



National Technical University of Athens
Road Safety Observatory

www.nrso.ntua.gr



Telematics, microsimulation and road safety assessment requirements for the enhancement of analytic tools

Maria Oikonomou

Transportation Engineer, PhD Candidate

Together with:

Apostolos Ziakopoulos and George Yannis

The PHOEBE project

PHOEBE aims to increase the **road safety of vulnerable road users**, especially those who use active mobility and e-scooters.

- **Project partners:** EIRA (SI), NTUA (EL), TUD (NL), TUM (DE), AIMSUN (ES), POLIS (BE), FACTUAL (ES), UPV (ES), Oseven (EL), The Floow (UK), iRAP (UK)
- **Duration of the project:** 45 months (November 2022 – July 2026)
- **Framework Program:** Horizon Europe - The EU Union Framework Programme for Research and Innovation



PHOEBE objectives

- To **exploit telematics** through data analysis techniques that are innovative and efficient.
- To harmonize safety definitions in **traffic simulation models** with those used in road safety assessment.
- To develop integrate **urban risk assessment models and tools** for the application of the methodological framework.



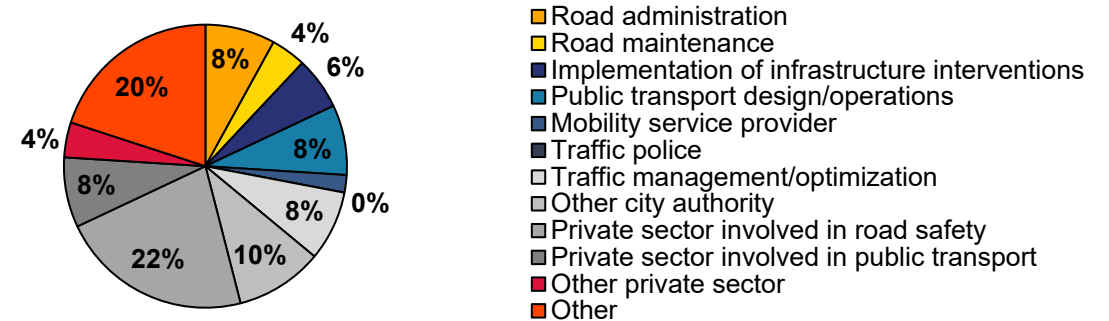


- [illegible]

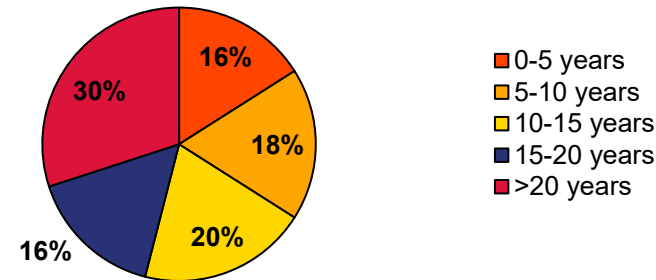
Respondent specifications

- Most respondents (22%) are **private sector employees** involved in road safety.
- Most respondents (30%) have more than **20 years of experience** in their position.
- Most respondents (17%) use a **safety assessment methodology**, while 10% of respondents use macroscopic traffic simulation.

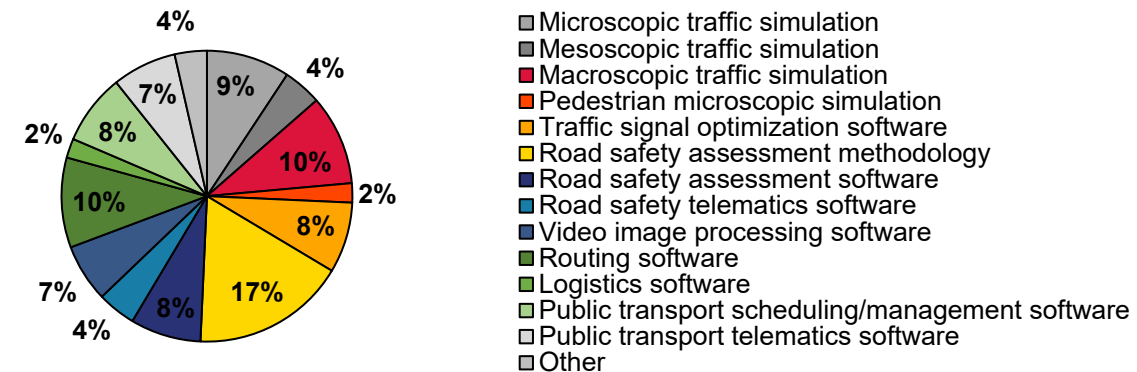
Stakeholders main role in cities



Stakeholders years of experience



Software/tool types that stakeholders use in daily activities



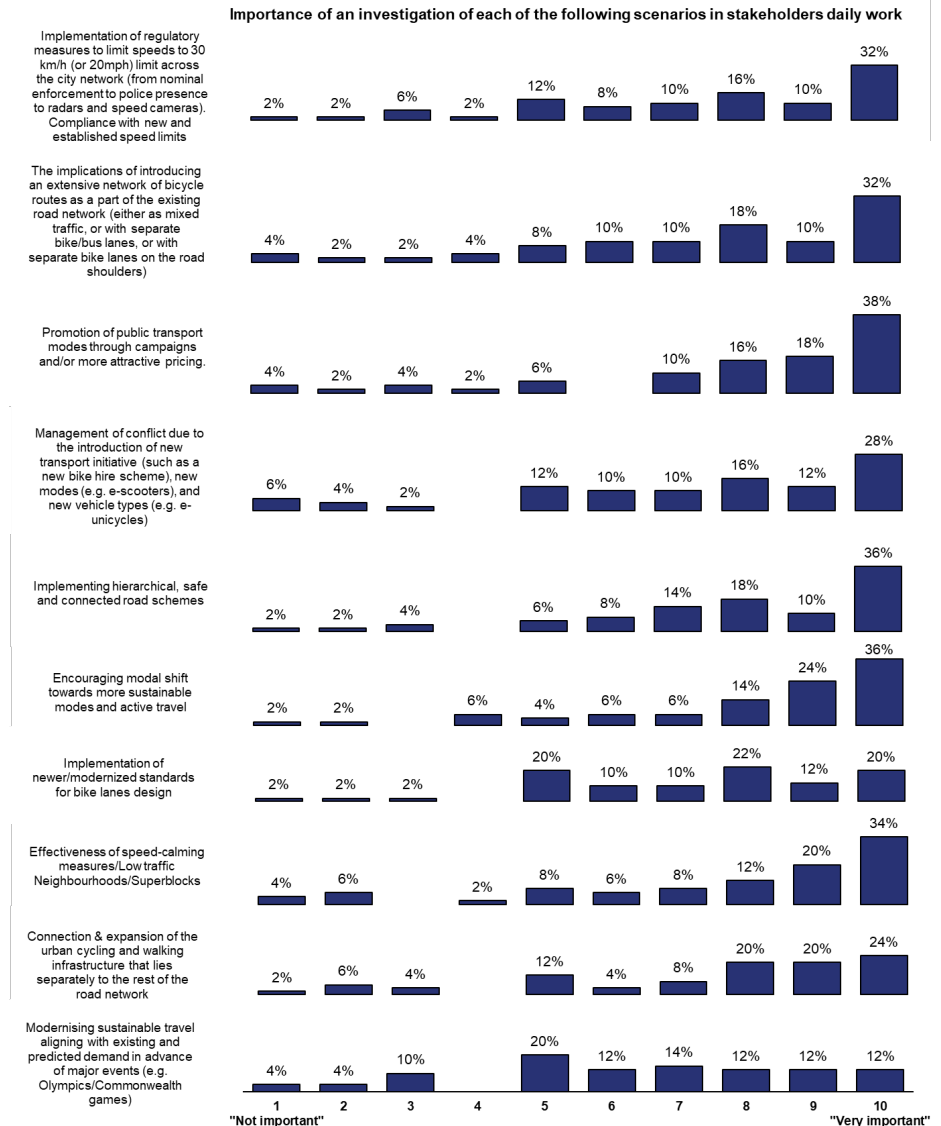
Scenarios determination

➤ It was reported that **several scenarios** need to be prioritized:

- implementation of regulatory measures to limit speeds
- introducing extensive network of bicycle lanes
- promotion of public transport modes
- introduction of new transport modes
- implementing hierarchical schemes
- encouraging modal shift
- speed calming measures
- expansion of cycling and walking infrastructure

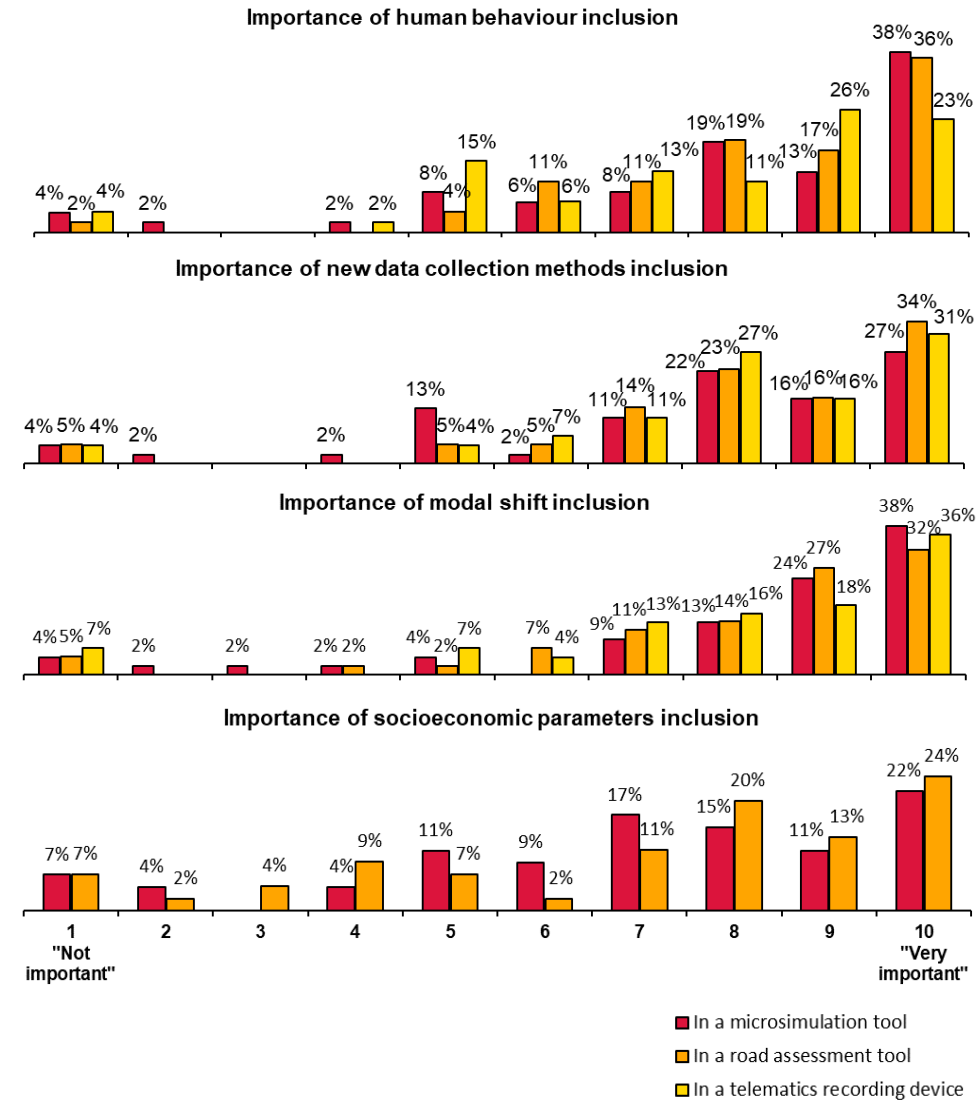
➤ **Lower priority** could be given to other scenarios, namely:

- implementation of newer standards for bike lane design
- modernizing sustainable travel aligning with existing demand in advance of major events



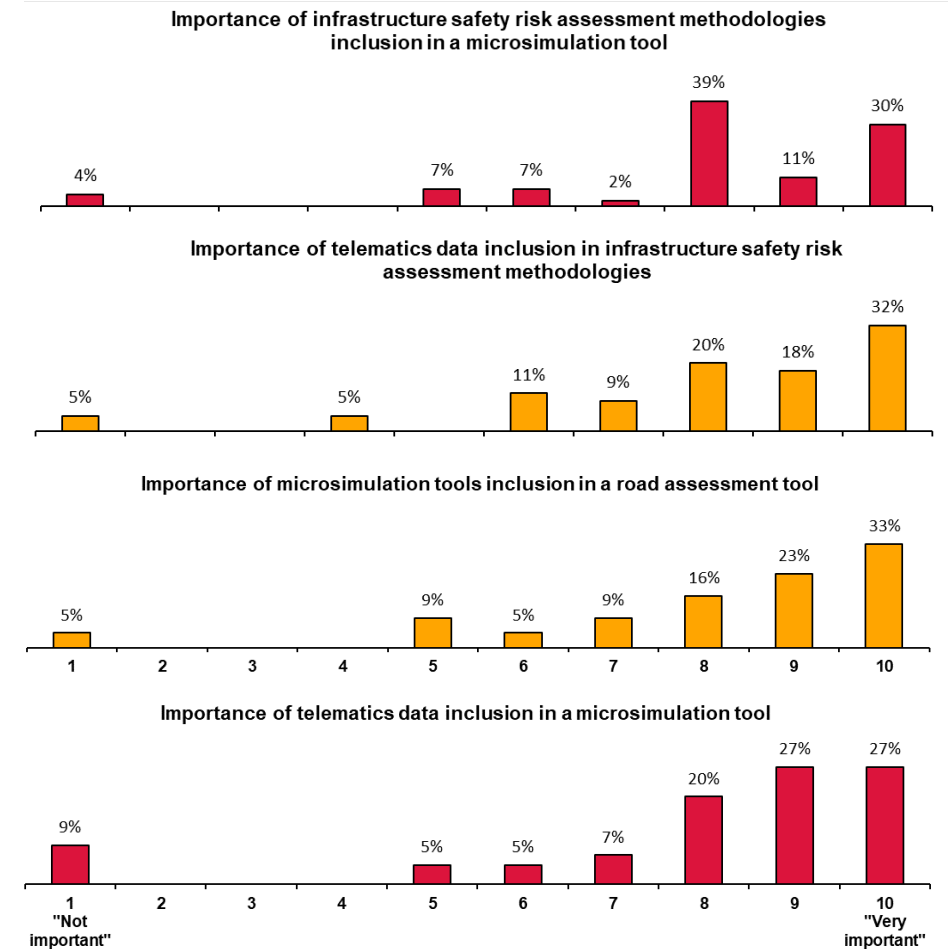
Tool requirements (1/2)

- Most respondents stated that the inclusion of human behavior models (38%), data collection methods (27%), modal shift (38%) and socioeconomic parameters (22%) **in microsimulation tool** is highly important.
- Similarly, most respondents identified that is very important to include **in road assessment tool** human behavior models (36%), data collection methods (34%), modal shift (32%) and socioeconomic parameters (24%).
- Most respondents stated a high importance of deriving human behaviour patterns from telematics data (23%) and monitoring modal shift effects (36%) using a **telematics recording device**.



Tool requirements (2/2)

- Most respondents (39%) tend to agree that **infrastructure safety risk assessment methodologies** inclusion in a microsimulation tool is slightly important.
- Similarly, a simultaneous inclusion of **telematics and microsimulation data** in road safety assessment methodologies is very important (32% and 33% respectively).
- Finally, it seems that most respondents (27%) agreed that is highly important to include **telematics data** in a microsimulation tool.



Stakeholder needs

➤ A **high priority** was requested to **enrich simulation** with:

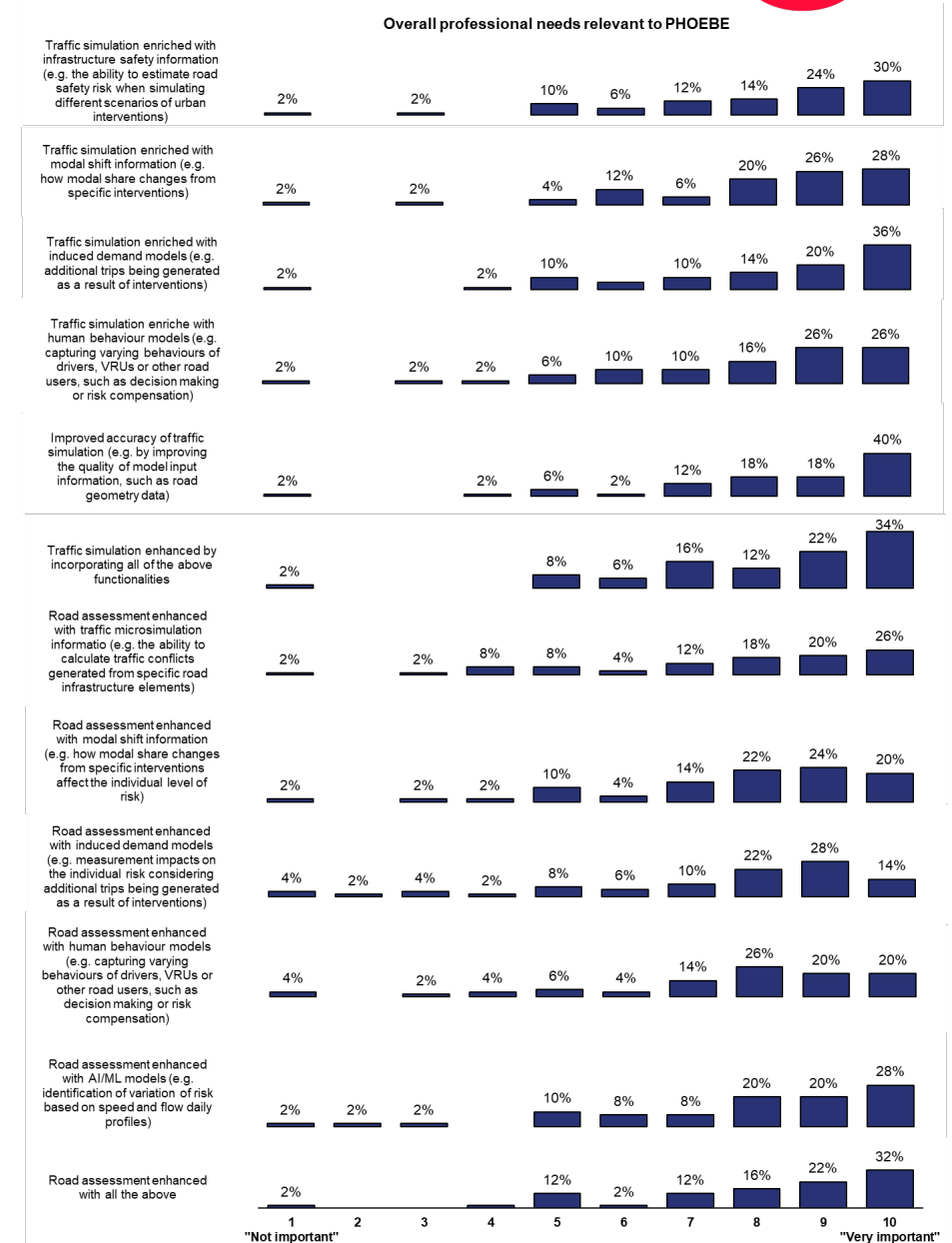
- safety information
- modal shift
- induced demand models and
- human behaviour models

as well as to **enrich safety assessment** with:

- microsimulation information
- AI/ML models.

➤ A **lower priority** was requested to enhance road assessment with:

- modal shift information
- induced demand models
- human behaviour models.



Conclusions

- Results provided valuable evidence in order to **determine the scenarios** that are worth investigation and therefore the interventions that will be developed.
- A high importance of integrating human behaviors, modal shift, socioeconomic parameters, simulation, safety assessment and data collection methods **into the utilized tools** was determined.
- Results will also help to ensure that the project outcomes are **applicable and relevant to real-world scenarios**, making the interventions and framework more effective and impactful.





National Technical University of Athens
Road Safety Observatory

www.nrso.ntua.gr



Telematics, microsimulation and road safety assessment requirements for the enhancement of analytic tools

Maria Oikonomou

Transportation Engineer, PhD Candidate

Together with:

Apostolos Ziakopoulos and George Yannis