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Improving the environmental performance of airport surface access in the UK: The role of public transport

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ABSTRACT

Simultaneously increasing the proportion of airport surface access journeys that are made by public transport modes and reducing the environmental effects of airport access/egress trips while accommodating growing consumer demand for air and surface access travel are priority areas for the air transport industry and the UK Government. Given the urgent need to reconcile commitments to environmental sustainability with commercial and economic imperatives for growth, this paper analyses the surface access strategies of London's six busiest passenger airports to identify the current challenges of airport surface access provision, examine opportunities for improvement within existing and future infrastructure and offer recommendations as to how increased public transport provision and patronage could improve the environmental performance of UK airport surface access.

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1. Introduction

The world's commercial airports are not only sites of intense aeronautical activity but they are also significant generators of surface access journeys. Every year, over 3.3 billion passengers and over 50 million tonnes of freight are transported between the estimated 4000 airports worldwide that support scheduled commercial flights (ATAG, 2014). Sustaining and accommodating increased future volumes of air passengers and freight is dependent not only on the provision of safe, reliable and cost effective air services but also on the ability of passengers, staff, visitors, freight, and mail to routinely, efficiently and reliably access airport terminals, cargo areas and maintenance facilities. Indeed, the provision of appropriate, affordable, accessible and reliable airport surface access options is a prerequisite of efficient airport operation and a source of competitive advantage both for airport operators, on account of a wider catchment area and a good reputation for surface access and national economies who benefit from enhanced speed and global connectivity.

Airport surface access (termed 'ground access' in the US) describes how people (including, but not limited to, passengers, employees, visitors and contractors), goods and vehicles access and egress airports by non-aeronautical based modes of transport. In the case of major airports, such as London Heathrow or New York JFK, which support a wide range of destinations and draw on a large and, in some cases, (inter)national catchment, the number of surface access trips can be considerable. Coogan (2008), for example, estimated that an airport handling 45 million passengers per year can generate up to 5 million vehicle miles of surface access travel per day (the equivalent of up to 1825 million miles per year). The fact that this mobility is concentrated at one site has potentially serious implications for human health and wellbeing, traffic delays and congestion, energy use, noise, vibration, user safety and local air quality.

The surface transport modes that are used to access and egress commercial airports in developed economies can be classified into three groups. Although other modes of surface access transport, including tuck-tucks, horse and carts, snowmobiles and off-road four wheel drive (4WD) vehicles, are also used, these modes typically only serve remote and/or smaller airports in less developed economies and, as such, are beyond the scope of this paper. The three categories of surface access transport that can be identified in

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developed economies are: private motorised, individual active and public transport modes (see [Table 1](#)). These three groups exhibit different characteristics in terms of technology, provision and patronage and generate a diverse range of commercial, environmental and social challenges that require targeted management and informed intervention.

Of these three categories, public transport offers the greatest potential to reduce emissions, lessen congestion and stimulate a modal shift towards more sustainable forms of surface access travel. Public transport is defined here as a shared surface transport mode which operates to a set timetable on fixed routes and which is available for public use. However, there are a number of significant challenges associated with procuring, planning, promoting and sustaining public transport services to airports, not least in terms of ensuring surface access options meet changing consumer needs and preferences with respect to accessibility, affordability and attractiveness while accommodating predicted increases in demand and operating in an environmentally sensitive yet cost efficient manner.

In the UK, as in many developed economies, private motorised modes dominate the airport surface access split. At some UK regional airports, as many as 95% of surface access journeys are made by private vehicles. The reasons for this are complex and involve site specific-interactions between:

- the physical location of the airport,
- its proximity to major population centres,
- interfaces with existing road and rail networks,
- local topography,
- public awareness of different transport options and knowledge of how, when and where they can be accessed,
- the relative cost, convenience and reliability of different public transport modes,
- the airport's passenger demographics and the type of air services it supports,
- the volume and seasonality of demand,
- the nature of competition with neighbouring airports,
- the regulatory position, and
- the political relationships that exist between an individual airport operator, public transport providers, local authorities and national Government.

One of the consequences of growing levels of motorisation and car ownership during the latter half of the twentieth and early

twenty-first centuries was that road access to airports developed in an ad-hoc way to accommodate the mobility needs of growing volumes of private vehicles. Indeed, in an age of the automobile and few environmental concerns during the 1950s and 1960s, many UK airports were intentionally developed or expanded to facilitate easy access by road. The location of East Midlands Airport in central England, for example, a facility which opened to commercial air traffic in 1965 to serve the cities of Leicester, Derby and Nottingham, was selected on account of its proximity to the newly constructed north-south M1 motorway which linked the major conurbations of London and Leeds ([Rowley, 1965](#)).

The legacy of this and other similar planning decisions that privileged vehicular access by road has meant that the built environment around many airports is dominated by multilane motorways and complex road interchanges that are hostile or totally inaccessible to pedestrians and cyclists and often unsympathetic (or wholly unsuited) to public transport provision and use. These problems are compounded by the fact that many UK airports, despite their geographic proximity to main railway lines, are not served by a dedicated on-site railway station. An exception to this is London Gatwick Airport which opened as London's second airport in 1958 and which was designed with an integral railway station from its inception. Other UK airports, including London Luton, Liverpool John Lennon and East Midlands, have subsequently been (albeit remotely) connected to the rail network through new off-site 'Parkway' stations. Elsewhere, both the Piccadilly Line of the London Underground and the Tyne and Wear Metro have been extended to serve London Heathrow and Newcastle Airports respectively. Even where airport stations are provided there is no guarantee of services or passengers. In 2013, Teesside Airport station, which serves Durham Tees Valley airport in northeast England, was the least used railway station in the UK, with only two (Sunday only) stopping services and 14 passengers using the facility in the year to April 2012 ([Williams, 2013](#)).

The need to address both the operational efficiency and the environmental implications of airport and aircraft operations is becoming increasingly acute and planning approval for airport expansion is now predicated on airport operators demonstrating a tangible financial commitment to enhancing public transport. In the UK, improving the environmental performance of airport surface access, reducing car use and promoting public transport have been identified at a national level both by the British Government-appointed independent Airports Commission and the House of

Table 1
Airport surface access modes in economically developed economies.

1. **Private motorised** (mechanised forms of non-scheduled transport that are not available for public use)
 - Private cars and motorcycles (whether as a driver or a passenger who parks the vehicle at the airport for the duration of their trip or someone who is being dropped-off or picked-up);
 - Private taxis or minicabs (whether as exclusive hires or as part of a shared occupancy scheme);
 - Airline or corporate chauffeur-driven services;
 - Minibuses (including hotel shuttles and private transfers).
2. **Individual active** (modes requiring physical effort/activity by an individual)
 - Walking;
 - Cycling.
3. **Public transport** (shared surface transport modes which operate to a set timetable on fixed routes and which are available for public use)
 - Long distance service coaches;
 - Local service buses and on-site shuttle buses to other terminals or local railway stations;
 - High-speed inter/national rail services;
 - Heavy national, regional and local rail services;
 - Light rail, automated rail or people mover/monorail services;
 - Underground or metro;
 - Tram, trolleybus or guided bus services;
 - Water ferries, water buses or water taxis (as used at coastal or estuarine airports such as Venice Marco Polo, Toronto City and Boston Logan).

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