GrowSmarter
Transforming cities for a smart, sustainable Europe

Smart taxi stand system

Smart solution 12
Smart mobility solutions

Estimated impacts

Up to 50%
reduction in CO$_2$ emissions possible if all taxis use stands

Up to 50%
reduction in kilometres driven possible if all taxis use stands

Barcelona

Technical partners

CENIT
Paco Gasparín
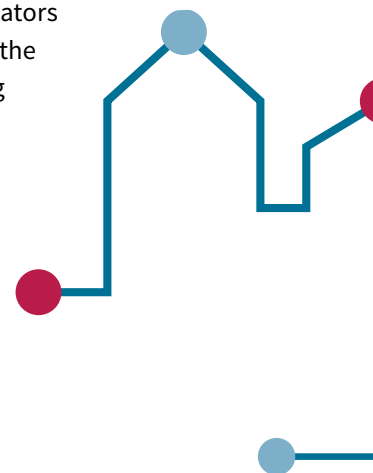*francesc.gasparin@upc.edu*

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What is it?

The smart taxi stand system is a new form of information system for taxi users and drivers, making use of sensors at taxi stands to monitor the number of waiting taxis in real-time. This is based on the creation of four scenarios and aims to increase the current occupation of the stalls in order to see a reduction of kilometers driven and pollution.

What did GrowSmarter do?

Implementation involved extensive discussions with the Regulatory Institute for Taxis. Taxi operators were informed about the measure and the temporary closure of taxi stands during installation of the sensors (one day per site). A driver survey indicated strong support of the measure, given its potential to reduce search traffic. In contrast to many cities, taxies in Barcelona are not prohibited from cruising around searching for customers and do not have to use determined taxi stands.

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Sensors were installed at three taxi stands with a total of 13 parking spaces. 30 taxis also shared all data generated by their rides. It was analyzed how the launch of an application could affect the creation of scenarios that reflect the favorable use of the stops.

Lessons learnt

Valuable experience was gained regarding the optimal placement of sensors for obtaining measurements, which types of taxi stands are appropriate for sensors, and the type of issues related to data communication between the sensors and the data management system. As with other measures, the process of obtaining permits for physical works took time. Similarly, the costs of network access and system use, and issues related with data costs (free for the City administration during the project phase) are long-term challenges for actions of this type. In the absence of regulations guiding taxis to use taxi stands, customers continue to prefer to hail on-street or be collected at, for example, their residence or office.

Upscaling & replication potential

Sensor-based systems are likely to interest cities or sites with taxi stands, particularly those that enforce zones or restrictions on where customers may be collected, such as airports. Such systems can be linked to other requirements, e.g. use of non-fossil fuel vehicles, to accelerate the transition to sustainable transportation. Taxi companies increasingly use proprietary applications, which could be linked to sensor-based systems to provide real-time information on taxi location and availability. Similarly, sensor-based systems may contribute to development of mobility station or MaaS (Mobility as a Service) offerings or enable synergies with other kinds of mobility services.

Long-term strategies should take into account the implications of technologies (e.g. maintenance, maturity, etc.) and their desirability.

How did the measure work?

Technical feasibility ● ○ ○

The installation of the sensors is feasible, but the battery depletes quickly. The development of an application has resulted in some issues.

Economic feasibility

Taxi stops need to be promoted to favour urban mobility. This will favour the pollution and travel time reduction of taxi drivers without a customer.

Replication potential ● ● ●

This measure is replicable if a suitable technology is chosen with enough time given to perform the analysis of the utilization of the taxi rank.