

Toward Efficient Urban Corridors

The Role of Metro Integration and Active Mobility Infrastructure

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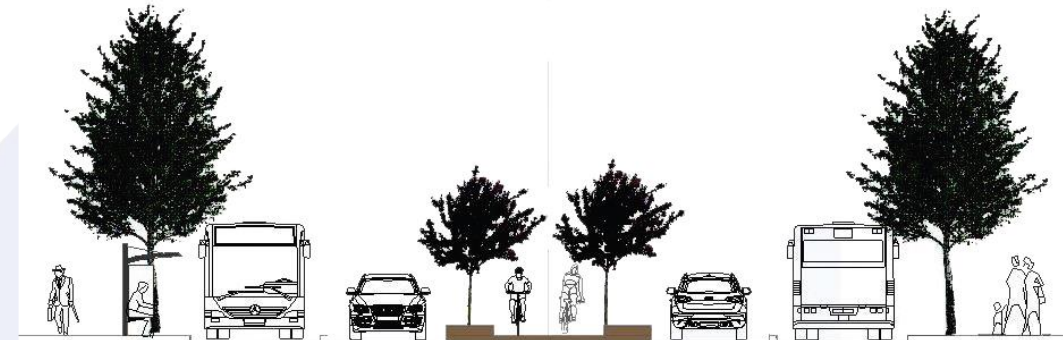
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Flagship Intervention on Egnatia Street (SUMP)

- **Reconfiguration of Urban Space:**
 - **Bridge urban discontinuities**
 - **Reduce road capacity for motorized traffic**
- **Proposed Reconfiguration Plan:**
 - **Creation of central island**
 - **1 general purpose lane per direction**
 - **Contra-flow bus lanes on either side of the island**
 - **Allocation of remaining space to alternative modes**
- **Investigation of Reconfiguration Necessity for:**
 - **Affected intersections**
 - **Traffic signal plans**





Strategic Objectives

- Evaluate the **impacts of road space redistribution** on different transport modes.
- Determine the **optimal placement of the bicycle lanes**, considering alternative **signaling strategies** for bicycle traffic.
- Provide the capability to determine the **optimal modal split** for each road space redistribution intervention.

Redistribution of road space among different transport modes

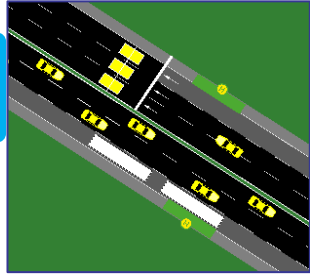
Evaluation of traffic and environmental impacts

Estimation of optimal bicycle lane placement

Evaluation of bicycle traffic signaling strategies

Estimation of optimal modal split

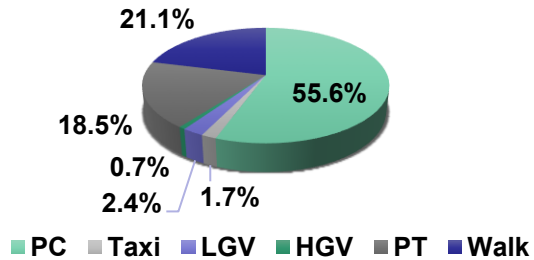
Reconfiguration Plans



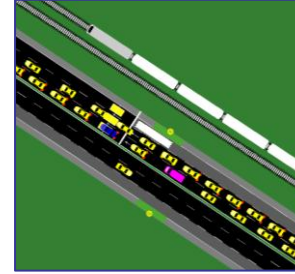
Baseline

- 2 general purpose lanes / direction
- 1 exclusive bus lane / direction
- Min sidewalk width = 2.00 m
- Total bus trips: 127 (8-9am)

Baseline



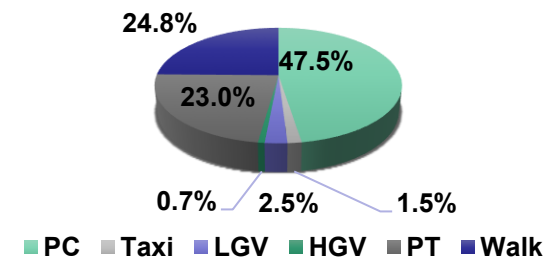
Baseline	
Mode	Percentage
PC	55.6%
Taxi	1.7%
LGV	2.4%
HGV	0.7%
PT	18.5%
Walk	21.1%



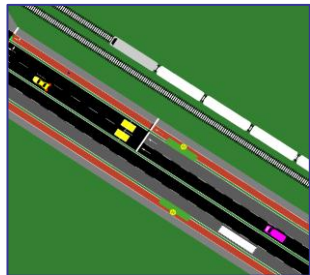
Scenario 1

- 2 general purpose lanes / direction
- 1 exclusive bus lane / direction
- Min sidewalk width = 2.00 m
- Total bus trips: 90 (8-9am)
- Metro service frequency: 2 min

Scenario 1

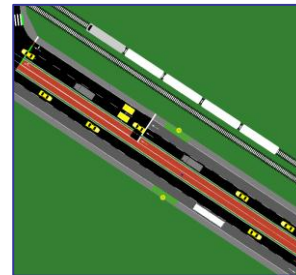


Scenario 1	
Mode	Percentage
PC	47.5%
Taxi	1.5%
LGV	2.5%
HGV	0.7%
PT	23.0%
Walk	24.8%



Scenario 2

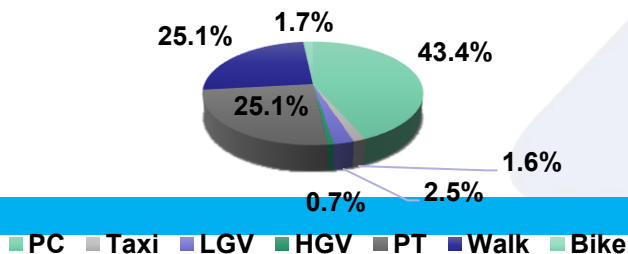
- 1 general purpose lane / direction
- 1 exclusive bus lane / direction
- 1 protected bike lane / direction (edge)
- Min sidewalk width = 2.20 m
- Total bus trips: 90 (8-9am)
- Metro service frequency: 2 min



Scenario 3

- 1 general purpose lane / direction
- 1 exclusive bus lane / direction
- 1 protected bike lane / direction (center)
- Min sidewalk width = 2.20 m
- Total bus trips: 90 (8-9am)
- Metro service frequency: 2 min

Scenarios 2 & 3



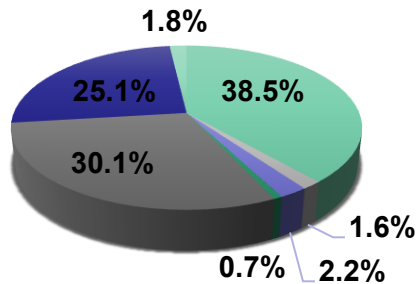
Scenarios 2 & 3	
Mode	Percentage
PC	43.4%
Taxi	1.6%
LGV	2.5%
HGV	0.7%
PT	25.1%
Walk	25.1%
Bike	1.7%

Alternative Modal Splits for Scenarios 2 & 3



- **Conservative Scenario:** -10% PC, +20% PT, +10% Bicycle (vs Scenario 1)
- **Neutral Scenario:** -35% PC, +60% PT, +30% Bicycle (vs Scenario 1)
- **Optimistic Scenario:** -60% PC, +100% PT, +50% Bicycle (vs Scenario 1)

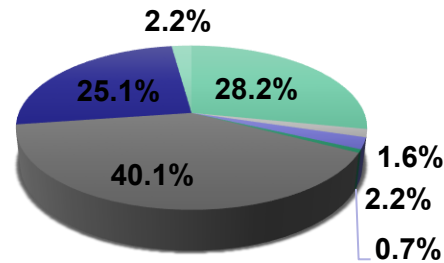
Conservative Scenario



■ PC ■ Taxi ■ LGV ■ HGV ■ PT ■ Walk ■ Bike

Conservative Scenario	
Mode	Percentage
PC	38.5%
Taxi	30.1%
LGV	25.1%
HGV	1.8%
PT	0.7%
Walk	1.6%
Bike	2.2%

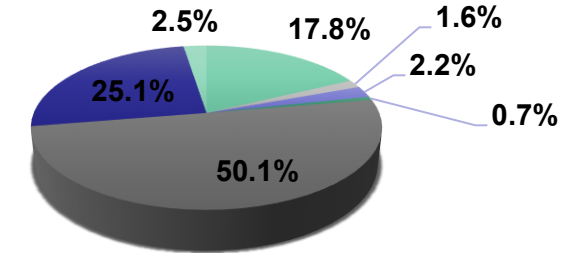
Neutral Scenario



■ PC ■ Taxi ■ LGV ■ HGV ■ PT ■ Walk ■ Bike

Neutral Scenario	
Mode	Percentage
PC	28.2%
Taxi	40.1%
LGV	25.1%
HGV	2.2%
PT	1.6%
Walk	0.7%
Bike	2.2%

Optimistic Scenario



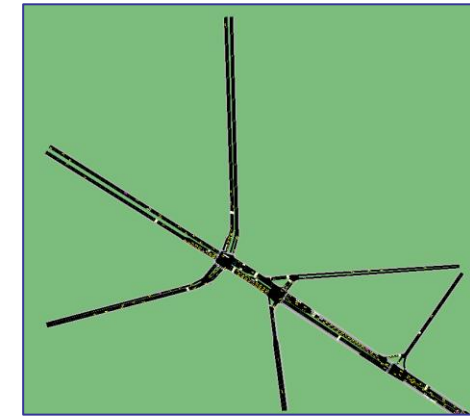
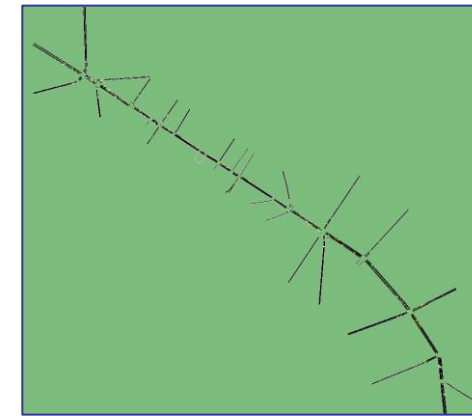
■ PC ■ Taxi ■ LGV ■ HGV ■ PT ■ Walk ■ Bike

Optimistic Scenario	
Mode	Percentage
PC	17.8%
Taxi	50.1%
LGV	25.1%
HGV	2.5%
PT	1.6%
Walk	0.7%
Bike	2.2%



Microscopic Traffic Simulation Analysis

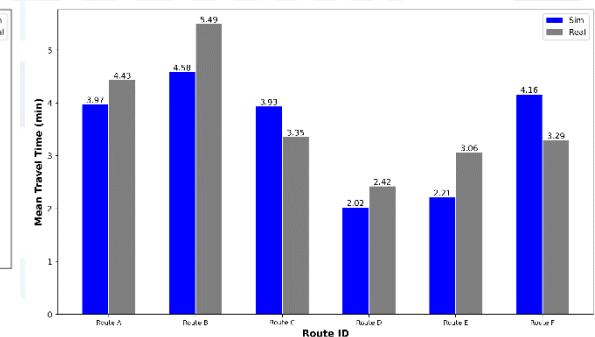
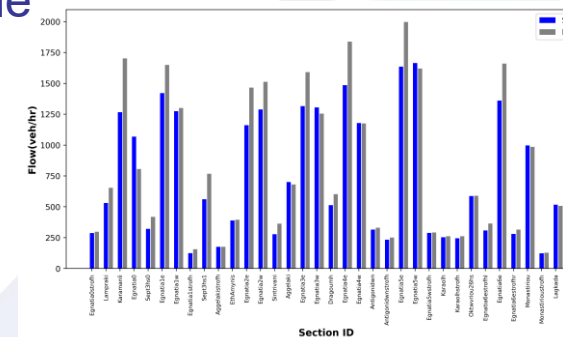
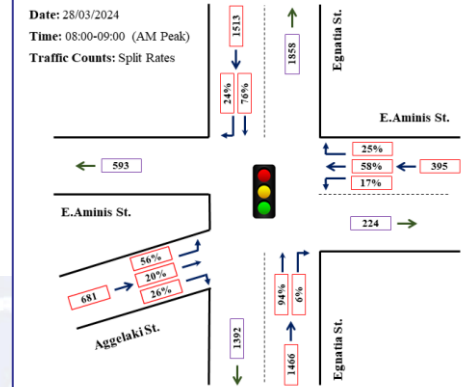
- Detailed mapping of network topology
- Network loading based on traffic counts (vehicles & pedestrians)
 - **RCM Traffic Management Center, Field Measurements (Mobile Cameras)**
- Coding of Public Transport System infrastructure and operations (static GTFS data)
 - **Stops, Lines, Schedules, Ridership (OSETH)**
- Input of actual traffic signal plans and weekly schedule
- Simulation of traffic detection system
- Thorough calibration of the traffic simulation model
 - **Traffic Volumes, Travel Times**



Junction Name: Egnatia St. – E.Aminis St. – Aggelaki St.



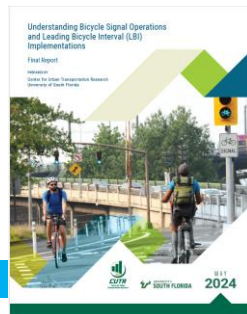
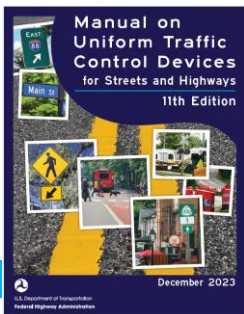
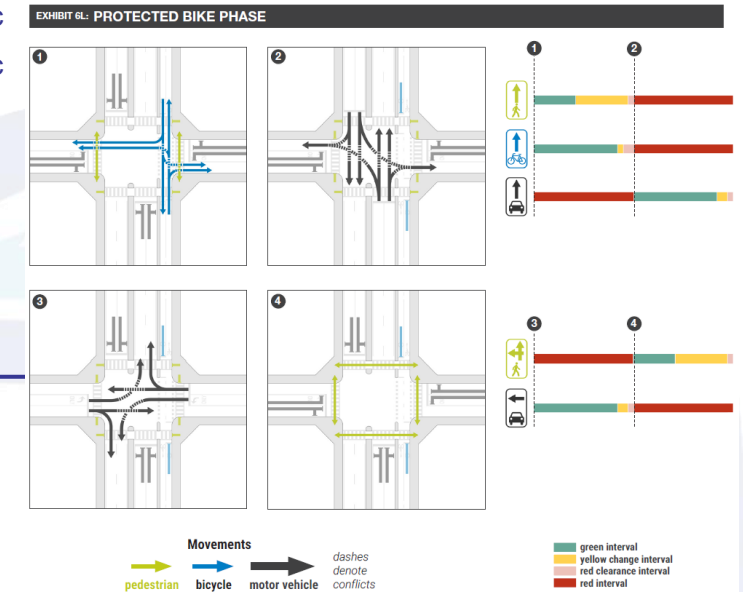
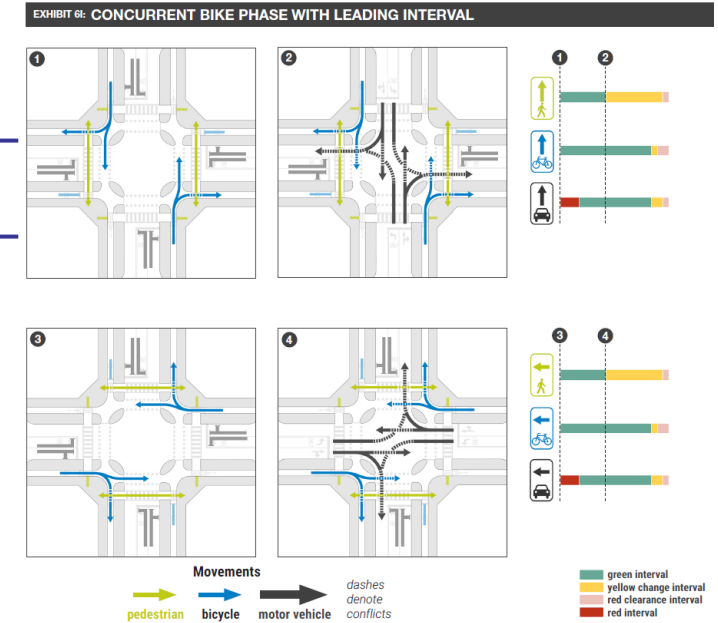
Junction Name: Egnatia St. – E.Aminis St. – Aggelaki St.



Bicycle Signaling Strategies



No.	Junction Name	Scenario 2 – Signaling Strategy per Junction	Scenario 3 – Signaling Strategy per Junction
1	K. Karamanli – G. Lampraki	Concurrent with Vehicle Traffic	Leading Bicycle Interval (LBI)
2	K. Karamanli – L. Kaftantzoglou	Leading Bicycle Interval (LBI)	Protected Bicycle Phase
3	Egnatia – 3rd Septemvriou	Leading Bicycle Interval (LBI)	Protected Bicycle Phase
4	Egnatia – AUTH	Leading Bicycle Interval (LBI)	Protected Bicycle Phase
5	Egnatia – E. Aminis – Aggelaki	Leading Bicycle Interval (LBI)	Protected Bicycle Phase
6	Egnatia – L. Iasonidou	Leading Bicycle Interval (LBI)	Leading Bicycle Interval (LBI)
7	Egnatia – P. Ioakeim	Concurrent with Vehicle Traffic	Concurrent with Vehicle Traffic
8	Egnatia – A. Sofias	Leading Bicycle Interval (LBI)	Protected Bicycle Phase
9	Egnatia – Platonos	Concurrent with Vehicle Traffic	Concurrent with Vehicle Traffic
10	Egnatia – M. Gennadiou	Concurrent with Vehicle Traffic	Concurrent with Vehicle Traffic
11	Egnatia – Aristotelous	Concurrent with Vehicle Traffic	Protected Bicycle Phase
12	Egnatia – E. Venizelou	Concurrent with Vehicle Traffic	Leading Bicycle Interval (LBI)
13	Egnatia – I. Dragoumi	Leading Bicycle Interval (LBI)	Leading Bicycle Interval (LBI)
14	Egnatia – Antigonidon	Concurrent with Vehicle Traffic	Leading Bicycle Interval (LBI)
15	Egnatia – Dodekanisou	Leading Bicycle Interval (LBI)	Protected Bicycle Phase
16	Egnatia – 26th Oktovriou – Lagkada	Leading Bicycle Interval (LBI)	Protected Bicycle Phase



Separated Bike Lane Operation	Motor Vehicles per Hour Turning across Separated Bike Lane			
	Two-way Street			One-way Street
	Right Turn	Left Turn across One Lane	Left Turn across Two Lanes	Right or Left Turn
One-way	150	100	50	150
Two-way	100	50	0	100

EXHIBIT 6A: Considerations for Time-separated Bicycle Movements

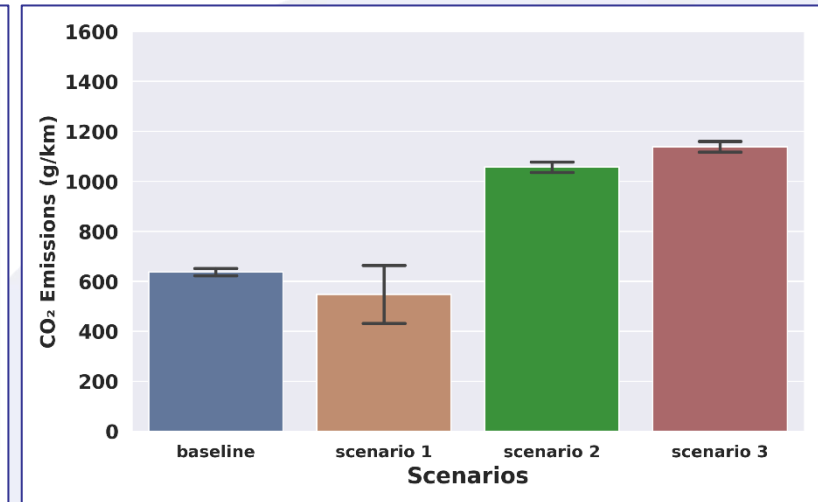
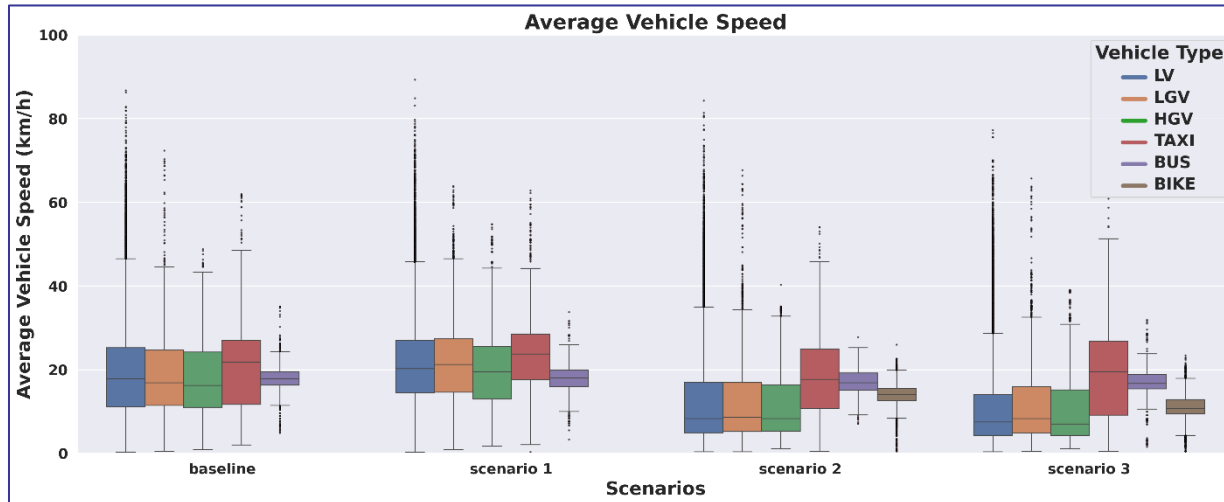
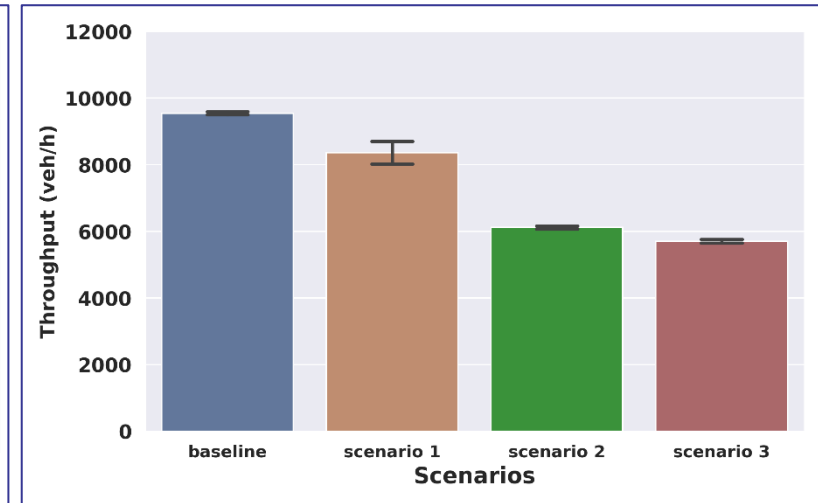
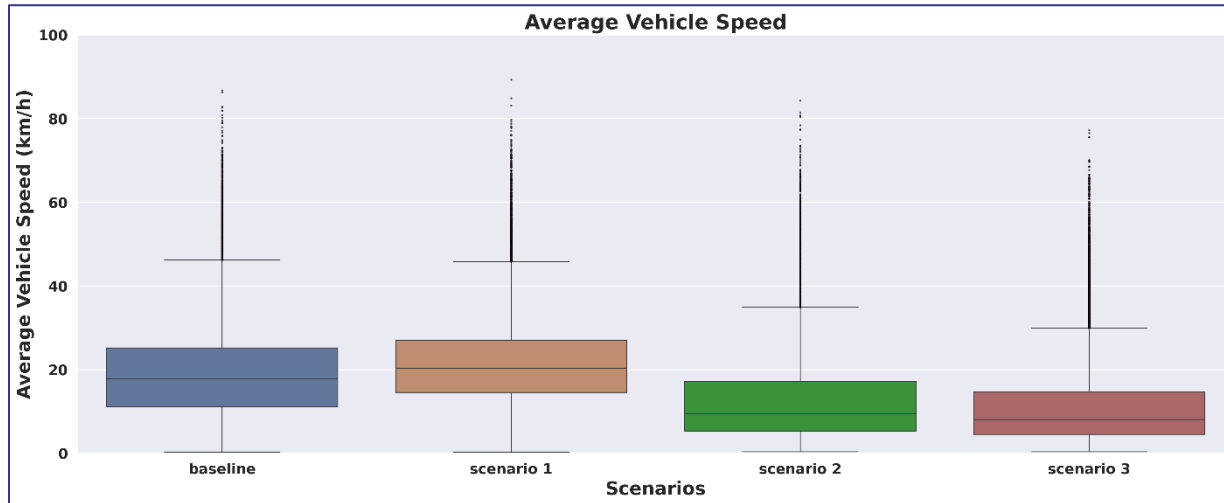


Bicycle Signal Plan Characteristics

No.	Junction Name	Signal Cycle (sec)	Scenario 2 – Min Green Bike Interval (sec)	Scenario 3 – Min Green Bike Interval (sec)	Yellow + All Red (sec)	Duration of Bike Lead Interval (sec)
1	K. Karamanli – G. Lampraki	100	8	8	6	4
2	K. Karamanli – L. Kaftantzoglou	100	8	8 & 12	6	4
3	Egnatia – 3rd Septemvriou	100	8	8 & 12	6	4
4	Egnatia – AUTH	100	8	8 & 12	6	4
5	Egnatia – E. Aminis – Aggelaki	100	8	8 & 12	6	4
6	Egnatia – L. Iasonidou	100	8	8	6	4
7	Egnatia – P. Ioakeim	100	8	8	6	4
8	Egnatia – A. Sofias	90	8	8 & 12	6	4
9	Egnatia – Platonos	90	8	8	6	4
10	Egnatia – M. Gennadiou	90	8	8	6	4
11	Egnatia – Aristotelous	90	8	8 & 12	6	4
12	Egnatia – E. Venizelou	90	8	8	6	4
13	Egnatia – I. Dragoumi	90	8	8	6	4
14	Egnatia – Antigonidon	90	8	8	6	4
15	Egnatia – Dodekanisou	90	8	8 & 12	6	4
16	Egnatia – 26th Oktovriou – Lagkada	90	8	8 & 12	6	4

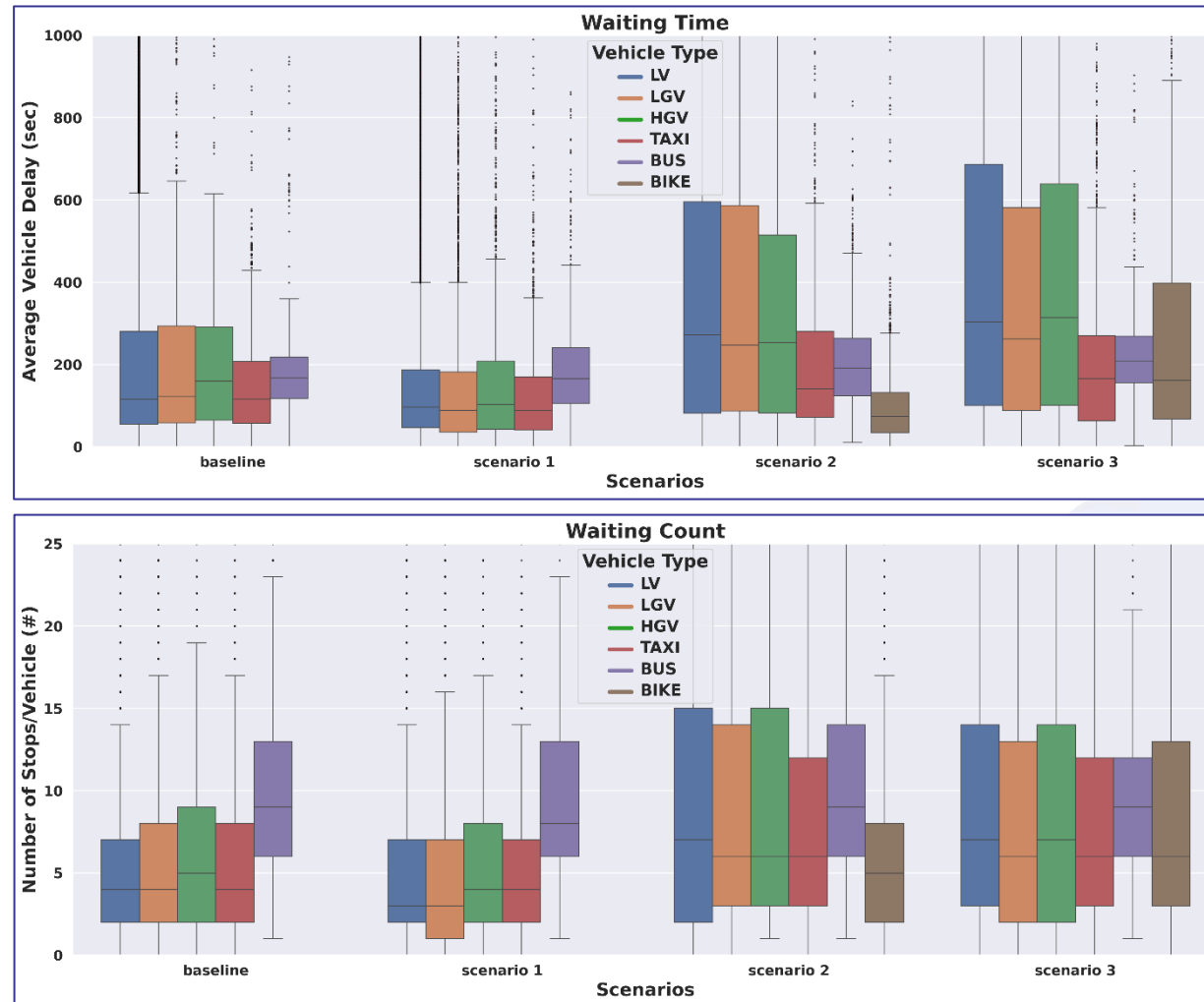


Results – All Scenarios (1/2)



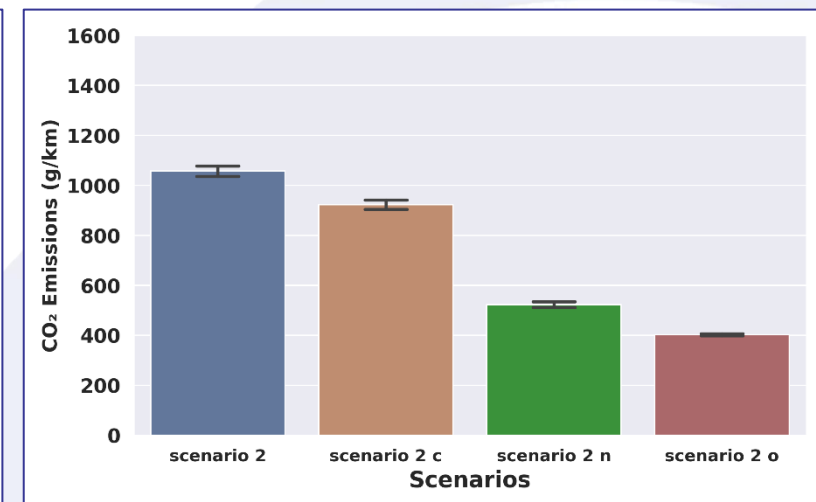
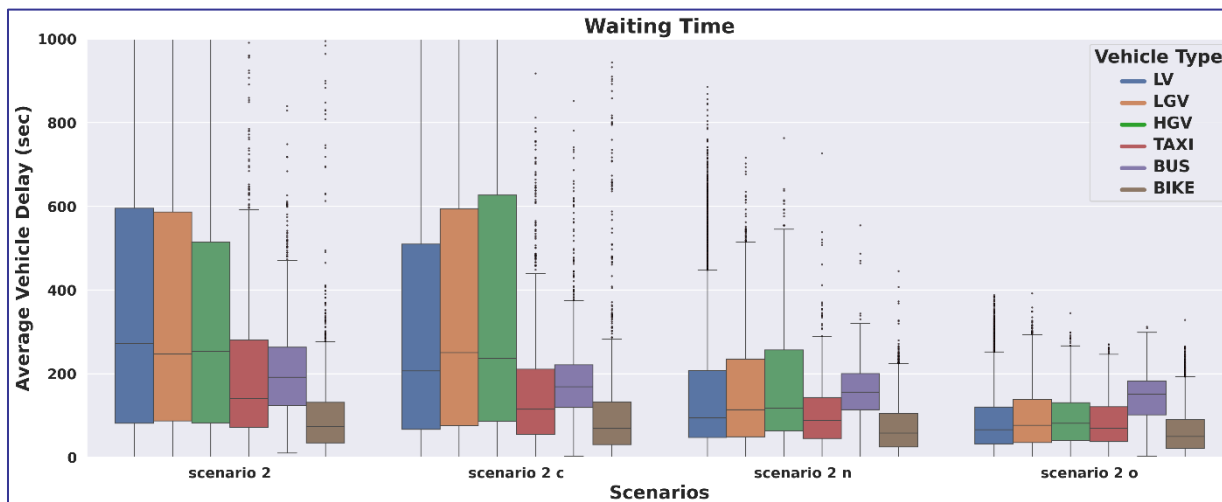
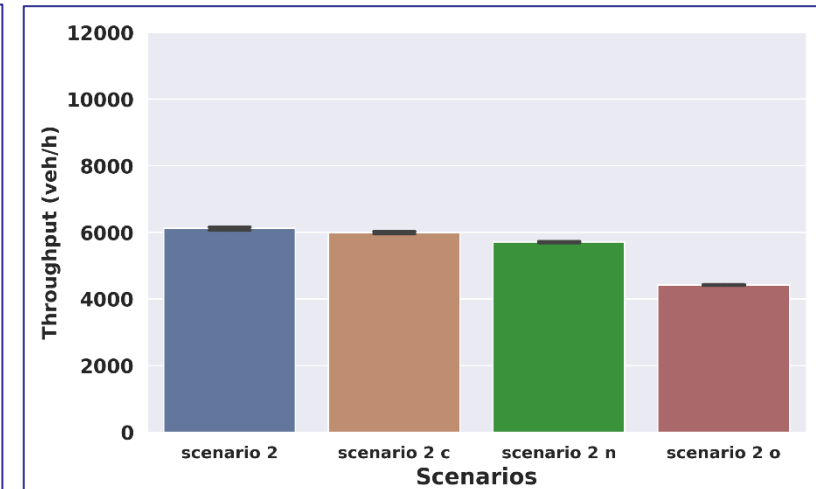
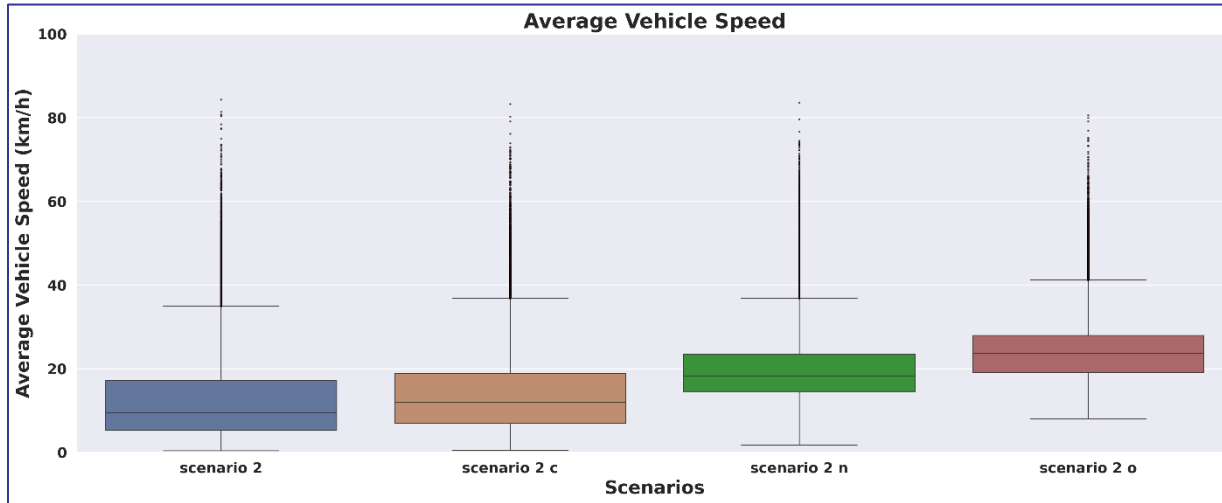


Results – All Scenarios (2/2)



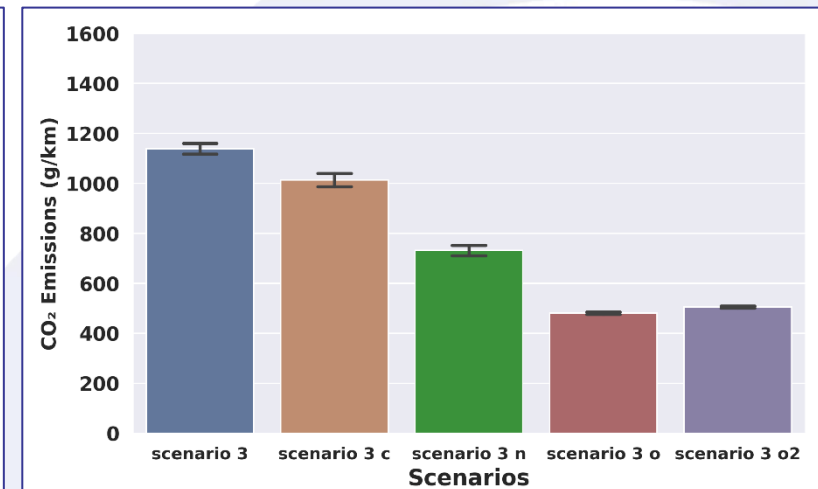
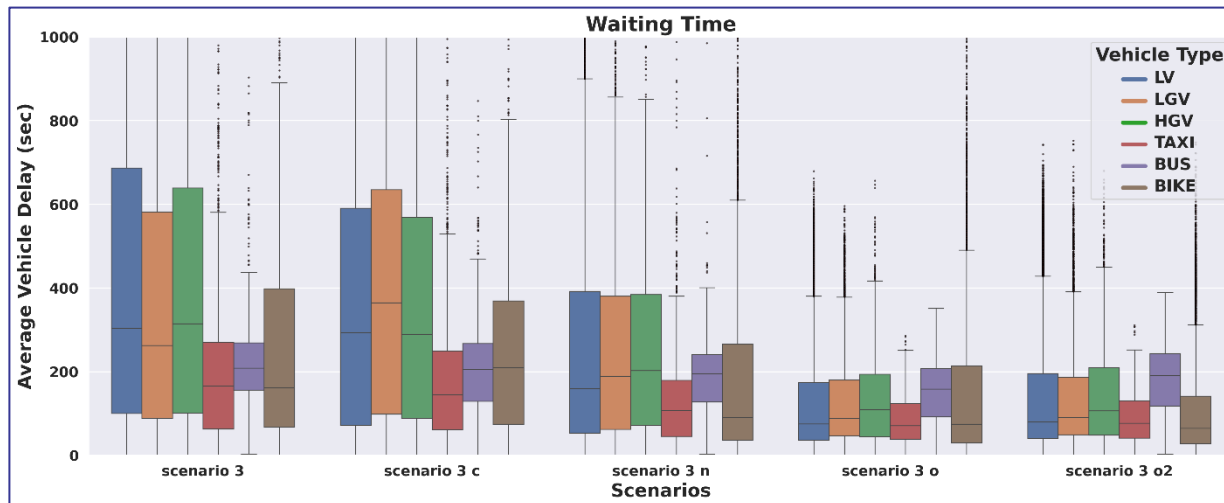
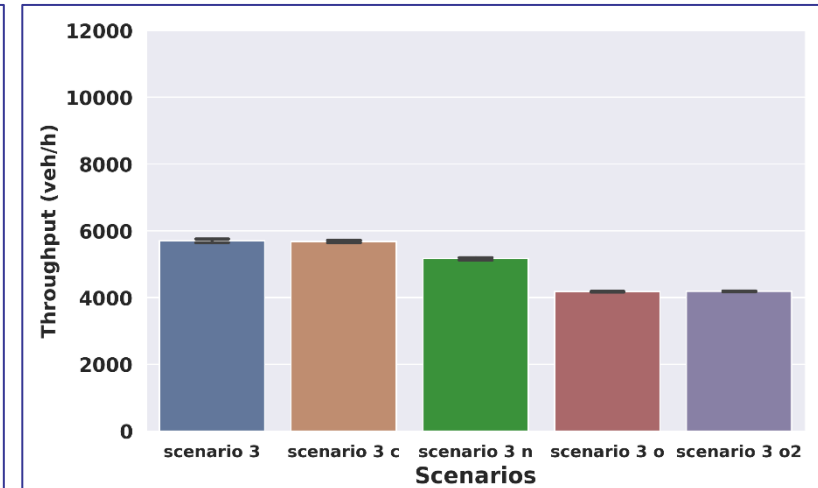
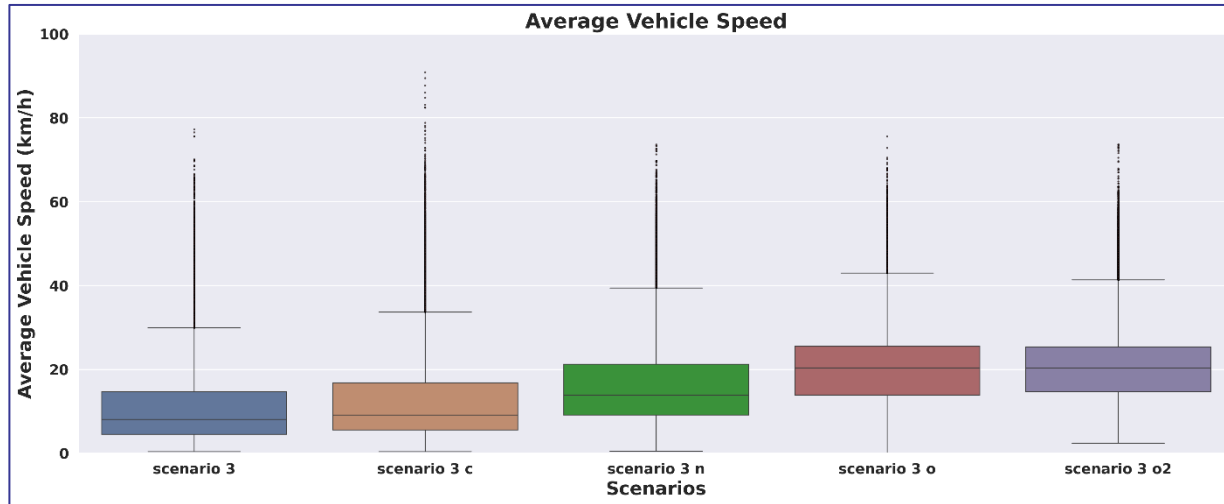


Results – Scenario 2





Results – Scenario 3





Discussion and Conclusions

- Redistributing road space to create exclusive bike lanes on Egnatia Street will significantly **worsen** traffic conditions and environmental impacts without a **notable shift** toward public transport and active travel modes.
- Placing bike lanes in the center of the road (Scenario 3) is predicted to have more adverse traffic and environmental effects than placing them at the edges (Scenario 2) due to **required signaling strategies**.
- Bike lanes at the road edges (Scenario 2) would function effectively only if at least **40%** of trips are made via PT, PC usage drops to **28%**, and bicycle usage reaches **2.2%**.
- **Bicycle signaling strategies** will heavily influence the operational efficiency of Egnatia Street if exclusive bike lanes are implemented.



Thank you!

Questions - Remarks

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