

# **dyntapy: dynamic traffic assignment in python**

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## **SHORT SUMMARY**

We introduce dyntapy, a macroscopic vehicular traffic modelling toolkit that brings together both static and dynamic modelling approaches into a combined framework. It provides (i) unified supply and demand definitions for both paradigms, (ii) the ability to extract networks from OpenStreetMap at differing granularity, (iii) a set of static and dynamic traffic assignment algorithms and (iv) visualization utilities, including selected link analysis. Dyntapy is designed to support assignment researchers by removing the need to implement auxiliary functionalities that handle the network parsing and visualization. It is straightforward to add new methods for both static and dynamic assignment since there is a common interface for demand, supply and the visualization of the assignment results. It has been used within DUET (Digital Urban European Twins<sup>1</sup>) where it participates in a multi-model framework to calculate changes in traffic flows, delays and emissions based on user manipulations of the network.

**Keywords:** Dynamic Traffic Assignment, Static Traffic Assignment, Scientific Computing, Transportation Network Modelling, Data Visualization

## **Reference Notice**

An adapted version of this paper has been submitted to the Journal of Open Source Software (JOSS). Dyntapy is available in our repository where you will find extensive documentation, tutorials and, eventually, a reference to the published article.

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<sup>1</sup><https://www.digitalurbantwins.com/>