Connecting passengers at UK airports

Civil Aviation Authority

November 2008

Contents

1. Summary and Introduction 2
2. General data on connecting traffic. 5
3. Connecting passengers at Heathrow 10
4. Connecting passengers at Stansted 17
5. Connecting passengers at Gatwick 20
6. Connecting passengers at Manchester 22
7. The costs and benefits of connecting passengers 24

1. Summary and Introduction

1.1 Connecting traffic[1] comprises those passengers whose sole business at an airport is to transfer from one flight to another, within 24 hours of arrival at the airport.[2] There are important distinctions to be drawn between the different types of connectors and their significance to UK airlines, airports and the economy in general. Connectors may travel with the same carrier on both legs of their journey (even if one of the flights is operated by a codeshare or alliance partner) or with different carriers on each leg of the journey; they may have an airside connection, or they may have to collect their bags from the first flight and check in again for the second; they may be transferring between domestic routes, between a domestic and an international route, or between international routes; they may be motivated by convenience or by price; and they may play an integral or a marginal role in supporting the service on which they fly.

1.2 This paper uses the CAA's Passenger Surveys to analyse all types of connecting passengers. The CAA surveys form part of a series which dates back to 1968, and have been undertaken continuously at London[3] and Manchester airports since 1996. This paper presents recent data on connecting passengers, a comparison with historic levels of connecting traffic at UK airports and an analysis of the factors behind recent trends.

1.3 The main findings of this paper are that:

- The level of connecting passengers in the London airport system has been 15% or more (and at Heathrow 20% or more) for at least the last thirty five years. Levels rose in the late 1980s and peaked in 1996 and 2002. However, they are still lower than the proportions of connecting passengers at other major European hubs, which have less populous or economically strong local catchment areas.
- Airline strategy can influence the level of connecting traffic, as seen with the increase in proportion of connectors at Heathrow and Gatwick from 1987, the decision of BA to instigate its dual hub policy, and BA's concentration of hubbing at Heathrow in 2002. However, the experience at Stansted, where around ten per cent of terminal passengers are connectors despite little or no airline encouragement, indicates that a sufficiently wide network of routes alone may generate a certain level of connecting traffic.
- There is evidence that connecting passengers help to maintain the wide range of services and level of frequency at Heathrow, including some routes where demand from local traffic alone may be insufficient for them to be economically viable. They therefore support the benefits that accrue to UK passengers (particularly

[1] Also called 'transfer traffic'. This is not the same as transit passengers, who arrive and depart on the same flight, normally remaining on board the aircraft. Transit passengers form less than half of one per cent of the UK's passengers and, therefore, are not considered in this paper.
[2] Connecting passengers are counted as two passenger movements at the airport, once on arrival and once on departure. 'Local', 'terminating' or 'point to point' passengers are only counted once as a passenger movement, either as an arrival or a departure. When reference is made to passengers in any statistics in this paper, the term refers to passenger movements unless otherwise stated.
[3] Heathrow and Gatwick joined the continuous survey in 1996 and were joined by Luton and Stansted in 2000.

business passengers) who place a high value on frequency of service and range of destinations.

- At capacity constrained airports, increasing demand over time for travel from the local market tends to displace connecting passengers, since, in general, point to point traffic is higher yielding than connectors. This effect probably explains the reduction in connecting passengers at Heathrow during the periods between 1996 and 2001 and 2002 and 2006. However, the opportunity to carry connecting passengers may help network airlines to weather periods of weaker local demand with less need to reduce services.

1.4 Section 2 of this paper reviews data on connecting traffic at UK airports, looking at the varying importance of connecting traffic at different airports, and the composition of that traffic, breaking it down by type of connection (i.e. domestic-domestic, domestic-international or international-international) and by journey purpose and nationality. The data show that Heathrow, Gatwick and Stansted are by far the most important airports for connectors, accounting for over 90% of all connectors in the UK, with Heathrow alone accounting for over 70% in 2007.

1.5 Sections 3 to 6 consider connecting traffic at the four largest UK airports: Heathrow, Stansted, Gatwick and Manchester. The majority of Heathrow connectors are travelling between international points (particularly between Europe and long haul destinations). The importance of connectors to network airlines and alliances is also considered. Connecting traffic is of particular significance to BA, accounting for 47% of its total traffic[4] at Heathrow in 2007.

1.6 At Stansted, there is little incentive or assistance for connecting passengers. Nevertheless, there is a significant proportion of connectors. These connectors may have been attracted by the range of destinations and low fares offered at Stansted, together with its position, which makes it attractive as a connecting point between Ireland or Scotland and much of mainland Europe, as well as between Southern Europe and Scandinavia.

1.7 The airlines and services at Gatwick have changed somewhat over the last ten years, and these changes have been reflected in the connecting passengers at the airport. As a hub for BA and US long haul services, its proportion of connecting traffic grew throughout the 1990s to 22%, a level comparable with Heathrow in the early 1980s. However, following BA's abandonment of its two hub strategy in 2002 and the increasing presence of no frills airlines, Gatwick's proportion of connecting passengers has fallen to 12%, a level similar to that of Stansted today.

1.8 Manchester is similar in size to Stansted in terms of total terminal passengers, yet has a much smaller proportion of connecting traffic. However, over a third of passengers at Manchester are on charter services, and, although the airport offers a wide range of both long and short haul scheduled destinations, it has many fewer such routes offering daily services than Stansted. Lower frequencies are likely to

[4] By definition, a single connecting passenger's one-way journey will count twice in this figure – once for the inbound flight and once for the outbound flight – whereas a direct passenger will only count once.

reduce the ability of passengers to make connections between services, and many of the links offered by Manchester may be available more conveniently at other UK or European hubs.

1.9 Section 7 concentrates on the costs and benefits of connecting traffic from the points of view of UK consumers, UK airlines and the UK economy. The section seeks to identify where costs and benefits arise and their likely level of significance relative to each other. Previous studies have attempted to quantify costs and benefits, and, given the level of uncertainty inherent in such calculations, this exercise is not repeated here. However, connecting passengers appear to help maintain some services at Heathrow, and the frequency of other services. They therefore support the benefits that accrue to UK passengers, particularly business passengers, for whom the value of a high range and frequency of air services is indicated by their willingness to pay high premium and flexible ticket prices to use those services.

2. General data on connecting traffic.

2.1 This section contains an analysis of connecting traffic at UK airports. The data were taken mainly from the 2007, 2006 and 2005 CAA airport passenger surveys, although earlier surveys have been used to examine historic trends.

2.2 Table 2-1 below shows the share of connectors and terminators[5] at each of the 23 airports surveyed by the CAA since 2005. The figures represent terminal passengers at each airport, where one terminal passenger is defined as a single passenger boarding or disembarking from an aeroplane at the airport. This means that the proportion of connecting passengers at an airport will be greater than the proportion of connecting journeys[6].

2.3 Terminating passengers comprised the larger part of total passengers at all airports. Heathrow served the greatest percentage of connectors who make up over one third of total passengers there. In absolute terms, Heathrow also served the highest total number of connectors; over 23 million. Gatwick is the next largest, where connectors were approximately four million or 13% of its total passengers, followed by Stansted with over two million connectors or 9% of its passengers. Combined, these three airports accounted for 94% of all connecting passengers in the UK in 2007.

2.4 At Aberdeen 10% of passenger movements were connectors. The figure was 4% or less for all remaining UK airports, including Luton, Manchester and Birmingham. Over half of the relatively large number of connectors at Aberdeen can be attributed to trips between the mainland and oilrigs.

Table 2-1 Connectors and terminating traffic at UK airports in latest survey year

Airport	*Connecting Proportion*	*Number of Connectors (m)*	*Number of Terminators (m)*	*Total Passengers[7] (m)*
Heathrow	35.1%	23.5	43.4	66.9
Gatwick	13.1%	4.5	30.0	34.5
Stansted	9.1%	2.2	21.5	23.6
Manchester	3.0%	0.6	20.1	21.6
Luton	4.1%	0.4	9.3	9.7
Aberdeen**	9.7%	0.2	2.2	2.4
Birmingham*	2.3%	0.2	8.8	9.0
Glasgow**	1.9%	0.2	8.3	8.5
Edinburgh**	1.6%	0.1	8.1	8.3
Liverpool	1.4%	0.1	5.4	5.4

[5] Terminators or terminating passengers at an airport are those passengers whose air journey starts or ends at that airport compared to connecting passengers whose sole purpose for using that airport is to take another flight to their final destination.

[6] A single return journey for a direct passenger will contribute two terminal passengers to the airport total – one on the outward flight and one on the return. However a single return journey for a connecting passenger will contribute four terminal passengers to the airport's total – two on the outward flights (disembarkation from the inbound service and boarding the outbound service) and two on the return.

[7] These totals are slightly lower than the reported total passengers in the survey year. Weighted survey data tend to understate the passenger numbers at airports due to low sample sizes on smaller routes.

London City*	2.4%	0.1	2.3	2.4
Newcastle**	0.6%	0.03	5.1	5.1
East Midlands*	0.5%	0.02	4.7	4.7
Leeds Bradford**	0.4%	0.01	2.5	2.5
Belfast Int'l*	0.2%	0.01	5.0	5.0
Inverness**	1.0%	0.01	0.6	0.6
Prestwick**	0.2%	0.00	2.3	2.3
Belfast City*	0.2%	0.00	2.1	2.1
Teesside**	0.2%	0.00	0.9	0.9
Bournemouth**	0.1%	0.00	0.6	0.6
Doncaster	0.1%	0.00	1.1	1.1
Londonderry*	0.1%	0.00	0.3	0.3
Humberside	0.0%	0.00	0.4	0.4

Source: CAA Passenger Survey 2007, 2006 (*), 2005 (**)
Notes: 0.00 indicates less than 5,000 passengers

2.5 Table 2-2 shows the types of journey made by connectors at the larger airports in 2007, in terms of the services in and out of the airport that they used. Passengers connecting between international services made up over 50% of all Heathrow and Stansted connectors. At Manchester, Gatwick and Luton the largest share of connectors were domestic - international passengers. Overall, domestic - domestic flows were less than 2% of all connecting traffic in the UK.

Table 2-2 Connecting passengers by journey type, 2007

	Domestic - Domestic	Domestic - International	International - International	Connectors (m)
Heathrow	0.0%	23.8%	76.1%	23.5
Gatwick	1.6%	54.3%	44.1%	4.5
Stansted	0.2%	45.0%	54.8%	2.2
Luton	0.0%	60.2%	39.8%	0.4
London(1) total	*0.3%*	*30.3%*	*69.4%*	*30.5*
Manchester	6.1%	70.1%	23.8%	0.6

Source: CAA Passenger Survey 2007
Notes: (1) excludes London City since it was not surveyed in 2007
0.0% indicates less than 0.05%

2.6 For the five airports with the greatest numbers of connectors, Table 2-3 divides connectors by passenger characteristics: the purpose of their trip and whether they are a UK or non-UK resident. At all five airports, non-UK residents formed the majority of connectors, although the proportion of non-UK resident connectors varied from 85% at Heathrow to 52% at Manchester. Even in London, only 56% of Gatwick's connectors were non-UK residents. The UK leisure[8] market formed the largest share of connecting passengers at Manchester and Gatwick, whereas non-UK leisure had the largest share at Heathrow, and non-UK VFR[9] at Stansted and Luton.

[8] Leisure is here taken to mean all leisure purposes of travel excluding VFR.
[9] Visiting Friends and Relatives

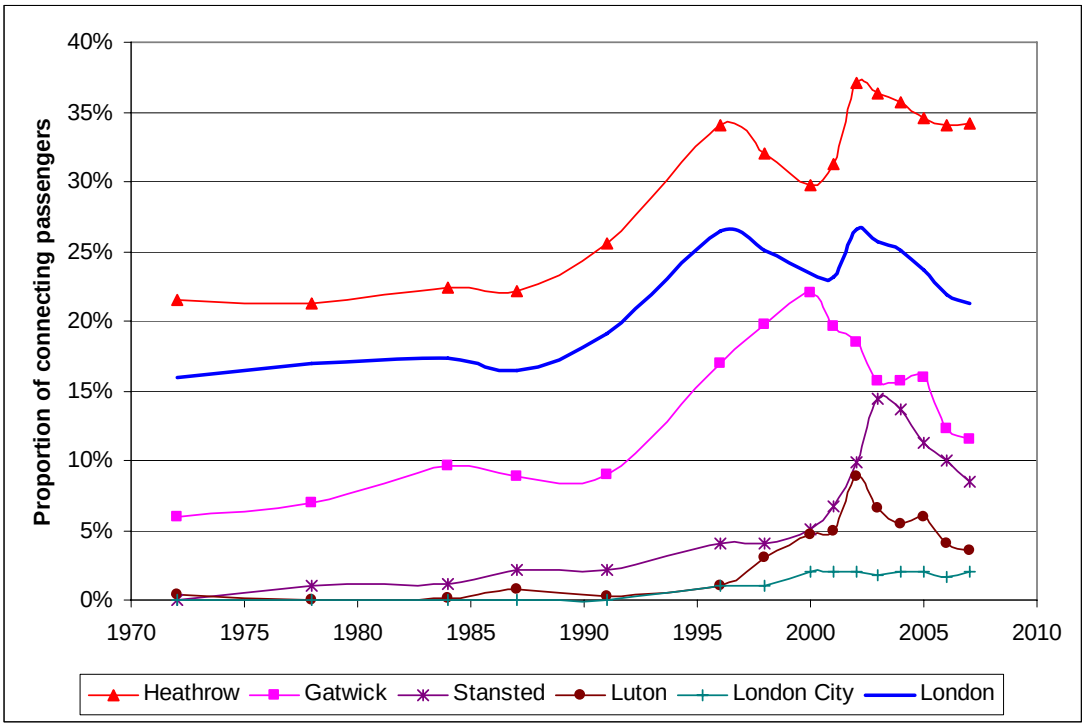
Table 2-3 Connecting passengers by residence and journey purpose, 2007

	UK resident			Non-UK resident			Total	Connectors
	Business	Leisure	VFR	Business	Leisure	VFR	Non-UK	(000s)
Heathrow	4%	7%	4%	25%	33%	28%	85%	23.5
Gatwick	7%	28%	9%	17%	21%	18%	56%	4.5
Stansted	6%	9%	13%	15%	26%	32%	73%	2.2
Luton	8%	18%	13%	16%	22%	25%	62%	0.4
London(1) total	*5%*	*10%*	*6%*	*23%*	*30%*	*27%*	*80%*	*30.5*
Manchester	13%	28%	6%	16%	18%	18%	52%	0.6

Source: CAA Passenger Survey 2007
Notes: (1) excludes London City since it was not surveyed in 2007
'VFR' = 'Visiting Friends and Relatives'
'Leisure' indicates all leisure purposes other than VFR

2.7 Figure 2-1 shows how the proportion of connecting traffic at each London airport has developed over time and shows also the overall proportion of connecting traffic in the London system[10]. The level of connecting traffic was reasonably static between 1972 and 1987, at around 17% for London as a whole and 22% for Heathrow (although short-lived variations in the proportion of connecting traffic may go undetected since there were only four surveys carried out over this period). Between 1987 and 1996 the proportion of connecting traffic rose at both Heathrow and Gatwick (and therefore for the London airports overall) by ten percentage points. At Heathrow, connecting passengers fell back from around 35% to 30% of traffic by 2001, but then rose again to a peak of 37% in 2002, and have remained at a level slightly below this.

Figure 2-1 Proportion of connecting passengers at London airports since 1972



Source: CAA Passenger Surveys
Note: Excludes passengers connecting between flights at different London airports

[10] Note that some values have been interpolated for Stansted, London City and Luton airports, and that the data in this figure do not include passengers that connect between flights at different London airports.

2.8 For consistency with historic data, Figure 2-1 **excludes** passengers connecting between flights at different London airports (for example, flying from Mumbai into Heathrow, and then travelling to Gatwick to fly on to Jersey). There were nearly 1.5 million such passengers across the London airports in 2007, representing around 1% of the total. By far the most important such flow in 2007 was between Heathrow and Gatwick airports (about 500 thousand passengers at each airport). Counting such passengers as connectors would have increased the connecting proportions in 2007 by 1% at Heathrow, 1.5% at Gatwick, 0.7% at Stansted and 0.6% at Luton. For the remainder of this paper, when analysing passengers transferring between services at the London airports as opposed to local London traffic, these passengers **will** be treated as connectors.

2.9 Many of the changes in overall connecting traffic at Heathrow and, to a lesser extent, Gatwick can be correlated with the growth and business strategy of British Airways (BA). The significant rise in the proportion of connecting traffic at Heathrow and Gatwick from 1987 coincides with the privatisation of BA[11]. Through the 1990s, BA operated a dual hub strategy at Heathrow and Gatwick and the proportions of connecting passengers grew. The decline in the proportion of connecting passengers from 1996 at Heathrow was likely due to the increasingly congested runway and the greater average yields that airlines can achieve from point to point passengers. In 2002, demand for air travel in general, and across the North Atlantic in particular, fell and BA abandoned its dual hub strategy to concentrate more of its services at Heathrow, causing the proportion of connectors at the airport to reach record levels. In the following years, the proportion of connecting passengers fell at Gatwick, most likely as a direct result of these services relocating, and also at Heathrow, probably reflecting increased demand for direct services and competition for connectors from other hub airports.

2.10 Other trends are observable from Figure 2-1. The proportion of connecting passengers increased at both Luton and Stansted as their network of no-frills services increased, despite the lack of through-ticketing available from the dominant carriers[12]. Although the contribution of these airports to total connecting traffic is small in comparison to Heathrow, they demonstrate how connecting passengers are not always a product of airline strategy, but can arise naturally as a result of the available route network.

2.11 In 2007, the proportion of connecting traffic in London airports overall, at 21%, is some four percentage points above the level prevailing through the 1970s and 1980s of around 17%. This difference represents an additional 6.5 million passengers at current traffic levels. However, the proportion has declined from its peak of 27%, reached in both 1996 and 2002, which is six percentage points (or 7.5 million passengers at current traffic levels) higher than in 2007.

[11] In a recent article in the Sunday Times, Robert Ayling, formerly CEO of BA, stated that only 9% of Heathrow's traffic in 1992 were connecting passengers. However, this is not borne out by the CAA passenger surveys, which also suggest that BA's transfer traffic at this time was a similar proportion to that of the airport as a whole.
[12] Virtually all connecting passengers at these airports must go landside following their inbound flights (collecting any hold luggage they may have) and then check in for their outbound flight. They will receive no special treatment from the airline to ensure that they make their connection.

2.12 The following sections look in more detailed at the characteristics of connectors at the four UK airports with the largest numbers: Heathrow, Stansted, Gatwick and Manchester.

3. Connecting passengers at Heathrow

3.1 In 2007, some three quarters of the connectors at Heathrow were transferring between two international flights. Table 3-1 shows how the distribution of different types of connectors at the airport has changed over the past twenty years. It shows how international to international connectors have increased their dominance of Heathrow's connecting traffic. Whereas the proportion of connecting passengers represented by domestic to international connectors has fallen since 1987, possibly due to increases in direct services from regional airports, the proportion of international to international connectors has greatly increased[13].

Table 3-1 Percentage of connecting passengers by type at Heathrow since 1987

	Domestic - Domestic	Domestic - International	International - International	Connectors (m)	Connectors % of total
1987	1.5%	41.8%	56.8%	7.7	22.2%
1991	0.8%	36.5%	62.7%	10.3	25.5%
1996	0.4%	31.4%	68.3%	18.1	32.5%
2001	0.0%	26.5%	73.5%	19.5	31.0%
2003	0.0%	28.1%	71.9%	23.4	37.0%
2007	0.0%	23.9%	76.1%	23.5	35.1%

Source: CAA Passenger Surveys
Note: 0.0% indicates less than 0.05%

Connecting routes

3.2 Table 3-2 sets out in more detail the world regions between which Heathrow's connecting passengers travelled in the years 1987, 1996 and 2007.

Table 3-2 Percentage of connecting passengers by routeing at Heathrow since 1987

	Domestic - Domestic	Domestic - International		International - International			Connectors (m)
		Dom-SH	Dom-LH	SH-SH	SH-LH	LH-LH	
1987	1.5%	22.4%	19.4%	7.5%	39.9%	9.3%	7.7
1996	0.4%	13.9%	17.4%	6.6%	51.9%	9.8%	18.1
2007	0.0%	6.6%	17.2%	2.7%	55.7%	17.7%	23.5

Source: CAA Passenger Survey 2007
Notes: Dom=Domestic, SH=Short Haul international, LH=Long Haul

3.3 Much of the growth in connecting traffic can be attributed to the rising number of international - international passengers which has quadrupled from 4.4 million in 1987 to 17.9 million in 2007, whereas total passengers at Heathrow have only doubled over this period. The increase in long haul services at the airport has given rise to greater numbers of domestic - long haul connectors (1.5 million in 1987 to 4.0 million in 2007), short haul - long haul connectors (3.1 million to 13.1 million) and long haul - long haul connectors (0.7 million to 4.2 million).

[13] Although in absolute terms, the number of domestic-international connectors at Heathrow is virtually the same: 2.7 million in 2007 compared to 3.2 million in 1987, whereas the number of international-international connectors has more than doubled.

3.4 Table 3-3 shows the most popular[14] city pairs for connecting passengers at Heathrow in 2007 for each of the main types of flow reported in Table 3-2 and where they would feature in a list of all connecting routeings at the airport. Whilst the most heavily used route is between Manchester and Hong Kong[15] the majority of other major routeings are between international points, such as Dublin and Singapore or Chicago and Nairobi.

Table 3-3 Connecting passengers by routeing at Heathrow 2007

Category	Routeing	Passengers (000)	Overall Rank
Domestic	Manchester – Hong Kong	136	1
– Long Haul	Manchester – Tokyo	62	15
	Glasgow – Hong Kong	56	24
	Edinburgh – Chicago	55	25
	Edinburgh – Hong Kong	51	29
Domestic	Manchester – Madrid	51	30
– Short Haul	Edinburgh – Madrid	33	102
	Edinburgh – Lisbon	32	109
	Aberdeen – Paris	25	166
	Manchester – Lisbon	24	188
Short Haul	Dublin – Singapore	98	2
– Long Haul	Barcelona – Los Angeles	88	3
	Paris – Hong Kong	87	4
	Rome – Hong Kong	85	5
	Paris – New York	79	8
Long Haul	Chicago – Nairobi	85	6
– Long Haul	Toronto – Dubai	81	7
	New York – Tel Aviv	65	13
	New York – Mumbai	58	21
	New York – Delhi	56	23

Source: CAA Passenger Survey 2007
Note: each passenger is counted twice – once on each leg – see footnote 6

3.5 Over 7.0 million passengers, or 27% of total connectors, are travelling between Europe and North America, typically between EU capitals, for example Dublin and Paris, and major US gateways such as New York, Chicago and Los Angeles. Routes between Europe and the Far East are also significant with around 2.8 million passengers. The most popular international – international city pair routes are between Dublin and Singapore (98 thousand), Barcelona and Los Angeles (88 thousand), Paris and Hong Kong (87 thousand), and Rome and Hong Kong (85 thousand).

3.6 Around three-quarters of the domestic - international connectors in 2007 were between the UK and long haul destinations. North America had the greatest share (29% of all domestic – international connectors), slightly above that of Europe (26%) and the Far East (18%). Routes between the UK and Europe were typically to and from Manchester, Glasgow, Edinburgh and Belfast to major EU destinations, particularly Madrid and Lisbon, but also Nice, Barcelona and Frankfurt. The largest

[14] In terms of the number of passengers on the route. Note that to remain consistent with previous tables and the reported total number of terminal passengers at Heathrow, each connector is counted as two terminal passengers at the airport, once on their arriving flight and once on their departing flight.
[15] As with all the routeings shown here, some of the passengers may also be making further connections at one or other end of the journey. In the case of Hong Kong, passengers may be connecting there onto flights to Australian or Far Eastern cities.

connecting flows were between Manchester and Hong Kong (used by about 136 thousand connectors), Manchester and Tokyo (62 thousand), Glasgow and Hong Kong (56 thousand), and Edinburgh and Chicago (55 thousand).

3.7 Of the 5.6 million passengers connecting from domestic to international services at Heathrow in 2007, about two-thirds were travelling from lowland Scotland or Northern Ireland airports. For many of these passengers, the alternatives to air travel for reaching their destinations, where alternatives exist, will greatly increase their overall travel time. The level of domestic connecting passengers is therefore only likely to be significantly reduced through the development of direct regional air services or services between the regions and other global hub airports.

Airlines and alliances

3.8 Table 3-4 shows the proportions of connecting passengers carried by the major airlines at Heathrow in 2007. Whilst BA carried the greatest number and proportion of connecting passengers[16], the table shows that only three of the airlines with over half a million passengers at Heathrow carried fewer than 15% connecting passengers.

Table 3-4 Connecting passengers by airline at Heathrow in 2007

Airline	Direct percentage	Connecting percentage	Total passengers (m)
British Airways	53%	47%	28.5
bmi	63%	37%	4.3
Virgin Atlantic	78%	22%	3.8
Aer Lingus	70%	30%	2.2
American Airlines	61%	39%	2.2
Lufthansa	81%	19%	2.1
Air Canada	56%	44%	1.7
SAS	80%	20%	1.5
United Airlines	68%	32%	1.5
Iberia	72%	28%	1.2
Alitalia	84%	16%	1.1
Emirates	80%	20%	1.0
Qantas	56%	44%	1.0
Air France	88%	12%	0.9
KLM	93%	7%	0.9
Cathay Pacific	66%	34%	0.8
SIA	81%	19%	0.7
South African Airways	67%	33%	0.6
SWISS	91%	9%	0.5
All airlines	65%	35%	67.7

Source: CAA Passenger Survey 2007
Note: British Airways total includes GB Airways operations

3.9 Table 3-5 shows how the connecting passengers at Heathrow divide between the major airline alliances, with BA traffic identified separately. It shows that, for the two main alliances at Heathrow in 2007, oneworld and Star the majority of

[16] Expressed as terminal passengers, where a return connecting journey will count as four terminal passengers whereas a return direct journey counts only as two (see footnote 6). If passenger trips were considered instead, then, in 2007, connectors would be 21% of Heathrow's traffic and 31% of BA's Heathrow traffic.

connecting traffic was between alliance partners[17]. The Skyteam alliance did not have a strong presence at Heathrow in 2007, whereas connectors from the non-aligned airlines were evenly distributed between BA, Star and other non-aligned airlines.

Table 3-5 Connecting passengers by airline at Heathrow in 2007

Passengers (m)	Connecting alliance					
Alliance	**BA**	**oneworld (excl BA)**	**Star**	**Skyteam**	**Non-aligned**	**Total Connectors**
BA	10.4	1.3	0.5	0.1	1.1	13.4
oneworld (excl BA)		0.2	0.2	0.1	0.3	2.1
Star			2.1	0.1	1.0	4.1
Skyteam				0.0	0.1	0.4
Non-aligned					0.9	3.5

Source: CAA Passenger Survey 2007
Note: 0.0 indicates less than 50,000 passengers

3.10 Table 3-5 also shows that BA carries well over half of the connecting passengers at Heathrow (over 13 million of the 23.5 million passengers) despite only carrying around 40% of the total traffic at Heathrow[18]. This indicates how a network airline (or an alliance or simply codeshare partners) can attract connecting traffic through its pricing, frequent flyer programmes or better advertising of connecting options. However, Section 4 will examine how connecting passengers have grown at Stansted, despite no encouragement from the incumbent airlines.

Connecting passenger characteristics

3.11 Table 3-6 shows the journey purpose and residence of the different types of connecting passengers at Heathrow. Unsurprisingly, virtually all domestic-domestic connectors are UK residents and international-international connectors are non-UK residents. Domestic-international connectors are predominantly (59%) UK residents, similar in proportion to non-connecting passengers (61%).

[17] Although only 0.2 million of the 2.1 million non-BA oneworld passengers connected to other non-BA oneworld services, as shown in the table, a further 1.3 million connected with BA services.
[18] In fact, 44% of the connecting passengers at Heathrow in 2007 were transferring between two BA flights.

Table 3-6 Journey purpose and residence of connecting passengers at Heathrow by connection type in 2007

	UK resident			Non-UK resident			Total	Passengers
	Bus	Leisure	VFR	Bus	Leisure	VFR	UK	(m)
Domestic-Domestic	0%	0%	100%	0%	0%	0%	100%	0.0
Domestic-International	16%	26%	16%	13%	13%	15%	59%	5.6
International-International	-%	-%	-%	28%	39%	32%	1%	17.9
Total Connectors	4%	7%	4%	25%	33%	28%	15%	23.5
Total non-connectors	24%	18%	19%	16%	10%	13%	61%	43.4
Total all passengers	17%	14%	14%	19%	18%	19%	45%	66.9*

Source: CAA Passenger Survey 2007
Notes: Dom=Domestic, SH=Short Haul international, LH=Long Haul
-% indicates less than 0.5%, 0.0 indicates less than 50,000 passengers
** see footnote 7*

3.12 Business passengers are typically assumed to have a high value of time, and therefore prefer direct to indirect services, and Table 3-6 shows that, for both UK residents and non-UK residents, there are fewer business connectors than leisure or VFR, whereas the opposite is true for non-connectors[19]. However, the table also shows that nearly 30% of connectors are business passengers. It may be that these are passengers who have no direct service available, or for whom direct and indirect services via other hubs offer a lower frequency or quality of service than at Heathrow[20]. However, it may be that airlines are offering lower prices for their Heathrow connecting services and therefore increasing their attractiveness.

3.13 Typically, full service airlines and alliances tend to command lower yields for a connecting service than they would from selling the two legs separately to direct passengers. This would suggest that network airlines and alliances would prefer, where possible, to sell two direct journeys rather than a single connecting trip. As demand for direct travel increases, it would therefore be expected that the proportion of connecting passengers would reduce. However, with increasingly sophisticated yield management systems and strategies, along with commercial benefits of connecting business class traffic relative to direct economy traffic, some level of connecting passengers is always likely to remain..

Comparison with other hub airports

3.14 Amongst other major European hub airports, high proportions of connecting traffic are not uncommon. In the recent London First report[21], proportions of connecting

[19] UK business connectors make up 4% of all connectors, lower than the 7% for UK leisure connectors and the same as UK VFR. However UK business non-connectors make up 24% on all non-connectors, higher than the 18% and 19% of UK leisure and UK VFR traffic respectively. A similar result can also be seen for non-UK business passengers.
[20] Business passengers are often considered to be more sensitive to frequency of service than price, and may prefer a connecting service which operates at the time that is most suitable, rather than a direct service at a more inconvenient time. Other considerations, such as the facilities offered by particular airlines, or frequent flyer programmes may also play a part in attracting some business travellers to connecting services.
[21] 'Imagine a World Class Heathrow' June 2008

passengers were given for the four main European hub airports (reproduced below in Table 3-7), showing that Heathrow and Charles de Gaulle both have much lower proportions of connectors than Frankfurt Main and Schiphol. The table also provides some indication of the local catchment areas accessible to these airports via the population estimates for Larger Urban Zones[22] produced by Urban Audit (a collaboration between the EU Directorate-General for Regional Policy and Eurostat to provide reliable and comparative information on selected urban areas in Member States), and the relative wealth of that catchment through GDP per head figures[23].

Table 3-7 Connecting passengers at selected European airports 2007

	Total Passengers (millions)	Connecting Passengers (millions)	% Connecting Passengers	LUZ Population 2004 (m)	GDP per head 2001 (euro 000)
London Heathrow	68	24	35%	11.9	31.1
Frankfurt Main	53	29	54%	2.5	38.4
Amsterdam Schiphol	46	19	42%	1.4	
Paris Charles de Gaulle	57	18	32%	11.1	37.1

Source: London First report 'Imagine a world class Heathrow', Urban Audit
Notes: LUZ = Larger Urban Zone

3.15 The table suggests that Heathrow and Paris have much larger potential in their local air markets than Frankfurt or Schiphol. Although in 2001 (the latest date for which comparable figures for LUZs are available), the local GDP per head of population in Paris and Frankfurt was larger than for London, the evidence of national GDP growth suggests that this gap would have closed somewhat by 2007. Also, unlike Heathrow, these airports are much more dominated by their main network airline (whereas BA made up 42% of Heathrow's scheduled passenger services in 2007, Lufthansa made up 61% of Frankfurt's, Air France 58% of Charles de Gaulle's and KLM 53% of Schiphol's).

3.16 It has been noted by Rigas Doganis[24] that the scheduling at Heathrow is not particularly conducive to connecting passengers[25]. However, this observation was made in 2002 and, since that time, developments such as the Eastern extension to Terminal 1 and the opening of Terminal 5, as well as the drive to locate airlines in the same terminal as their alliance partners, have been undertaken with a view to facilitating connecting passengers.

3.17 Nevertheless, scheduling at Heathrow still does not – and given the present shortage of runway capacity, is unlikely to – approach the ideal pattern for a hub airport[26], in which waves of inbound and outbound flights alternate through the day

[22] "The larger urban zone (LUZ) allows a comparison between the city and its surroundings. The goal was to have an area from a significant share of the resident commute into the city, a concept known as the "functional urban region". To ensure a good data availability, the Urban Audit works with administrative boundaries that approximate the functional urban region." Urban Audit website (www.urbanaudit.org)
[23] Data for these figures are only available for 2004 and 2001 respectively. Although no comparable local figures for GDP are available for 2007, it should be noted that UK national GDP grew faster between 2001 and 2007 than that of the other European countries.
[24] 'The future of hubbing in London', October 2002.
[25] Based on schedules from 27 June 2002, they are such that that connections available in a two hour window between inbound and outbound services are no better than if the flights were randomly distributed during the day, whereas at Schiphol, Charles de Gaulle and Frankfurt all had schedules with nearly twice as much connectivity.
[26] As utilised by some of the US carriers' hubs, such as Atlanta.

to provide the shortest possible connection times for the maximum combination of routes. In part this reflects the sizeable pool of direct demand that Heathrow serves first and foremost, conditions that it shares with the New York airports, but which distinguish it from some Middle and Far Eastern airports that have established themselves primarily as hubs providing onward connections.

4. Connecting passengers at Stansted

4.1 Stansted is of particular interest as concerns connecting passengers since (excepting, until recently[27], Air Berlin) no major airline offered any connecting facilities at the airport. However, as the network of services and frequencies has developed, the proportion of connectors at Stansted has grown, despite lacking well-established long haul operations at the airport.

4.2 Stansted is also interesting because neither of the main airlines' services have been available on Global Distribution Systems, the traditional means by which travel agents investigate connecting routes and fares for passengers[28]. However, the increasing use of the internet to book travel may have allowed passengers more easily to explore the possible connections available and make a more active trade-off between cost and convenience.

4.3 Currently, the proportion of domestic-international and international-international connectors at Stansted is roughly equal (domestic-domestic connectors are a minimal proportion). Table 4-1 shows how this relationship has developed as Stansted's route network has expanded. Connecting traffic grew quickly between 2000 and 2004, when it reached its peak in absolute passenger numbers (2.8 million)[29]. Since 2004, the number of connectors at Stansted has declined somewhat, whilst total passenger numbers have continued to grow.

Table 4-1 Passengers by connecting type at Stansted

	Percentage of connectors			Connectors		Passengers	No.
Year	Dom-Dom	Dom-Int	Int-Int	(m)	% of Total	(m)*	Routes
2000	0.1%	54.1%	45.8%	0.6	5.1%	11.9	68
2002	0.4%	53.0%	46.6%	1.6	9.9%	15.7	70
2004	0.8%	44.4%	54.8%	2.8	13.6%	20.9	104
2006	0.2%	45.4%	54.5%	2.6	10.8%	23.6	121
2007	0.2%	45.0%	54.8%	2.2	9.1%	23.6	109

Source: CAA Passenger Surveys and CAA Airport Statistics
Notes: No. Routes = destinations averaging over six scheduled return passenger flights in a week
** see footnote 7*

4.4 There are few long haul services at Stansted, so the majority of connections are between domestic and short haul or between different short haul services. The development of direct short haul services from the UK regions and between continental European airports might help explain the reduction in connectors at Stansted seen since 2004.

4.5 Table 4-2 shows the major country destinations for domestic connecting traffic through Stansted in 2007. It shows that nearly a quarter of domestic connectors are connecting with a German route, a country which is less well served from the regions than, say Spain or Italy, but for which Stansted has an extensive network.

[27] Air Berlin stopped offering connecting facilities at Stansted when it withdrew its domestic UK services in October 2007.
[28] In November 2007, easyJet announced an agreement to allow its flights to be viewed and bought through certain GDS, although at a premium to the price available on the easyJet website.
[29] Although as a proportion of total traffic at the airport, 2003 was the peak year when 2.7 million connectors represented 14.4% of Stansted's 18.7 million passengers.

Table 4-2 Main country flows for Stansted domestic connecting traffic 2007

Connecting country	Connecting Passengers 000s	Share
Germany	246	25%
France	153	16%
Spain	114	12%
Italy	112	12%
Denmark	47	5%
Austria	40	4%
Poland	33	3%
Norway	22	2%
Switzerland	17	2%
Belgium	16	2%
Other	171	18%
Total	971	100%

Source: CAA Passenger Survey 2007

4.6 Given its lack of long haul services, international-international connectors at Stansted do not benefit from the position of London at the west of Europe, which makes Heathrow attractive for connecting to and from North America. Table 4-3 shows the predominant country pair flows for international-international connectors at Stansted. The table shows the importance of Ireland to Stansted's connecting traffic, but also demonstrates flows between the Scandinavian countries and Southern Europe.

Table 4-3 Main country flows for Stansted international-international connecting traffic 2007

Country Pair	Connectors (000s)
Italy-Ireland	81
Ireland-France	59
Ireland-Germany	57
Spain-Ireland	55
Germany-France	33
Spain-Italy	31
Spain-Norway	31
United States-Italy	30
Spain-Germany	27
Italy-Denmark	22
Sweden-France	22
Sweden-Spain	20
Ireland-Czech Republic	19
Italy-Iceland	18
Sweden-Italy	17
Sweden-Ireland	17
Ireland-Austria	16
Ireland-Denmark	15
Spain-Austria	15
Slovakia-Ireland	15

Source: CAA Passenger Survey 2007

4.7 Table 4-4 shows the proportion of Stansted's connectors using the main airlines at the airport and compares this to the airlines' overall share of passengers. It shows that Air Berlin, as the only major carrier to offer some form of managed connecting

service at Stansted in 2007[30], attracted a share of connectors (8%) much more than proportionate to its presence (5% of all passengers). In contrast, Ryanair's and easyJet's shares of connectors (65% and 20% respectively) were the same as their share of all passengers in 2007.

Table 4-4 Connectors at Stansted by airline 2007

	Connecting passengers		Connecting within airline		Total Passengers*	
Airline	**000s**	**%**	**000s**	**% of conn**	**m**	**%**
Ryanair	1,409	65%	892	63%	15.1	64%
easyJet	427	20%	118	28%	4.7	20%
Air Berlin	176	8%	123	70%	1.2	5%
Other	143	7%			2.7	12%
Total	2,155	100%			23.6	100%

Source: CAA Passenger Survey 2007
Notes: 'Connecting within airline' = passengers that connect between services of the same airline
** see footnote 7*

4.8 The table also shows that connectors on Ryanair flights were no more likely to be connecting to a Ryanair service (called 'Connecting within airline' on the table) than connectors in general[31]. This compares with over two-thirds of Air Berlin's connecting passengers that are connecting between two Air Berlin flights, despite Air Berlin having only 8% of the total connecting passengers and 5% of total passengers at Stansted, which was most likely driven by the through ticketing offered by Air Berlin to its connecting passengers. Over a quarter of easyJet's connectors were connecting between two easyJet flights, which compares favourably to easyJet's share of 20% of connectors. Although this could be a reflection of the routes offered by easyJet, it may also reflect the airline's website, which allows passengers to group flights into a 'basket' which are then all confirmed at the same time, making it less risky to tailor a connecting itinerary with the airline[32].

4.9 The case of Stansted is interesting, as it indicates that a certain level of connecting traffic is likely to prevail at any airport with a sufficient network of routes and a favourable geographic position, even where airlines provide little or no explicit support for such connections.

[30] Although see footnotes 27 and 28 above.
[31] 63% of Ryanair's connecting passengers were transferring to another Ryanair service, whereas 65% of all connectors were travelling on Ryanair.
[32] In contrast, Ryanair's website made the passenger book their flights one at a time, so it was possible to find that there is no availability (or availability only at a higher price than the passenger is prepared to pay) on the second leg of a transfer trip after having paid for the first leg.

5. Connecting passengers at Gatwick

5.1 Services at Gatwick have changed markedly over the last ten years. Charter operations, which used to comprise nearly half of all traffic, are now reduced to less than a quarter; long haul services had been stimulated by restrictions of Bermuda II and BA's twin hub policy, but now tend to be more focussed on leisure routes (Caribbean etc), and since 2002, easyJet has established a strong no frills presence. These developments have had an effect on the type and volume of connecting passengers at the airport.

5.2 Table 5-1 shows the changing traffic mix at Gatwick since 1996 and the connecting proportions of the different traffic types. It shows that the proportion of passengers on domestic services that are connecting has remained between 30% and 40%, whilst the proportion on charter services is very small. However, the proportion of passengers on long and short haul scheduled services that are connectors has come down from around 30% for each category in 1996 and 2001 to 19% for long haul in 2007 and only 11% for short haul.

Table 5-1 Connectors at Gatwick by route type 1996 to 2007

	Total passengers* (m)			% connecting		
	1996	2001	2007	1996	2001	2007
Domestic	2.1	3.0	4.0	36%	39%	31%
Charter	9.7	10.7	8.4	2%	3%	3%
Short haul scheduled	6.6	8.9	15.3	28%	31%	11%
Long haul scheduled	5.6	7.8	6.9	34%	31%	19%
Total	24.0	30.4	34.5	20%	22%	13%

Source: CAA Passenger Survey 2007
*Note: * see footnote 7*

5.3 Table 5-2 shows that the number of connecting passengers at Gatwick was virtually the same in 2007, around 4.5 million, as in 1996. However, the composition of those connectors is very different, with more travelling on domestic services and fewer travelling on long haul scheduled services.

Table 5-2 Connectors at Gatwick by route type 1996 to 2007

	Connecting passengers (m)			Share		
	1996	2001	2007	1996	2001	2007
Domestic	0.7	1.2	1.2	16%	18%	27%
Charter	0.2	0.3	0.3	5%	4%	6%
Short haul scheduled	1.8	2.8	1.7	39%	42%	38%
Long haul scheduled	1.9	2.4	1.3	40%	36%	29%
Total	4.7	6.7	4.5	100%	100%	100%

Source: CAA Passenger Survey 2007

5.4 The fall in the proportion of long haul connectors is likely due to the abandonment of BA's twin hub strategy, and its subsequent concentration of many of its long haul services at Heathrow. By 2007, the majority of Gatwick's connectors on long haul services were travelling to or from the US cities which could not be served by all US carriers from Heathrow. Around 850,000 of the 1.3 million long haul connectors were on services to Houston, Dallas, Atlanta or New York. With the commencement of the EU-US Open Skies agreement in 2008, many of these

services have transferred in whole or in part to Heathrow, so connectors at Gatwick are likely to have fallen to a lower proportion.

5.5 The drop in the proportion of connectors on short haul services at Gatwick is likely due to the change in airline operators, rather than a change in destinations served. The main short haul scheduled airlines at Gatwick in 1996 and 2001 were BA and its franchisees, with over half of all such passengers. However, from 2002, easyJet has expanded its operations at the airport considerably, and by 2007 was Gatwick's largest carrier of short haul scheduled passengers, with 32% of the total (in addition to this, easyJet's acquisition of GB Airways in 2008 will increase its share by around 15 percentage points).

5.6 As discussed in the previous chapter, no frills airlines tend to carry a lower percentage of connecting passengers, so the emergence of easyJet and other no frills airlines at Gatwick (which combined carried about 14% of short haul scheduled passengers in 2007) has undoubtedly contributed to the decline of connecting passengers at the airport. However, the experience at Stansted suggests that connecting passengers will still form part of Gatwick's traffic in the future.

6. Connecting passengers at Manchester

6.1 In terms of passenger numbers, Manchester airport was similar in size to Stansted in 2007. However, as shown in Table 2-1, the proportion of Manchester's passengers that were connectors stood at only 3%, much smaller than the 9% at Stansted.

6.2 Table 6-1 shows connecting passengers at Manchester in 2007 broken down between the different types of service offered at the airport, together with the number of routes of each type operating at Manchester with an average of at least six return service per week in 2007. It shows that charter passengers, which represented virtually a third of the terminal passengers at Manchester in 2007, have a low propensity to connect between services. It also shows that connecting passengers only made up 2.5% and 3.7% respectively of the long and short haul international scheduled services at the airport, whilst domestic routes provided the highest proportion of connectors.

Table 6-1 Connectors at Manchester by route type 2007

	Connecting passengers		Total Passengers*		Number
Route	**m**	**%**	**m**	**Conn %**	**of routes**
Domestic	0.3	42%	3.2	8.3%	17
Charter	0.1	13%	7.9	1.1%	21
Short haul scheduled	0.2	28%	7.3	2.5%	32
Long haul scheduled	0.1	18%	3.1	3.7%	11
Total	0.6	100%	21.6	3.0%	81

Source: CAA Passenger Survey 2007
Notes: Number of Routes = destinations averaging over six scheduled return passenger flights in a week
** see footnote 7*

6.3 Charter services tend to carry passengers on inclusive tour trips[33], and are less likely than scheduled services to have a near-daily operation (only 21 services at Manchester in 2007 averaged at least six return trips per week, whilst another 46 destinations were served on average at least once per week). This gives passengers on other flights less opportunity to make connections with charter services.

6.4 Table 6-2 looks at the domestic services at Manchester and how the proportion of connectors differs between domestic routes. It shows that London airports, which make up around half of all domestic traffic at Manchester, have relatively few connecting passengers, whereas a high proportion of passengers travelling from Scotland, Northern Ireland, the Channel Isles or the Isle of Man are using Manchester as a local hub and connecting onto other services there.

Table 6-2 Domestic connectors at Manchester by route 2007

Passengers (000)	Connecting to		Direct		Connecting
Route	**Domestic**	**International**		**Total**	**%**
Heathrow	8	27	937	972	3.6%
Gatwick	0	4	410	414	0.9%

[33] Where the passenger pays a single fee for a combination of travel, accommodation and other holiday expenses (ie a 'package holiday').

London City	0	0	92	92	0.0%
Stansted	0	0	81	81	0.0%
London Total	***8***	***31***	***1,521***	***1,560***	***2.5%***
Edinburgh	1	36	200	237	15.8%
Glasgow	3	22	141	167	15.1%
Aberdeen	0	21	100	121	17.7%
Inverness	1	0	15	16	8.1%
Scotland Total	***5***	***80***	***456***	***541***	***15.8%***
Belfast	2	39	195	236	17.2%
BFS	0	11	182	194	5.7%
N Ireland Total	***2***	***50***	***378***	***429***	***12.0%***
Southampton	7	8	155	170	8.5%
Jersey	2	11	101	114	11.1%
Isle of Man	13	41	93	148	36.8%
Guernsey	2	5	69	76	9.0%
Others	2	3	199	203	2.4%
Other UK Total	***25***	***68***	***617***	***710***	***13.1%***
Total	**39**	**230**	**2,971**	**3,240**	***8.3%***

Source: CAA Passenger Survey 2007

6.5 Table 6-3 shows the scheduled international destinations served from Manchester with the highest numbers of connecting passengers in 2007.

Table 6-3 International scheduled connectors at Manchester by route 2007

	Connectors		Total passengers	
	(000)	share	(m)	Connecting %
Chicago	36	12%	0.3	13%
Dublin	33	11%	0.7	5%
Paris	17	6%	0.5	4%
Helsinki	14	5%	0.1	18%
Bridgetown	13	4%	0.1	17%
Malaga	10	3%	0.4	3%
Amsterdam	10	3%	0.6	2%
Other Long Haul	64	22%	2.7	2%
Other Short Haul	97	33%	5.2	2%
Total international	294	100%	10.4	3%

Source: CAA Passenger Survey 2007

6.6 Only 43 scheduled international routes and 17 domestic routes operating at Manchester in 2007 had more than six services per week[34]. Manchester's combined total of 60 such routes, on which 4% of the traffic is connecting, is much lower than Stansted, which had 109 routes with 9% of traffic connecting in 2007. In this respect, Manchester's range of destinations is closer to Stansted in 2000, which had 68 routes averaging six or more services per week, and 5% of passengers making connections.

6.7 For a network to generate connecting traffic, it is clearly essential, not only that the flights are on the same day, but that they are conveniently placed in the schedule. Manchester's lower proportion of connecting traffic than Stansted is likely to be due to its higher level of charter services and the lower frequency with which its international scheduled services operate.

[34] Whereas over 60 further routes operated with between one and six services per week.

7. The costs and benefits of connecting passengers

7.1 This section seeks to examine the costs and benefits that accrue to the UK through the presence of connecting passengers, primarily at the London airports. It is not the intention of this paper to quantify these cost and benefits, rather to examine where they are likely to occur.

Costs/benefits for UK passengers

Benefits to connecting passengers

7.2 The ability to connect at London or other hubs allows passengers additional choice in deciding how best to travel to their destination. Many passengers will have made a conscious decision to fly by way of London for a particular reason. For some business passengers, journey length and/or schedule convenience may be of prime concern. Other passengers may be attracted by a low price, flight timings or airline preference to travel indirectly via London even though a direct service is available.

7.3 Whatever influenced the passengers' decisions, and provided they are rational, their choice of London as an intermediate point will in some way increase their welfare. However, the degree of benefit will vary by passenger and by route. In some cases there may be an alternative routeing, say via Amsterdam, Paris or Frankfurt, which is not significantly inferior to the London routeing. Generally, the precise benefit to passengers in a particular city-pair market of being able to make a connection at London will depend on the state of competition between both direct and indirect services in that city-pair market.

7.4 The UK passengers who gain directly from the ability to connect at London are those travelling from UK regional points to, in the main, international destinations. International – international connectors are, by their nature, virtually all non-UK originating.

Benefits from range of services

7.5 Connecting passengers can also confer benefits on local traffic, which may enjoy a wider range of destinations and more frequent services than would otherwise be available. For local passengers who benefit in this way, the actual gain may vary significantly from one passenger to the next. For example, a leisure passenger may have a wide range of directly served destinations from which to choose, although may not place much value on marginal increases or decreases to that range. By contrast, business passengers, whose destination cannot be changed, may place great value in terms of time and convenience on the ability to travel directly and at a time convenient to their schedules.

7.6 It is difficult to assess accurately whether routes rely for their continued operation on connecting passengers, since any such routes will tend, by their nature, to be relatively thin. When estimating the proportion of connectors on a route from survey data, routes with fewer passengers will tend to have a small representation

in survey responses, which in turn leads to less certainty in the estimate[35]. Thinner routes are also more likely to be operated as part of a multi-sector service which can further complicate the calculation of connectors.

7.7 Despite these shortcomings, Table 7-1 shows the routes at Heathrow in 2007 that had the highest proportion connecting traffic and, therefore, could be considered to be most heavily reliant on connecting traffic. The table only ranks routes that were large enough to estimate connectors reasonably from survey data (it excludes all routes with fewer than 40,000 passengers in 2007 or with fewer than 40 interview responses) and that operated an average of between 0.5 and 2.0 rotations per day during the year.

Table 7-1 Thin routes at Heathrow with the highest proportions of international connecting passengers 2007[36].

			Connectors		Total Passengers
Airport	**Country**	**Direct**	**Domestic**	**International**	**(000)**
Mexico City	Mexico	36%	1%	63%	117
Lusaka	Zambia	37%	13%	50%	55
Beirut	Lebanon	38%	0%	62%	107
Halifax	Canada	41%	13%	46%	117
Dar-Es-Salaam	Tanzania	43%	2%	55%	46
Seattle	USA	44%	2%	54%	249
Phoenix	USA	44%	3%	53%	179
Chennai	India	45%	1%	53%	121
Bangalore	India	46%	3%	52%	159
Tripoli	Libya	47%	24%	30%	65
Riyadh	Saudi Arabia	47%	20%	33%	65
Accra	Ghana	47%	1%	52%	115
Ottawa	Canada	48%	11%	41%	128
Dhaka	Bangladesh	48%	2%	49%	75

Source: CAA Passenger Survey 2007

7.8 The presence of connecting passengers in such large numbers on certain routes is likely to contribute to the financial viability of those routes, and thereby contribute to the range of air connections available from the UK to North and Central America, Africa, Asia and the Middle East. International connectors on these routes may contribute indirectly to the UK economy where they are travelling on a UK airline, and, irrespective of the airline used, they will attract passenger charges at Heathrow. In addition, their presence is likely to ensure a greater range of services are available to the UK passenger.

Benefits from frequency of service

7.9 There are also some high frequency routes at Heathrow that have a large proportion of connecting passengers. Direct passengers on the route benefit from the higher frequency, as they will be able to travel nearer to their ideal departure

[35] For example, on a route with 50,000 passengers, an estimate of 40% connectors using a sample of 40 interviews would have 95% confidence limits of ±12%, whereas with 20 interviews the confidence limits would be ±18%.

[36] Only routes with at least 40,000 annual passengers, at least 40 survey responses and average daily frequency between 0.4 and 2.0 were included. A similar table, using 2006 survey data, was included in the CAA's April 2008 response to the Government's proposals to replace Air Passenger Duty with Aviation Duty.

and/or arrival time. CAA survey data has been used to estimate which routes with multiple daily frequencies at Heathrow also carry a high proportion of connecting passengers. As an illustration, Table 7-2 shows the routes where the most frequencies could be described as being 'wholly supported' by connecting passengers[37]. These results should be treated with some caution, as they make the unrealistic assumptions that frequency of service could be reduced without affecting direct passenger volumes or yields, and that a lower frequency service could be operated without attracting connecting passengers, when the experience at Stansted suggests some passengers will connect even where no airline assistance is provided.

Table 7-2 Sample of Heathrow routes where frequency is supported by connectors 2007

Carrier and Route	Frequency (daily return trips)	Percentage of connecting passengers	Frequency required 'solely' to serve connecting passengers
BA-Paris (CDG)	10.0	48%	4
BA-Manchester	7.7	76%	5
bmi-Manchester	6.4	68%	4
BA-Edinburgh	10.0	57%	5
BA-Glasgow	8.7	48%	4
BA-Brussels	7.3	55%	4
BA-New York (JFK)	7.4	39%	2
American Airlines-New York (JFK)	5.7	31%	1
Aer Lingus-Dublin	12.6	25%	3
BA-Amsterdam	7.1	42%	3
bmi-Amsterdam	7.3	34%	2

Source: CAA Airport Statistics and CAA Passenger Survey 2007

7.10 In all, the analysis suggests that there are around 125 daily frequencies at Heathrow that, using this rule of thumb, are supported 'solely' by connecting passengers in this way. However, many of these frequencies are on domestic routes, where the connectors will be UK residents (or foreign visitors to the UK) that benefit from the extra services. For international services, the benefits that extra frequencies confer on UK passengers need to be set against any benefits that would be gained from reduced congestion or other services that could be operated in their place, while, in considering wider costs and benefits, environmental and other factors should also be taken into account.

Costs from use of constrained capacity

7.11 In a capacity constrained airport, such as Heathrow, there are likely to be services whose operation or level of frequency is being supported by connecting passengers. Arguably, these could be used to serve direct passengers on other routes. However, in the long run, it is likely that airlines will make rational decisions about the provision of services, and so the services provided will tend to be those that generate the greatest profit for the airline. It would follow that these routes will therefore be the ones most valued by passengers, and hence that they maximise

[37] For example, BA's service to Paris (CDG) averaged ten return trips per day in 2007, but over 40% of the passengers were connecting at Heathrow to other domestic or international services. Had these passengers travelled via another hub or on direct flights, then capacity equivalent to four of the ten return flights would not have been needed.

the net benefits of passengers as well as airlines, although in the short term, the speed of airlines' reaction to passengers' changing valuation of services may be constrained by their existing aircraft fleets and the difficulties faced by competitors in gaining access to the constrained airport.

7.12 UK passengers' benefits will not be the same as the benefits which accrue to all passengers at Heathrow (which the above argument suggests will be maximised in the long term), but the value passengers place on services can be assumed to be reflected in the extent to which passengers are prepared to pay for those services. Therefore direct passengers, who pay higher prices at Heathrow on average than connecting passengers, could be expected to receive greater benefits from the airport's services than connecting passengers. In particular, this is true of direct premium traffic at Heathrow, which places a high value on frequency of service and range of destinations, both of which aspects may be supported by the existence of connecting traffic. As shown in Table 3-6, UK passengers form a higher proportion of direct traffic than they do of connecting traffic at Heathrow, and, therefore, it is likely that UK passengers will attract a higher proportion of the benefits than their share of total passenger numbers would suggest.

Costs/benefits for UK airlines

7.13 Airline benefits from carrying connecting traffic are likely to come through increasing average yields, reducing average costs and/or spreading risk, thereby providing increased financial resilience.

Benefits through increased yield

7.14 Increased airline yields could arise directly, where connecting fares are higher than point to point fares on the same route, although this is rare. Passengers who have the alternative of a direct or a connecting route between two points, can be expected to prefer the direct one, other factors being equal. Typically, therefore, the fare for a connecting journey from a network airline will be lower than the sum of the point-to-point fares for the two individual legs of that journey[38]. This effect can be observed through the fares quoted on airline websites[39], and indicates that most network airlines would benefit from selling two direct tickets rather than one connecting ticket at the same class and conditions. Airline yield benefits from connectors are therefore more likely to arise indirectly, where average passenger yield rises through the greater range and frequency of services offered.

7.15 A high proportion of the major Heathrow airlines' yields come from business passengers, who are more likely to use premium cabin classes and flexible ticket types. Access to a range of destinations and, particularly, frequency of service to key business destinations are reckoned to be significant in attracting the business

[38] For a no frills airline, the fare will be the same, since a connecting passenger is simply one who buys separate tickets for each leg of the trip.

[39] For example, a BA connecting fare on the routeing Edinburgh-Heathrow-Los Angeles was observed to cost £546 return, whereas the two equivalent direct return tickets cost a total of £659. Similar results can be observed with other network airlines or on international – international connecting routes, although comparisons are more complicated as the prices quoted may be in different currencies.

passengers, from whom airlines attract higher yields. For example, a recent report by London First[40] which interviewed business passengers about their opinions noted that the availability of direct flights to a wide range of international business destinations and convenient flight schedules were both considered quite or very important by over two-thirds of respondents.

7.16 The provision of high frequency services, particularly to long haul destinations that smaller aircraft may be unable to serve, entails the provision of a high daily seat capacity, the majority of which is often in the economy cabin. Although an airline can fill this capacity with direct passengers, it will have to flex fares to stimulate sufficient demand, and this will affect revenues from all passengers in same class. Alternatively, airlines can differentiate between higher and lower yielding passengers through ticket criteria such as flexibility to change flights or (on long haul flights) the 'Saturday night rule'[41]. Attracting connecting passengers will also allow airlines to avoid diluting direct passenger yield.

7.17 The advantage of using connecting passengers in this way may be even more important for premium or flexible ticket classes. Attracting extra premium direct passengers may be undesirable for the airline if it requires a significant reduction in the standard premium fares[42]. However, indirect premium tickets can be offered at a rate much lower than the sum of the direct services, but which will nevertheless be higher than the sum of the direct economy fares obtainable on the two legs.

7.18 The use of connecting traffic by airlines in the way described above might appear to be at the expense of direct passengers, since it is designed to increase the average level of fares which airlines can obtain from direct passengers. However, the same mix and frequency of routes might not be available if fewer connecting passengers were carried, since it might not be economically viable for the airline to continue operating them with reduced yields from direct passengers.

Other airline benefits

7.19 Carrying connecting traffic may allow an airline to use larger aircraft on a route than if it were only catering for direct passengers. Since larger aircraft have lower average seat costs, then, in these cases, the carriage of connecting passengers is not necessarily at the expense of direct passengers, but may instead benefit them through lower fares.

7.20 By carrying connecting traffic, airlines can spread the risk of their operations and thereby improve their financial viability and sustainability. They can reduce their dependence on the UK economy, attracting more traffic from other countries when local demand is depressed. This effect can be seen at Heathrow, where the

[40] 'Imagine a World Class Heathrow' June 2008

[41] Where return fares with a Saturday night between the outbound and inbound flight are cheaper than fares that do not – intended to target the less price sensitive business passengers whose travel is unlikely to include a Saturday night away. This practice has been effectively discontinued from short haul flights due to the influence of low cost carriers.

[42] The relative 'price-insensitivity' that makes business passengers high yielding also makes their numbers harder to increase through lower fares.

proportion of connecting traffic peaked in 2002, when demand for air services softened, mainly as a consequence of the terrorist attacks on 11 September 2001.

Costs/benefits for the wider UK economy

7.21 Whilst connecting passengers increase the size of the UK aviation industry, providing increased employment opportunities and additional economic activity to the UK, the net benefits conferred will only be those which would not have been achieved in the absence of connecting passengers[43]. There may be contributions to tourism and airline profits and therefore to shareholder value. But more significant is likely to be the potential for a wider range of air services to improve the underlying performance of the economy, such as supporting higher value economic activity, stimulating trade and improving the efficiency with which people work.

7.22 Connecting passengers, by supporting a wider network and higher frequency of services than could be provided by direct passengers alone, contribute to the 'connectivity' of an airport or airport system[44]. IATA has recently attempted to quantify[45] the benefits of connectivity to GDP growth and labour productivity. Its statistical analysis estimates that the 25% increase in connectivity experienced by the EU accession countries between 2001 and 2004 has boosted their long-run GDP by 2.75%, and that, in general, a 10% increase in connectivity relative to GDP will boost labour productivity levels by 0.07%.

7.23 Inevitably, the difficulty of isolating aviation's effects from all the others acting on a country's economy create a degree of uncertainty around such results. More concrete evidence may be the value which businesses in particular place on the range and frequency of air services, indicated by their willingness to pay high premium and flexible ticket prices to use those services. It is also supported by various surveys of businesses, such as the IATA study on network benefits[46] and the London First report[47]. A short review of these and other studies, such as those by Oxford Economic Forecasting or York Aviation, into the trade and productivity benefits of air services can be found in the Department for Transport's response to the provisional findings of the Competition Commission in its market investigation into the airport services provided by BAA[48].

7.24 The extent to which connecting passengers support the range and frequency of air services, indicates the benefit they provide to the wider economy. In considering wider costs and benefits, environmental factors should also be taken account of. The environmental effects of connecting traffic are difficult to quantify, since they must consider whether passengers choose to connect at UK airports in preference

[43] For instance, the difference between pay in aviation and the likely alternative employment opportunity in the absence of aviation jobs.
[44] Aviation connectivity has been defined by IATA as 'a measure which reflects the range and economic importance of destinations, the frequency of service and the number of onward connections available through each country's aviation network.'
[45] IATA Economic briefing 3: Airline Network Benefits and Economic briefing 8: Aviation Economic Benefits available from www.iata.org/economics, which attempted to estimate the relationship between connectivity of a country and growth in both long run GDP and labour productivity.
[46] ibid
[47] ibid
[48] http://www.dft.gov.uk/pgr/aviation/airports/ccinvestigation.pdf - pages 35-38.

to an alternative air travel routeing or some other travel mode or activity, and the environmental costs implied by these alternative choices. Local environmental effects (such as noise or local air quality) could be transferred outside the UK even when the connecting passenger's alternative still involves air travel, so the presence of connecting traffic is likely to constitute a net cost. However, global environmental effects are harder to judge, since, for example, when comparing a connection in the UK to one elsewhere, the environmental cost or benefit of connecting through a UK airport is the difference between the emissions generated by the two alternatives. Even when the alternative air routeing involves a direct flight, which may produce fewer emissions for a particular aircraft type than an indirect routeing, the connecting service may be able to operate a larger aircraft type with lower emissions per passenger kilometre.