CIrClE 2019

Challenges for the Islands in the era of the Circular Economy

Larnaca **S**ustainable **U**rban **M**obility **P**lan – Facts & Figures

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Mobilityinchain srl – Consortium Leader

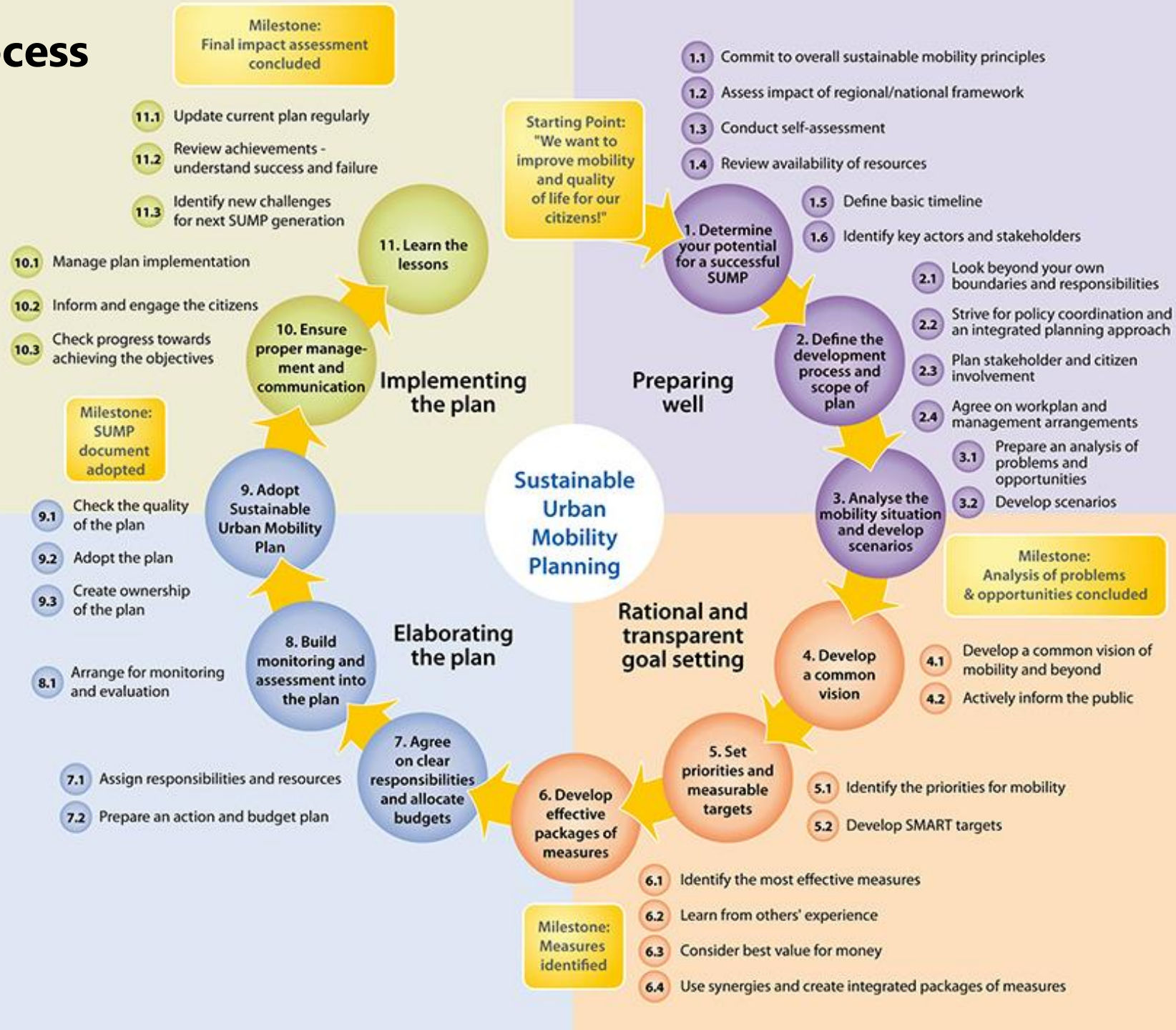
Under the auspices of

ENV MOVE

SMile 2019

6th Sustainable Mobility & Intelligent Transport conference

The SUMP process



The SUMP process

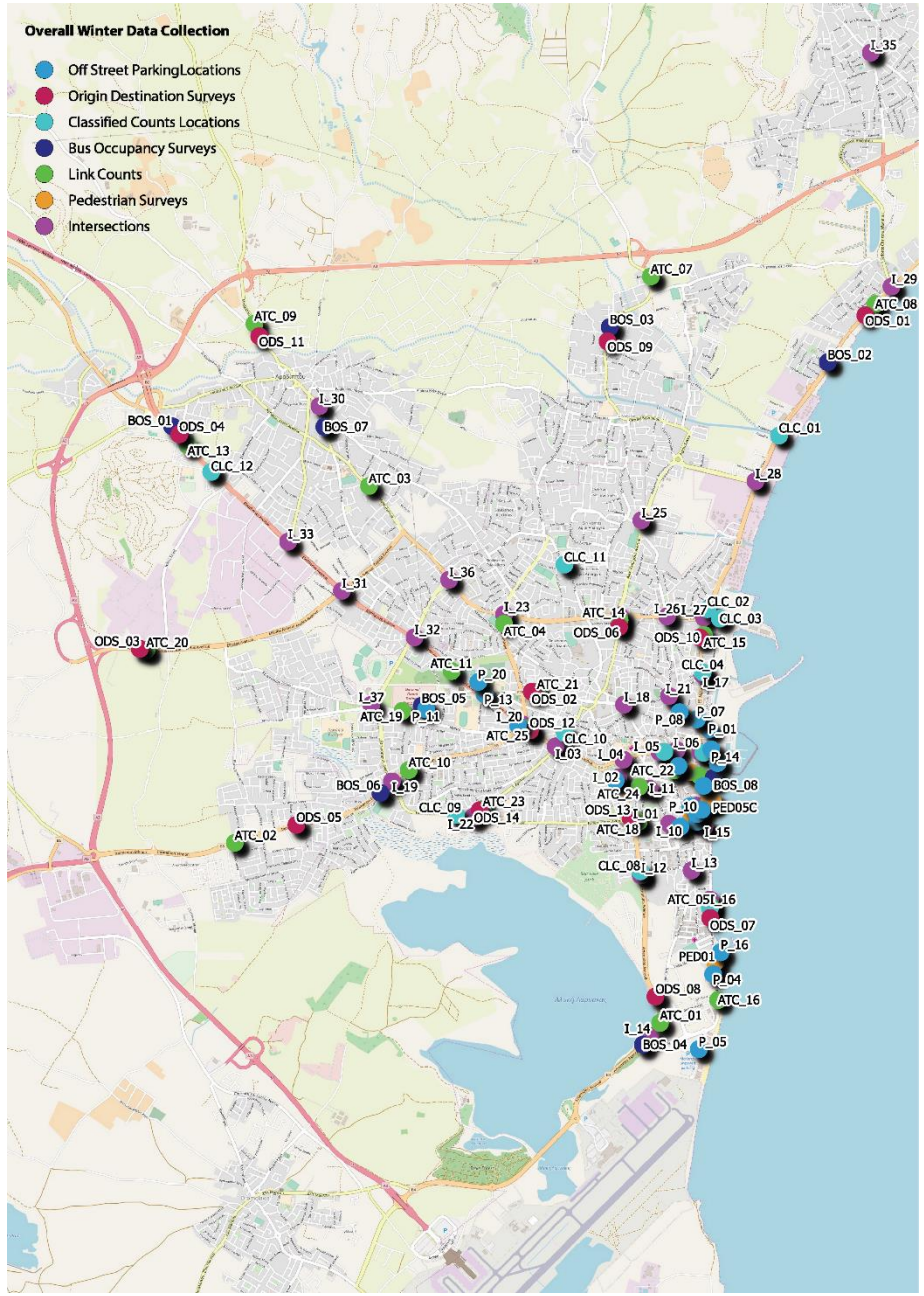
SUMP 4 LARNACA

- ***WP1 –*** Plan stakeholder and citizen involvement
- ***WP2 –*** Review of existing relevant studies and data
- ***WP3 –*** Data gathering and collection

…coming soon

- ***WP4 –*** Development of the transport model
- ***WP5 –*** Analysis of problems and defining Operational Objectives
- ***WP6 –*** Develop a common vision, set priorities and targets → includes a second moment for citizen involvement **(April 17th 2019)**

Primary & Secondary Data Collection



- Pedestrian and Bicycle counts
- Public Realm observational analysis

- Automatic Traffic Counts
- Manual Traffic Counts
- Cordon Surveys
- Household Surveys

- Bus Passenger Counts
- Bus Occupancy Surveys
- Bus Passengers Interviews

37 Junctions surveyed

25 ATC stations organized on

2 Cordons

2 months + **15** days in summer

32 people on the ground

3,500 people intervewed

More than **16,000** parked cars monitored in winter alone

...and much more

Key Numbers

Population & Workforce

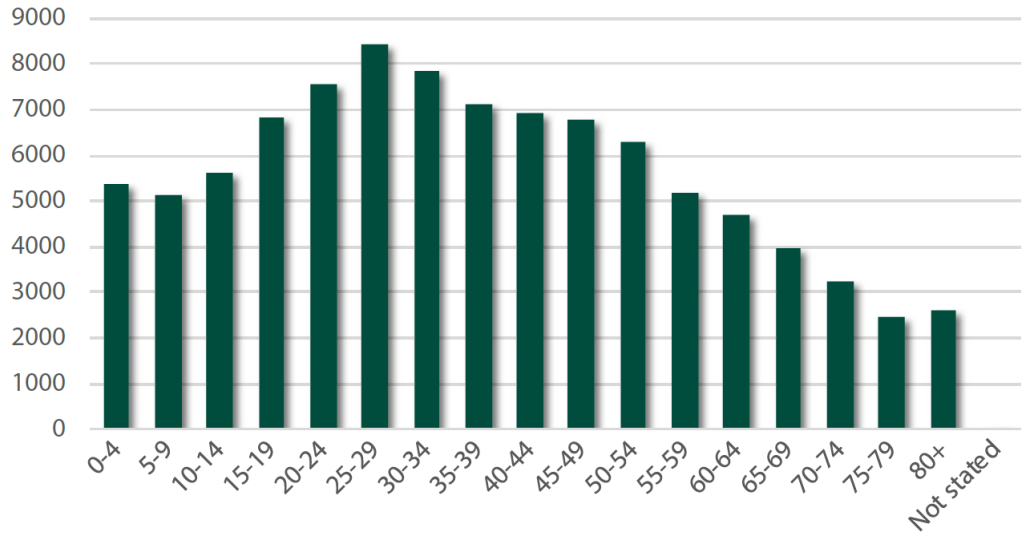
The majority of the population concentrated in Larnaca and the other the urban centres, where the average household size is smaller.

The majority of work places are located in the Larnaca Central Business District, in the other city centres and finally in the industrial areas present in the study area

103,000 People

includes the municipalities of Larnaca, Aradippou, Livadia and Dromolaxia-Meneou, and the Communities of Kiti, Pervolia, Pyla, Oroklini, Chorio and Kalo.

Age Pyramid

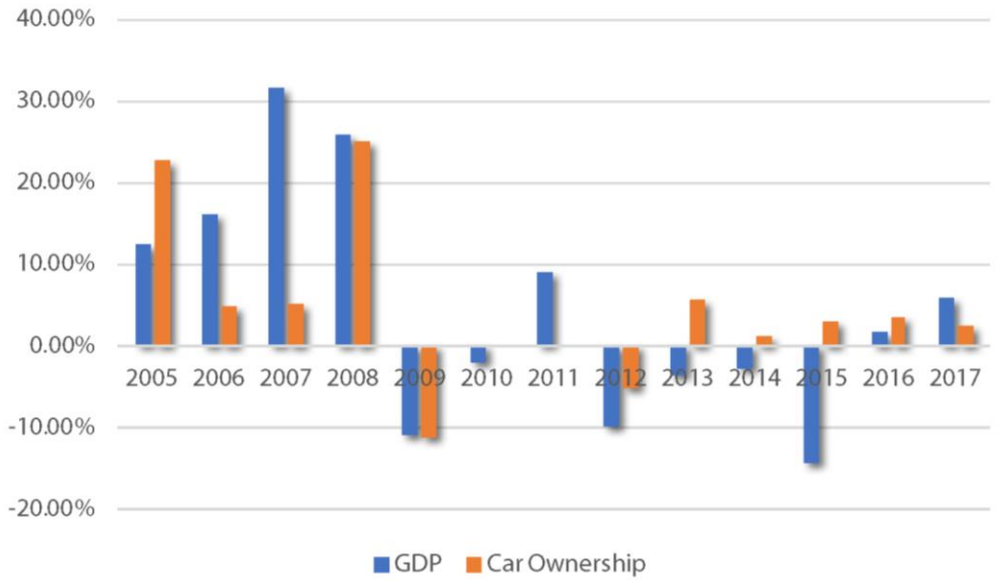


Key Numbers

Car Ownership

Our analysis indicates that all households sampled own at least one car;
76% of the households owns two or more vehicles, and 32% at least three. If this data is associated to the average household size, we can see that almost all adults have access to a private car.

63,000 veh



Car Ownership (2017)

613 vehicles / ***1000 inh.***

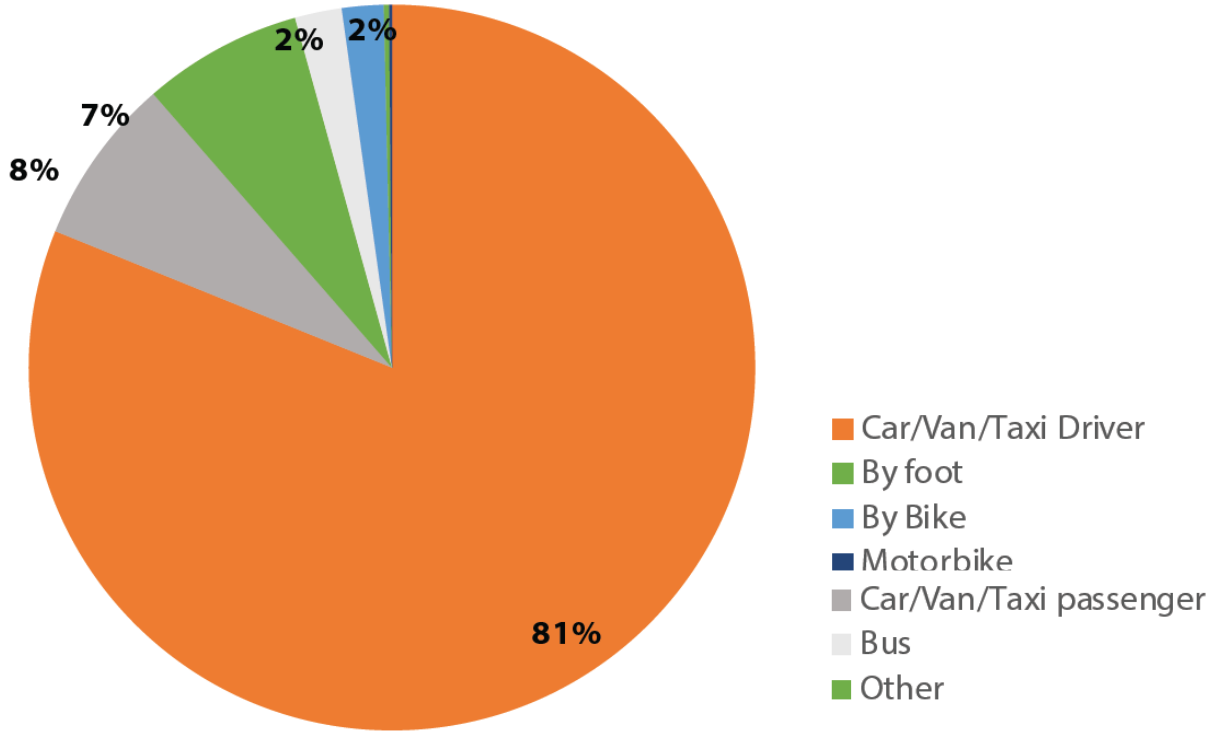
Key Numbers

Bike Ownership

In contrast, bicycle ownership is low. Almost two-thirds of the households surveyed **does not own a bicycle**.

Mode Share

Information collected through our questionnaire indicates that 91% of the trips occurs by car while 2% by public transport and another 2% by bicycle.



Vehicle occupancy

Many vehicles stopped had **only one person on board**.

Purpose of journey

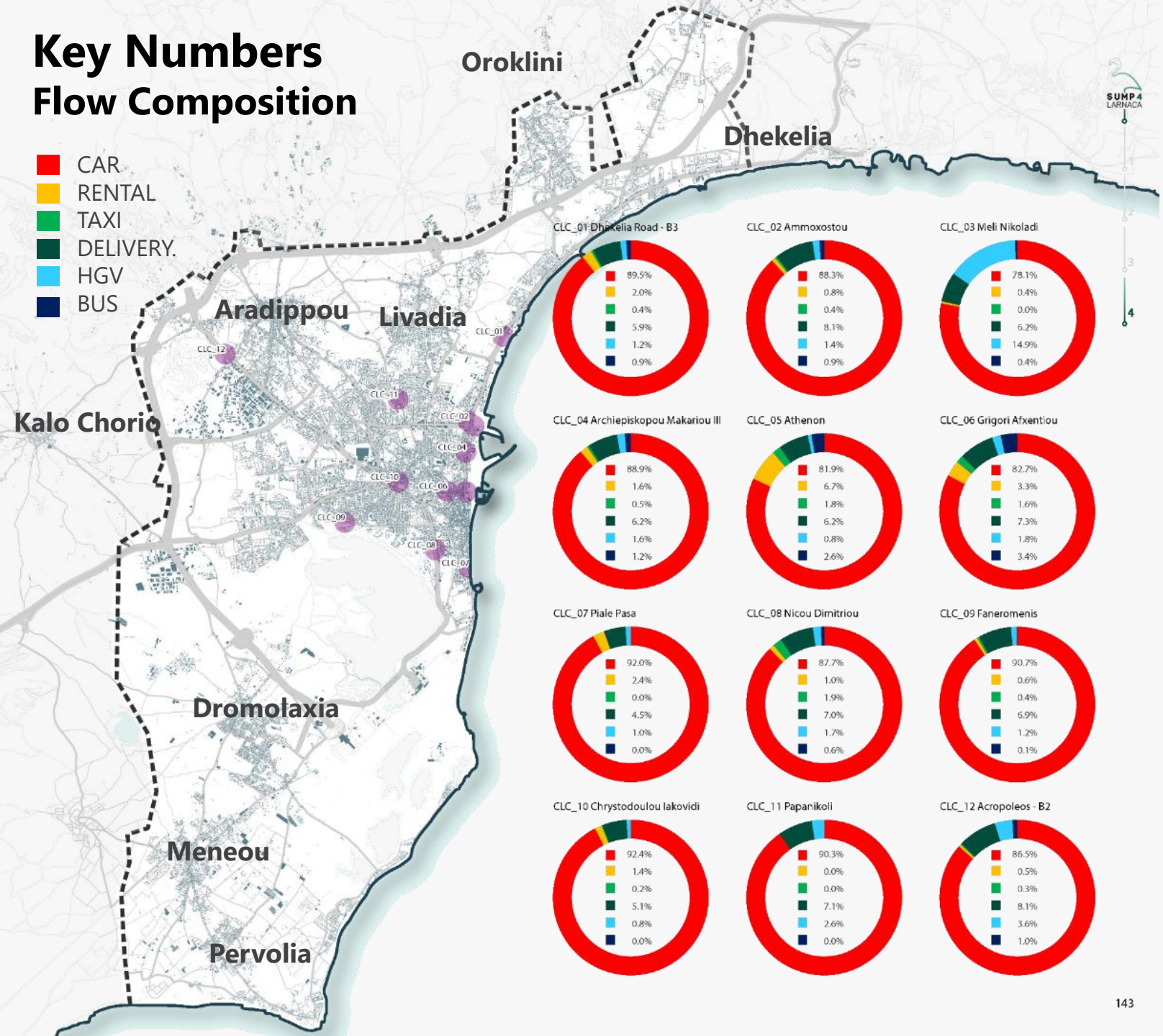
76% of motorists declared they were commuting to or from work,

24% declared the reason for the trip was tourism-related, or that they were not undertaking an ordinary trip.

Key Numbers

Flow Composition

- CAR
- RENTAL
- TAXI
- DELIVERY.
- HGV
- BUS

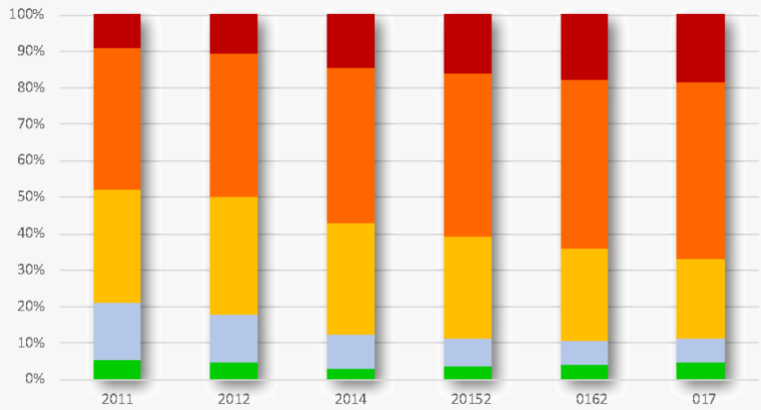


Fleet Age

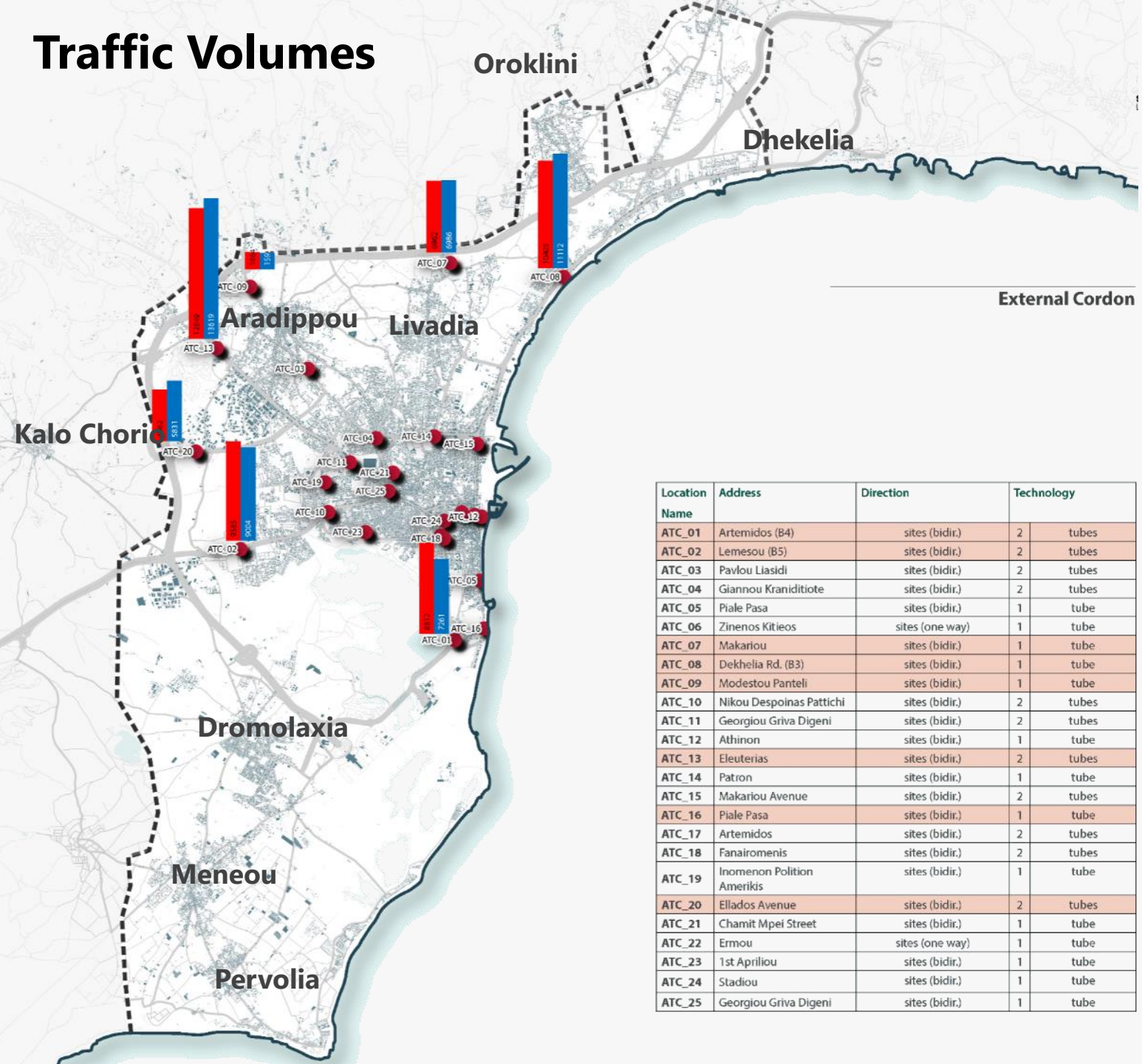
Between 2011 and 2017 the age of vehicles increased significantly and adding 50% to the share of vehicles that were registered between 10 and 20 years ago.

→ IT'S THE RIGHT TIME FOR A CHANGE

- Younger than 2 years
- 2 yr. < age < 5 yr.
- 5 yr. < age < 10 yr.
- 10 yr. < age < 20 yr.
- Older than 20 yr.



Traffic Volumes



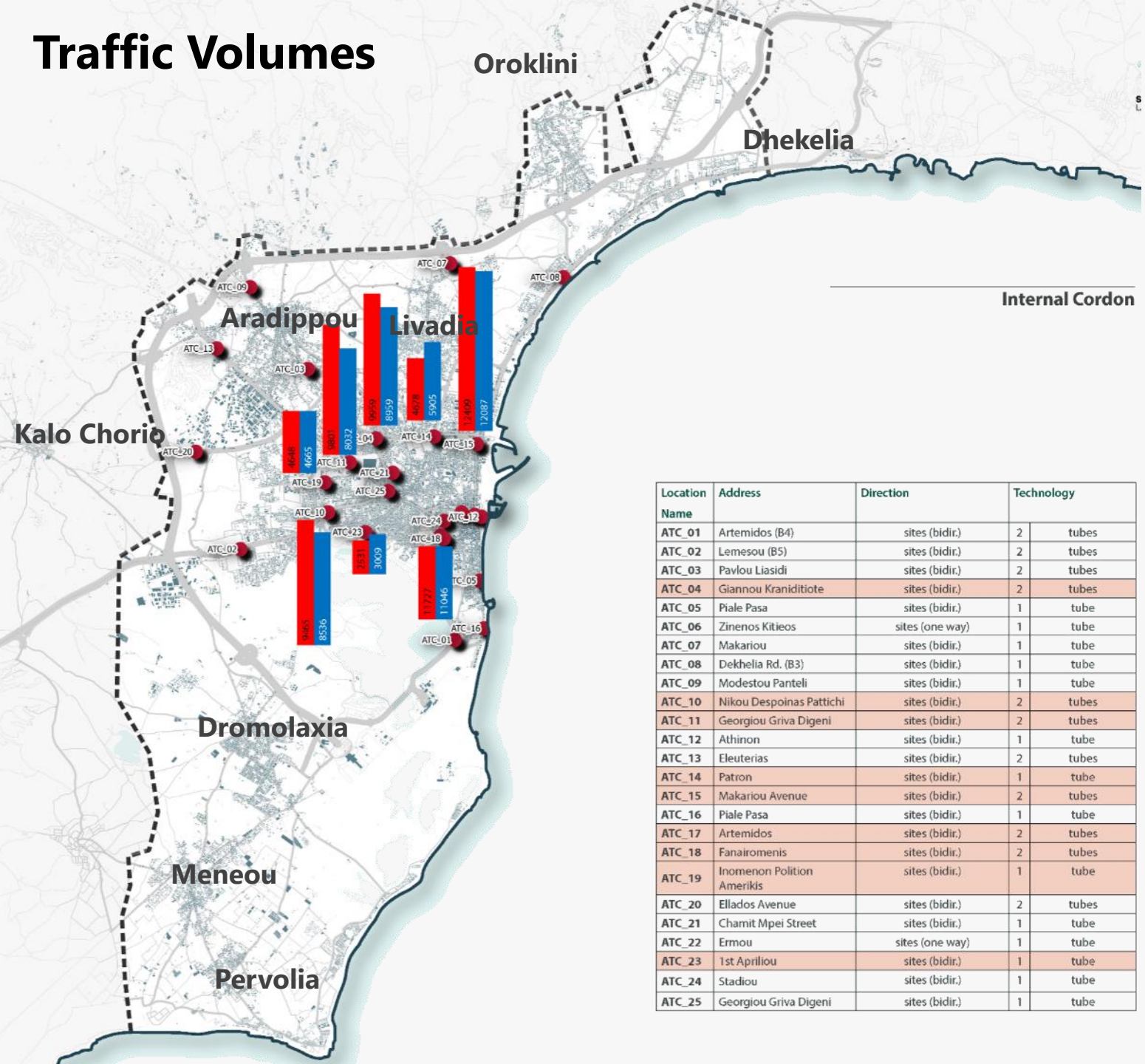
Location Name	Address	Direction	Technology	
ATC_01	Artemidos (B4)	sites (bidir.)	2	tubes
ATC_02	Lemesou (B5)	sites (bidir.)	2	tubes
ATC_03	Pavlou Liasidi	sites (bidir.)	2	tubes
ATC_04	Giannou Kraniditiote	sites (bidir.)	2	tubes
ATC_05	Piale Pasa	sites (bidir.)	1	tube
ATC_06	Zinenos Kitieos	sites (one way)	1	tube
ATC_07	Makariou	sites (bidir.)	1	tube
ATC_08	Dekhelia Rd. (B3)	sites (bidir.)	1	tube
ATC_09	Modestou Panteli	sites (bidir.)	1	tube
ATC_10	Nikou Despoinas Pattichi	sites (bidir.)	2	tubes
ATC_11	Georgiou Griva Digeni	sites (bidir.)	2	tubes
ATC_12	Athinon	sites (bidir.)	1	tube
ATC_13	Eleuterias	sites (bidir.)	2	tubes
ATC_14	Patron	sites (bidir.)	1	tube
ATC_15	Makariou Avenue	sites (bidir.)	2	tubes
ATC_16	Piale Pasa	sites (bidir.)	1	tube
ATC_17	Artemidos	sites (bidir.)	2	tubes
ATC_18	Fanairomenis	sites (bidir.)	2	tubes
ATC_19	Inomenon Polition Amerikis	sites (bidir.)	1	tube
ATC_20	Ellados Avenue	sites (bidir.)	2	tubes
ATC_21	Chamit Mpei Street	sites (bidir.)	1	tube
ATC_22	Ermou	sites (one way)	1	tube
ATC_23	1st Apriliou	sites (bidir.)	1	tube
ATC_24	Stadiou	sites (bidir.)	1	tube
ATC_25	Georgiou Griva Digeni	sites (bidir.)	1	tube

The ADT (Average Daily Traffic) observed at the **External Cordon** is in the range of **116,000 veh/day** on **Weekdays** and of **97,000 veh/day** on **Weekend days**

Data suggest that:

- The peak hour of the morning is between **07:15 and 08:15**;
- The peak hour of the afternoon/evening is between**17:15 and 18:15**;
- The peak hour weighs approximately **7.2 % of the daily total.**

Traffic Volumes



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ATC_25	Georgiou Griva Digeni	sites (bidir.)	1	tube

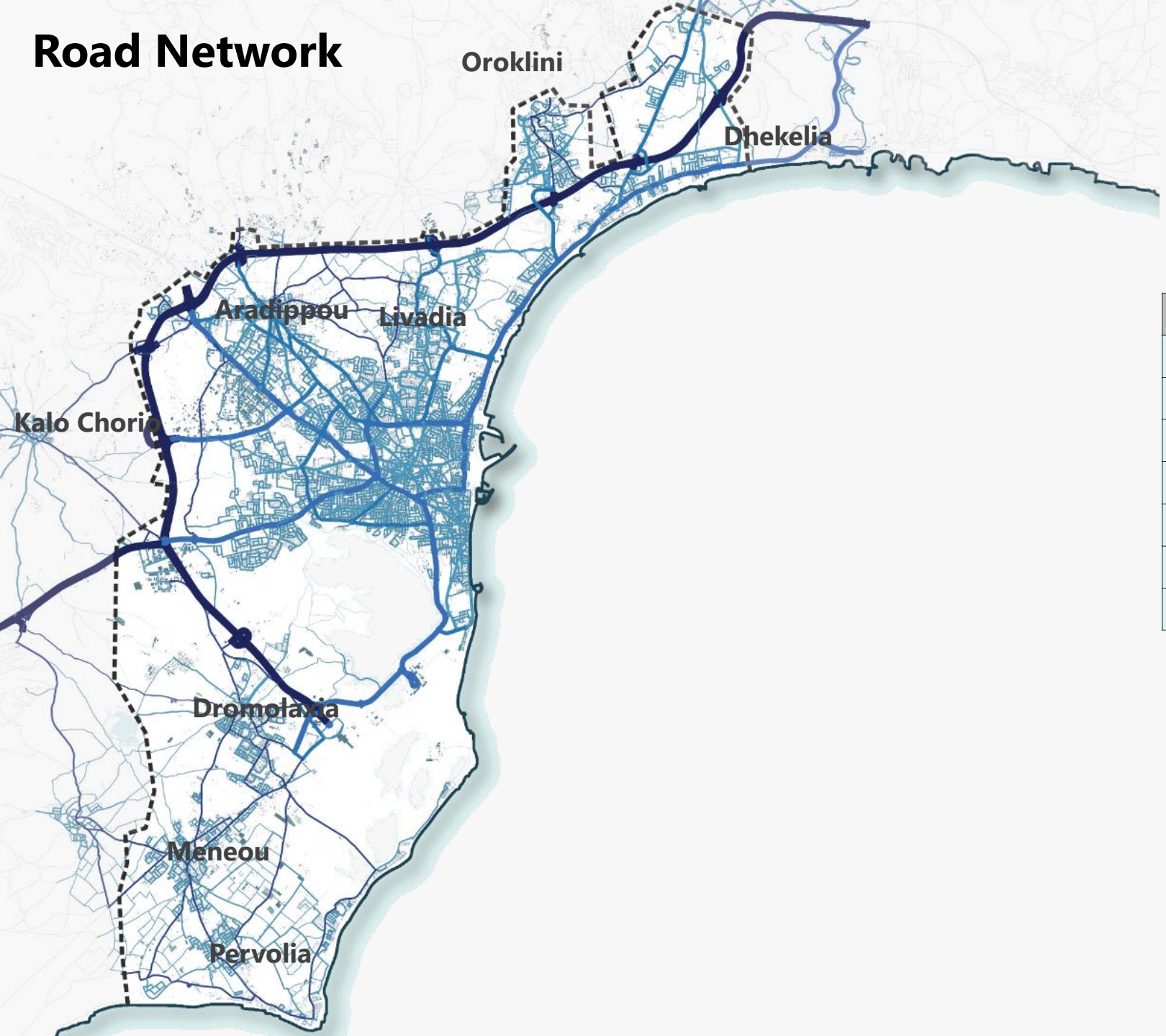
The ADT (Average Daily Traffic) observed at the **Internal Cordon** is in the range of **140,000 veh/day** for the **Weekdays** and **110,000 veh/day** for the **weekend days**.

Flow across the Internal Cordon are constantly higher than the external cordon.

Such difference is therefore generated by the areas in-between the two cordons.

Such spread is in the range of 20% on weekdays

Road Network



Composed of a mix urban and extra-urban roads framed by a ring road

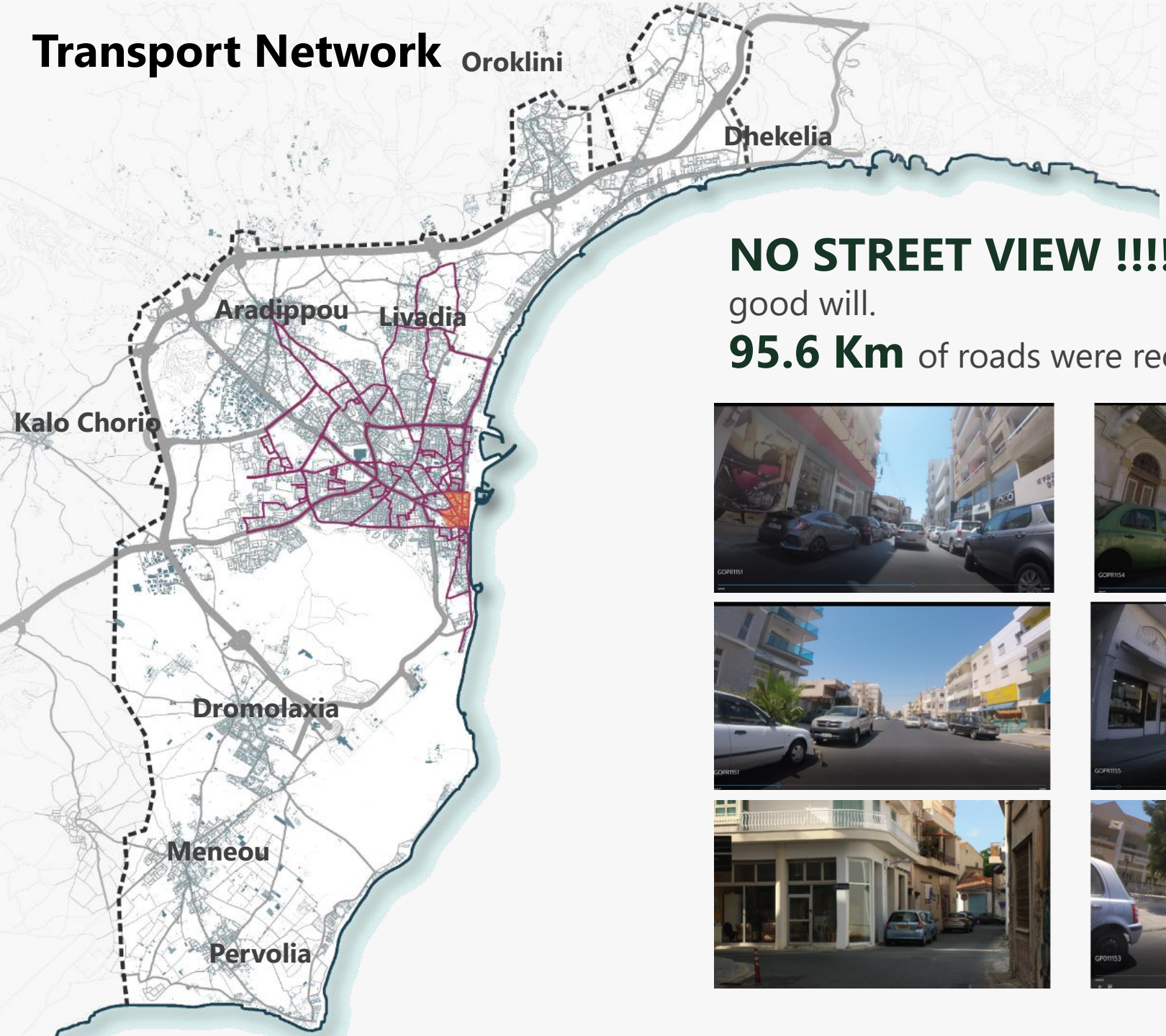
Overall extent of the network is **1,043 Km**.

Class	Length [Km]	%
Motorway	83.3	8%
Arterial	73.2	7%
Minor Arterial	48.7	5%
Major Collector	163.7	16%
Minor Collector	526.3	50%
Local	148.7	14%
Grand Total	**1043.9**	**100%**

Road network of the CBD accounts for approximately 20 km and it includes a wide variety of street sections ranging from a single lane to four lanes.

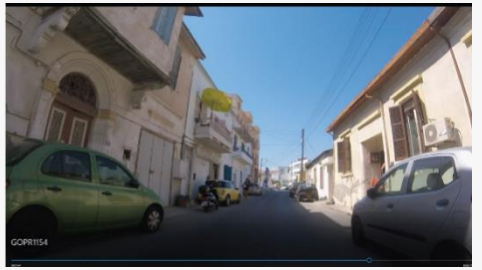
Most streets of the local network work with a **one-way system, due to narrow carriageways.**

Transport Network

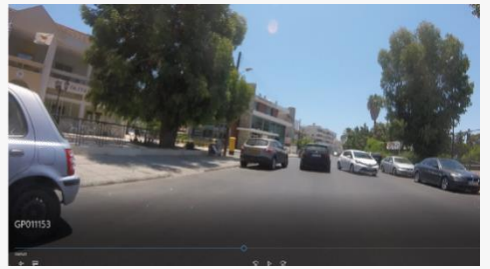


NO STREET VIEW !!!! → we made our own with cameras and good will.

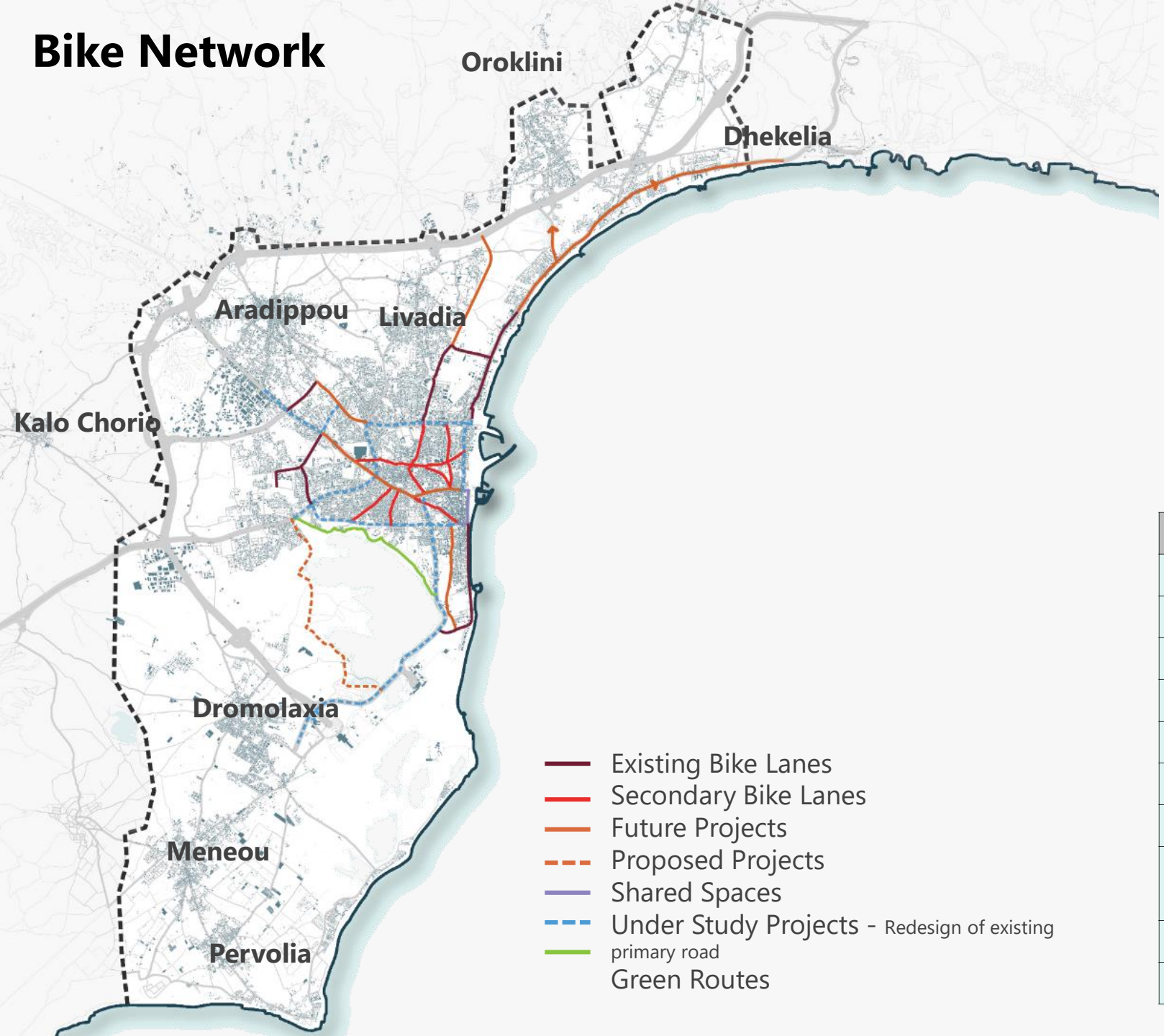
95.6 Km of roads were recorded on camera and data stored








Bike Network



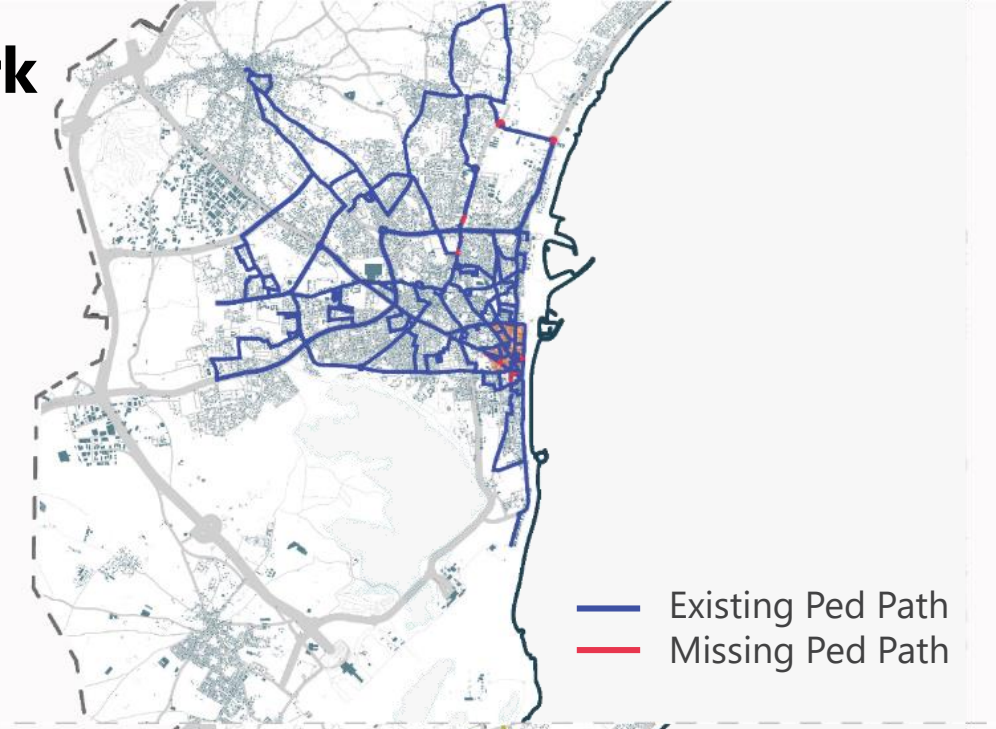
The city has a plan for the expansion of the cycling network that is aimed at **integrating the stretches currently in operation** (Piale Pasa, Dhekelia Rd, Giorgou Christodoulidi Rd, Spyrou Kyprianou, the Green Route and the various shared lanes) **with in a wider network**.

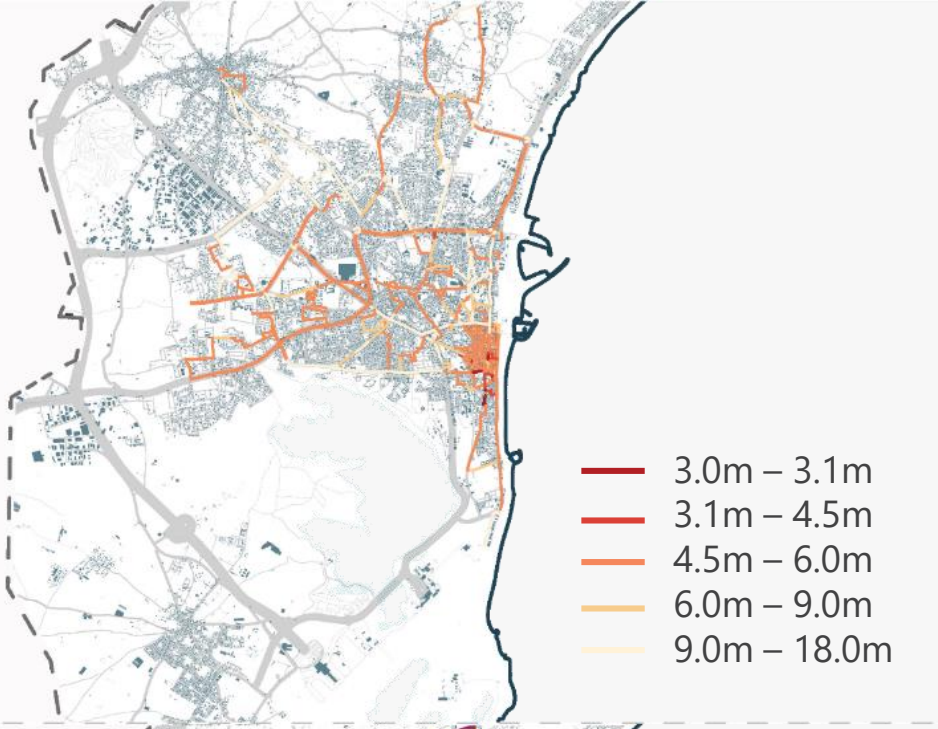
Description	Status	Length
Existing bike lane	existing	11.3
Green route	existing	3.9
Secondary bike lanes	existing	9.2
Share space	existing	1.1
Subtotal Existing		**25.4**
Future projects	future	18.0
Proposed projects	future	5.1
Under study projects - Redesign of existing primary roads	future	19.6
Subtotal Planned Projects		**42.8**
Grand Total		**68.2**

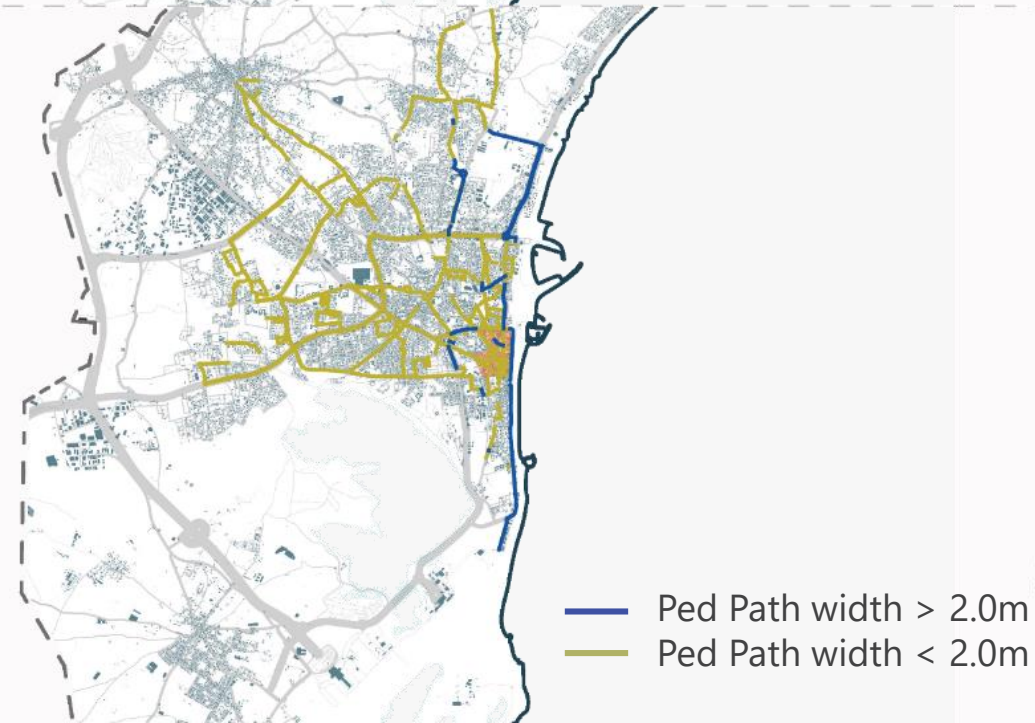
Transport Network

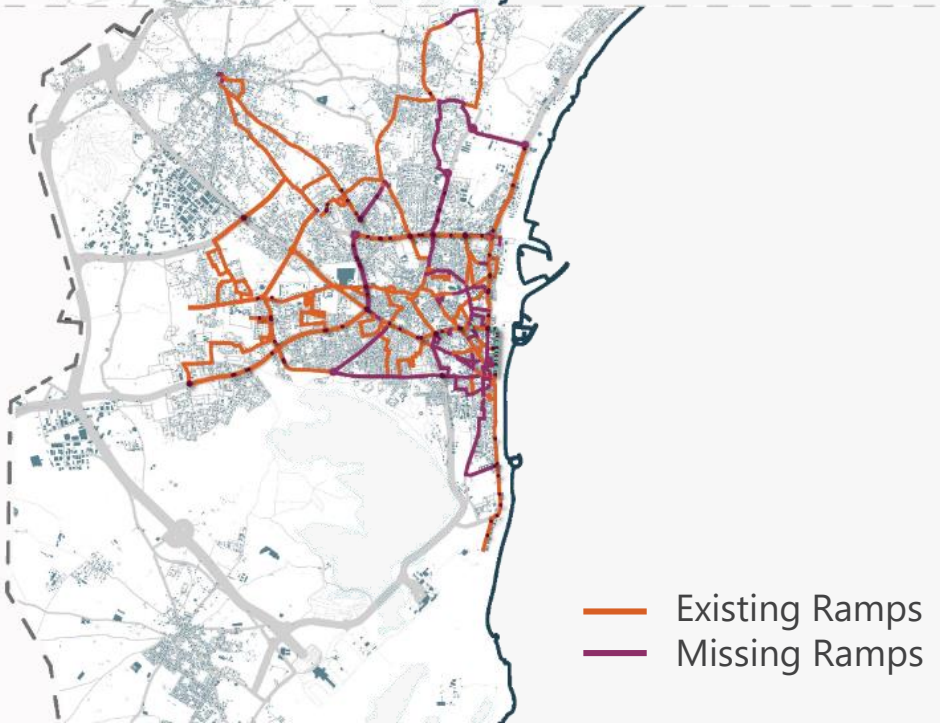
- Gap Analysis of pedestrian paths
- Continuity of pedestrian paths and presence of barriers
- Width of paths
- Width of roads

....and other contextual information









Pedestrian and Active Mobility First

https://edgarseis.com/derechos-del-peaton

Pedestrian and Active Mobility Behavioral Survey

The Vorokini - Oroklini community is spread in different directions following a sprawling model promoting private car mobility. The area selected is part of a public regeneration plan in the old nucleus. The regeneration introduced tiles as paving material encouraging a pedestrian friendly mobility with sufficient lighting and street signs, however the programming of the space did not account for public spaces such as seating's and treelines. On the contrary a public parking space was created in a short distance (40m) from the central crossroad in the area but illegal parking continues to be a problem.

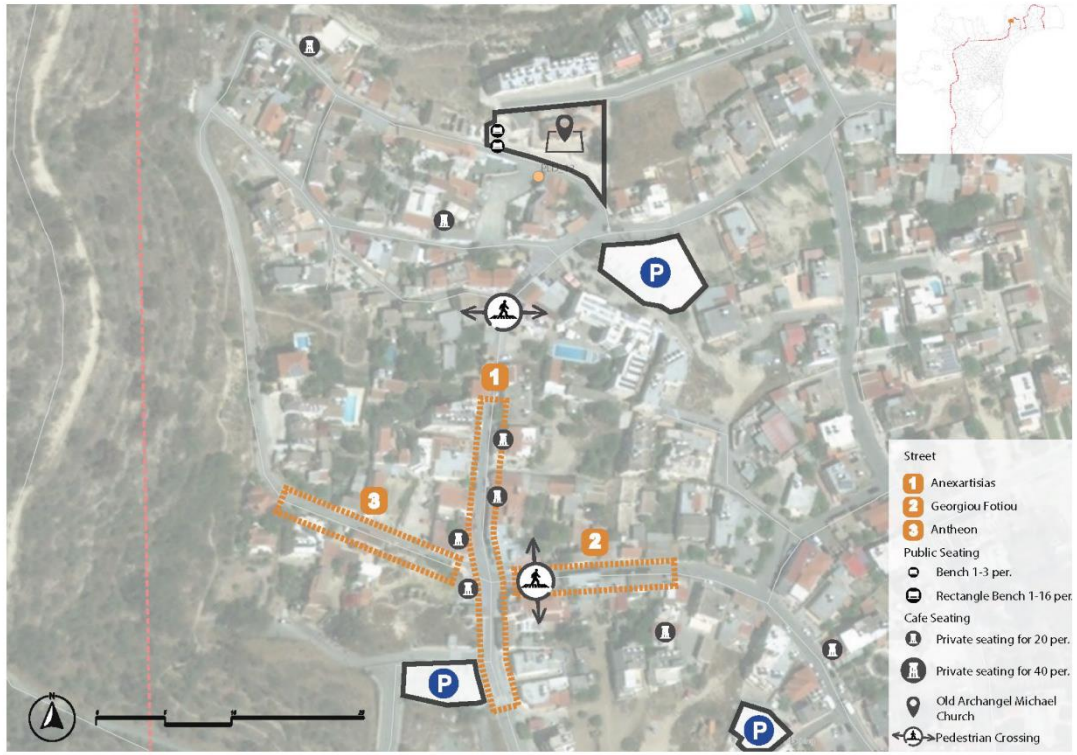
Anexartisias which is a central road leads to the monument of the old Archangel Michael church which is a very important attraction for the area. As was the case for the two aforementioned communities on the outskirts of Larnaca (namely Aradippou and Leivadia) public space programming is a recurrent problem. The communities rely on private coffee shops and associations for socialization spaces.

Car mobility in Antheon, Georgiou Fotiou, and Anexartisias is one - way because of the narrow street pattern thus making traffic safety (when respected) and traffic circulation better. The crossing noted at the northern part of Anexartisias lacks sufficient street signs and because of unplanned street design has a blind spot creating a dangerous environment for the pedestrians.

As was the case in Aradippou residents have proposed decentralization of services such as supermarkets, fruit and vegetable markets, and bakeries because of a lack of parking spaces in the old nucleus.

Also tourists are forced to rent cars for their movement because the area is not covered sufficiently by Public Transport (frequency, stops, information).

WP3 - D.3.2 - Fig. 53 - Position of public realm assessed with Gehl methodology.



PED_12 - Voroklini - Oroklini Anexartisias

PED_12 - Voroklini - Oroklini Georgiou Fotiou

PED_12 - Voroklini - Oroklini Antheon

PED_12 - Voroklini - Oroklini Old Archangel Michael Ch.

Parking – OnStreet

PARKED CARS on the streets are a constant through the city

CARS are part of the urban landscape.

the overarching **parking pricing strategy is not easy to grasp** for the visitor.

More than 60% of the parked cars in the city centre remain parked for less than an hour, 18% for two and 7% for three.

The overall on street parking capacity subject to control is of **1165 car park spaces**.

it is deemed "acceptable" to have parked cars on the street sides (often on the sidewalks), and to have pedestrians walking in the centre of the carriageway

In the city centre,

- **38%** of the surveyed cars **paid for parking**,
- **33% were legally parked** on free stalls,
- 29% were parked illegally

Parking – OffStreet

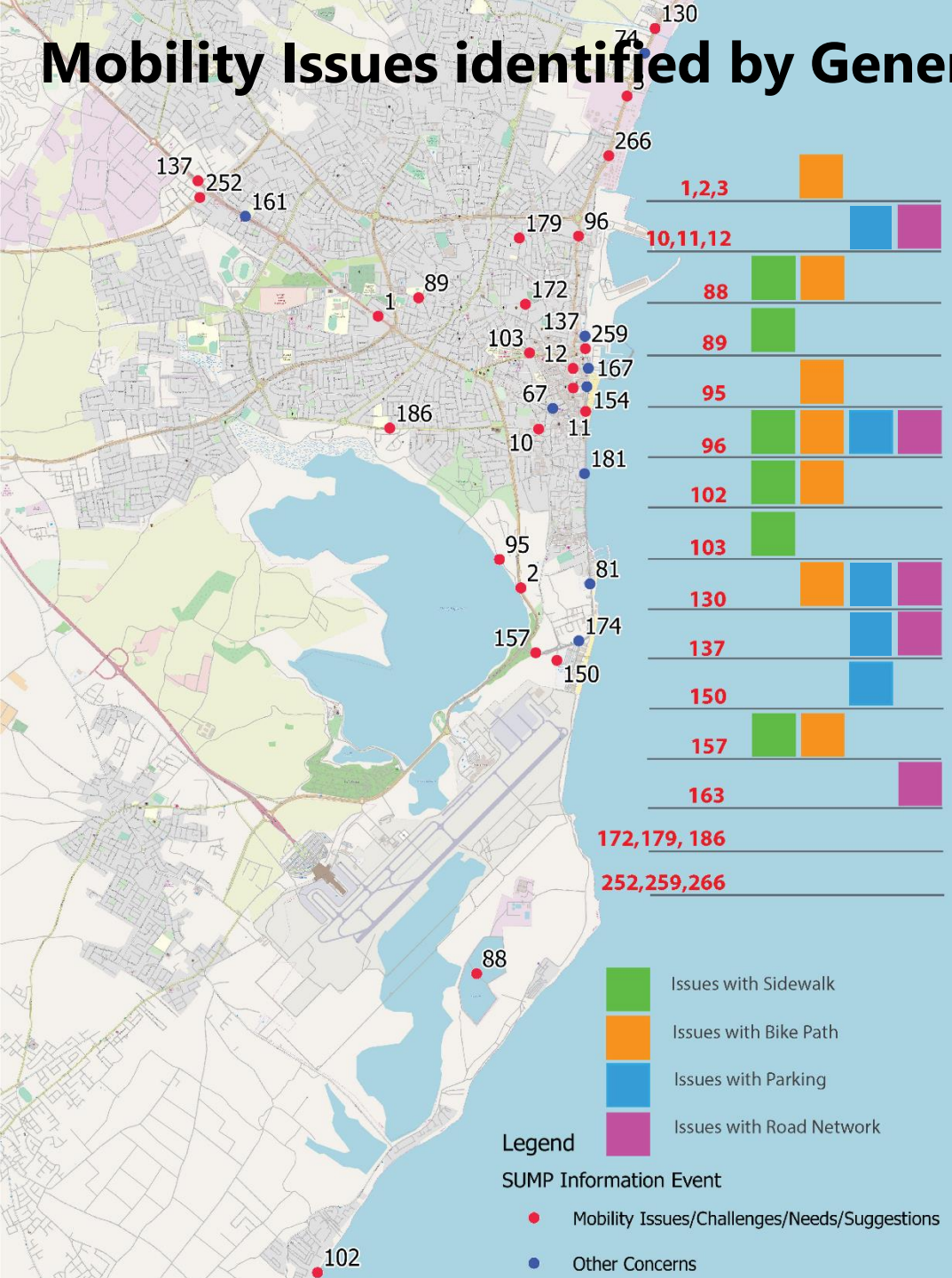
18 locations were surveyed.
Only a couple of locations were found to have reached (and passed) the capacity threshold

Maximum occupancy was identified at noon and more generally, albeit with few exceptions, in the morning

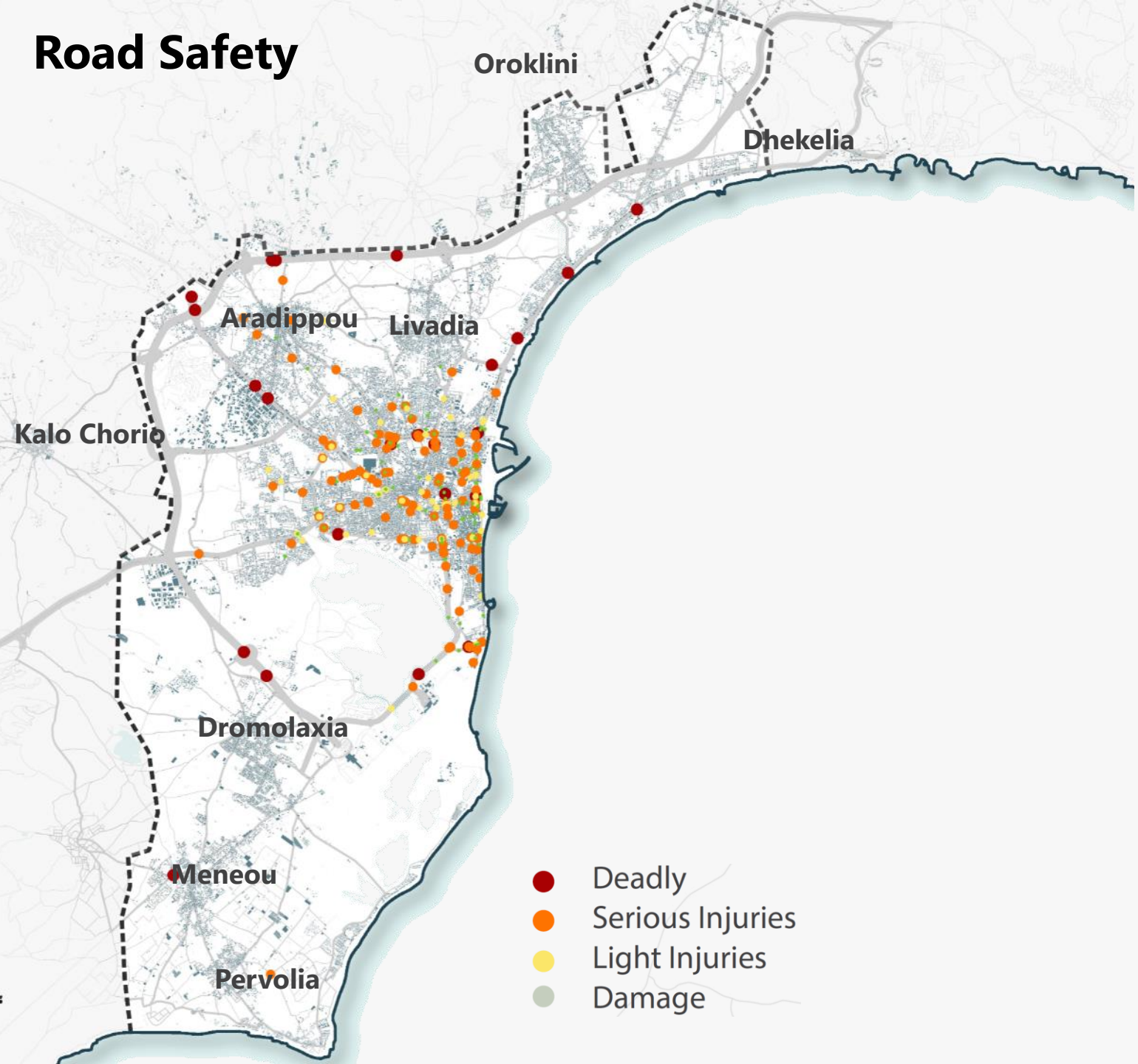
Prices are low compared to similar Mediterranean contexts

The average duration of stay was found to be around **7.5 hours**, which is significantly longer (three times more) what recorded for on-street parking.

Mobility Issues identified by General Public



Road Safety



Spatial mapping of the accidents occurred **between 2013 and 2018** .

There were **642** occurrences, divided in four categories:

- Deadly accidents **(15%)**
- Accidents which caused serious injuries **(36%)**
- Accidents which caused light injuries **(19%)**
- Accidents which caused only damages to vehicles or objects **(30%)**

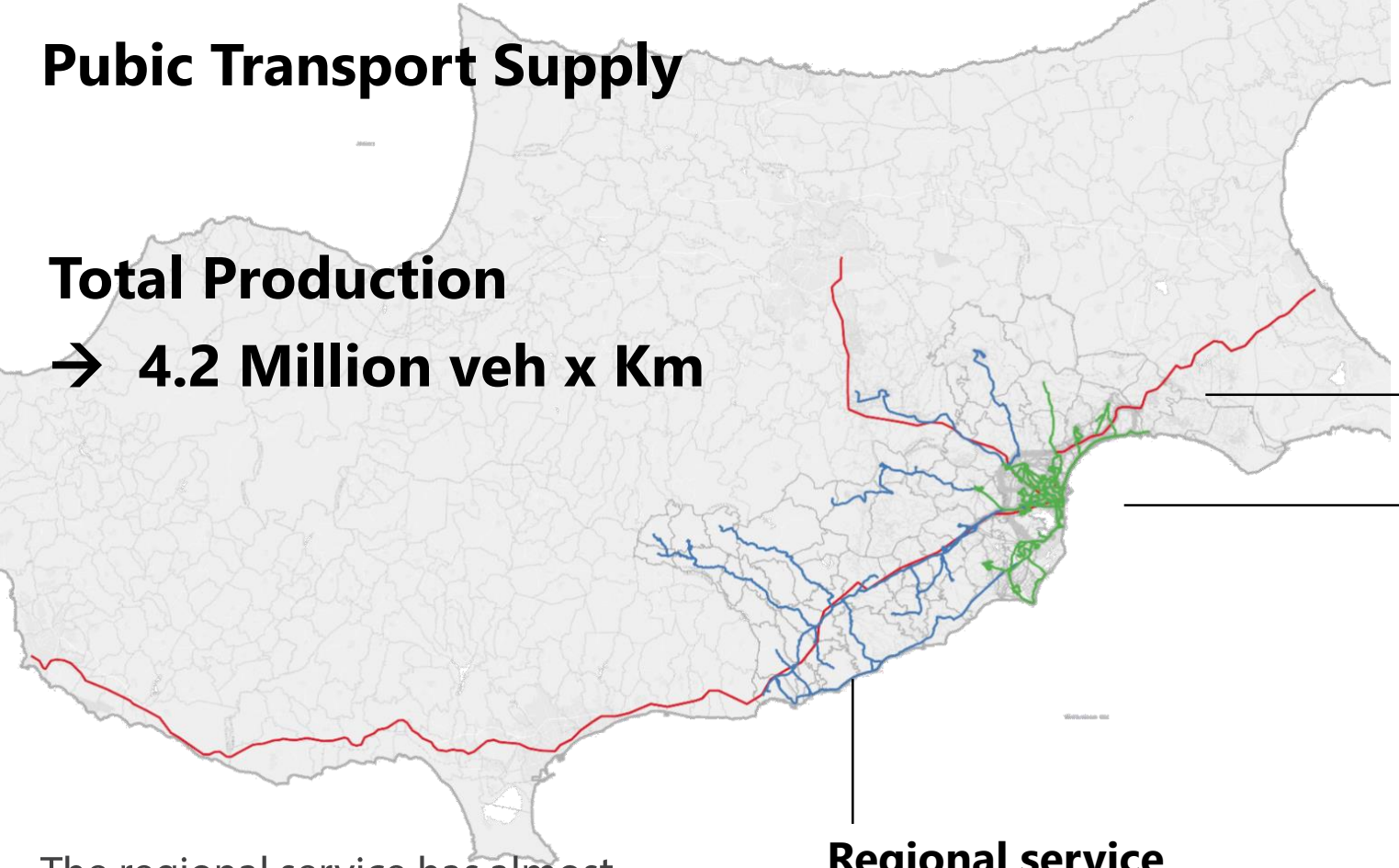
Deadly accidents are mostly located on the Arterials and the Motorway suggesting high speed collisions.

The analysis of traffic speed obtained from ATCs suggests that 15% of traffic travels at speed greater than 70 Km/h.

Pubic Transport Supply

Total Production

→ 4.2 Million veh x Km



Intercity service

- **5** main intercity lines

Urban service

- **13** urban lines
- **5** night lines
- **66** school services

Regional service

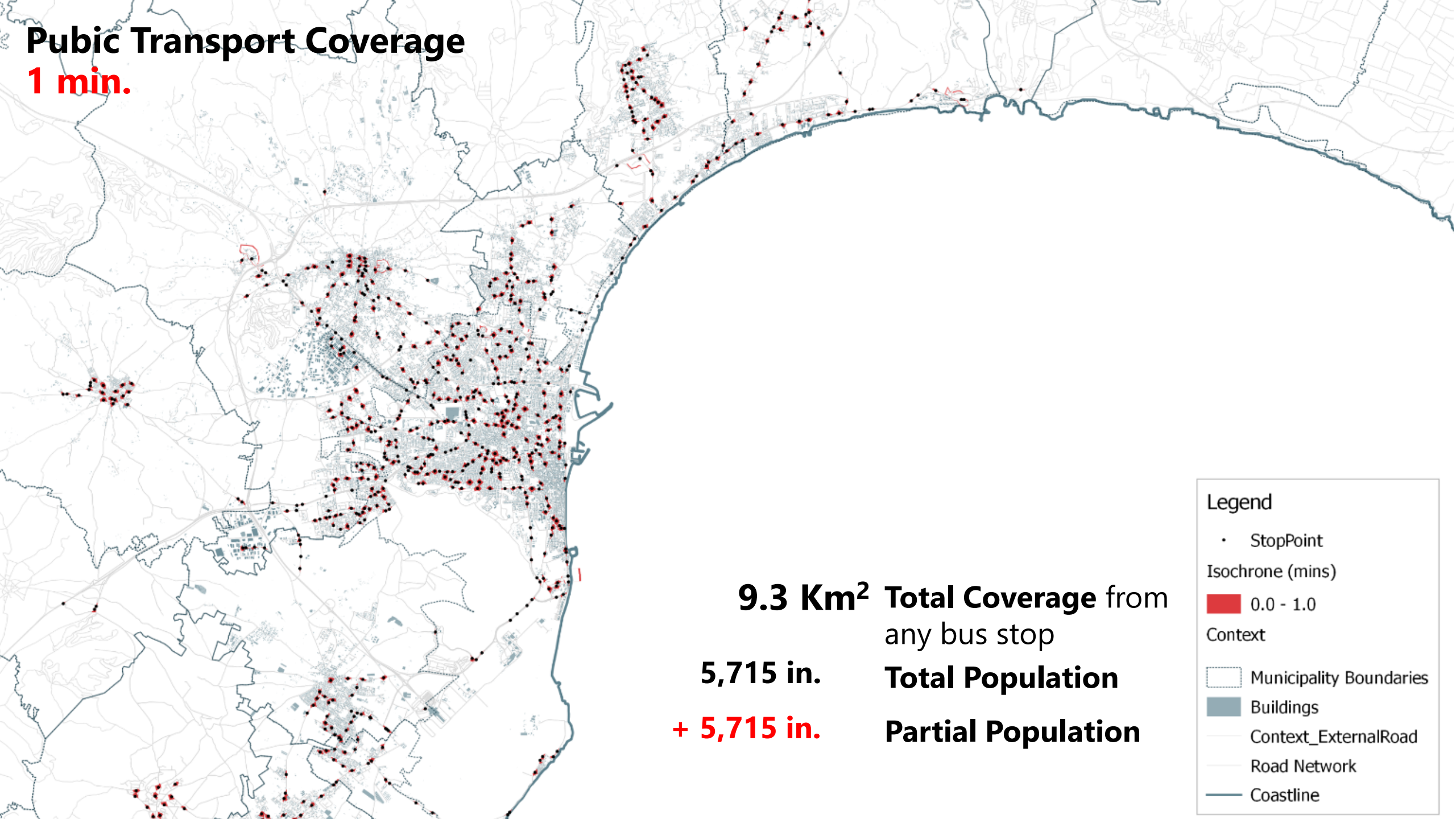
- **17** regional lines;
- **8** regional night lines;
- **29** regional school support lines

The regional service has almost exclusively commute and scholastic characteristics.

The annual regional service provides active routes that deliver in average 3.5 daily trips for each route.

Pubic Transport Coverage

1 min.

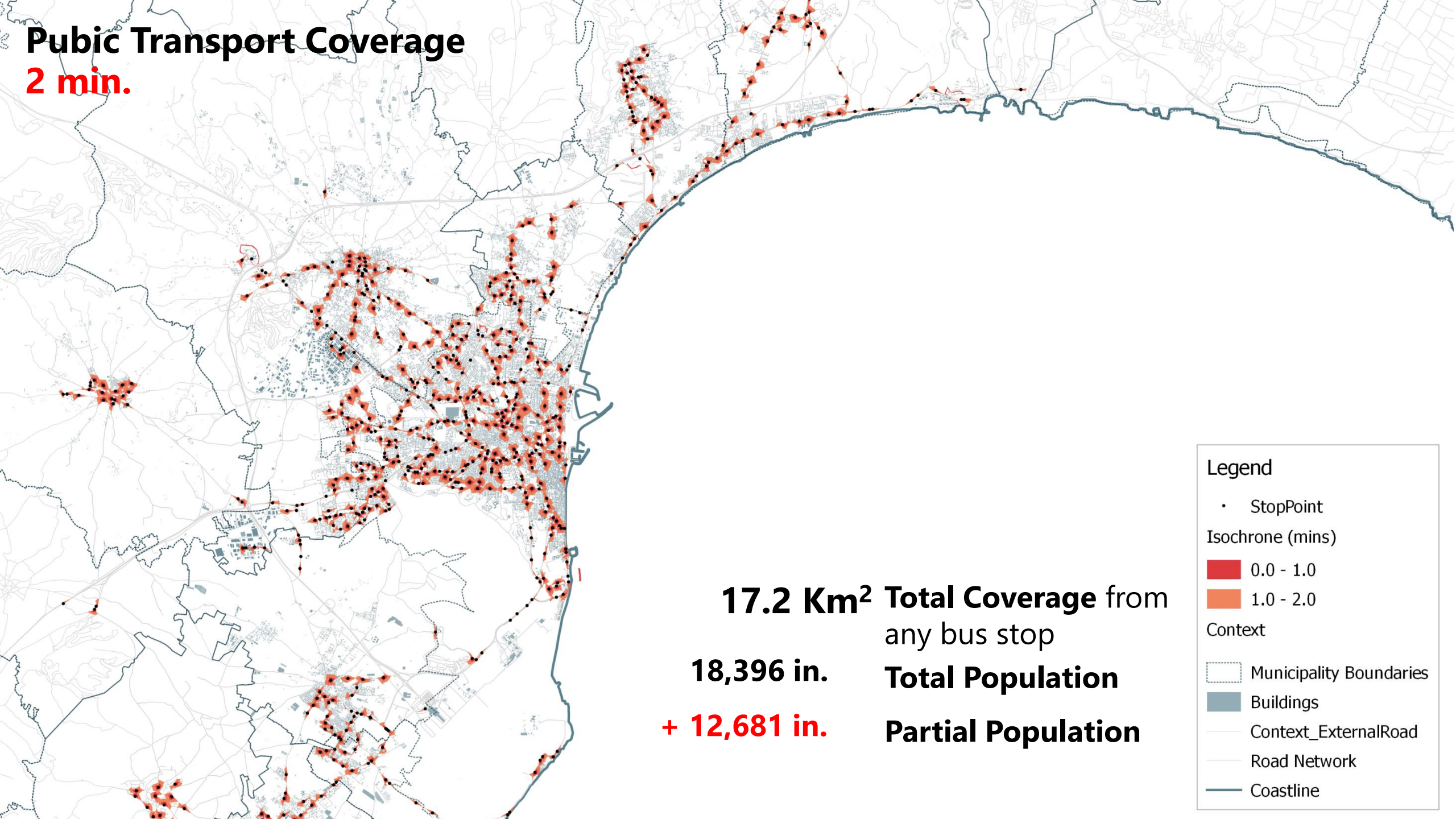


9.3 Km² **Total Coverage** from any bus stop

5,715 in. **Total Population**

+ 5,715 in. **Partial Population**

Pubic Transport Coverage
2 min.



17.2 Km² **Total Coverage** from any bus stop

18,396 in. **Total Population**

+ 12,681 in. **Partial Population**

Legend

- StopPoint

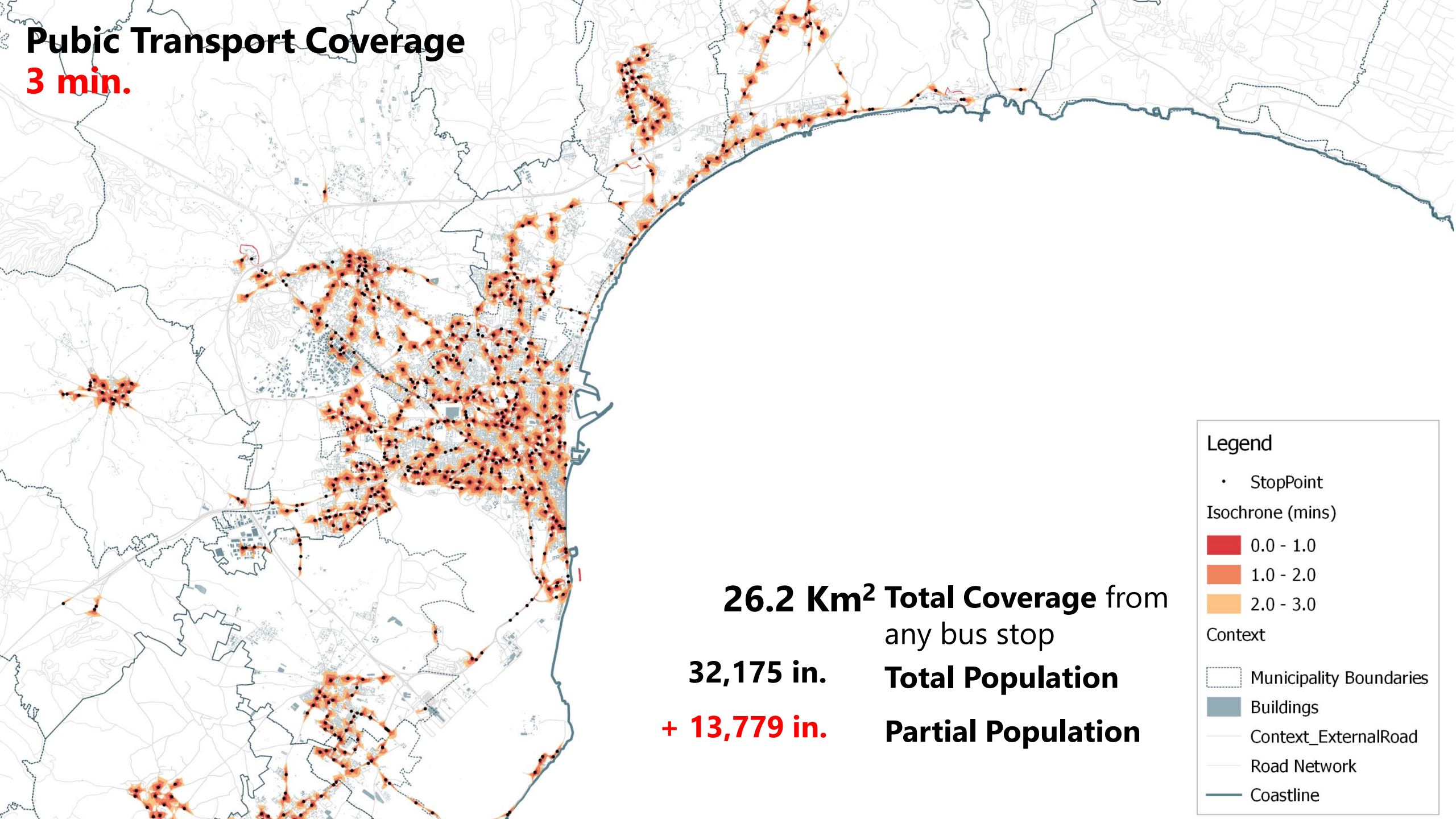
Isochrone (mins)

- 0.0 - 1.0
- 1.0 - 2.0

Context

- Municipality Boundaries
- Buildings
- Context_ExternalRoad
- Road Network
- Coastline

Pubic Transport Coverage
3 min.



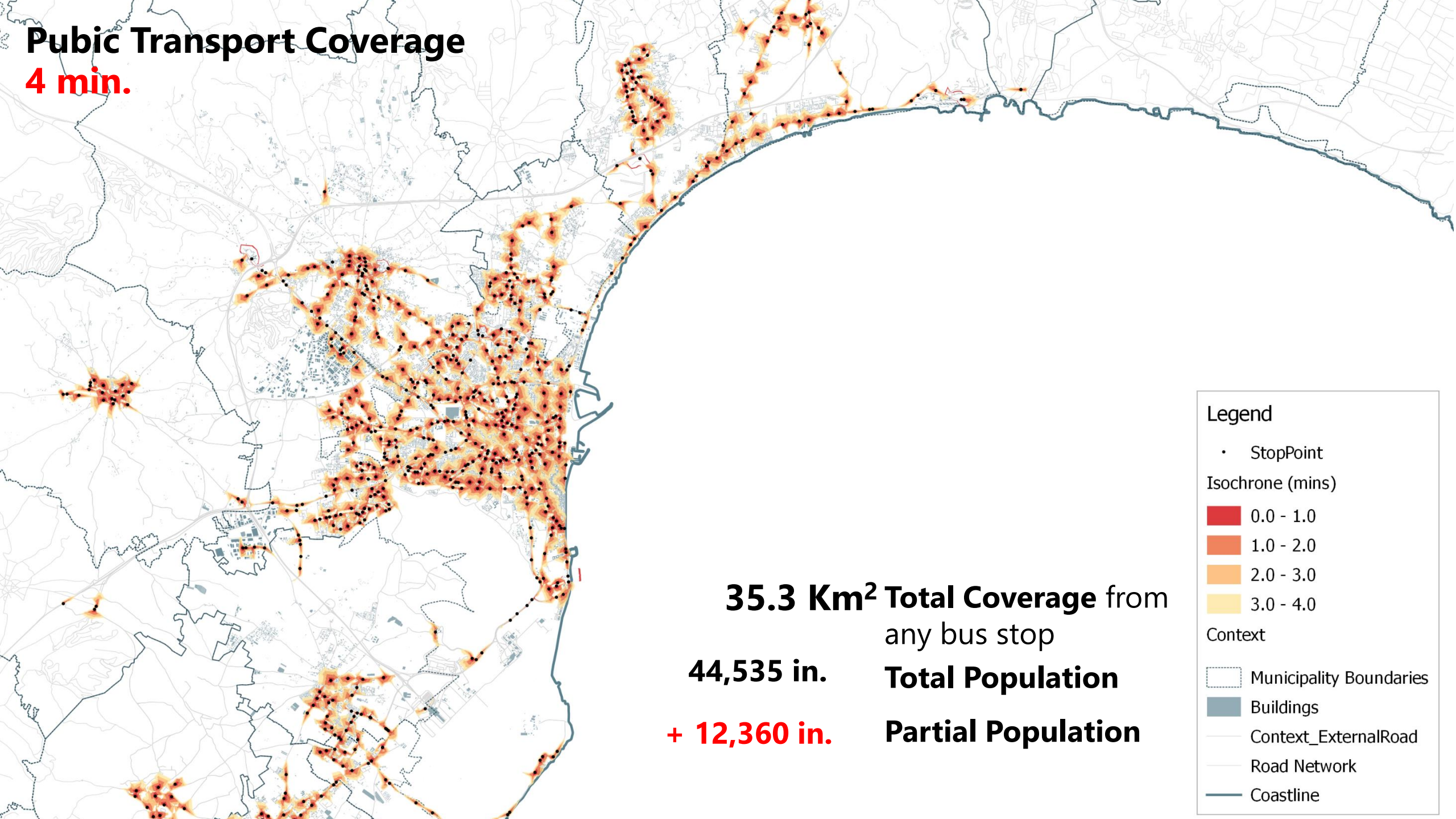
26.2 Km² **Total Coverage** from any bus stop

32,175 in. **Total Population**

+ 13,779 in. **Partial Population**

Pubic Transport Coverage

4 min.



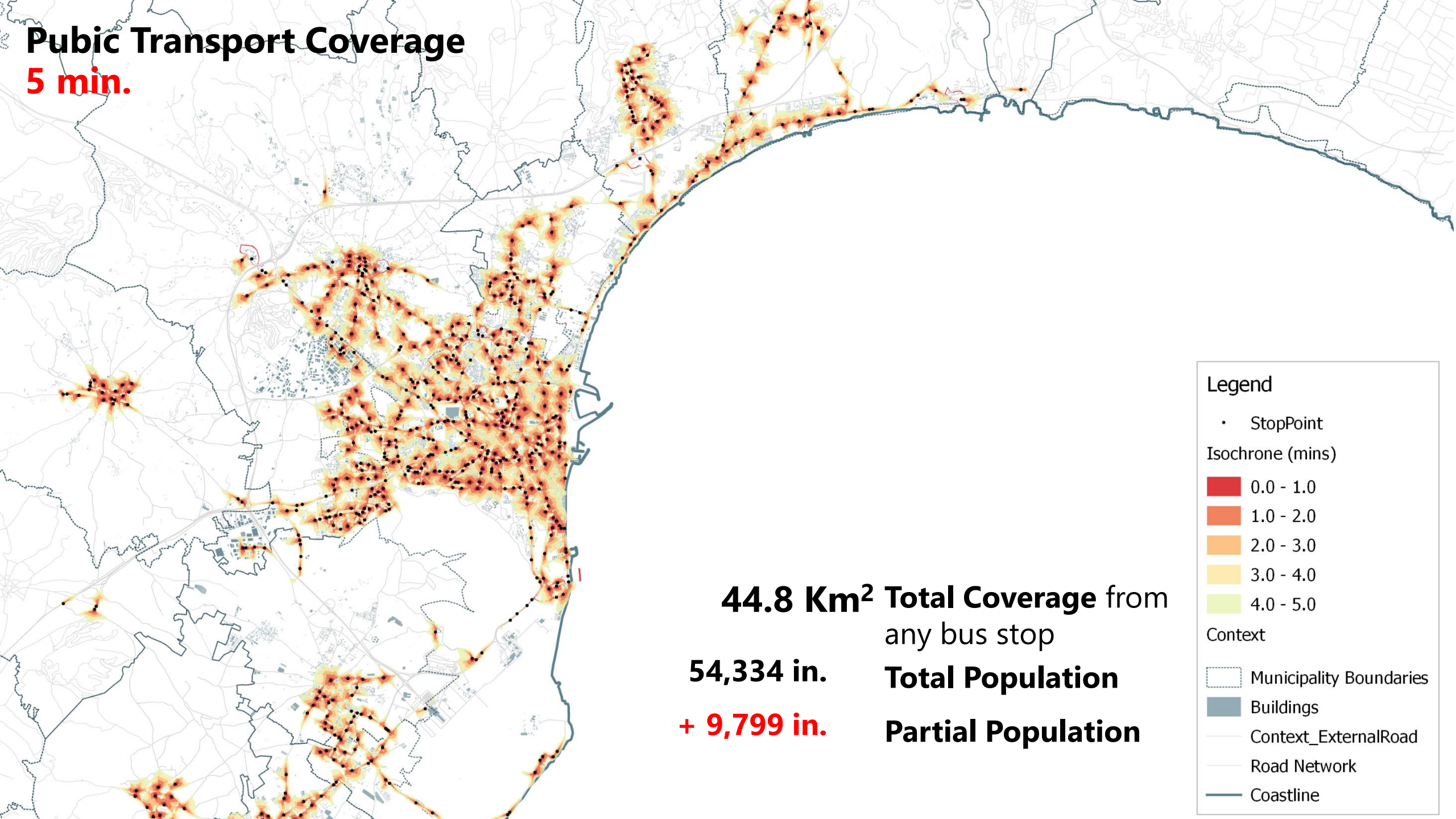
35.3 Km² **Total Coverage** from any bus stop

44,535 in. **Total Population**

+ 12,360 in. **Partial Population**

Pubic Transport Coverage

5 min.



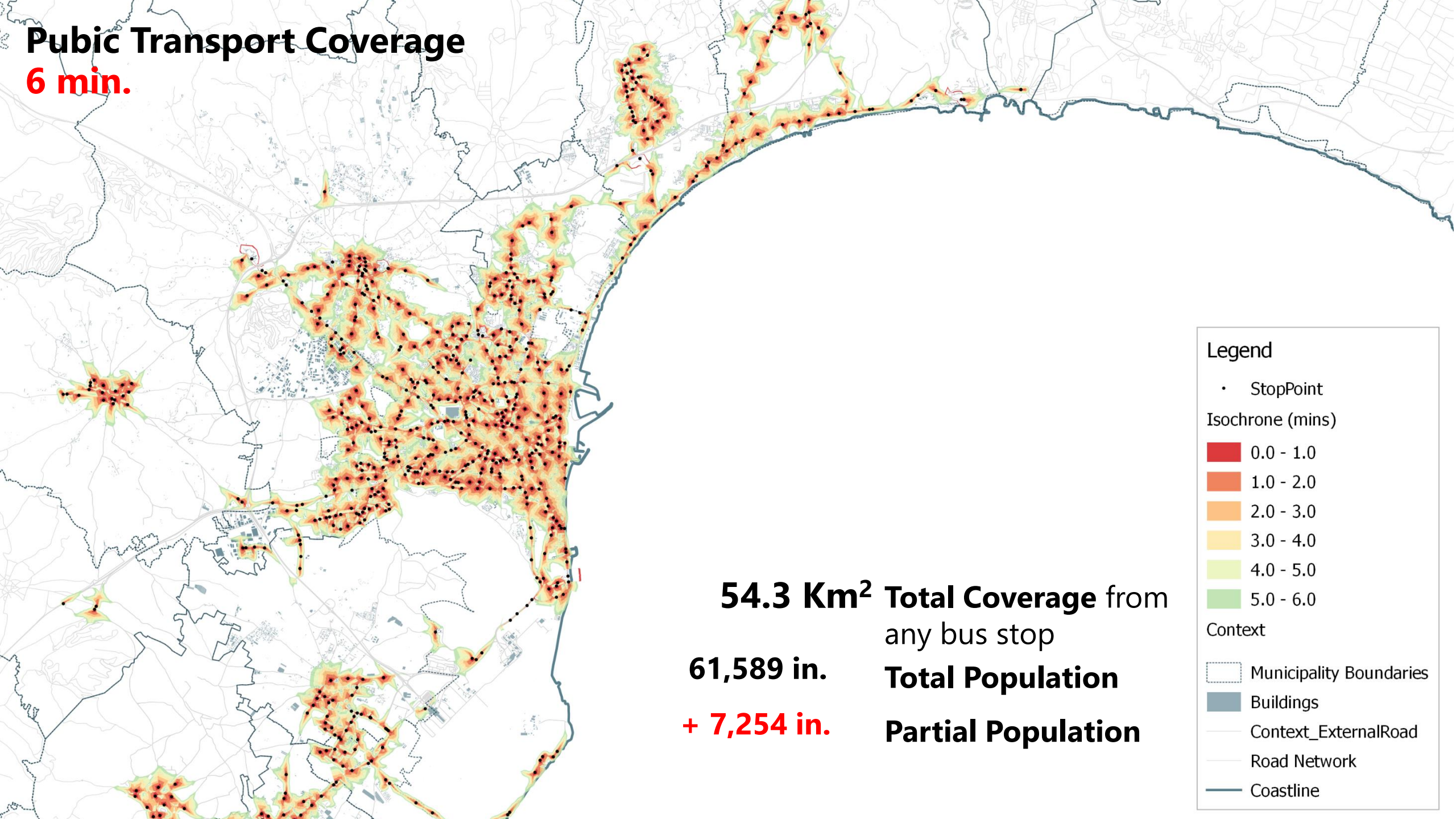
44.8 Km² **Total Coverage** from any bus stop

54,334 in. **Total Population**

+ 9,799 in. **Partial Population**

Pubic Transport Coverage

6 min.



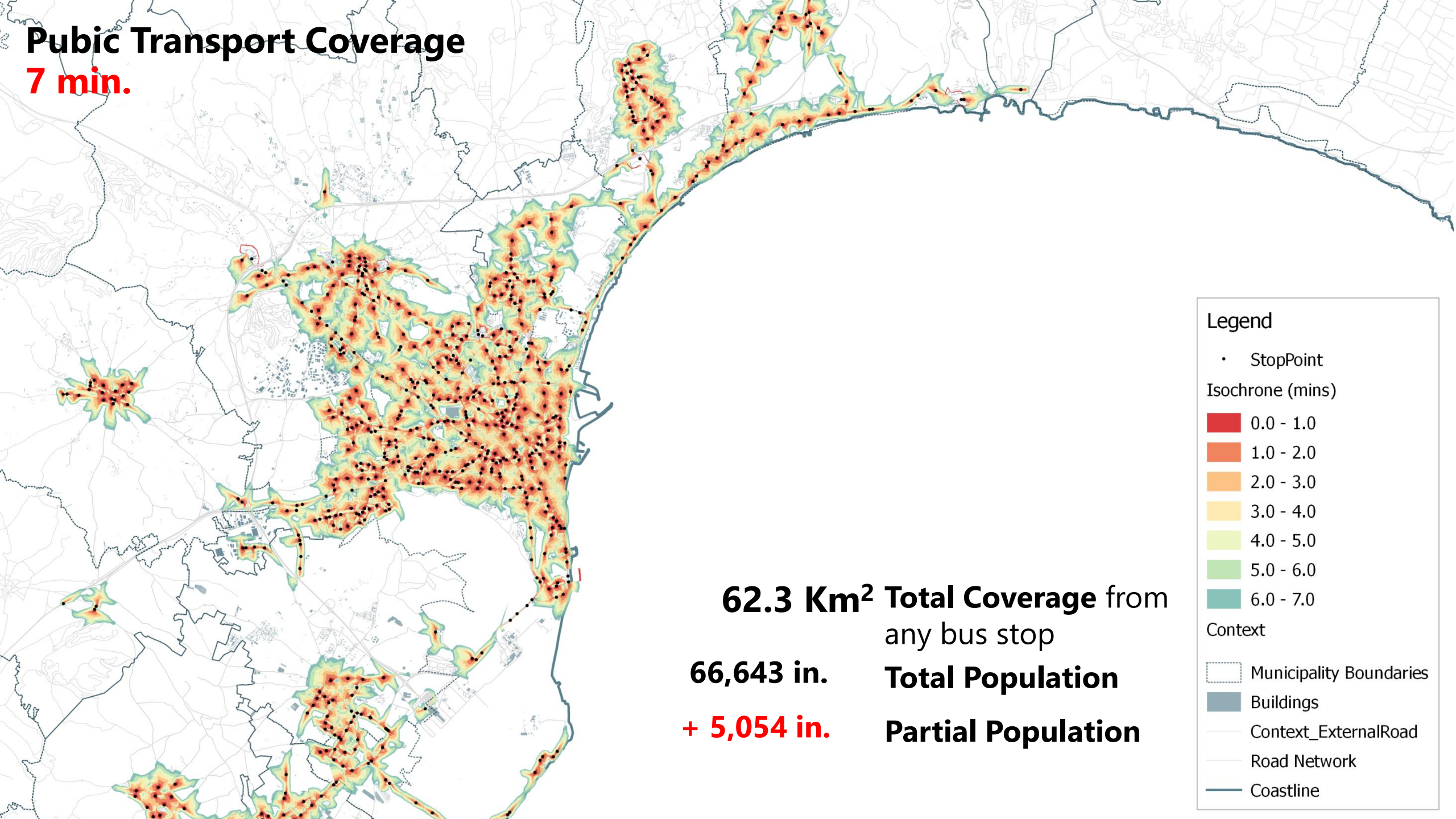
54.3 Km² **Total Coverage** from any bus stop

61,589 in. **Total Population**

+ 7,254 in. **Partial Population**

Pubic Transport Coverage

7 min.



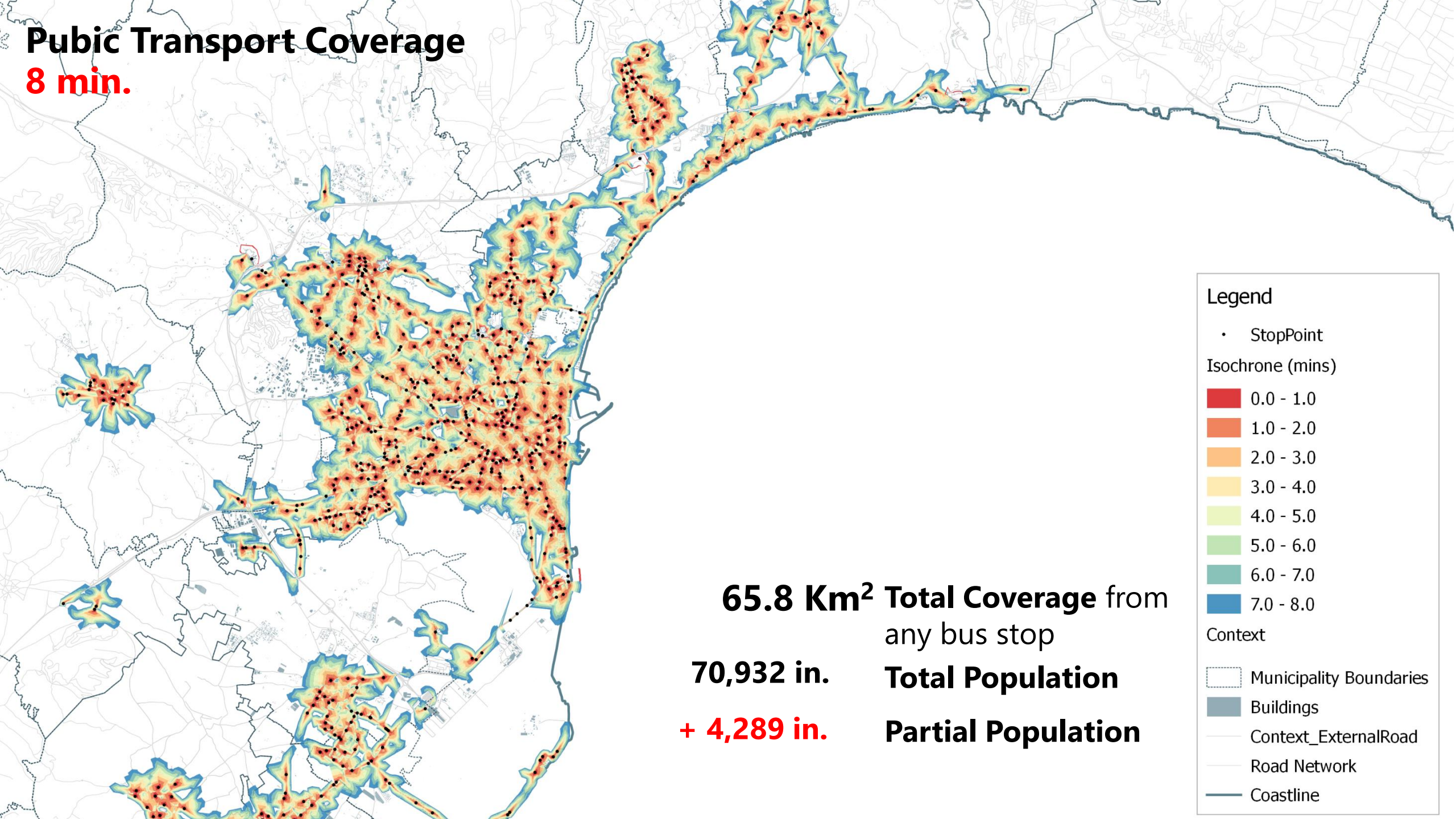
62.3 Km² **Total Coverage** from any bus stop

66,643 in. **Total Population**

+ 5,054 in. **Partial Population**

Pubic Transport Coverage

8 min.

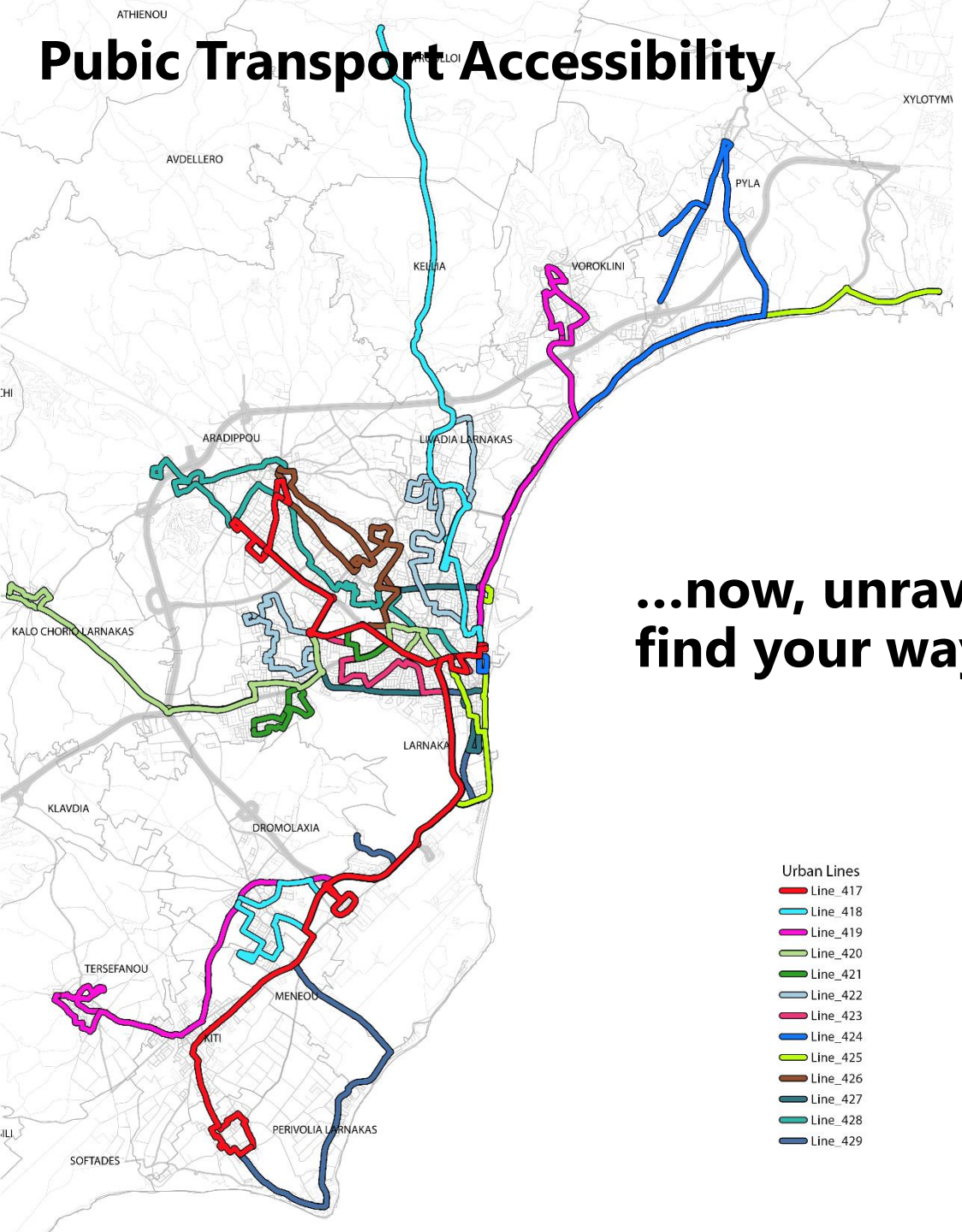


65.8 Km² **Total Coverage** from any bus stop

70,932 in. **Total Population**

+ 4,289 in. **Partial Population**

Pubic Transport Accessibility



…now, unravel the ball and find your way

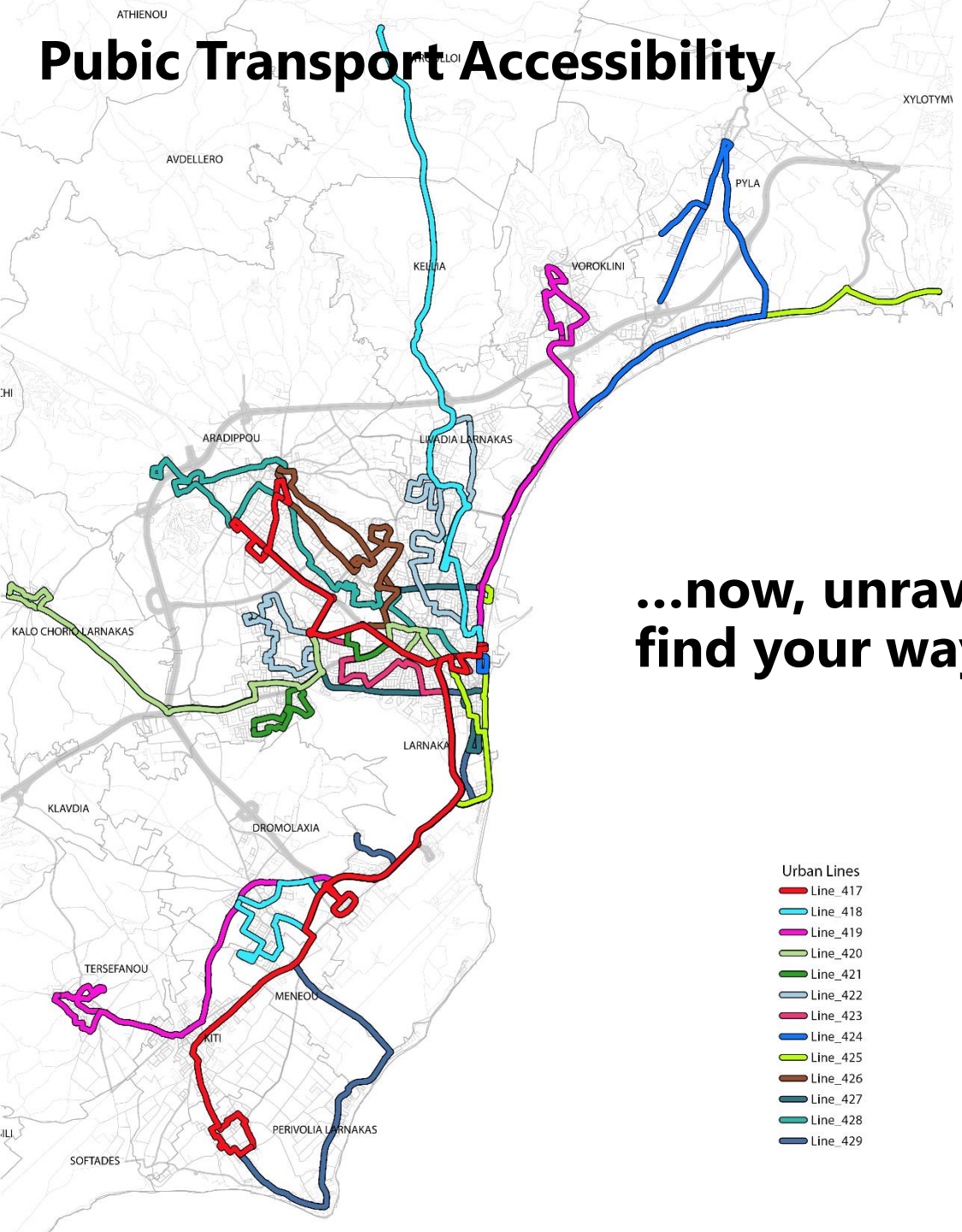
Public Transport Scheme proves counter intuitive and difficult to memorize.

Many lines are arranged not in straight lines and orientation is difficult.

School Service is not mapped and information were not retrieved.

Most lines converge in the Bus Station which is not adequate for handling such traffic.

Pubic Transport Accessibility



The urban public transport service is widespread and maximizes coverage.

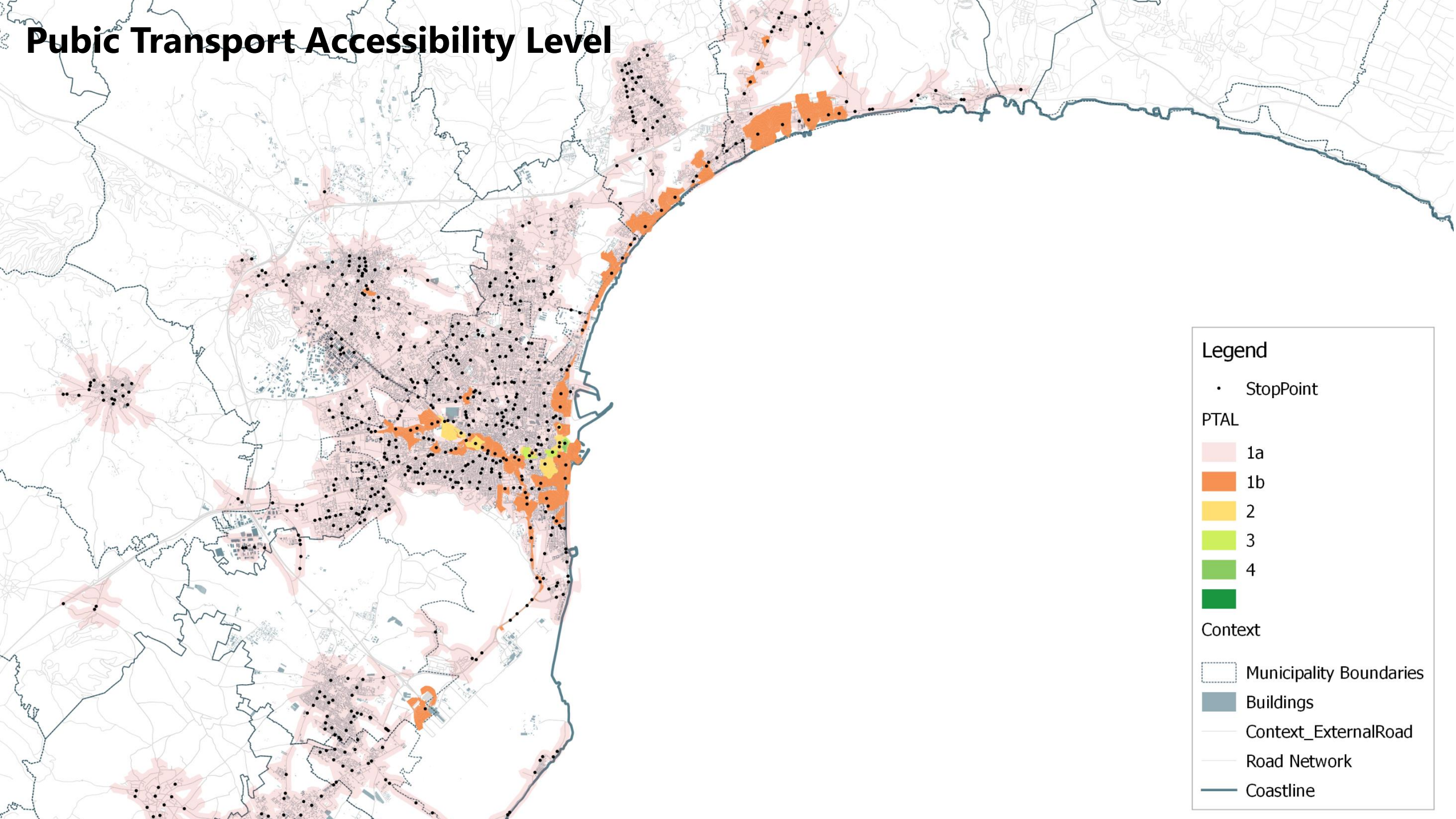
However, **the long travel times due to the length of the routes, determines low frequencies and limits the effectiveness of the service.**

…now, unravel the ball and find your way

…then WAIT for the bus

For many lines, **frequencies are in the region of 60 minutes or higher**.

Pubic Transport Accessibility Level



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Thank you for your attention

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