



Passenger recovery after an airport closure at tourist destinations: A case study of Palma de Mallorca airport



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HIGHLIGHTS

- We analyze passenger recovery in the event of a closure of PMI airport.
- Our model relocates disrupted holidaymakers to minimum-delay itineraries.
- Speed of recovery differs across airlines and geographical markets.
- Intermodal transfers improve the quality of relocation.
- Public authorities should facilitate airline cooperation to improve resilience.

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ABSTRACT

In the context of increased concern about the resilience of critical transport infrastructure to external events and the impact of such events on local tourism industries, this paper analyzes the ability of tourism-oriented airports to relocate departing passengers in the event of an unexpected airport closure. A case study of Palma de Mallorca airport is presented. Using an MIDT dataset on passenger itineraries in August 2014, several closure scenarios are simulated, and disrupted passengers are relocated to minimum-delay itineraries. Aggregate delays and relocation rates are used to assess the impact of each scenario, with a particular focus on UK and Germany markets. The results provide useful benchmarks for the development of policies aimed at minimizing the impact on stranded tourists, such as allowing for passenger connections, establishing a protocol for interline cooperation, and improving intermodal transfers. These measures will help mitigate the negative impacts on airline loyalty and destination image.

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1. Introduction

In recent years, a number of events have challenged the robustness of air transport services worldwide. These events negatively affect both passengers, particularly those departing or returning from their holidays at major tourist destinations, and airlines, which have a statutory responsibility to assist their disrupted passengers. The nature of each disruptive event varies,

though most events are related to those most widely addressed in the literature on post-crisis recovery at tourism destinations, i.e., weather events and terrorist attacks (Mair, Ritchie, & Walters, 2016). In 2010, the Volcanic Ash Cloud led to thousands of cancelled flights, millions of stranded tourists across Europe, and massive economic impacts (Mazzocchi, Hansstein, & Ragona, 2010). On a smaller scale, a volcanic eruption led to the closure of Bali International airport in November 2015, with the expected impact on tourists returning from holidays (BBC, 2015a). The closures of both London and Gatwick airports for several days in December 2010 due to heavy snowfall also left thousands of tourists trapped (BBC, 2010). In addition to weather conditions, industrial actions are also responsible for massive flight cancellations, particularly in periods of strong holiday demand: In late 2009, the entire Spanish

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airspace had to be closed due to a nationwide strike of air traffic controllers (ATC) at the beginning of the Constitution/Immaculate Conception holiday (El País, 2009). In March 2016, the French ATC strike affected European holidaymakers during the Easter period (BBC, 2016), continuing a trend from previous years. Between 2015 and 2016, several strikes (primarily ATC and ground handling) also occurred in Italy, Spain, and Greece, causing many flight cancellations, as reported by the websites of Europe's major low-cost carriers (LCCs). An industrial action was also an underlying cause of the collapse of Vueling operations at Barcelona airport in July 2016. In this case, however, the primary factor, as concluded by the Spanish Government, was the lack of resilient planning of summer operations by the low-cost carrier, which compromised its ability to adapt to minor disruptions (El País, 2016).

Furthermore, it is worth mentioning the threat of terrorism, which has also affected airports directly. According to the Global Terrorism Database compiled by START (2016), 75 terrorist attacks specifically targeted European airports between 1970 and 2015, 83% of which were bombings/explosions. Twenty-eight of these airport attacks (37.3%) occurred during the summer months. The most affected airports are located in the UK (primarily London and Belfast), France (Paris), Italy (Rome), Spain (Madrid), and Turkey (Istanbul), which together accounted for 39 attacks (52% of the attacks in the last 45 years). This trend continued during the first nine months of 2016, when two major attacks in Europe occurred. The bombing of a passenger terminal at Brussels International Airport on March 22nd led to a full closure for passenger flights that lasted for 12 days, affecting many tourists, after which the airport opened on a limited basis (CNN, 2016). Istanbul Ataturk Airport was the target of a very similar bombing attack on the evening of June 28th. However, in this case, the airport closed only overnight and was operating by the next morning (NYT, 2016). Terrorist attacks at non-European airports can also affect European holiday travelers. For example, the presumed bombing of a Russian flight departing from Sharm el-Sheikh Airport (Egypt) in November 2015 led to many flight cancellations due to increased security measures that left more than a thousand UK tourists stranded (BBC, 2015b) and caused substantial immediate damage to the tourism industry in the city (Colliers, 2016). In the future, the predicted rates of growth in air transport demand (ICAO, 2013) and the current geopolitical instability in regions that attract substantial tourism activity (e.g., the Mediterranean) could reduce the ability to cope with such disturbances and put additional pressure on airport and airline managers as well as public authorities in tourist destinations.

The existing tourism literature (see, e.g., Mair et al., 2016) provides little insight into the role of air transportation agents in crisis management at tourism destinations, particularly regarding the recovery of departing tourists stranded due to massive flight cancellations. Previous studies in a broader tourism context, however, have established the negative impact of large-scale disruptions on destination image. The impact is particularly severe if it generates negative word-of-mouth (Lehto, Douglas, & Park, 2008), if the tourists are relatively close to the source of the disruption (Walters & Clulow, 2010), and if there is some attribution of responsibility by the tourists to a local authority or organization (Breitsohl & Garrod, 2016). We argue that these characteristics are present in disruptive events that directly involve air transport services. Therefore, the issue of passenger recovery at tourism-oriented airports is bound to be relevant not only from a purely service-recovery perspective (airports and airlines) but also from the perspective of protecting the destination image (tourism authorities). The literature also highlights the importance of planning and preparedness for improving the outcome of crisis management strategies in tourism

destinations (Ritchie, 2008), bringing the concepts of resilience, speed of recovery, and cooperation into play (Scott & Laws, 2008). At this point, however, the tourism literature becomes mainly qualitative and discursive, with some authors (e.g., Mair et al., 2016) recommending the production of more quantitative research.

To that end, it is worth mentioning that there is a decent body of transport literature on the structure of airline networks and their implications in terms of resilience to airport failures or the closure of air corridors (Lordan, Sallan, & Simo, 2014a). Building on these papers, we seek the opportunity to adapt a quantitative transport methodology to the subject of tourism. To the best of our knowledge, there is no quantitative study that focuses on passenger service recovery at tourism-oriented airports in the transport or tourism literatures. We argue that this type of airport presents a set of characteristics that warrant differentiated treatment, such as a focus on origin-destination traffic, the prevalence of insular or otherwise isolated locations, strong seasonality (Dobruszkes, 2013), or the dominance of LCCs. These carriers have a strong focus on cost-cutting measures (Doganis, 2006), and their service failures typically result in more complaints in comparison to full-service carriers (Bamford & Xystouri, 2005; Dobruszkes, 2006). These characteristics can hamper the ability of tourism-oriented airports to relocate stranded passengers in the event of a major disruption and, therefore, should be analyzed within a context of tourism crisis management, alongside any policies aimed to improve the speed of recovery, including the issue of multi-party cooperation highlighted in the literature.

We observe a disconnection between the analyses provided by the transport literature and the actual impact of airline or airport disruptions on the final users (i.e., the passengers/tourists who experience travel delays). Only a few of the available studies on air transport vulnerability and resilience consider the important aspect of how airlines relocate disrupted passengers, and to the best of our knowledge, no paper has taken into account the full passenger itineraries by employing air passenger demand data, as we do in this paper. Knowing the original passenger itineraries allows us to simulate an airline recovery process (i.e., rescheduling the stranded passengers) in the event of an airport closure. The use of demand data also allows us to disaggregate the impact across geographical markets, which is also a novel contribution to the literature. The relevance of this disaggregation can be understood by contrasting the literature on airline service recovery — which establishes the importance of “fairness” in that process (Akamavi, Mohamed, Pellmann, & Xu, 2015; Nibkin, Hyun, Iranmanesh, Maghsoudi, & Jeong, 2015) — with the experience of UK passengers stranded at Sharm el-Sheikh Airport in November 2015. These passengers faced longer delays than holidaymakers from other countries. While these differences were linked to increased security measures from UK authorities, it illustrates a situation in which a perceived “unfairness” in service recovery leads to passenger dissatisfaction (The Guardian, 2015) and negative impacts for the airline and the local tourism industry.

In this context, the objective of the present paper is to analyze the ability of tourism-oriented airports to relocate departing passengers in the event of an unexpected airport closure. A case study of Palma de Mallorca Airport (PMI), the busiest tourism-oriented island airport in Europe, is presented. PMI is chosen due to its large number of passenger departures and the lack of alternative modes of transportation in the event of an airport closure. Moreover, the case study provides enough variability on airline types and geographical markets for a more detailed discussion of the results. Using an MIDT dataset on passenger itineraries that includes flights in August 2014, several closure scenarios are simulated, and

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