

# The vulnerability of tourist destinations to air transport

Inma Gallego ([igallego@uma.es](mailto:igallego@uma.es))

Department of Economics and Business Administration, University of Málaga and Statistics and Market Research Area for the regional Government of Andalusia (Spain).

Xavier Font ([x.font@surrey.ac.uk](mailto:x.font@surrey.ac.uk))

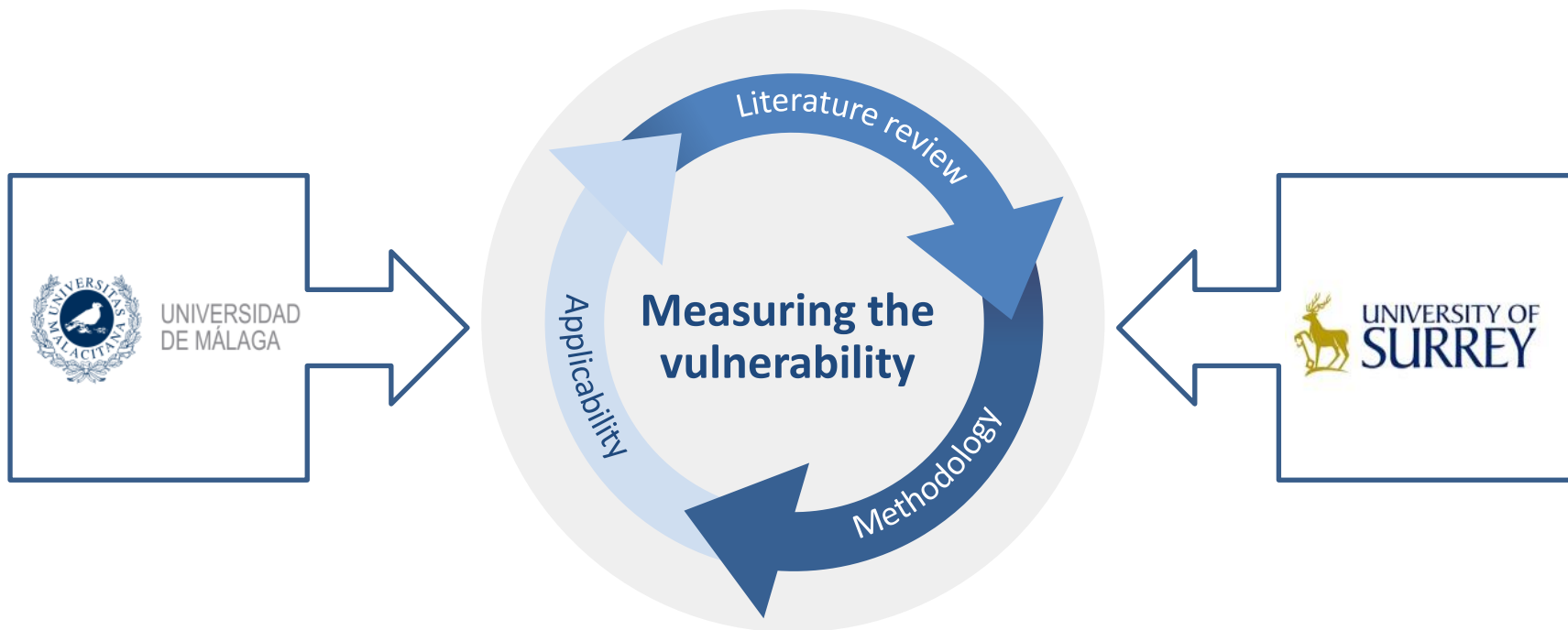
School of Hospitality and Tourism Management, University of Surrey, UK



**Do you think ...?**

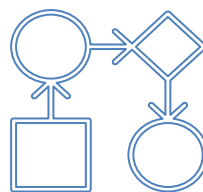
**the consequences of air transport industry decisions on your destination**

**and how these can ultimately impact the your tourism business model.**



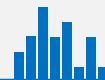


**System of simple indicators**



**DASHBOARD**  
**Vulnerability of a tourist destination in relation to air transport**

**Composite index**



# System of indicators

## AIR TRANSPORT INDUSTRY



### Factors

### Simple indicators

Weight

Characteristics

V1 | Importance of air transport in the tourist destination

Markets

**V2 | Level of concentration of tourist markets using air transport**

V3 | Key market (using air transport)

Seasonality

**V4 | Seasonal concentration of airport activity**

V5 | Key month for airport activity

Commercialisation

**V6 | Level of airline concentration**

V7 | Key airline

V8 | Type of airline (lost cost / flag carrier)

Accessibility

**V9 | Level of airport concentration**

V10 | Key airport

**Level of concentration:** Concentration of one element of the tourism system (market, season, airline and airport) has an impact on how sensitive a tourist destination will be towards changes in that element.

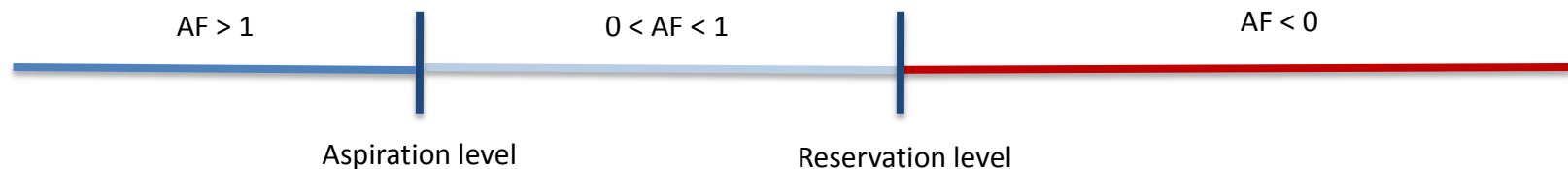
**Level of dependency:** where high dependence on a single element within a tourism system (transport, market, season, airline and airport) it gives that element a degree of power that limits the destination's ability to adapt.



## The double reference point method for building Composite Indicator of Vulnerability



The procedure uses individual Achievement Functions (AF), defined for each indicator, to measure how far apart the values of each unit of analysis are from those established as the reference points.



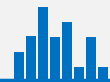
In our case:

**Reservation level** (maximum admissible value)

The mean value between the average and the maximum value of the analysed destinations (discarding the outliers).

**Aspiration level** (desirable value)

The mean value between the average and the minimum value of the analysed destinations (discarding the outliers).



In our case:

**Equal Weight method**

Without previous experience or consensus about what factors make tourist destinations more or less vulnerable

However, it is likely that not all the factors affect the vulnerability of a destination to the same extent



What you think?



We need your opinion

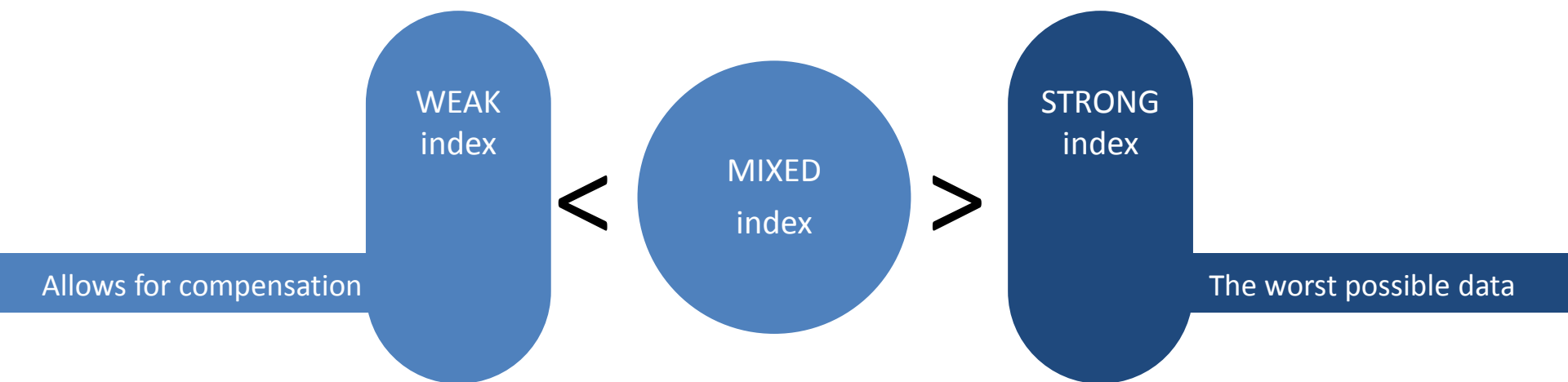
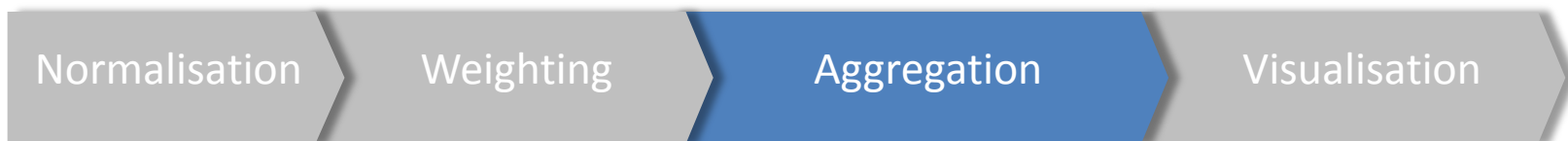


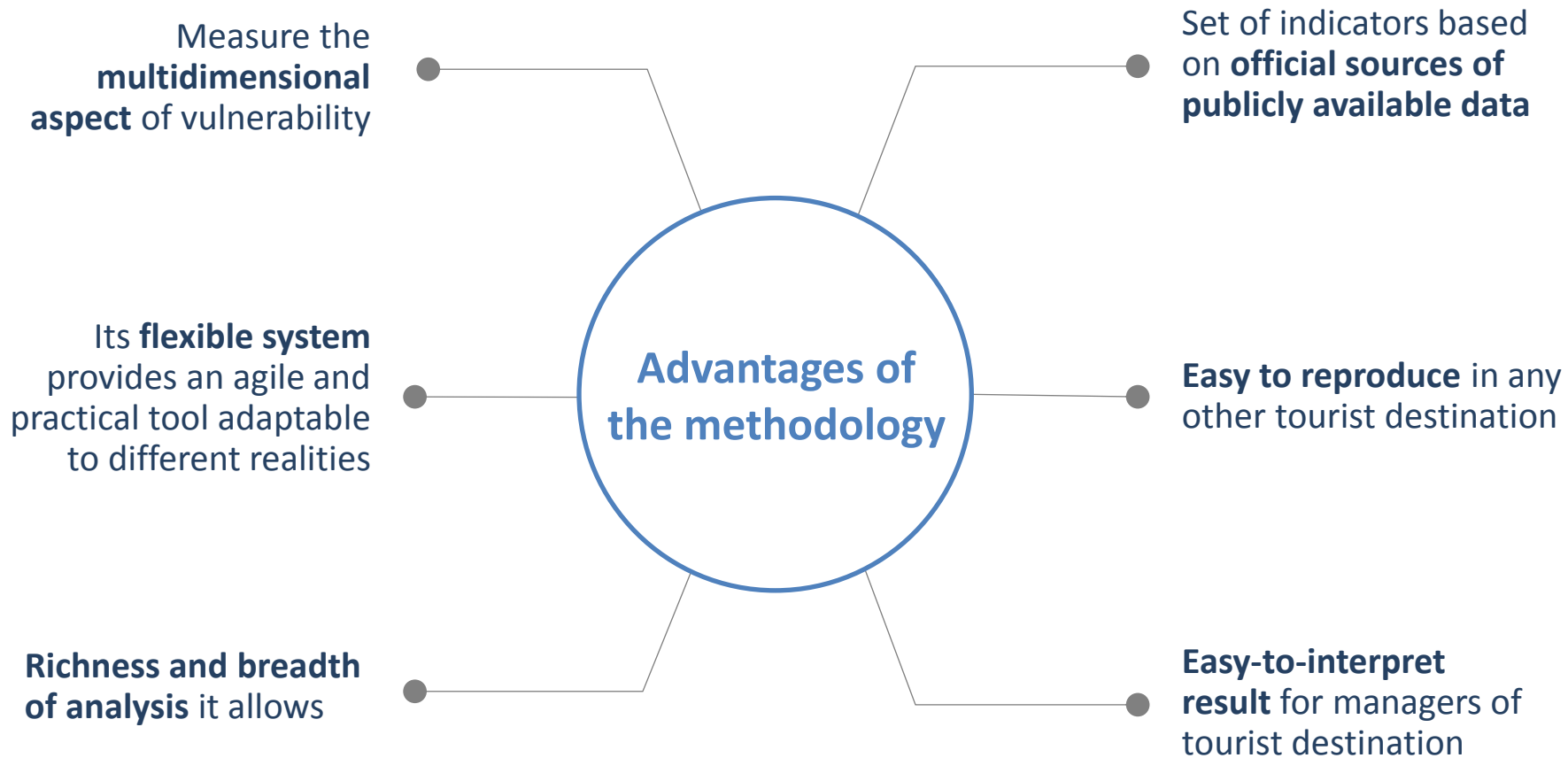
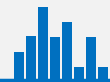


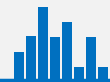
ACCORDING TO YOUR EXPERIENCE, HOW DOES THE FOLLOWING FACTORS MAKE A TOURIST DESTINATION VULNERABLE?

(1 = WEAK / 5 = STRONG)

1	2	3	4	5	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>Weight.</b> Importance of air transport in the tourist destination.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>Markets.</b> Dependence of one or a few source markets.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>Seasonality.</b> Concentration of tourism demand in one or a few months.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>Commercialisation.</b> Dependence of one or a few airlines.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>Accessibility.</b> Dependence of one or few airports to access the destination.







To offer easy-to-interpret results for the managers of the tourist destinations, who do not have to be experts in the subject in order to understand the findings



### **Simple indicators**

Dependency: 0–100%  
Concentration: 0–1 Gini index

The lower the indicator, the better



### **Composite index**

Strengths: (AF>1)  
Weaknesses: (AF<0)

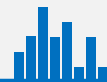
The lower the indicator, the worst



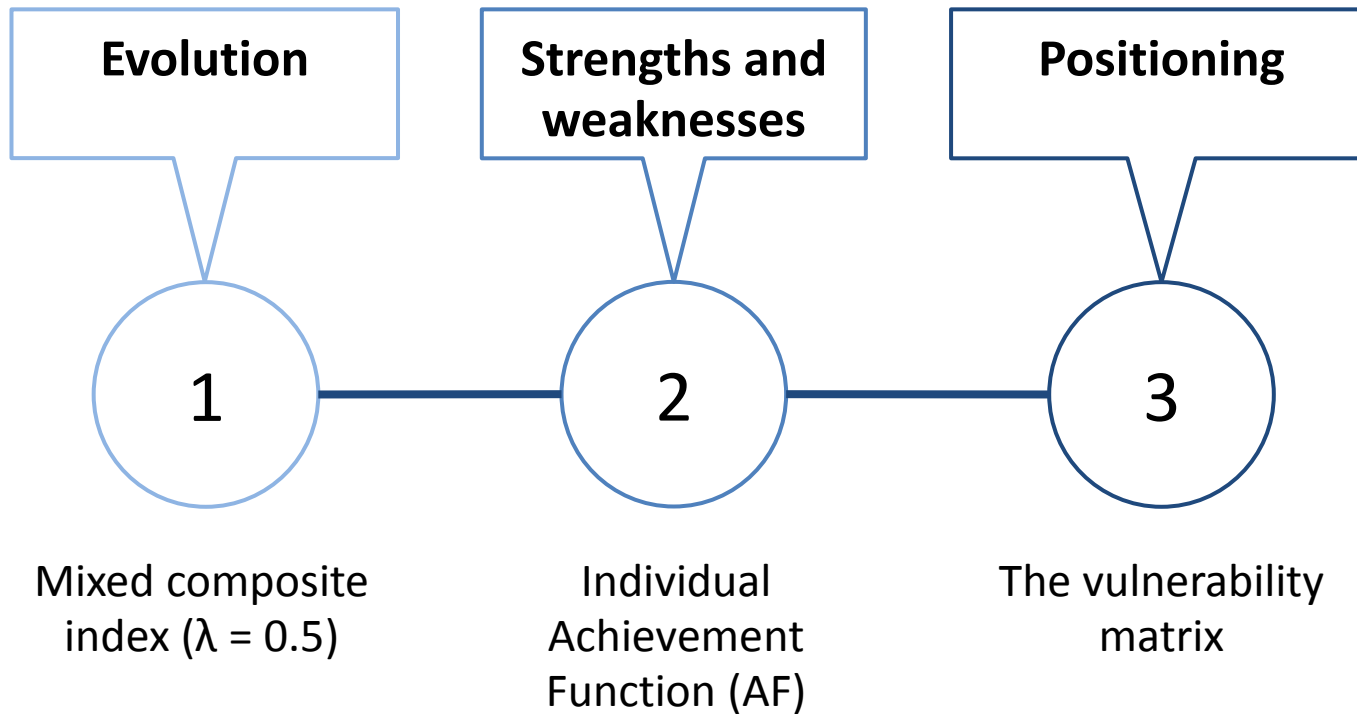
### **Visualisation techniques**

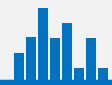
Colour scale  
Graphics: evolution, matrixes

Offer an easy and intuitive visualisation of the results



# Case study: Catalonia

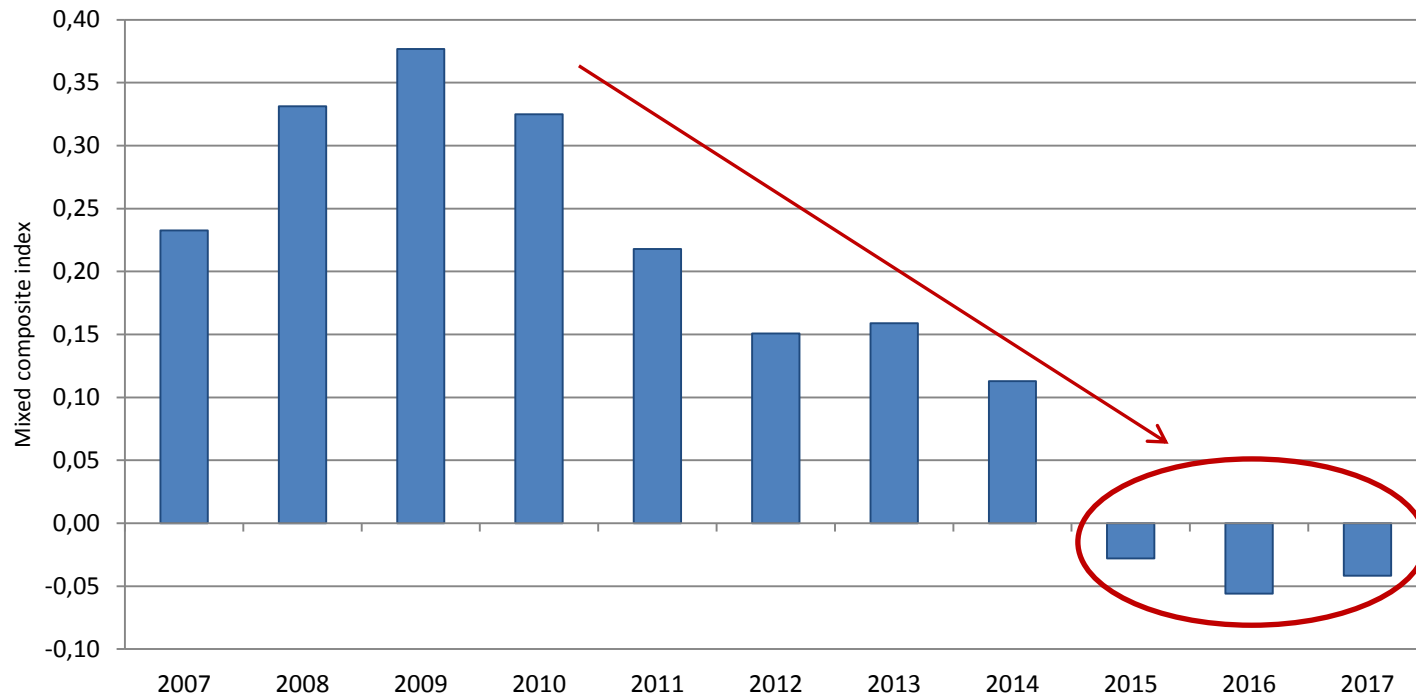


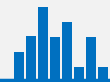


# 1

## Catalonia | Evolution

Evolution of the mixed composite index of vulnerability  
(compensation coefficient  $\lambda = 0.5$ )





## 2 Catalonia | Strengths and weaknesses



**Strength**  
(Value above the aspirational level)



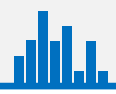
**Strength**  
(Value between the reserve and aspirational level)



**Weakness**  
(Value below the reserve value)

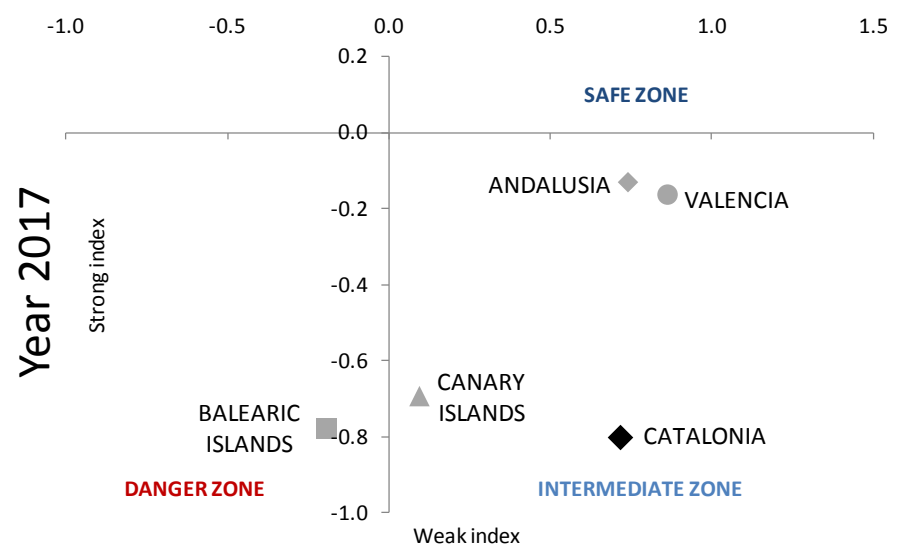
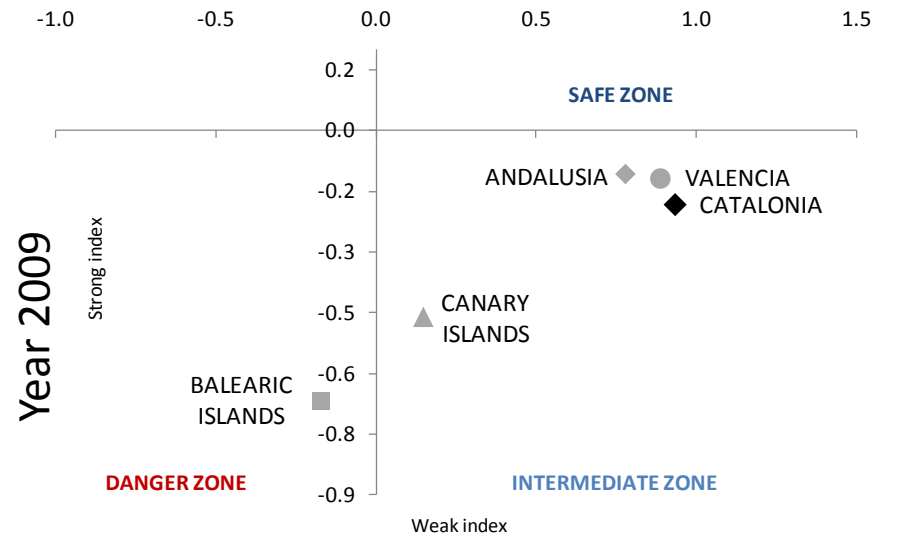
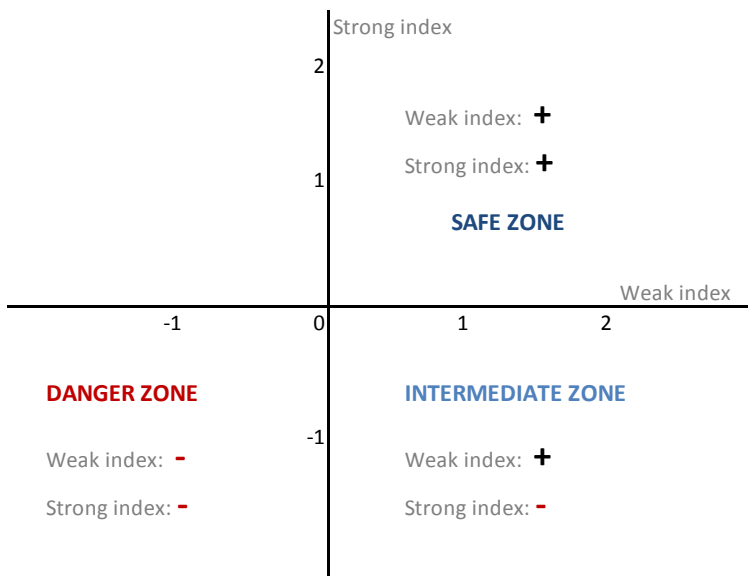
### Individual Achievement Functions (AF)

INDUSTRY	INDICATOR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
WEIGHT	V1 Importance of air transport to the tourist destination	1.161	1.149	1.140	1.115	1.031	0.976	0.979	1.015	1.051	0.987	0.994
MARKETS	V2 Level of concentration of tourist markets using air transport	1.043	1.056	1.057	1.063	1.065	1.067	1.151	1.157	1.164	1.160	1.164
	V3 Key market (using air transport)	0.401	0.976	0.968	0.654	0.891	1.034	1.066	1.067	1.074	1.060	1.073
SEASONALITY	V4 Seasonal concentration of airport activity	0.246	0.335	0.280	0.270	0.293	0.099	0.103	0.080	0.111	0.205	0.140
	V5 Key month for airport activity	0.171	0.510	1.016	1.021	1.024	1.019	1.016	1.008	1.014	1.023	1.019
COMMERCIALISATION	V6 Level of airline concentration	0.064	0.837	1.009	1.014	1.015	1.011	0.972	0.798	0.621	0.475	0.621
	V7 Key airline	0.293	0.713	0.480	0.527	0.788	0.095	-0.045	-0.071	-0.078	-0.073	-0.070
	V8 Type of airline (lost cost versus flag carrier)	0.935	1.093	1.092	1.089	1.092	0.694	0.575	0.447	0.368	0.332	0.342
ACCESSIBILITY	V9 Level of airport concentration	0.613	0.795	0.968	0.779	0.525	0.468	0.516	0.423	0.335	0.323	0.340
	V10 Key airport	-0.305	-0.237	-0.181	-0.239	-0.412	-0.463	-0.447	-0.531	-0.800	-0.820	-0.801

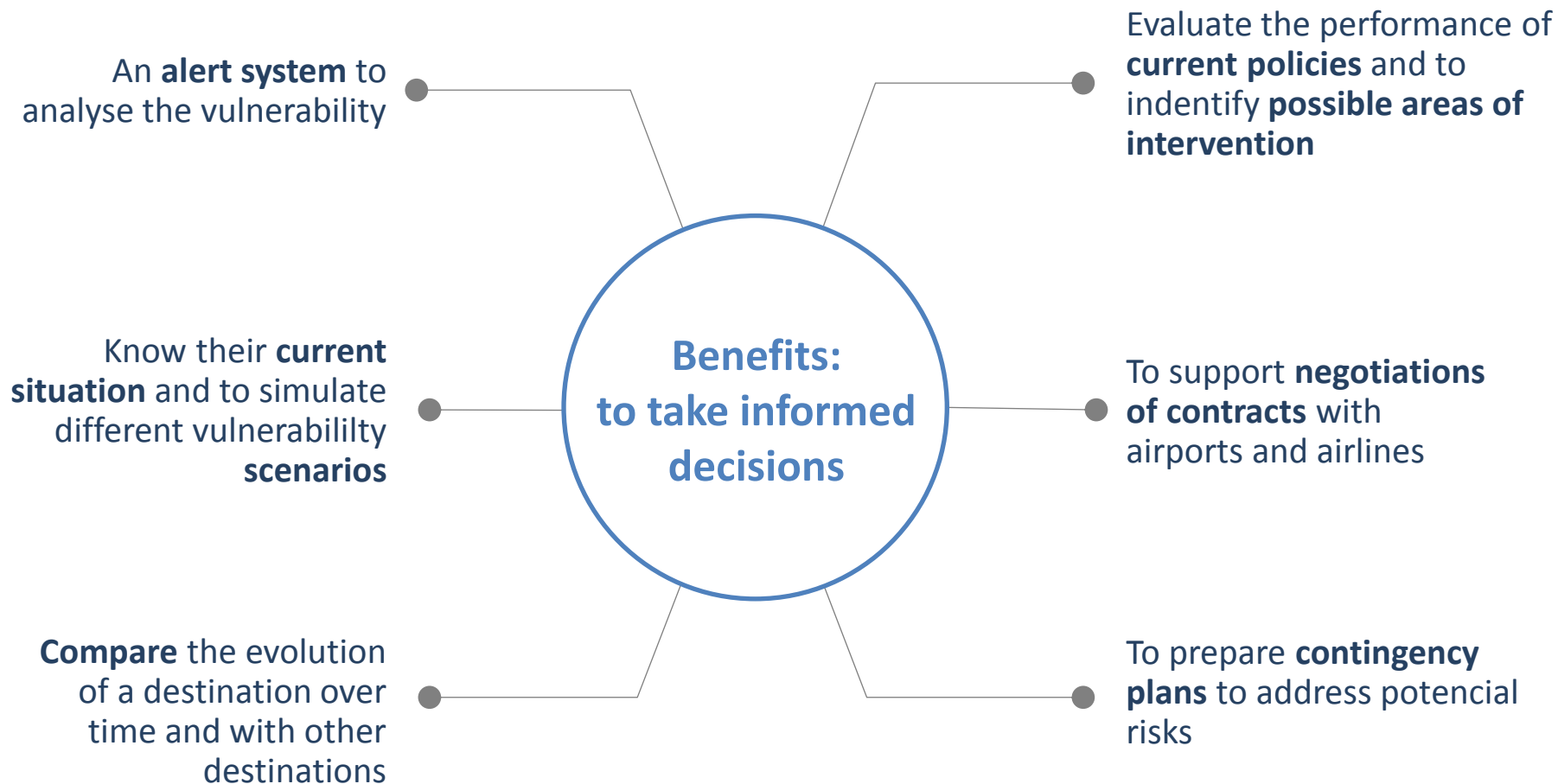
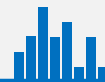


# 3

## Catalonia | Positioning









Research paper

### Measuring the vulnerability of tourist destinations to the availability of air transport, using multi-criteria composite indexes

I. Gallego<sup>a</sup>, X. Font<sup>b,\*</sup>

<sup>a</sup> Department of Economics and Business Administration, University of Málaga, Spain  
<sup>b</sup> School of Hospitality and Tourism Management, University of Surrey, UK

#### ABSTRACT

Tourist destinations are vulnerable to the decisions of commercial stakeholders that may have different organisational priorities to them. A high level of tourism concentration, and dependence on certain airports and airlines, can increase the strategic risks and threaten the competitiveness of destinations. This paper develops a novel methodology to measure the vulnerability of tourist destinations to the availability of air transport through the use of composite indexes. The applicability of the methodology is demonstrated in Catalonia (Spain) from 2007 to 2017. The result is a rigorous control of easy interpretation that allows multiple analyses and flexible application in different circumstances. The system provides politicians and technical staff with the tools they need to have a comprehensive and integrated understanding of their destination. It also provides robust data that can be used to analyse current policies, negotiate contractual conditions and prepare contingency plans for those instances where the collective needs at a destination differ from those of individual commercial stakeholders.

#### 1. Introduction

Vulnerability refers to a state of being at risk of being harmed. The concept of vulnerability is context-dependent and the language used to define it varies across disciplines, although all definitions have in common an exposure to changes, a sensitivity or susceptibility towards such changes, a capacity to address such risks, and resilience to adapt to the change (Flood, 2007; Smith, 2005). The tourism literature has defined vulnerability mainly in relation to single exogenous circumstances that are difficult to control (Brouder & Lundmark, 2011; Hinkel, 2011; Paraskevas & Altınay, 2013; Scott, 2013). Few studies consider multiple criteria of vulnerability, beyond Schoyons and Moman (2008), who analyse both economic dependency and environmental fragility, and Strickland-Munro, Allison, and Moore (2010), who combine data on resilience from protected areas and local communities.

Destination management organisations (DMOs) need to equip themselves with data, and then to act upon it, in order to reduce the vulnerability of their destinations and to improve their competitiveness and sustainability (Ritchie & Crouch, 2003). This paper fulfils the need to create a novel methodology through the use of composite indicators in order to improve substantially the interpretation and use of simple indicators. This provides decision-makers with an alert system to analyse the vulnerability of their tourist destination towards external factors, based on data publicly available. Vulnerability is defined in relation to the level of tourism concentration and dependency towards key stakeholders, in the present case, the airline industry. The literature on

destination vulnerability in relation to the airline industry is first summarised. The paper then moves on to a detailed outline of the methodology, which is its main contribution, by determining the key measurement dimensions and then identifying associated indicators that will be subsequently normalised, weighted and aggregated into a single index. The value of this methodology is next demonstrated in the Spanish region of Catalonia. The paper then presents some conclusions and reflections on the political and management implications. Recommendations for future research are also made.

#### 2. Literature review

Tourist destinations are vulnerable to decisions made by external stakeholders who do not share the same organisational objectives as those established by the destination managers and who, therefore, may take commercial decisions that negatively affect the destination (Ethynitou & Papathodorou, 2018). A tourist destination authority can do well, financially, while at the same time being vulnerable if it is dependent on: (a) a single airport and/or single airline operator, (b) tourist generating markets, and (c) seasonal variations (Koo, Halpern, Papathodorou, Graham, & Arvanitis, 2016). It is this interpretation of vulnerability that is of interest to this study. Vulnerability is defined here as being the result of two key concepts (Flood, 2007; Pridemore, 2000): (a) concentration, where one element of the tourism system (e.g. the market, season, airline, airport) has an impact on how sensitive a tourist destination will be towards changes in that element; and (b)

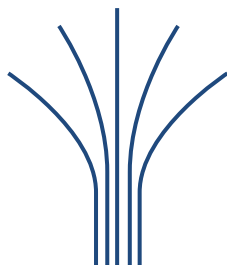
\* Corresponding author.

E-mail address: x.font@surrey.ac.uk (X. Font).

<https://doi.org/10.1016/j.jdmm.2019.100382>  
Received 15 October 2018; Received in revised form 3 September 2019; Accepted 22 September 2019  
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# Thanks!!

Inma Gallego ([igallego@uma.es](mailto:igallego@uma.es))

Department of Economics and Business Administration, University of Málaga and Statistics and Market Research Area for the regional Government of Andalusia (Spain).

Xavier Font ([x.font@surrey.ac.uk](mailto:x.font@surrey.ac.uk))

School of Hospitality and Tourism Management, University of Surrey, UK