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# BEHAVIOURAL SCIENCE AND NUDGE :

## what potential for a better management of tourism flows?

# TABLE OF CONTENTS

**In July 2021, Avitem, in collaboration with the Tuscany Region, the Foundation for Research and Innovation and the Florence City Council,** launch an experimentation within the framework of the HERIT-DATA project. The challenge: testing interventions based on the contribution of behavioural insights to improve the management of tourism flows.

In the article below we will share the thoughts that led us to conceive such an action. After a snapshot of the state of tourism and an overview of behavioural sciences, we will present the potential contributions of this discipline to a sector that finds itself at a crossroads, now more than ever.

This note is intended as a starting point for an emerging vision. We hope to refine and enrich it with all the stakeholders in the tourism ecosystem.

**B**efore the Covid-19 pandemic, the world was witnessing an exponential growth of tourism: the World Tourism Organisation estimated that by 2030, the number of international tourists would reach 1.8 billion[1].

This growth threatened to have irreversible repercussions on the most visited sites, with degradation of the cultural and natural heritage and negative effects on the quality of life of the resident communities.

The term '**Overtourism**' has emerged: it is defined as a phenomenon where tourist activity creates too much pressure on a site, whether due to overcrowding or other factors related to tourists' behaviour and/or the site's capacity.

The travel restrictions resulting from the Covid-19 pandemic have reversed this trend, causing a sharp decline in the tourism economy worldwide.

With the gradual lift of restrictions, the 2020 summer season was characterised by domestic tourism, and a tourism demand more oriented towards open spaces and nature, a trend that persisted in 2021[2]. According to the report on the 2020 tourist season in France[3], of the 53% of people who managed to go on holiday in July and August, 94% stayed in France; tourists favoured outdoor activities, coastal destinations and the countryside. To the extent that certain sites saw situations of overcrowding, for example the protected natural areas, taken over by many people in search of a reconnection with nature. The Gorges du Verdon in the South of France saw an exponential increase in the number of tourists, mostly French, during the 2020 summer season[4]. In the Basque Country, a 180% increase in visitors has led to damage to natural areas and harmful behaviour[5].



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[1] UNWTO, transport-related CO2 emissions of tourism, 2019

[2] Espaces tourisme & loisirs in revue Espaces n°360 May 2021 - Local tourism: a necessarily sustainable trend. Available HERE

[3] Review of the 2020 tourist season in France by the Minister of Europe and Foreign Affairs, the Minister of the Economy, Finance and Recovery and the Secretary of State to the Minister of Europe and Foreign Affairs, responsible for Tourism, French Nationals Abroad and the French-speaking World. . Available HERE

[4] Summer holidays: the Verdon Gorges are victims of their own success

[5] Tourist overcrowding in the Basque region: «In the mountains, toilet paper everywhere, everywhere, everywhere!»

The management of tourism flows therefore remains a major challenge and becomes even more crucial in the current context (and most probably in the months and years to come), where the respect of social distancing rules and sanitary measures remains unavoidable.

We believe that it is essential to continue to reflect on these issues, including in the perspective of a recovery in tourism activities in the short and medium term. The experts' opinions on this subject are mixed. Some think that once the pandemic is over, we will return to a style of travel and visits very similar to the one we have known until now. Others think (and hope) that tourism demand will be profoundly transformed, and that we will move towards alternative, slower, more nature-oriented tourism models, in line with the underlying trend of consuming more locally, sustainably and authentically, while continuing the long-standing trend of democratisation of tourism.

What is certain is that tourism remains an important economic sector (11% of GDP in France) and a socially essential practice, for the humanist values it conveys and for its potential of bringing together the tourists and the locals.

As Jeremy Sampson, President of The Future of Tourism Coalition, created in 2020 to promote a new vision for tourism practices, says: «When tourism adds value to a destination, improving the quality of life of residents and the balance of the ecosystem, it can be considered regenerative».

In any case, whether we return to a «business as usual» model, with San Marco Square in Venice teeming with visitors or the Ramblas in Barcelona invaded by tourists, or whether we move towards more local and responsible forms of tourism, the question of flows management and site preservation will remain central.

In a study published in 2018[6], the World Tourism Organisation (UNWTO) listed 11 strategies that tourism managers and planners can adopt to deal with Overtourism :

1 **Promote** the redistribution of visitors within the city and beyond

2 **Promote** a redistribution of visitors over time

3 **Stimulate** new visitor itineraries and attractions

4 **Review** and adapt tourism regulations

5 **Increase** visitor segmentation

6 **Ensure** that local communities benefit from tourism

7 **Create** tourism experiences that benefit both visitors and residents

8 **Improving** infrastructure and urban planning

9 **Communicating** with and mobilising local stakeholders

10 **Communicating** with and engaging visitors

11 **Put in place** monitoring and response measures

The same study points out that the most successful experiences involve the implementation of several complementary strategies.

Among these strategies, many refer to visitors' behaviour change and guiding their choices: promoting alternative routes, offering longer opening hours, providing information about the peak periods, etc.

This suggests that the development of strategies to guide visitors' choices could be particularly useful in dealing with overcrowding, especially where this phenomenon is incipient. Hence the great potential of behavioural sciences.

Behavioural sciences and Nudging are increasingly used to positively influence the choice of a given target audience, including by public administration and on subjects of general interest[7].

However, their application to the tourism sector is still very marginal.

This paper aims to better understand the potential of behavioural sciences and Nudging applied to tourism, especially in the planning and management of tourism activity. Can this approach contribute to making some tourism practices more sustainable and respectful? Can behavioural sciences provide innovative solutions for a better management of tourism flows?



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The term 'behavioural sciences' covers a range of disciplines that study the behaviour and interactions between organisms. Behavioural economics is a field of study and action of economic science that aims to work on the behaviour of human beings in economic situations, and in particular to study why they adopt certain behaviours that may seem irrational.

Nudge theory is a branch of behavioural sciences and behavioural economics. It consists of observing and modelling the way in which decisions are made by individuals and identifying the levers that can influence this decision-making process. The aim is therefore to guide the behaviour without limiting the freedom of choice of the people concerned.

The term «Nudge» describes the basic principle of this approach, which is based on gentle encouragement. The «fathers» of Nudge, Richard Thaler[8] and Cass R. Sunstein, define it as a way of organising and presenting choices that «alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. (...) To count as a nudge, the intervention must be easy and cheap to avoid. Putting the fruit at eye level counts as a nudge. Banning junk food does not.»[9].

Nudges are based on the observation of human behaviour and on the knowledge of brain function gained from academic research carried out in the United States since the 1970s. This work has shown that decision-making processes are primarily dictated by cognitive biases, such as availability bias, social norms, risk aversion, and many others.

While Nudges have long been used for commercial and promotional purposes (in marketing, for example), in recent years they have also been taken up by public policy, with an increasingly wide application in a variety of areas such as health, nutrition, energy and mobility. Nudges are, in most cases, relatively easy-to-test interventions that can be adapted and applied to many contexts, as they are built based on behavioural observation. This makes them particularly interesting to apply in public policies.

## EXAMPLE,
### THE CITY OF LAVERNE IN THE UNITED STATES

In the city of LaVerne in the United States, posting a simple note indicating how many households recycled their waste and how much waste was collected was enough to increase the number of households recycling by 19%[10]. This Nudge was based on the cognitive bias of the social norm: the tendency of any human being to adopt the behaviour that is perceived to be adopted by the majority of people. According to the study that illustrates this experiment, measures based solely on sharing information about the importance of recycling had less effect on households' actual recycling behaviour[11].

8 Who was awarded the Nobel Prize in Economics in 2017 for his contributions to behavioural economics.

9 H. THALER, Richard and R. SUNSTEIN, Cass. Nudge: Improving Decisions About Health, Wealth, and Happiness, 2008

10 Source: INCITATION TO ECOLOGICAL BEHAVIOUR, Futuribles, 2016 (p. 39) - Download

11 SCHULTZ, Paul Wesley, Changing Behavior With Normative Feedback Interventions: A Field Experiment on Curbside Recycling, 1999 - Download

**The application of Nudges and other behavioural science-based interventions in tourism is still relatively unexplored.**

**However, there are a few initiatives in areas such as the hotel and restaurant industry, which suggests that this approach is on the way up in the tourism sector too.**

### RAISING AWARENESS FOR BETTER USE OF RESOURCES IN TOURIST ACCOMMODATIONS

For example, the National and Regional Natural Parks of the Provence-Alpes-Côte d'Azur region have set up a series of Nudges to make guests aware of the need to use resources (electricity, water, etc.) more wisely.

One of these Nudges is a sign placed in the rooms indicating that the majority of travellers (75%) choose to reuse their towels. A wheel on the back allows the guest to show if he/she has made this choice too. This Nudge is based on two behavioural levers: on the one hand, the social norm (the tendency to conform to the behaviour of the majority of people around us), and on the other hand, the rewarding effect caused by the display of a virtuous choice (in this case, reusing towels and therefore saving energy & water).

Another example of Nudge in accommodation is the installation of a smart showerhead, which combines the use of a water flow reducer (6.6L/ minute instead of 12L/ minute, for a standard showerhead) with a set of lights that alerts in real time on the volume of water consumed during the shower. The light changes colour as the shower continues, from green to blue, then to purple, and finally to red when the 30L of water is exceeded. The light then starts to flash when you exceed 40L. The gradual change in colour encourages users to optimise their showering time.

### FIGHT AGAINST FOOD WASTE

In order to reduce food waste in restaurants, a team of researchers from the International Centre for Climate Research (CICERO) has implemented and tested two Nudges in several hotel restaurants belonging to the same chain, in Norway and Sweden:

**1.** Smaller plates (21 cm instead of 24)

**2.** Signs encouraging guests to help themselves to the buffet several times. They read, in 7 different languages: «Welcome back! Again! And again! Visit our buffet many times. That's better than taking a lot once».

Changing the size of the plates reduced food waste by 19.5%, and posting signs to encourage several refills increased this reduction to 20.5%. The test also showed that customer satisfaction remained essentially unchanged before and after the introduction of Nudge.

# Behavioural sciences and flows management: some examples

There are several approaches to managing the flow of people in an area, including within a tourist site. In many destinations, managers opt for what might be considered coercive methods, such as limiting visitor access to a site, or imposing taxes. There are, however, other measures that rely on other levers, including behavioural ones.

For example, in 2021 the Provence-Alpes-Côte d'Azur Regional Tourism Committee has launched an experimentation with the mobile application Waze[12], aimed at directing the flow of visitors and preventing overcrowding.

Four sites were selected last summer to carry out this experimentation: the Saint Julien beach on the Esparron lake and the Blanc Martel trail in the Verdon, the «Sentier des Ocres» in Roussillon and the «Colorado Provençal» in the Luberon. The operating principle is simple: to use the reach and reputation of Waze to inform the app's users of the occasional overcrowding of the site they are looking for and to direct them to alternative solutions. These include suggesting a relay car park with a free

*"THE PROVENCE-ALPES-COTE-D'AZUR TOURISM COMMITTEE HAS LAUNCHED AN EXPERIMENTATION WITH THE MOBILE APPLICATION WAZE, AIMED AT DIRECTING THE FLOW OF VISITORS AND PREVENTING OVERCROWDING."*

shuttle service to get to the desired site and avoid the traffic jams of the last few kilometres. Or suggesting other less crowded tourist sites nearby.

The results of this first experimentation, carried out between 5 June and 31 July 2020, were conclusive: 325,000 drivers were reached by the system set up around the 4 experimental scenarios, and more than 28,000 navigations towards the proposed alternative solutions were «triggered» following exposure to the messages.

With simple and salient messages that appear when the sites concerned reach their traffic limit, the application relies on behavioural levers that suggest without constraining.

Based on the success of this first experimentation, the trial will be extended to 8 national or regional natural parks in 2021.

**In other territories and contexts, Nudges have been designed and tested with the aim of better managing people flows. The two factsheets on the following pages illustrate two Nudges and the result of their experimentation in the Lyon train station and Copenhagen airport to better manage passenger flows.**
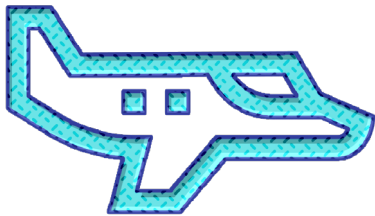
# The challenge

**In 2016, the Copenhagen Airport had a flow of about 26.6 million passengers per year and planned to double this number in the next 25 years.**
**How can we better manage current and future flows, when the airport was witnessing bottlenecks created by the passengers' crowd?**

## The behaviour(s) observed

**The exit from the airport was through two doors. However, almost 90% of the passengers exiting the airport used only the right-hand door. Several causes have been identified:**

- **just before exiting, passengers had to go through the customs post. Most people went through the «nothing to declare» section, which was on the right, making the right door the most direct way out.**
- **the taxi station was located and signposted on the right-hand side as you left the airport, therefore passengers needing a taxi also chose the right-hand door.**
- **since most passengers used the right-hand door, some of them probably thought that this was the only way out.**

**The problem was thus amplified by the social norm: the tendency to act like everyone else.**

# The nudge

Fig. 1 Exit area at the airport.

Fig. 2 Exit area at the airport with the intervention.
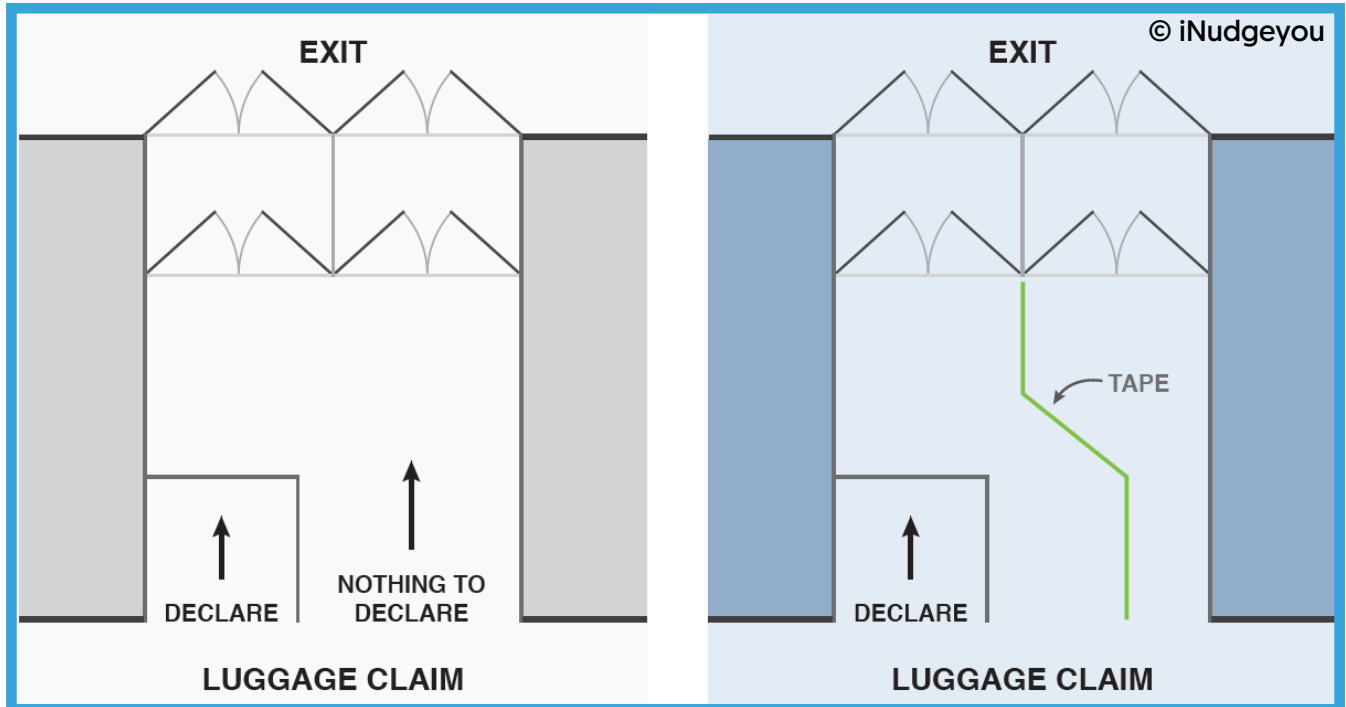
The objective of the Nudge was to rebalance the flow of passengers and the use of the two exit doors.

A team of experts marked out two lanes to the two exit doors by sticky tape on the ground and a sign for each lane. The left lane was deliberately made wider than the right one, so that some people used it as a default (relying on the cognitive bias of choosing the default option more easily).

Fig. 3 The exit area with the two different intervention.

For the colour of the stickers, two tests were carried out, the first using a dark green sticker and the second using a fluorescent green sticker, thus relying on the principle of salience (making the information more visible).
To test the Nudge, the teams set up three test situations:

1. Control situation, without any intervention
2. Use of dark green stickers
3. Use of fluorescent green stickers

# The results

In the control situation, only 10.75% of people used the left door.
This percentage rose to 16.55% when the Nudge was implemented with the dark green stickers and 24.50% when using the fluorescent green stickers.
Considering that the objective was to reach a ratio of 50% of passengers using the left-hand door, the result achieved in situation n. 3 was considered satisfactory.

## To go further

This Nudge was developed and tested by the Danish company iNudgeyou in partnership with Copenhagen Airport.
Source : Available HERE

# Le challenge

**In the Lyon Part-Dieu train station, the large flows of passengers exiting the metro inside the station often generated bottlenecks and some tension.**

## The behaviour(s) observed

**The passenger jams were mainly due to two behaviours:**

- **on one hand, there was an aggregation of people in front of the escalator,**
- **on the other hand, the hesitation of passengers coming out of the metro.**

**Indeed, they could not quickly decide which direction to take to get to the train station or to one of the exits. This problem was further exacerbated when tourists or people in transit were involved.**

# The nudge

**Two Nudges have been implemented:**

**1** Clearer and more visible signage. The use of signage that makes it very clear which direction to take: for example, with the word «Station» printed very large and symbols such as arrows explaining the path to take. The effect of highlighting the information was to make the decision faster.



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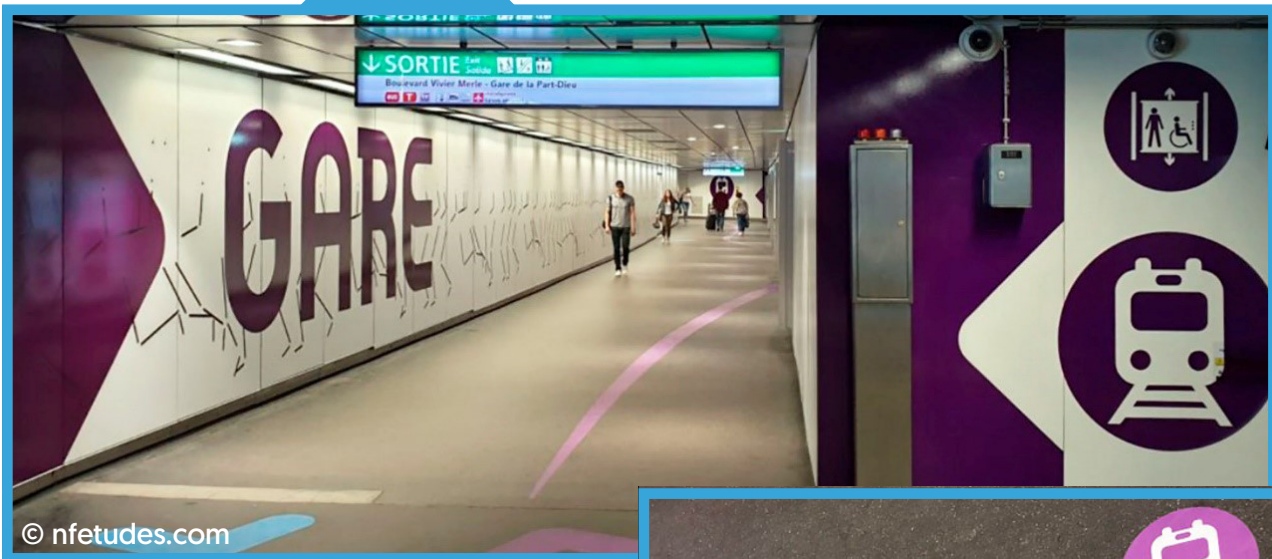
**2** Encourage people to take the stairs instead of the escalator, using motivational messages such as «Excellent start», «Let's go for 36 short steps» or «Well done for your courage», which were pasted along the entire length of the stairs to encourage users in a positive way. At the top of the stairs, a trompe-l'oeil showing a view of the Part Dieu tower reinforced the satisfaction for having reached the end of the climb.



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# The results

Observations of passenger behaviour over a period of about 6 months have shown encouraging results:

**1.** A 25% reduction in the number of people who hesitated when exiting the metro train

**2.** An increase of more than 50% in the number of people using the stairs instead of the escalator

## To go further

Source : Available [HERE]

# Behavioural sciences and tourism: potential and future experimentation

The application of behavioural sciences to tourism remains rather marginal for the moment. However, the results of the few actions implemented and cited in this document seem promising, particularly in terms of flow management.

This approach, which has proven effective in several fields of application, would certainly deserve to be more widely developed in the tourism sector, where behaviour changes can be key in limiting the impact on the territory and heritage.

The main contribution of Nudges, explains Eric Singler, president of Nudge France, is based on the fact that «knowledge of information is not enough to encourage us to make the right decisions». Knowledge is not enough! «Pedagogy and education, which are so often used to solve problems, create the intention, but do not always help us to take action»[13].

The challenge of behavioural science-based interventions is therefore not to create motivation, but to move people from intention to action. Intention is created through education and communication. Action is created through behavioural change, which can be triggered by Nudging.

It is this trigger function that makes Nudging particularly interesting in the tourism sector. Surveys conducted on the adoption of more responsible behaviours, including in the tourism sector, indicate that the majority of consumers and travellers are aware of

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the issues at stake and would agree to change their habits. For example, the Sustainable Travel Report produced by Booking.com[14] showed that in 2019, 72% of travellers believed that there was an urgent need to make more sustainable travel choices. According to another study conducted by the association Agir pour un Tourisme Responsable (ART)[15] in 2016, 2/3 of the 7000 travellers interviewed thought that responsible tourism was a criterion that should be integrated by all travel professionals, and 90% of the same group thought that a more sustainable form of tourism would benefit them.

The vast majority of travellers express a clear intention to change their behaviour. But when we compare the intention with the real behaviour, the trend is reversed.
The contribution of behavioural sciences

[13] Article from Le Monde du 15/07/2017 Tout est-il « nudgable » ? L'incitation comportementale en ses limites »

[14] For the main findings of the report: https://globalnews.booking.com/bookingcom-reveals-key-findings-from-its-2019-sustainable-travel-report/

[15] Downloadable here: http://www.tourisme-responsable.org/wp-content/uploads/2017/02/%C3%A9tude-clients-ATR-2016.pdf

must therefore be complementary to other approaches and tools such as information, education and the enforcement of rules. Nudge remains a complementary approach, whose value lies as much in changing behaviour as in understanding it.

This is why implementing Nudges as a complement to other strategies could be a winning choice for territories when they wish to reverse a trend or influence a phenomenon, be it addressing tourism overcrowding or limiting the waste of resources.

As mentioned above, many public policies have already adopted such tools in areas such as taxation, health and/or the ecological transition.


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Because of its transversality and the potential of its impact, tourism can be a formidably rich playground, particularly in the Mediterranean area, which is confronted with phenomena such as tourist hyper-concentration in certain areas, the fragility of the heritage, and the harmful effects of climate change.

The Florence city council has understood this challenge. With around 48 million tourists per year[16] in the Tuscany region and around 15 million tourists in Florence, the city has been confronted

with the issue of flow management and the tensions generated by the concentration of visitors since a long time, particularly in certain areas of the city centre. This is why, during the summer of 2021, the municipality will take part in an experimentation aimed at developing innovative solutions to better manage tourists' flows, by orienting their behaviour.

This experimentation, carried out within the framework of the European project HERIT-DATA[17], will be coordinated by AVITEM with the support of the behavioural science experts of the BIT (Behavioral Insigth Team). The experimentation has started in early July with the setting up of co-design workshops, designed on the basis of a precise analysis of the context. The tools identified during these sessions will be tested and evaluated during the summer of 2021 and the first results will be available in the autumn.

## CONTACTS

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[16] Centro studi turistici di Firenze, 2019 data, before the health crisis

[17] Herit-Data ta is an Interreg Med project, coordinated by the Tuscany region : https://herit-data.interreg-med.eu/