29-30 Οκτώβριος 2026 | Συνεδριακό Κέντρο Φιλοξενία Λευκωσία, Κύπρος

8ο Συνέδριο
Βιώσιμης Κινητικότητας και Ευφυών Συστημάτων Μεταφορών

From Open Data to Smarter Urban Mobility

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Το Συνέδριο υλοποιείται στο πλαίσιο του Προγράμματος Πολιτικής Συνοχής «ΘΑΛΕΙΑ 2021-2027» με τη συγχρηματοδότηση της ΕΕ.

Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ

ΤΜΗΜΑ ΔΗΜΟΣΙΩΝ ΕΡΓΩΝ

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GTFS: From Timetables to Live Vehicle Movements



General Transit Feed Specification (GTFS): a common standard for public transport data

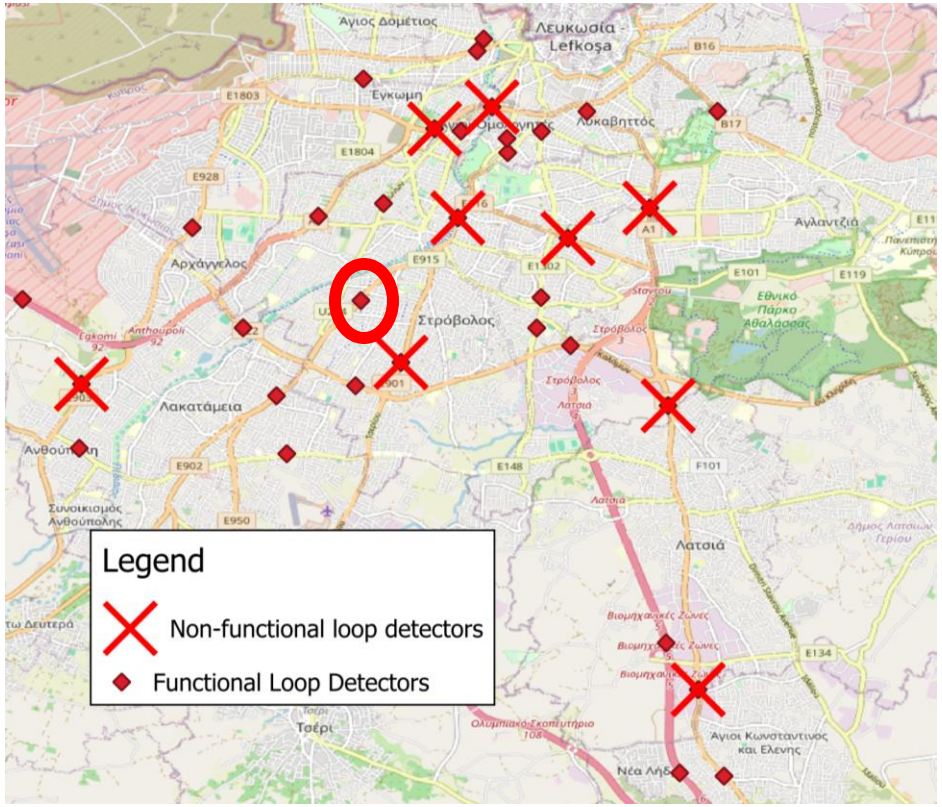
Static GTFS (planned service)

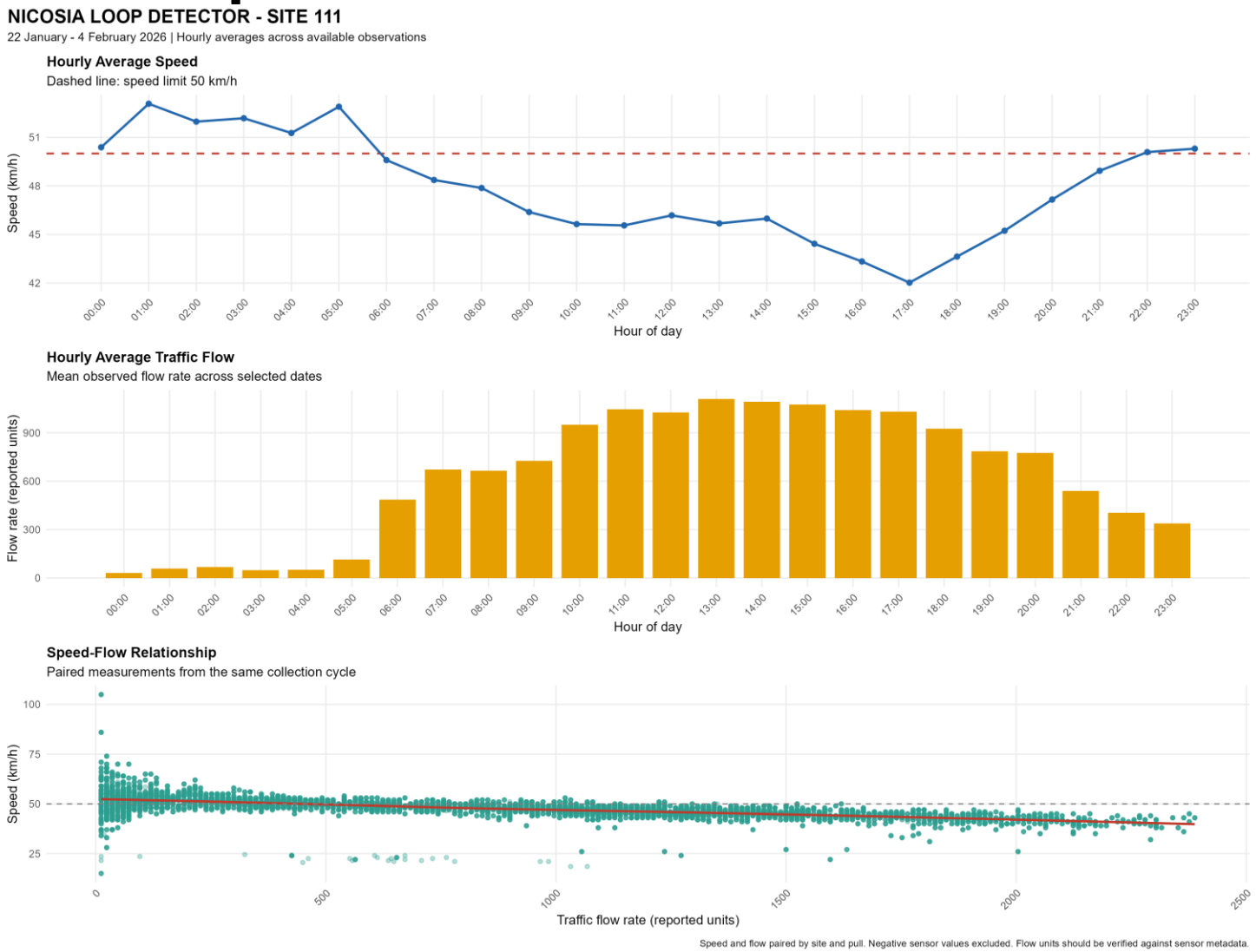
- Routes and stops
- Scheduled arrivals and departures
- Service calendars and route geometry
- Where and when should the bus operate?

Real Time GTFS (live service)

- Vehicle locations
- Predicted arrivals and delays
- Cancellations and disruption alerts
- Where is the bus, and is it on time?

Traffic Information – Loop Detectors

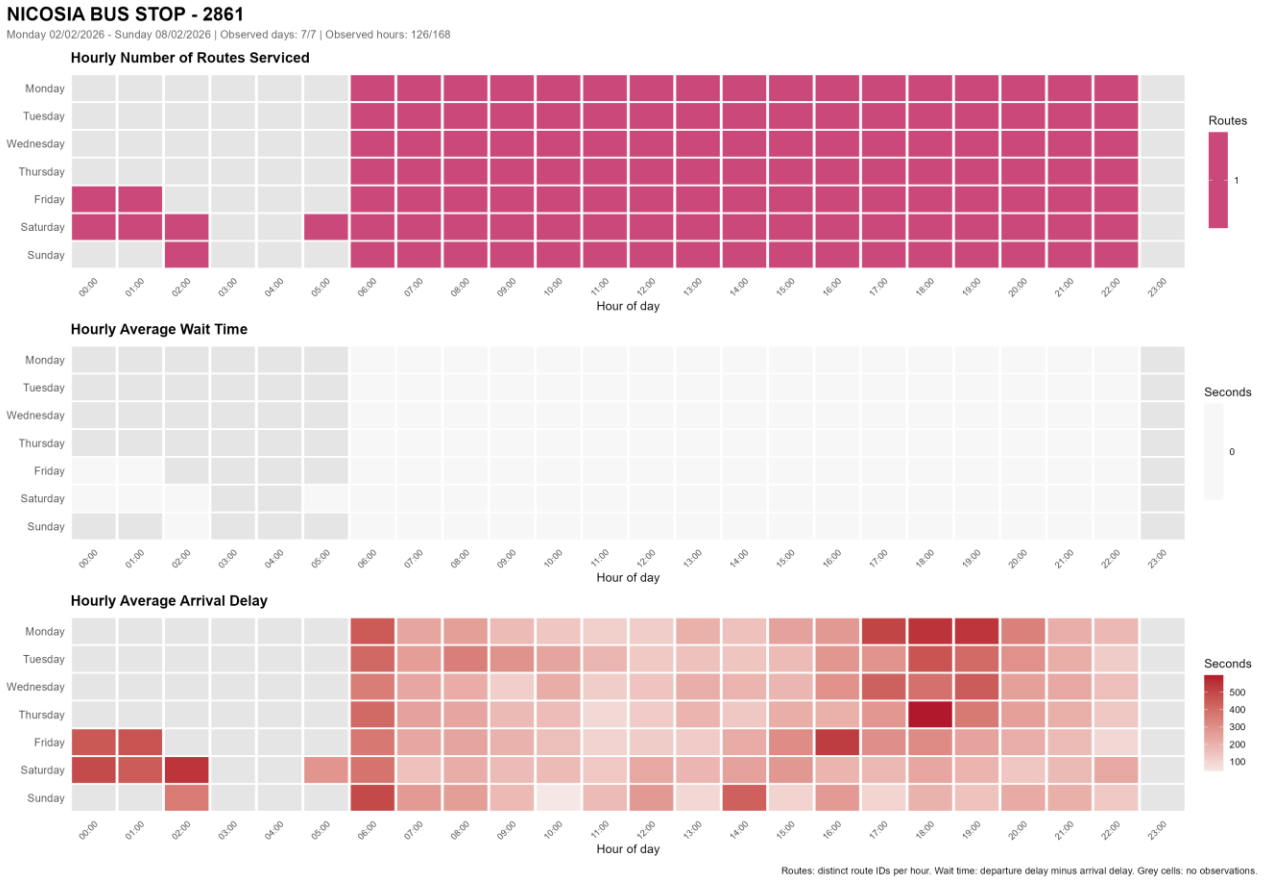




- Loop detectors' location
- Reference day: January 30th, 2026 (Friday), 13:00
- >25K vehicles
- Additional 5 non-functional loop detectors

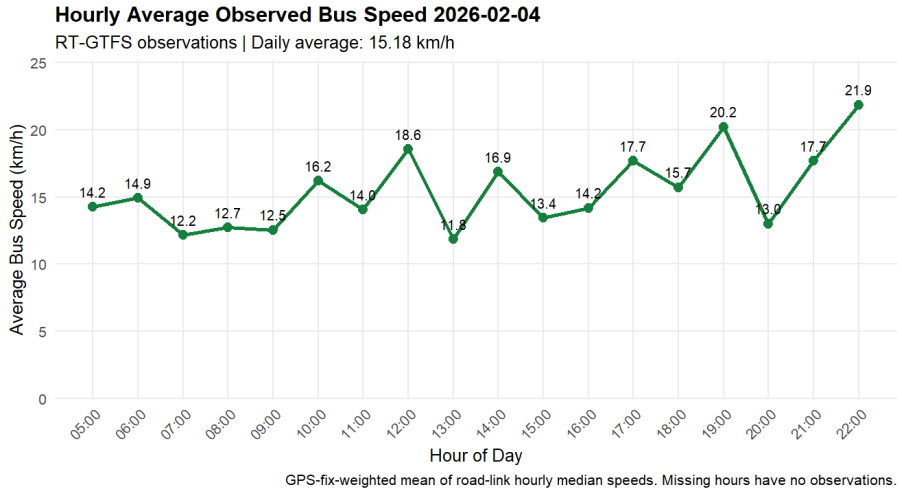
Traffic Conditions and Public Transport Provision

- Higher traffic flows and lower road speeds coincide broadly with periods of increased bus arrival delays, particularly in the afternoon.
- Only one route is observed serving this stop, raising questions about network coverage and available travel options.
- Route coverage, service frequency and passenger demand should be assessed together to identify gaps in provision.
- Bus-priority lanes and targeted service improvements, including additional routes where justified, could improve reliability and public transport attractiveness.
- Planning implication: Combine traffic, operational and passenger-demand data to identify where public transport investment can deliver the greatest benefit.



Bus Performance

- Indications of Public Transport Demand
- Arrival Delays
- Routes’ service



Static Vs Real-Time GTFS Data

Inconsistencies between the static and real-time GTFS data:

Route-level:

- Matched routes: 93%

Bus stop level:

- Matched bus stops: 96%

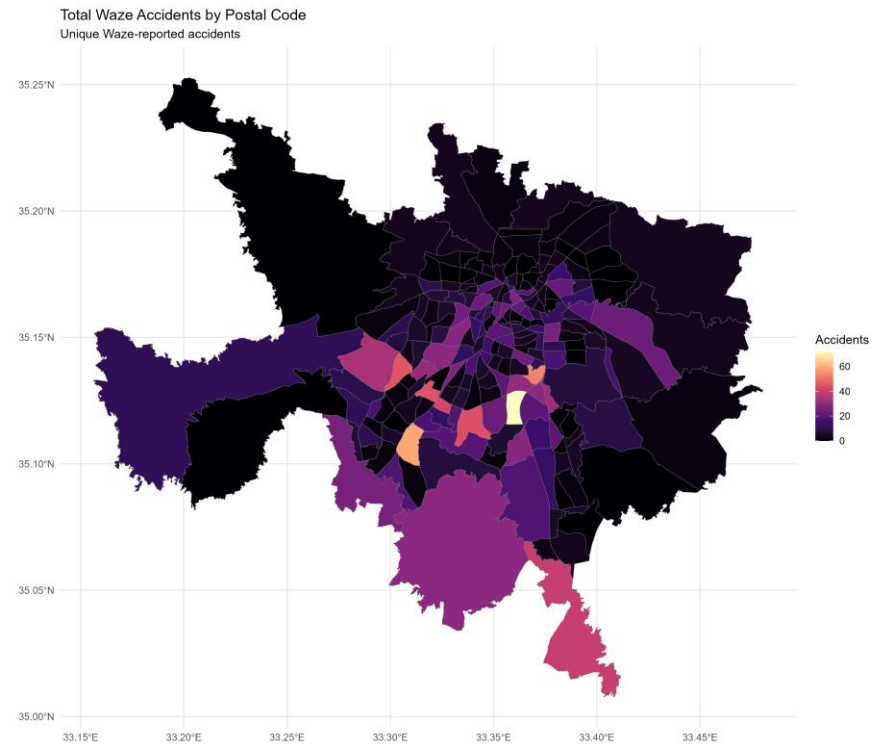
Community-Driven GPS Navigation and Traffic Application

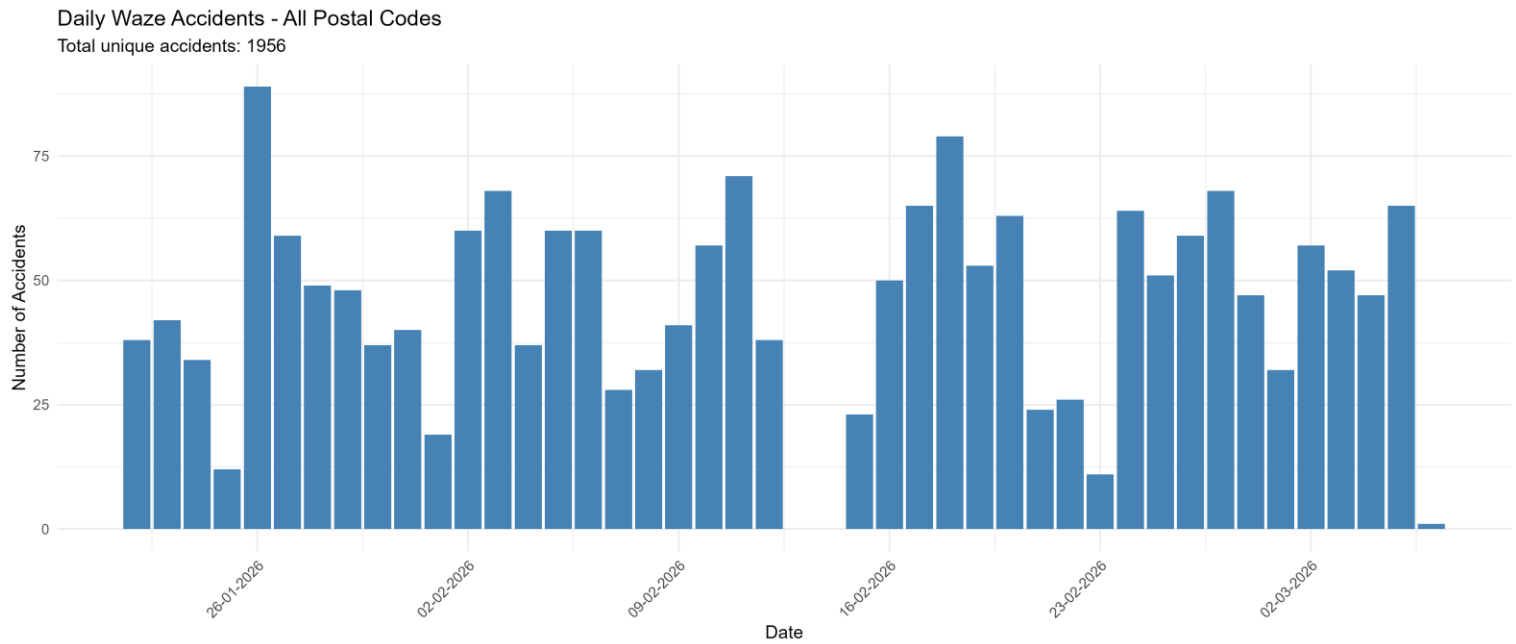
The challenge

- Multiple reports may describe the same accident.
- Report time may differ from the actual accident time.
- Reported locations may vary, even for the same event.

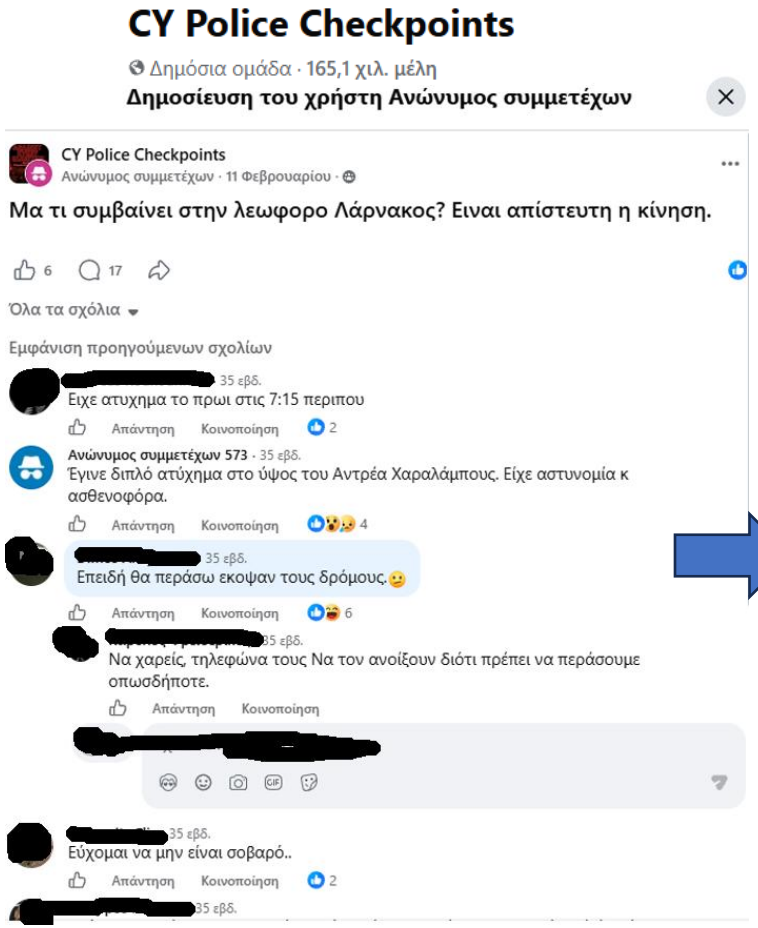
How we address it

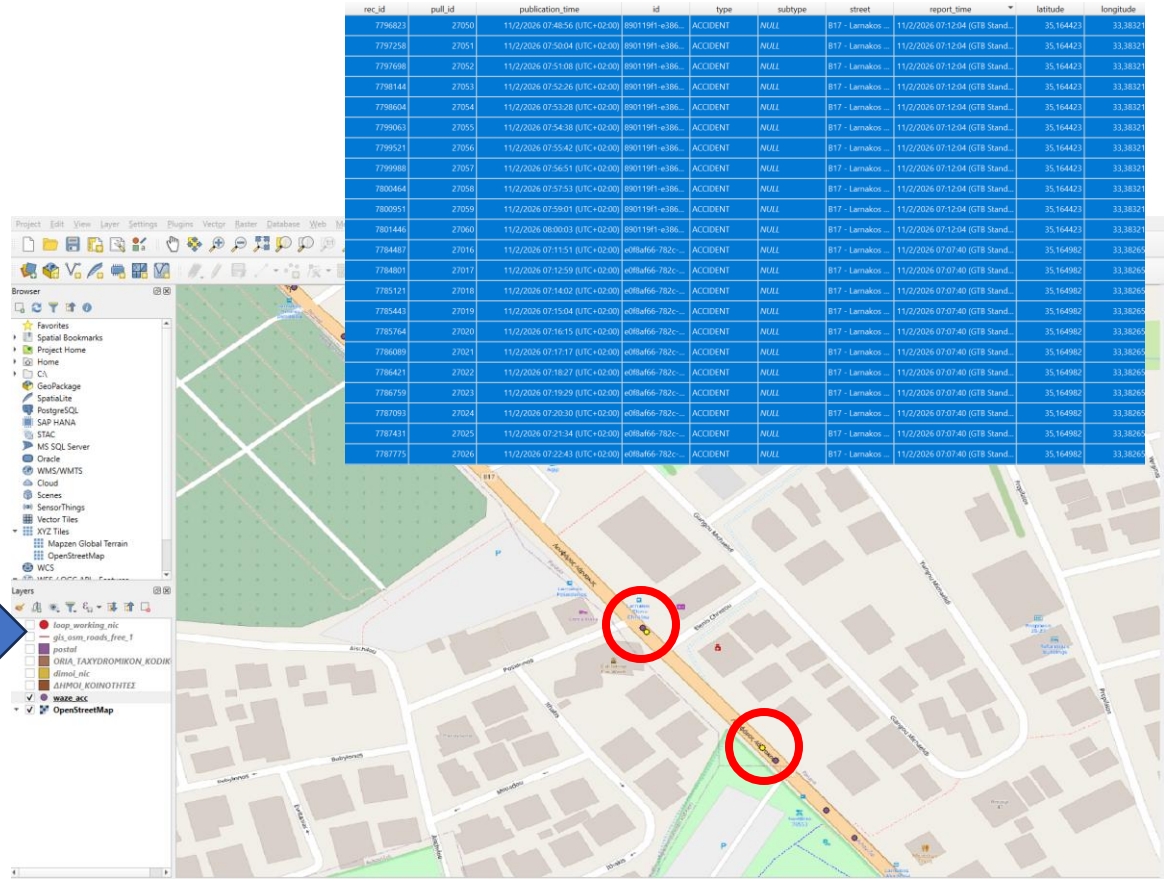
- Remove repeated records of the same report.
- Group nearby reports within a defined spatial and temporal window into potential accident events.
- Check road location and travel direction, where available, to avoid merging separate accidents.
- Retain the earliest report time and a representative location, while acknowledging uncertainty.





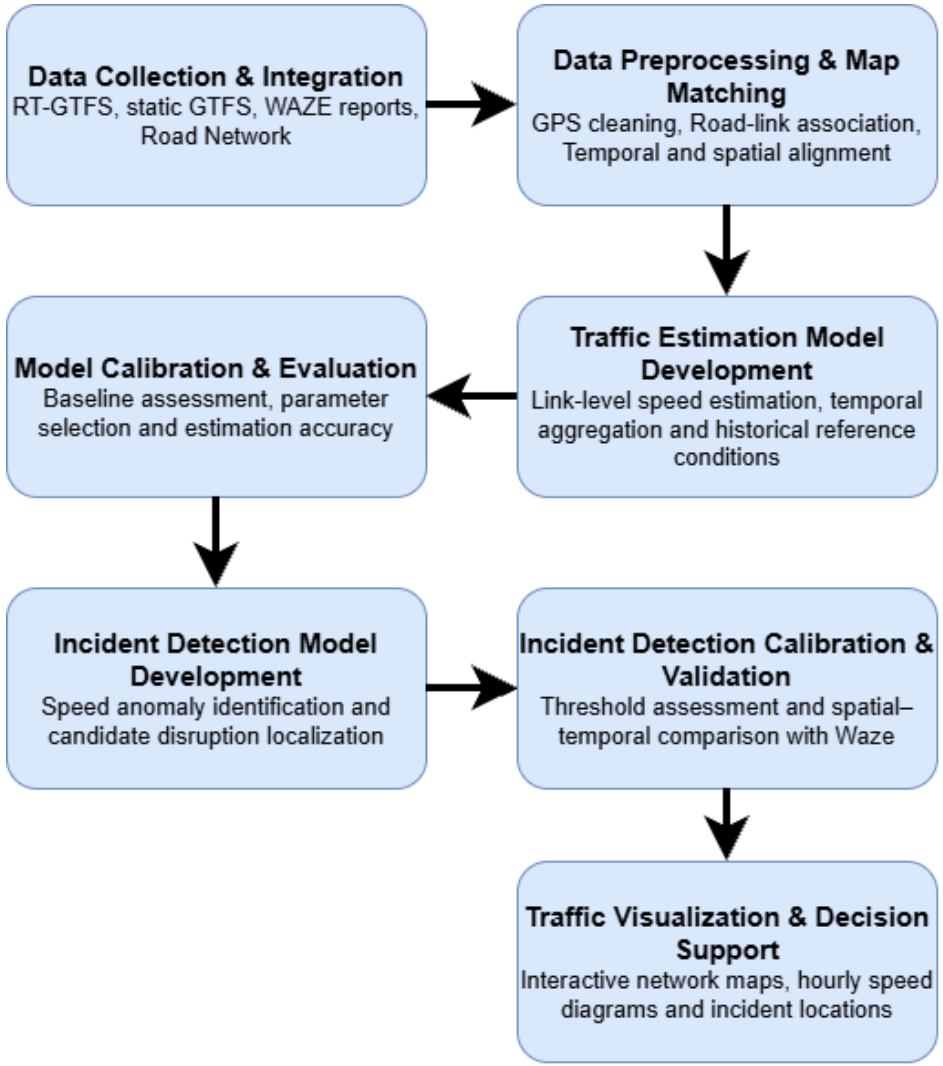
Validation of Incidents





- Social Media Reports (165K members)
- Preliminary validation of incidents
- Sample checks
- Need of police reports for validation (limitation on PDO accidents)

Methodological Approach

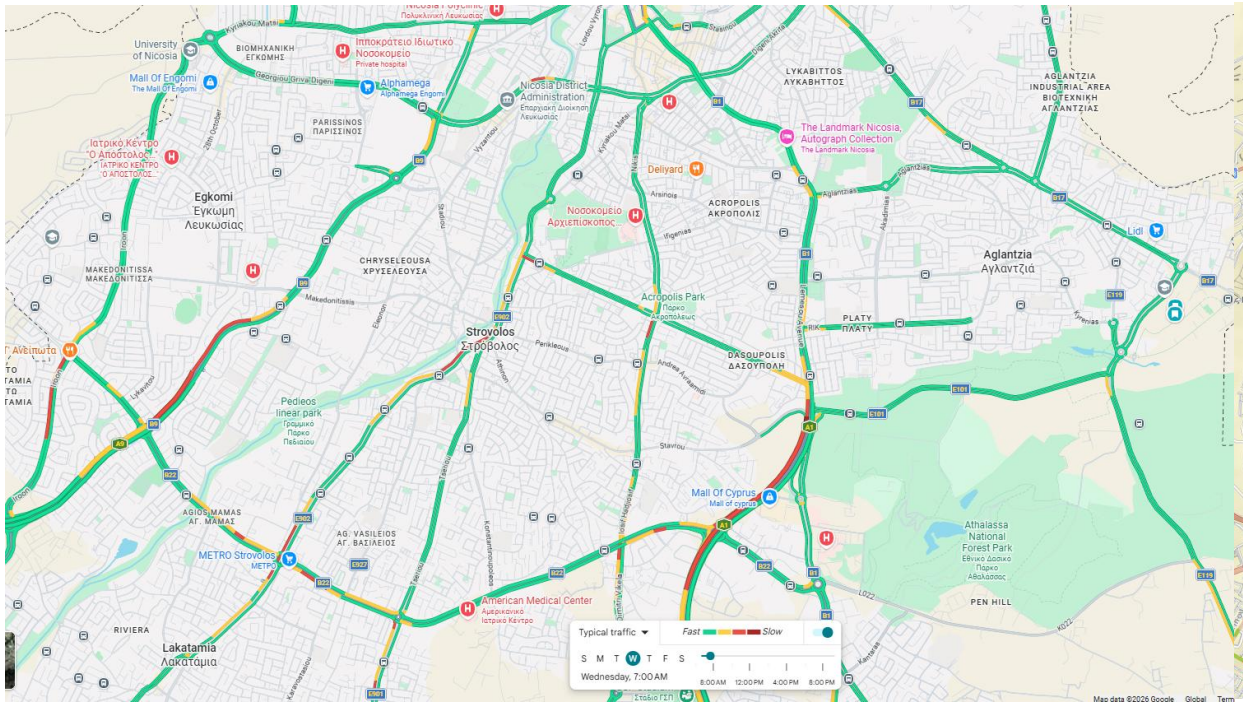


Traffic Estimation

- Extraction of bus positions and speed information from RT-GTFS data.
- Map matching of bus trajectories to directed road-network segments.
- Estimation of hourly bus operating speeds for individual road segments.
- Processing of loop-detector measurements (traffic flow and vehicle speed).
- Spatial and temporal comparison of RT-GTFS and loop-detector observations.
- Visualization of traffic conditions across the road network.

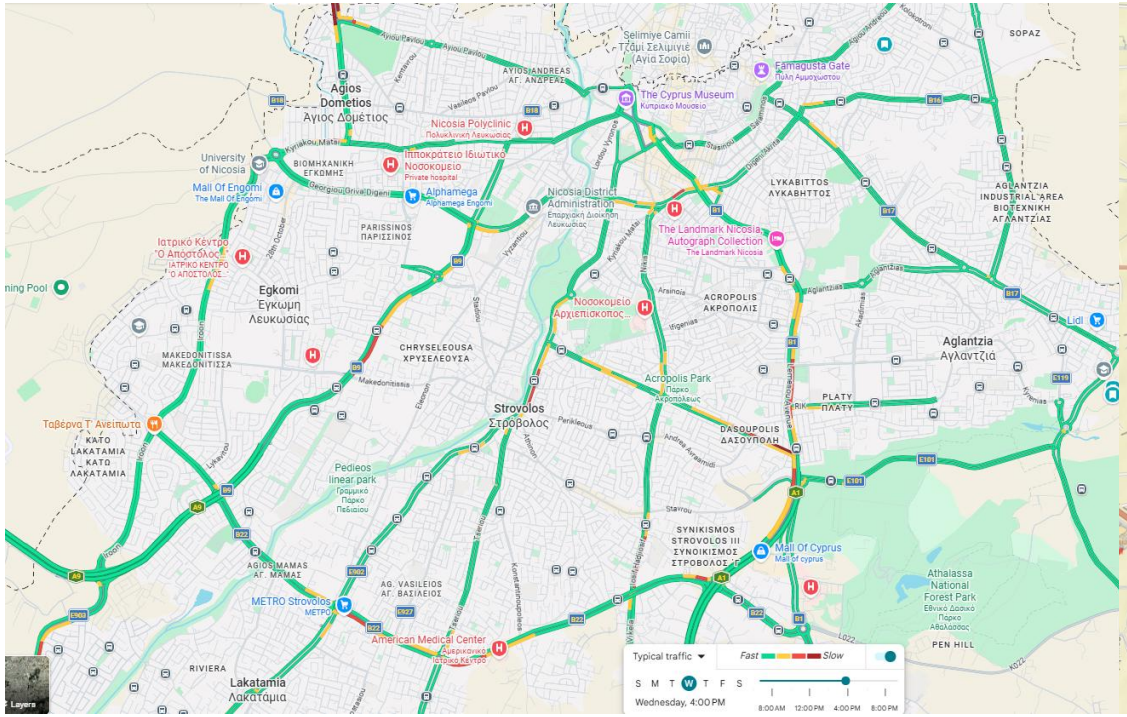
Traffic Estimation

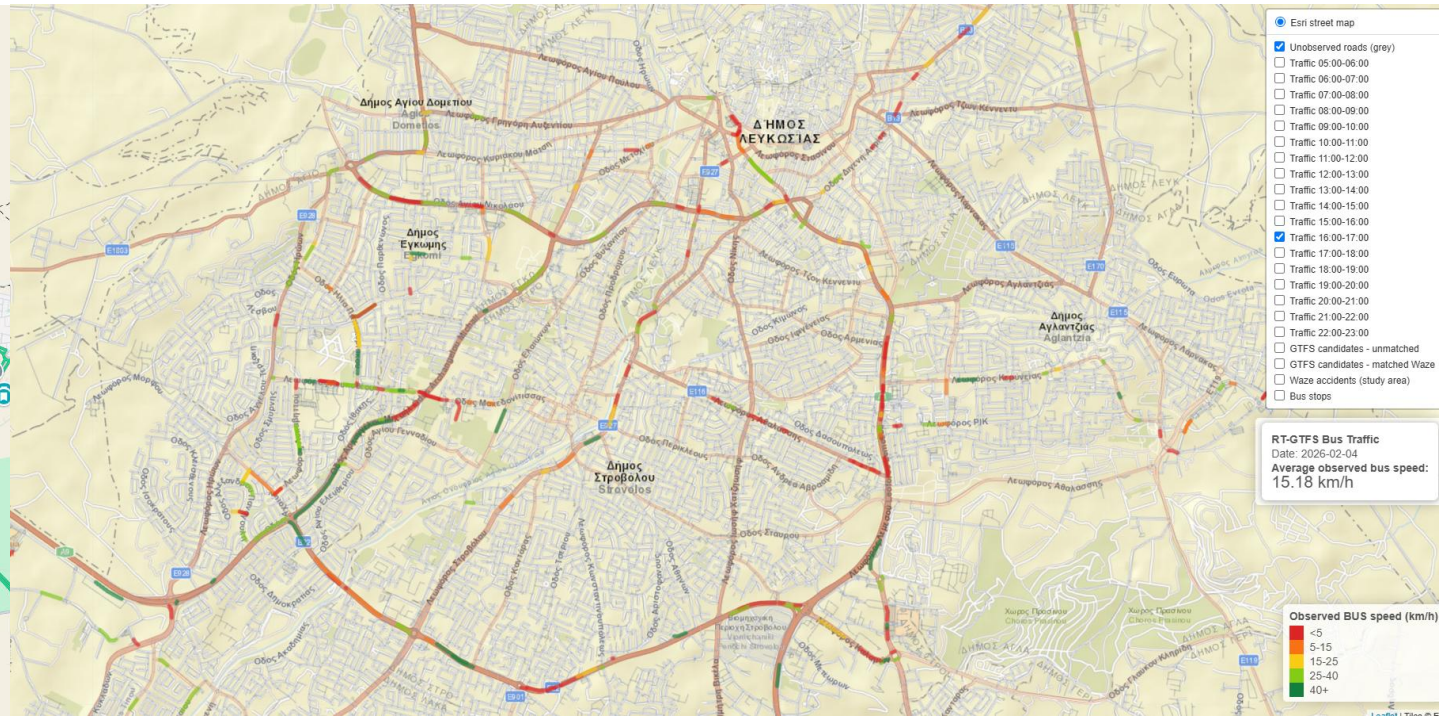
- Comparison with Google Maps indicative traffic (7:00-8:00)



Traffic Estimation

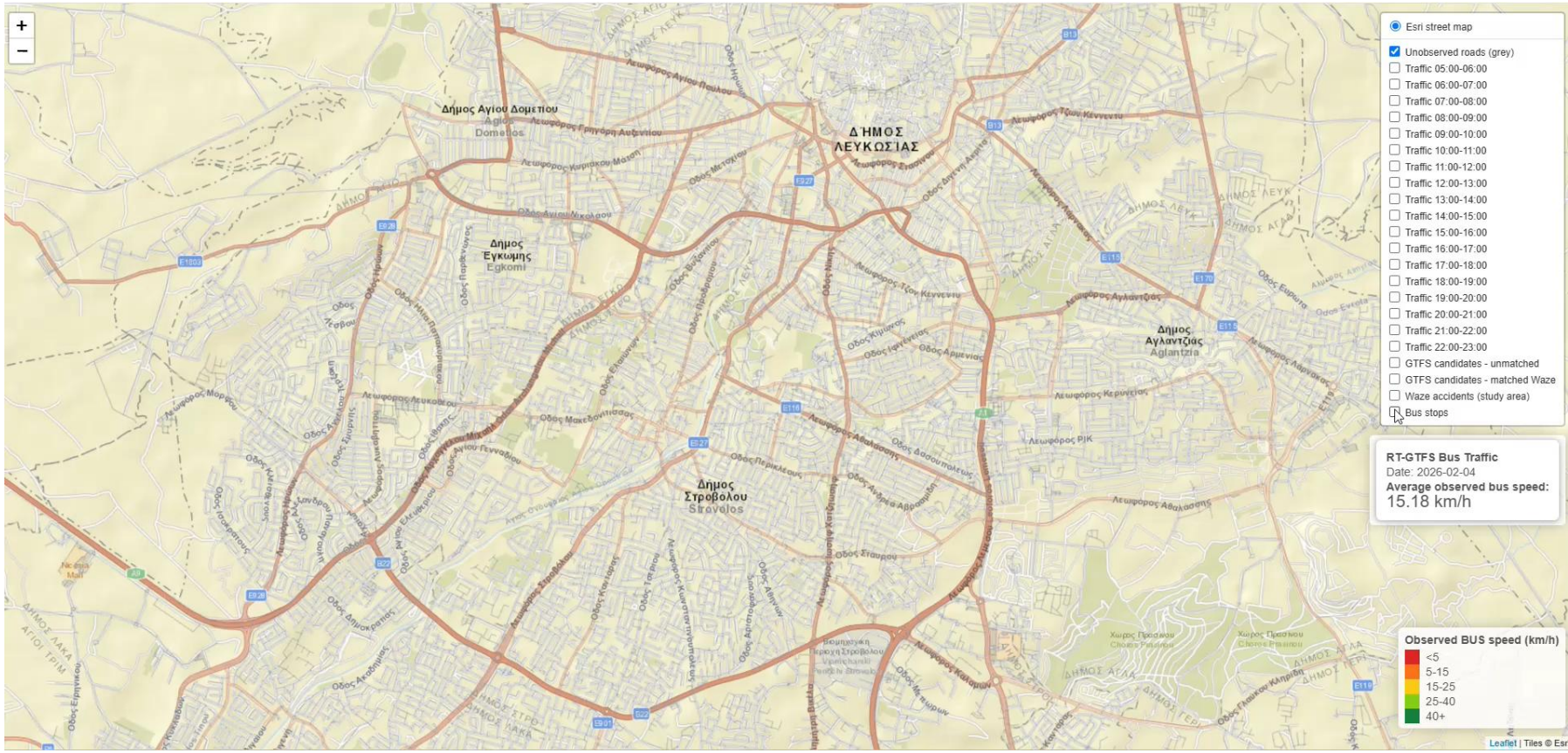
- Comparison with Google Maps indicative traffic (16:00-17:00)





Incident Detection

- Identification of abnormal bus-speed reductions relative to historical traffic conditions.
- Spatial and temporal localization of potential incidents on the road network.
- Cross-referencing detected anomalies with Waze accident reports.
- Assessment of the spatial and temporal correspondence between independent data sources.



Decision Support

- **Performance uncertainty**: Assessment of variability and uncertainty in travel times, delays and service reliability.
- **Operational decision-making**: Evaluation of alternative responses under uncertain traffic and incident conditions.
- **Intervention prioritization**: Identification of critical road segments and priority measures to enhance public transport performance.

Οργανωτές

ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΜΕΤΑΦΟΡΩΝ, ΕΠΙΚΟΙΝΩΝΙΩΝ ΚΑΙ ΕΡΓΩΝ

ΤΜΗΜΑ ΔΗΜΟΣΙΩΝ ΕΡΓΩΝ

Συνδιοργανωτές

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University of Cyprus

ΚΟΙΟΣ
Research and Innovation Center of Excellence

Σύλλογος Συγκοινωνιολόγων Κύπρου

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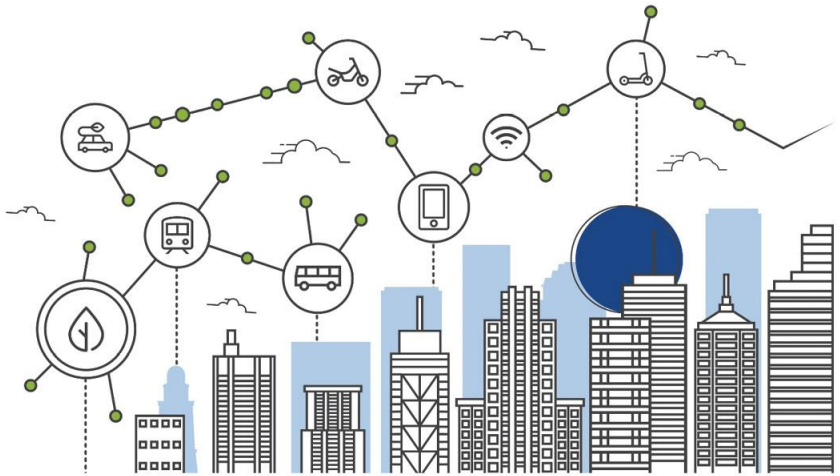

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Ευχαριστώ για την προσοχή σας!