Urbanity: A Global Tool for Open Urban Network Analysis

Winston Yap
National University of Singapore
8 Architecture Dr, Singapore 117564
winstonyym@u.nus.edu

Abstract

City planning is a hard task given the scale and complexity of urban systems. Urban planners need better tools to help them understand and contextualise large urban systems. To address this concern, we introduce Urbanity, an open global tool that provides planners a seamless interface to generate city-scale representation of urban networks and their contextual features. Urbanity is developed with Python and built entirely on open source software and open data. The tool has been applied and tested at a global scale and demonstrates the powers and promises of urban analytics across any geographical location and scale. The proposed workshop session will include: 1) a presentation on Urbanity, 2) demonstration of its key functionalities, and 3) a step-by-step code along session to use Urbanity in urban science workflows. Urbanity plays an important role in helping urban planners and policymakers to make sense of the big data that is emerging from cities.

Workshop pre-requisites

- Participants should come with basic knowledge of Python to ensure meaningful participation
- Basic GIS knowledge

About this workshop

In the last decade, urban analytics has seen tremendous strides in development and innovation. From street view analytics to urban scale morphology, many methods have emerged to support evidence-based planning and large scale sensing in cities. Building on these innovations, this workshop introduces a new urban analytical tool, Urbanity, for urban planners to model and understand urban networks. With a standardised and robust open science workflow, our tool allows planners and urban scientists a streamlined interface to connect with various open data layers such as OpenStreetMap, Mapillary, and Meta's Population Density Maps.

In this workshop, participants will go through a step by step code-along session with the lead developer of Urbanity. The workshop will cover installation and setup, introduction to basic functionalities of Urbanity, and exploratory and descriptive analyses with Urbanity. The workshop has been designed to run on Google Colab notebooks to ensure minimal setup effort. The entire session will last for the duration of two hours.

Access to materials

The Colab notebook for this session can be accessed and downloaded from: Urbanity Colab Notebook.

What to prepare

No preparation required. Participants interested in our tool's methodology are more than welcome to check out our open access publications [1, 2].

References

[1] Winston Yap and Filip Biljecki. "A Global Feature-Rich Network Dataset of Cities and Dashboard for Comprehensive Urban Analyses". In: *Scientific Data* 10 (2023), p. 667. DOI: 10.1038/s41597-023-02578-1.

[2] Winston Yap, Rudi Stouffs, and Filip Biljecki. "Urbanity: automated modelling and analysis of multidimensional networks in cities". In: *npj Urban Sustainability* 3.45 (2023). DOI: 10.1038/s42949-023-00125-w.