

2020
CIVITAS
Cleaner and better transport in cities

DESTINATIONS



Measure Evaluation Results

LPA 2.2 – SMART Destination

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Executive Summary

The CIVITAS DESTINATIONS project provided the opportunity to the local partnership in Las Palmas de Gran Canaria (Municipality of Las Palmas de Gran Canaria, Guaguas Municipales, Sagulpa and CINESI) **to assess and analyse tourists' mobility behaviour**.

The evaluation approach was based on crossing two information sources: **on-street surveys** to tourists and **mobile phone data tracking**, which consisted of obtaining information about the geolocation of phones through the cell towers installed in the city. In this way, information such as itinerary, distance travelled, and time spent at each location for different tourists' profiles could be obtained.

At first, the tracking was based on the installation of a smart metering system in a small area of Las Palmas de Gran Canaria' promenade (called the Laboratory Area). A smart meter is an electronic device that records real-time or near real-time data about mobile phone flows and movements. However, major Spanish telecom operators such *Telefónica*, *Vodafone*, and *Orange España* have developed new services and business models to monetise their data in the recent years. After having conducted comprehensive market research, mobile phone data tracking has been identified as the best solution in the market to obtain rich mobility information about tourists in the city. Besides this, using mobile phone tracking data allowed the study to be expanded to the whole city and not only to focus on a small area.

The data collected by tracking was integrated with the qualitative information obtained by on-street surveys carried out in three touristic hotspots in the city. Both data sources (mobile phone data tracking and on-street surveys) are complimentary but cannot be combined. Mobile phone data allowed the local partners to quantify the total number of visitors and to track their travel patterns inside the study area, while surveys allow more qualitative information to be obtained about the visitors (needs and requirements, preferences, opinions, etc.), which offers added value. The data collection was carried out between 17th and 19th November 2019 (mixing working days and weekends), and during the touristic peak season on the island.

Concerning the evaluation of this measure, as its outcome was not a tangible solution, the final choice of indicators was related to the mobility choice and opinions of tourists. The first indicator is "modal split" (obtained through telephone surveys), which has changed after the implementation of the CIVITAS DESTINATIONS project, increasing the share of public transportation and non-motorised modes at the expense of private cars. The other indicator measured the level of satisfaction of tourists towards the city mobility system, obtained through on-street surveys. The value obtained was 7.8/10 and although there was no baseline for this indicator, it was considered a positive result.

A Description

The main aim of this measure was to deliver information about tourists' needs by collecting data on where and how tourists were moving around, and to clearly identify their favourite walking, cycling, and public transport routes. Before DESTINATIONS, the Municipality of Las Palmas de Gran Canaria and other local tourism stakeholders did not have this information available as it was never tracked before.

This issue was addressed through two data sources: on-street surveys to tourists and mobile phone data tracking.



Figure 1: On-street survey to tourists (new Aquarium and Cruise Terminal)

Initially, data tracking was planned to be carried out using new technologies such as smart metering systems in a pilot area. This pilot area was the Laboratory Area for sustainable urban mobility around the *Puerto Ciudad* area (close to the new Aquarium and the Cruise Terminal), and strongly linked to measure LPA 3.1.

However, the initial idea has been extended and, thanks to mobile phone data tracking, information about tourists' mobility patterns over the whole island of Las Palmas has been obtained.

The information obtained can be valuable for the Municipality, the Tourist Office, and other local stakeholders related to tourism.

A1 Objectives and outputs

City policy level objectives

- Promotion of sustainable mobility among citizens and visitors
- Efficient and coordinated use of the different transport modes (urban public transport, pedestrian and bike mobility)

Measure specific objectives

- Increase the total share of tourists that use sustainable modes of transport
- Shift of travel behaviour of tourists towards more sustainable modes
- Identify and analyse the mobility patterns of different target groups (students, tourists, commuters, etc.)
- Gather data about tourists' movements in Las Palmas de Gran Canaria
- To achieve a more attractive destination for tourists

Outputs

- The original output was to develop a new smart metering system to track and monitor tourists' mobility patterns in the Laboratory Area. However, this was not the technology and methodology that was finally selected as mobile phone data tracking provides much more information in a more cost-efficient way
- Data about mobility patterns of tourists in the whole city of Las Palmas de Gran Canaria as well as over the whole island through mobile phone data tracking¹

Supporting activities

Not applicable.

A2 Inter-relationship with other measures

The identification of tourists' mobility flows and their mobility patterns is useful for the Municipality, Guaguas Municipales, and Sagulpa in order to better adapt their mobility services to tourists (especially with measures LPA 4.1 - *Public e-bike system* and LPA 6.1 - *Green credits scheme*).

Information about tourists' mobility has also been used to assess the impact of measure LPA 3.1 - *Attractive, safe, and accessible public space at major attractions* in the Laboratory Area.

A3 Target groups and/or affected part of the city or region

The target group of this measure were tourists visiting Las Palmas de Gran Canaria (including one-day visitors such as cruise passengers, tourists staying at the hotel resort in the south of the island, as well as those whose accommodation is in the city). Originally, data had to be collected exclusively inside the Laboratory Area, but in the end new technologies allowed data to be collected from the whole island with the same budget.

A4 Stakeholders: CIVITAS project partners and other important actors

Stakeholder name	Activities description
F.E.H.T. – Federación de empresarios de Hostelería y Turismo de Las Palmas.	Definition of the key topics to be monitored by the smart metering system.
Tour operators	Definition of the key topics to be monitored by the smart metering system.
Patronato de Turismo de Gran Canaria	Information about cultural and entertainment events.

Table 1: Stakeholder involvement

¹ Extra-output with DESTINATIONS budget

B Measure implementation

B1 Situation before CIVITAS

The city of Las Palmas de Gran Canaria was facing a new kind of tourism: permanently connected, with new needs, and a desire for more integration with their travel destinations before, during, and after the visit. Unfortunately, before the implementation of this measure, there was no way to monitor the mobility trends and travel behaviour of tourists that visit the city of Las Palmas de Gran Canaria.

This was a clear gap for the decision makers of the Municipality that had to address solutions to this growing mobility without any reliable information.

B2 Innovative aspects

The data collection approach was based on crossing two information sources: on-street surveys to tourists and mobile phone data tracking, which consists of obtaining information about the geolocation of phones through cell towers installed in the city.

Telecom operators have developed new services and business models to monetise their data in recent years. After having conducted comprehensive market research, mobile phone data tracking was identified as the best solution on the market to obtain rich mobility information about tourists in the city for this measure. Moreover, this new approach using mobile phone tracking data allows the study to be expanded across the whole city instead of only focusing on a small area.

At the beginning of the CIVITAS DESTINATIONS project, this technology was still not widely available, and this is the reason why it was decided to install smart metering systems in the pilot area. However, as explained before, the chosen methodology of phone data tracking was a more innovative technology.

The study area for the mobile phone data tracking was the whole island of Gran Canaria, which was divided into 68 zones according to the census sections and touristic hotspots. The mobile phone data was provided by Orange (the third largest Spanish mobile operator), so the sample was made up of its national customers and those foreigners whose mobile operator has a roaming agreement with Orange. Then, the sample was extended using sociodemographic data and land use data.

This data tracking methodology allowed the local partners to quantify the total number of visitors and to track their travel patterns inside the study area. It also allowed for a characterisation of tourists (age, gender, nationality, etc) and it also enabled the identification of length of stay and the most visited areas (by using heat maps).

B3 Research and technology development

At the beginning of the CIVITAS DESTINATIONS project, marked research was carried out in order to determine the best technological solution available to track movement of tourists in a specific area of Las Palmas de Gran Canaria (the Laboratory Area). However, some years later, during the lifetime of the CIVITAS DESTINATIONS project, telecom operators developed

new services. Therefore, comprehensive market research was conducted again, in order to identify new solutions that did not exist before, and which could be more appropriate for measure LPA 2.2. Finally, as explained before, the mobile phone data tracking method was chosen, which was more complete and cheaper than the technological solution chosen in the first place.

B4 Actual implementation of the measure

The first step for this measure was carrying out a benchmarking of available solutions for tracking tourists' mobility. This stage lasted longer than expected as it was not clear which was the best technological solution available on the market. Finally, in the second half of 2019, new comprehensive market research was conducted, and mobile phone data tracking was identified as the best solution. This type of solution provides rich mobility information about tourists in the city. This was a relatively new technology in the market.

The data collection campaign took place in November 2019, during 3 days (an average weekend of the touristic peak season was chosen). This data collection campaign included on-street surveys to tourists in the city of Las Palmas de Gran Canaria and mobile phone data tracking across the whole island.

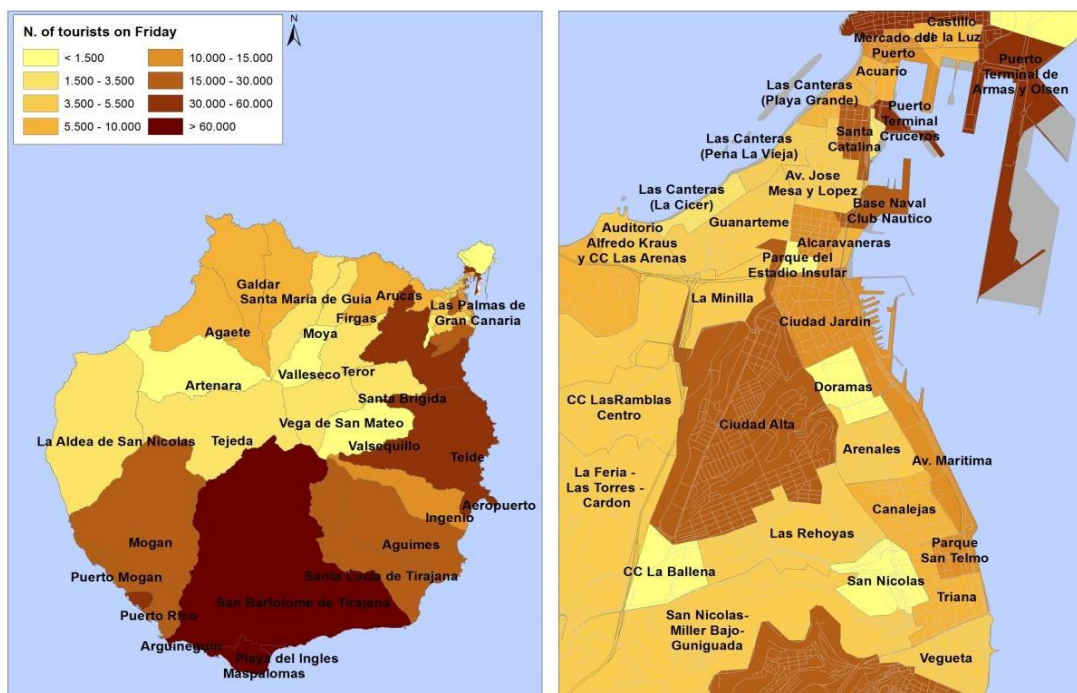


Figure 2: Heat map of tourists in Gran Canaria and Las Palmas de Gran Canaria (Friday)

In the first semester of 2020, the data was analysed in order to identify tourists' mobility patterns and travel behaviour in Las Palmas de Gran Canaria and the whole island of Gran Canaria. The information extracted from the mobile phone tracking data included information about the visitor, such as their nationality, their age and gender, the sequence of visited areas, and the length of their stay. With this, heat maps were created, identifying the most visited areas. The surveys gathered qualitative information about the length of stay of the tourists and their mobility behaviour during.

C Impact evaluation

C1 Evaluation approach

Expected impacts and indicators

Impact category	Impact indicator	Unit of measure
Society	1 – Satisfaction with the mobility system	Nº

Table 2: Expected impacts and indicators

Method of measurement

Impact indicator	Method *	Frequency			Target Group	Domain (demonstration area or city)
		Bef.	Dur.	After		
1 – Satisfaction with the mobility system	S	n.a	n.a	39	citizens / tourists	city

* (Data collection (DC), Estimation (E), Survey (S))

Table 3: Method of measurement

Detailed description of the indicator methodologies:

- 1. Satisfaction with the mobility system** - This indicator evaluates the level of satisfaction of tourists about the mobility system of Las Palmas de Gran Canaria. The data was collected through 244 on-street surveys applied to tourists under this measure. The survey included questions about tourist's opinions on different transportation modes in the city. The result shows the average satisfaction level towards all transportation modes in the city (on a Likert scale from 1 to 10).

The Business-as-Usual scenario

If the data collection of LPA 2.2 had not been carried out, local tourism stakeholders would lack information about where and how tourists are moving around and the transport modes they use. The Municipality and local stakeholders can take advantage of this information, something that would have not been possible if measure LPA 2.2 had not been implemented.

C2 Measure results

Impact category	Impact indicator	Unit of measure	Baseline	Ex-Ante	Ex-Post
Society	1 – Satisfaction with the mobility system	Nº	-	7	7,8

Table 4: Measure results

C 2.1 Society

1 - Satisfaction with the mobility system

The on-street surveys carried out showed that tourists visiting the city of Las Palmas de Gran Canaria were very satisfied with the city mobility system, which includes all transport modes. The score obtained exceeded the expected, which was 7 out of 10. It was considered that a score of 7/10 would be a great value for tourists' level of satisfaction, as the index of satisfaction of citizens about the public transportation system of the city has historically been between 7 and 8 out of 10.

In addition, a common indicator was evaluated that was considered to assess the overall performance of the project at a city level, the **modal split**. Unfortunately, it was not possible to assess the direct impact of this measure to this indicator as its evolution is linked to several measures and it can therefore only be calculated at a city level. The overall evolution of the modal split between 2016 and 2019 is shown in Figure 3.²

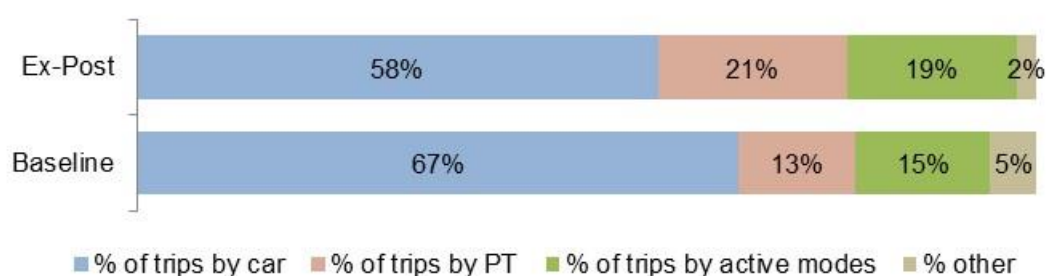


Figure 3: Average modal split between Baseline and Ex-post

C3 Quantifiable targets

No	Target	Rating
1	Increased satisfaction among tourists about the quality of mobility services at the tourist destination	**
2	More efficient policy-making	**
3	Decrease in the costs of data collection	***
4	Increased use of sustainable mobility options for leisure trips	**
<p>NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%) ** = Achieved in full *** = Exceeded</p>		

Table 5: Assessment of quantifiable targets

Target 1 was Achieved in full. The level of satisfaction among tourists about the quality of mobility services was evaluated through surveys in November 2019. Tourists rated the quality of mobility services in Las Palmas de Gran Canaria at 7.8/10. This value is not comparable

² For more details regarding the cumulative effects under this indicator, see the “MER Introduction: Global Executive Summary and Common Indicators” document

with a baseline value as it has never been evaluated before, but 7.8/10 exceeds the forecast (Ex-Ante), which was 7/10.

Target 2 is considered to be Achieved in full. The policy-making of the city has indeed improved thanks to the experiences learned during the CIVITAS DESTINATIONS project. On the one hand, the activities carried out in LPA 2.2 have given useful data to the Municipality, Tourist Office, and public transport operator in order to improve mobility options for tourists. On the other hand, the new “mobile phone data tracking” technology used in the framework of this measure opened the door for local authorities to use this in the future as an efficient way of mass data collection during decision making processes.

Target 3 was Exceeded. The data collection methodology which was originally planned in measure LPA 3.1 (smart metering systems) was later changed to a newer and a more cost-efficient technology (mobile phone data tracking). This data collection procedure allows the collection of more data at the same time with a reasonable cost. The method of using smart metering systems required the installation of on-street equipment and could only count tourists that passed by it. However, the mobile phone data tracking system allows data collection without additional on-street equipment and can obtain data from much larger areas with small variations in cost (economy of scale).

Target 4 was Achieved in full. In overall terms, there was an increase of the use of sustainable mobility options, as reflected by the city modal split. The percentage of trips by active modes increased from 15% to 19%, and the percentage of trips by public transport increased from 13% to 21% during the project lifetime. The percentage of trips by car registered a reduction from 67% to 58%. These results were achieved through the implementation of several measures in the DESTINATIONS project, under which several actions contributed to the increase of the use of sustainable mobility options.³

C4 Up-scaling of results

Not applicable

D Process Evaluation Findings

D1 Drivers/enablers

A driver for this measure was the involvement of key departments of the Municipality (Mobility, Tourism, etc.) from the beginning. This enabled a data collection to be designed which was useful for multiple purposes such as providing better knowledge about tourists’ travel patterns and urban mobility behaviour, most visited hotspots, etc.

D2 Barriers

It was necessary to carry out a comprehensive market research study in order to assess the different technological solutions to track tourists’ mobility (smart metering systems, mobile

³ For more details regarding the cumulative effects under this indicator (modal split), see the “MER Introduction: Global Executive Summary and Common Indicators” document

phone data tracking, etc.). On the one hand, at the beginning of the CIVITAS DESTINATIONS project (2016), the technology solution foreseen – smart metering systems – could not offer the basic features needed in order to track a representative sample of tourists. On the other hand, mobile phone data tracking was very expensive and there were very few options available in the market.

Continuous monitoring of the market allowed those responsible for the measure (Municipality of Las Palmas de Gran Canaria and Cinesi) to implement the measure once the best technological solution was identified. By the end of 2019, mobile phone tracking technology was mature enough, and there were several options available in the market, costs had decreased substantially, and it offered very good value for money.

This was the main reason why this measure was delayed and implemented during the last year of the project lifetime.

D3 Main Lessons Learned

Despite mobile phone data providing much information about tourists' travel patterns, it must be combined with other data sources in order to fine-tune their mobility behaviour.

Mobile phone data tracking has proven to have several benefits compared with traditional data collection methodologies such as surveys or counting, such as the volume of the sample, lower cost, quick processing of the data collected, and precision.

However, traditional data collection methodologies are still useful and can provide valuable qualitative information about the target(s) group(s) that are being analysed. For instance, in Las Palmas de Gran Canaria, the on-street surveys were used to improve the following issues according to the needs and requirements of tourists: the public transport map, the *LPA movilidad* App, *Sagulpa* and *Guaguas Municipales* Apps, the on-foot guided tours, the bike sharing scheme (*Sítycleta*), the bike guided tours, the tourist-oriented travel fares (LIVE ticket), and the touristic bus.

E Evaluation conclusions

The measure was implemented in a different way than described in the Description of Action due to some difficulties in finding the right technological solution. However, its output has far exceeded the original expectations as the data collection area covered the whole island of Gran Canaria instead of a small area of Las Palmas de Gran Canaria (the Laboratory Area).

The awarded subcontractor that provided the raw mobile phone data (KINEO-NOMMON) responded on time according to the timeline and immediately solved any request.

F Additional information

F1 Appraisal of evaluation approach

As the objective of this measure is not to provide a tangible solution but to obtain and deliver information about tourists' mobility behaviours and needs, it was not easy to determine the more appropriate indicators to evaluate this measure.

This is why the indicators that were finally chosen were related to the results – the tourists' level of satisfaction about the transport service of the city, and the change in the modal split before and after the CIVITAS DESTINATIONS project.

F2 Future activities relating to the measure

A wide range of stakeholders will benefit from the information about tourists' mobility patterns and travel behaviour in Las Palmas de Gran Canaria obtained by mobile phone data tracking. Traditional urban mobility stakeholders such as the Mobility Department of the Municipality, public transport operator (Guaguas Municipales), and the public parking company (Sagulpa – who are also in charge of the bike sharing scheme), can all use the information to better plan their mobility services in order to improve tourists' accessibility to sustainable mobility services (public transport, bike sharing, etc.). Other Departments within the Municipality can also benefit from the data collected, especially the Tourism Department, which carries out surveys from time to time but do not have thorough knowledge of tourists' mobility patterns and behaviour.

Tracking of mobile phone data to identify the mobility behaviour of tourists can be done periodically in order to monitor changes. Moreover, if in the future other measures for tourists' mobility are implemented, this method could also be a way of evaluating their effect.

In addition, this method could also be applied not only to identify tourists' mobility behaviour but the mobility patterns of the overall population or other specific groups. It could be a useful tool to obtain large-scale data that could be difficult and expensive to obtain by other means.