

Contribute to increase impact, sustainability, and business efficiency in the tourism sector

Version 1.0

Context

The Municipality of Porto is going through a complex and demanding internal reorganisation that aims to improve its internal data policy. One of the main outcomes of this endeavour it's to make available a new open-data and public resource to serve its inhabitants, visitors, companies and institutions.

Two major aspects of this investment are:

- The implementation and operation of an Urban Data Platform that aggregates, processes and publishes city data (such as environmental sensor data, geolocation data, mobility data and others);
- The launch of the Porto Open Data Portal which is constantly being updated to improve the quality and value of its data.

One of the main goals for the coming years is to find ways to utilise and create value from our datasets. With this focus, we want to release a challenge to use municipality data to create new insights, dashboards and indicators, but always with a critical mindset towards the quality and preparation of the datasets available or of new data sources.

One possible application of the open data available is the creation of indicators that can show the current state of areas of interest for city governance, such as mobility, tourism or economy, while providing decision makers and city planners tools to support the design of local policies that effectively contribute to urban sustainable planning. These can be simple indicators based on data analysis and insights from the day-to-day urban activity data, or advanced indicators developed using more intricate analysis techniques and approaches.

An example of such an advanced indicator has been studied and developed in a previous research project Data4Covid in collaboration with NOVA Urban Analytics ([link](#)). The Urban Dynamic Indicator (UDI) consists of a composite indicator

designed to create a holistic and daily view of the city of Porto. It measures the current state of the urban dynamics through factor analysis over traffic, public transportation, air quality and noise data-sources to deliver a single indicator that represents the city's activity.

Another example of an indicator that can support local authorities, is the Illegal Parking Score, a system to measure, predict and simulate the risk of parking illegalities ([link](#)). The system calculates a conditional probability of illegal parking occurring in a road segment, based on parking ticket occurrences and spatiotemporal conditions (like period of the day and climatic conditions). The IPS was first calculated for the Lisbon Municipality, and it is supported by a Light Gradient Boosting Machine model that allows to predict the IPS for future conditions.

Topic

As a topic for this year's Hackacity, Porto wants to focus on the creation of new indicators and visualisation of data for the Tourism scene in the city.

In recent years, tourism has flourished in the city, making it a very positive case study, deserving the attention of tourists, who come either for leisure or for business, and specialised publications regarding tourist activities and economic development, with several international awards.

The biggest differences are related to the economic enhancement, the specialisation and qualification of the tourist supply, the urban, cultural and heritage requalification, the creation of programs that promote the territory sustainability, cleanliness and safety, the greater attraction and fixation of people and companies that provide qualified jobs, in which the whole city progresses and benefits from the strategic development of the tourism sector. Another important change is the challenging decentralisation of tourist flows, with the creation of more points of interest and centralities throughout the city.

Goal

For this edition of Hackacity, we challenge you to create an indicator, or several indicators, that measure(s) the city's Tourism dynamism.

These indicators should allow officials to act on a well-informed basis and make decisions around the city, while also being simple to read and understand. While we leave it up to you to decide which questions can be answered through the

metric, without overcomplicating it, here are some examples of the types of challenges that the city is tackling (without order of importance):

- Within the city areas which ones are more visited? By which demographics?
- What are the most sought after points of tourist interest? By zones, typology (monuments, museums, restaurants, historic shops, etc.), demographics, time of year and day?
- Bearing in mind the tourist flows and the densest areas of the city, are hotels and local accommodation establishments distributed evenly? How to improve the sustainability of tourist accommodation in the city?
- Does the tourist activity have an impact on the promotion of local and traditional commerce? Is there any relationship between the geolocation of the historic “Porto de Tradição” shops and the influx of tourists?
- Does the proliferation of points of interest coincide with the areas with the highest volume of commercial transactions?
- Given the location of Porto Tourism info spots and iPoints (Sé Tourism Office, Porto Welcome Centre, Ribeira, Aliados and Campanhã iPoints, airport reception desk) – is there is a good geographical distribution and balance to respond to requests from tourists, guaranteeing a good tourist reception?

Participants are encouraged to study and systematise the dynamics of tourism in the city of Porto, by crossing datasets and available resources, creating an indicator, or several indicators, of tourist pressure zones in the city in real-time and the circulation of visitors, in order to create the best solutions and answers to the challenges presented.

The work developed should focus on contributing to increase impact, sustainability, and business efficiency in the tourism sector.

Further Background Information

Papers and Studies:

- [The daily urban dynamic indicator: Gauging the urban dynamic in Porto during the COVID-19 pandemic](#)
- [The illegal parking score – Understanding and predicting the risk of parking illegalities in Lisbon based on spatiotemporal features](#)
- [Compositional data analysis to model tourists' expenditure by categories](#)
- [Social Media Data for Tourism Analysis](#)
- [O impacto do Turismo na Qualidade de Vida dos Locais](#)
- [Perfil do Turista no Porto](#) (2018)
- [Turismo em Portugal](#) - Numbers (2018)

News:

- <https://www.investporto.pt/pt/setores/turismo/>
- [Porto. Desertificação, rendas e turismo são maiores problemas do centro](#)

Other resources:

- [Porto Ambiente BI](#)
- [Turismo de Portal Dados Abertos](#)