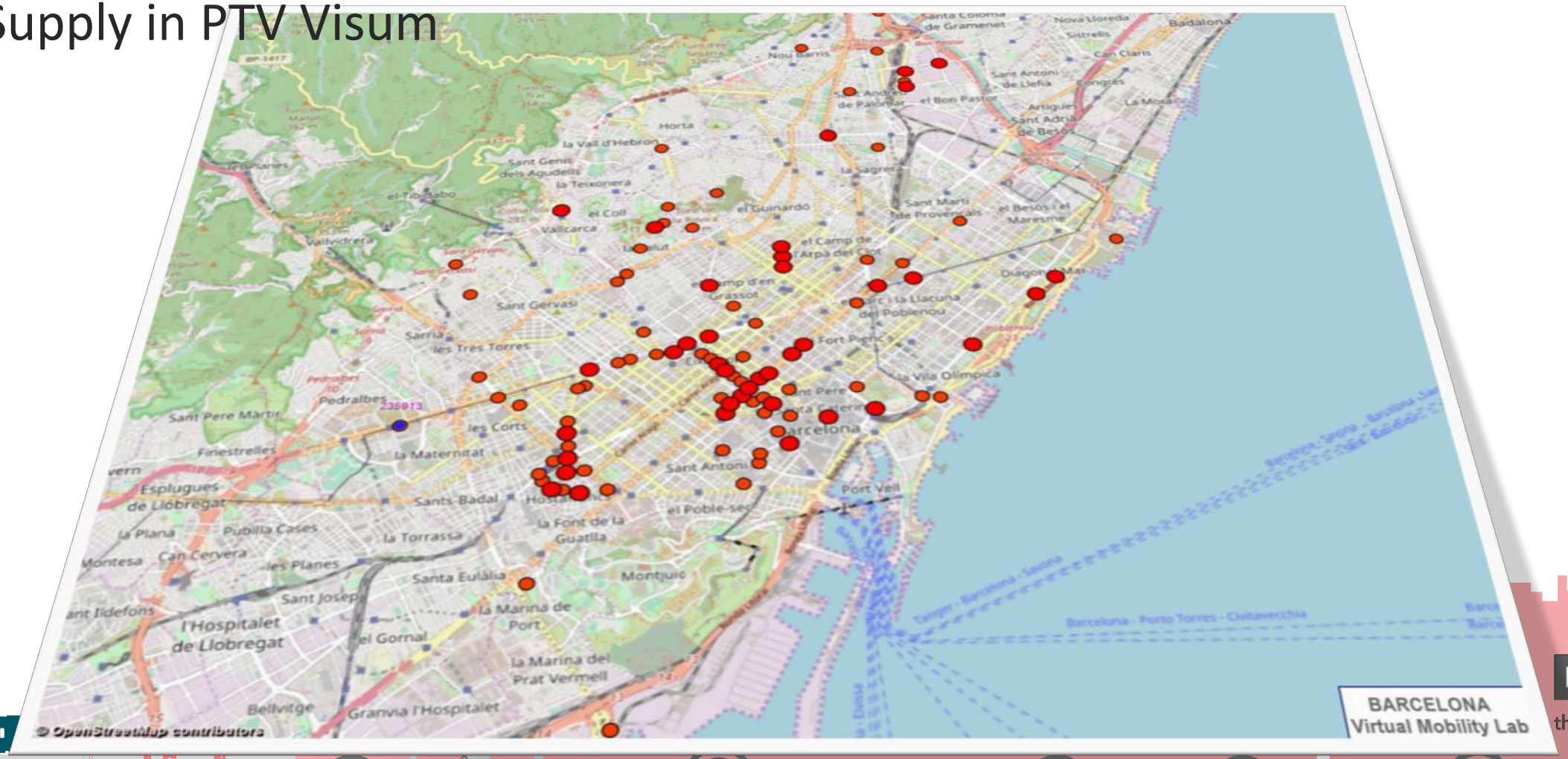
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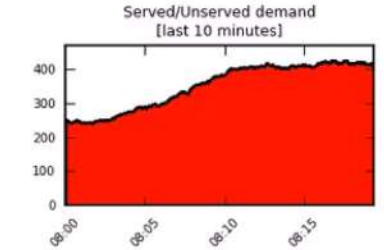
Scenario Barcelona

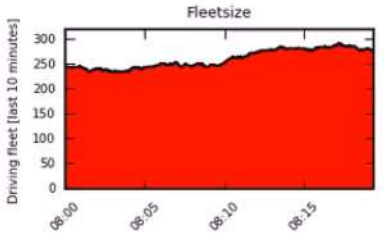
PUDO Stops Top 100

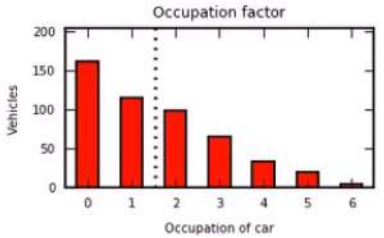
Supply in PTV Visum











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