

# Airports Commission Discussion Paper 04 - Airport Operational Models



## UTILISATION OF CURRENT CAPACITY AT LONDON HEATHROW

Written evidence to the Airports Commission from AvGen Limited  
9 July 2013

### Introduction

This submission examines in detail how the constrained capacity at London Heathrow Airport is currently being used, and looks at various ways of segmenting current activity in order to understand better the potential scope for balancing supply and demand. This updates an earlier paper published in February 2013.

### Background

This report has been prepared from AvGen Limited's statistical databases which cover many years' activity at Heathrow. AvGen is an independent consultancy providing air transport data and analysis to clients on an ongoing basis, including a number of the local authority stakeholders on Heathrow Airport's Consultative Committee.

All of the data in this report, except where indicated, is derived from AvGen's in-house ATM database, DARTS, which provides 100% coverage of air transport and other aircraft movements at Heathrow, both current and historical.

### Heathrow Annual Statistics

During the 12-month period from January to December 2012 inclusive, there were 475,029 fixed-wing movements (237,519 arrivals and 237,510 departures) at Heathrow, excluding a small number of ILS calibration flights. For the same period, Heathrow Airport Ltd reported 471,341 ATMs (Air Transport Movements), where this figure excludes non-revenue, government and military flights and those with 10 or fewer passenger seats.

## A Typical Heathrow Day in Detail

The statistics and charts in the following sections relate to activity at Heathrow on Monday 4 February, 2013. This was chosen as a typical day, with no significant disruptions having been reported by the airport operator. There were 1,284 flights on that day, with 641 of the 647 scheduled arrivals and 643 of the 646 scheduled departures operating as planned.

For the purpose of this analysis, 4 of the 1,284 flights were excluded: 3 were corporate/VIP aircraft movements and one was a British Airways Boeing 747 returning from maintenance at Cardiff.

A total of 73 different airlines operated revenue flights on the day, to/from 150 non-stop destinations (including 5 freight flights by 3 operators and 2 freight-only routes, which are also excluded from the following analyses).

## Segmentation by Airline Alliance

Passenger flights at Heathrow represent all 3 of the principal airline alliances - Oneworld, Star Alliance and Skyteam - in the proportions shown below:

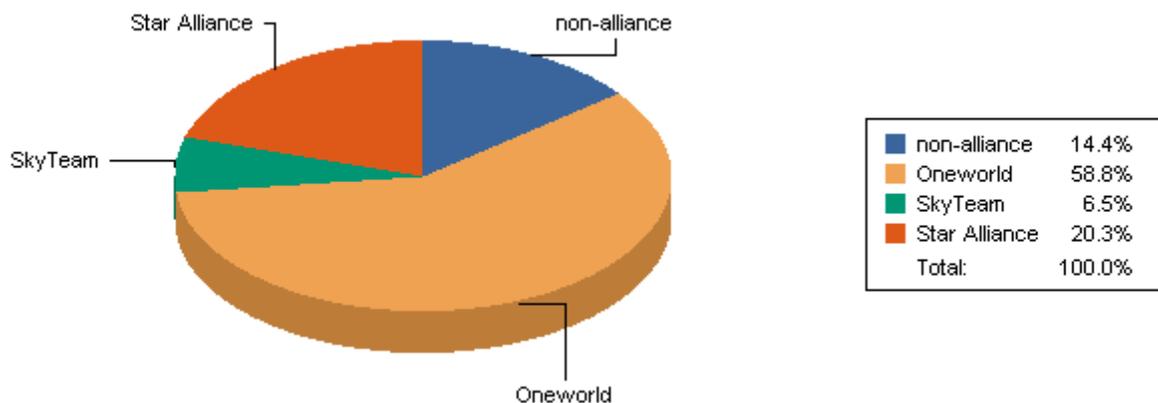


Figure 1: Flights by Airline alliance

As can be seen, Oneworld accounts for nearly 60% of flights from Heathrow, reflecting the dominance of British Airways and its alliance partners, particularly American Airlines.

## Segmentation by World Region

The 150 non-stop destinations served from Heathrow, when segmented by IATA world region, look like this:

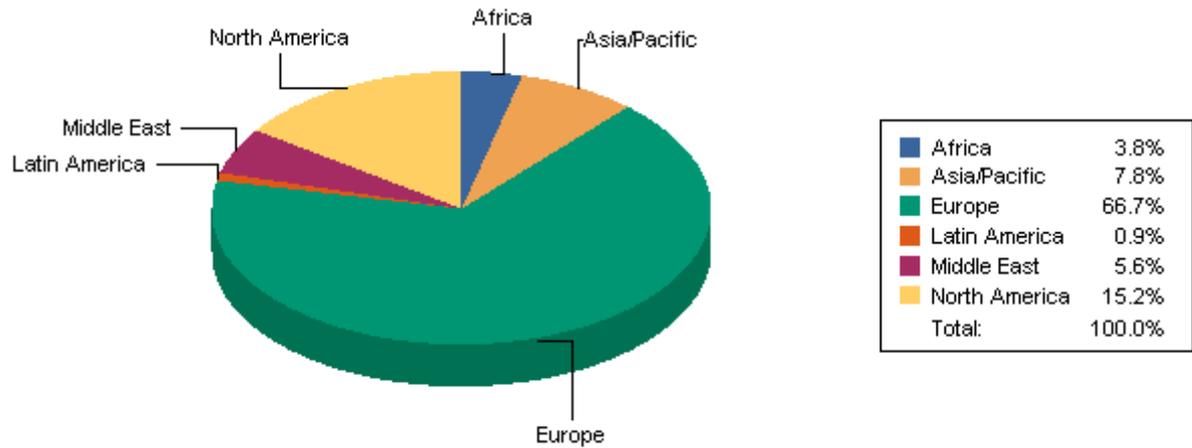


Figure 2: Flights by IATA world region

Unsurprisingly, two-thirds of all flights from Heathrow are to European destinations, with North America representing the next most frequently-served region.

When destinations served are weighted by aircraft size (i.e. the number of seats flown on each route), the picture changes somewhat:

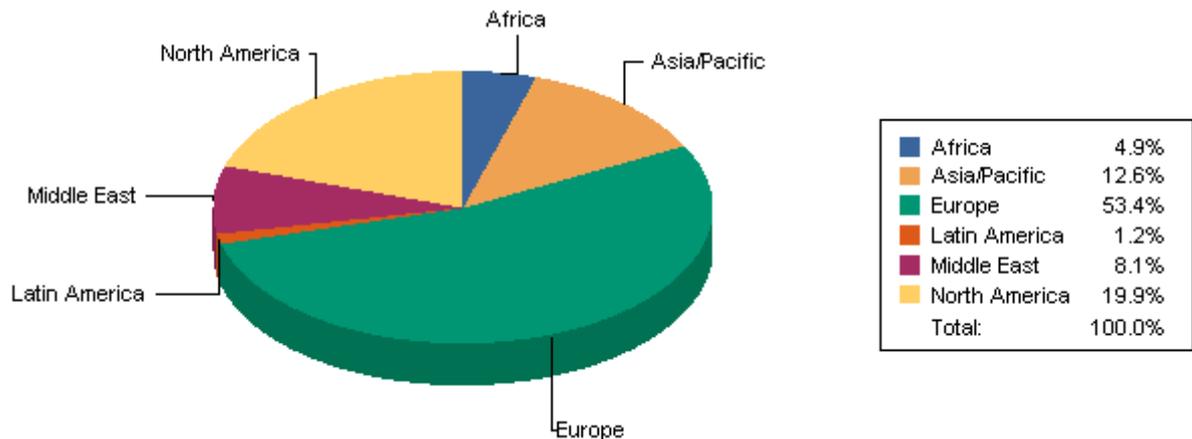


Figure 3: Seats by IATA region

The almost equal split between Europe and the rest of the world reflects the fact that aircraft used on long-haul routes tend to be larger types with more seats, with the smaller aircraft types being used mainly on intra-European routes.

## Segmentation by Route Distance

A more detailed picture of the short/long-haul split is obtained by looking at individual flight legs, segmented by distance (great circle, statute miles).

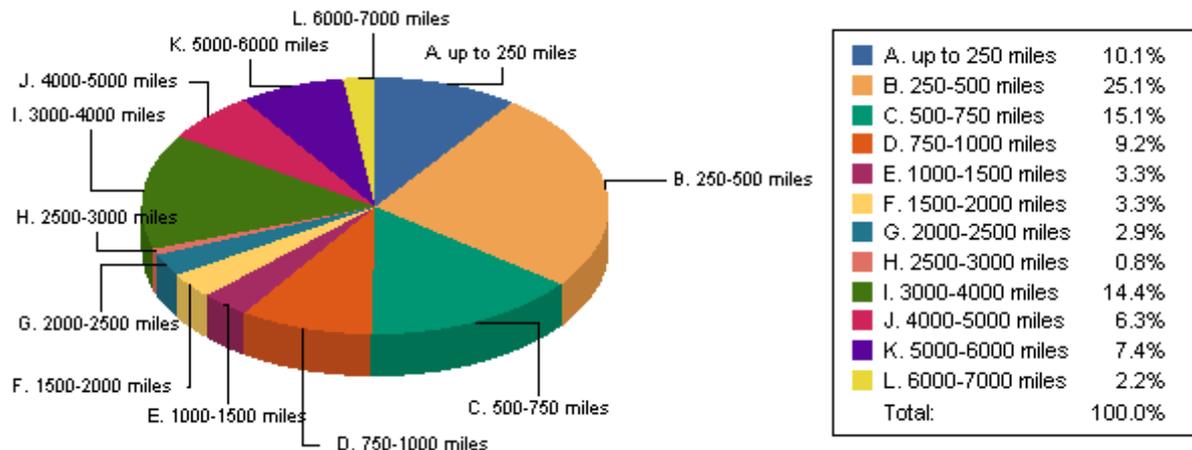


Figure 4: Flights by route distance

One in 10 flights from Heathrow are on routes of less than 250 miles (Manchester, Leeds, Paris, Brussels, Rotterdam and Amsterdam). Half of all flights are under 750 miles (i.e. around 2 hours duration). The longest non-stop routes served from Heathrow are to Singapore (6750 miles) and Buenos Aires (6900 miles), at around 13-14 hours.

## Segmentation by Aircraft Category

Another convenient way of segmenting activity is by differentiating between narrow-body (single-aisle) and wide-body aircraft, and between the different manufacturers (principally Airbus and Boeing).

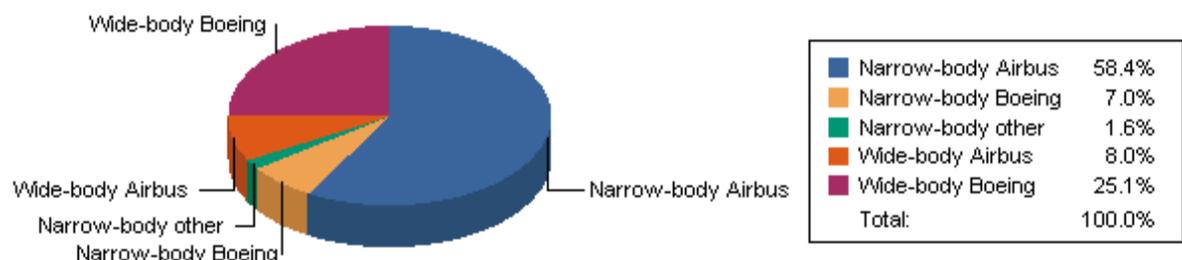


Figure 5: Flights by aircraft category

Two-thirds of flights are operated by narrow-body aircraft, with the Airbus A319/A320/A321 dominating this sector. The remaining one-third of flights flown with wide-body types are mostly accounted for by the Boeing 747 and 777.

### Segmentation by Aircraft Seat Size

A more detailed picture of the different types of aircraft used at Heathrow is obtained by looking at seating capacity per flight. Aircraft sizes in use for flights at Heathrow range from the 80-seat Fokker 70 used by KLM to the Airbus A380 aircraft used by Emirates and Malaysia Airlines with more than 500 seats.

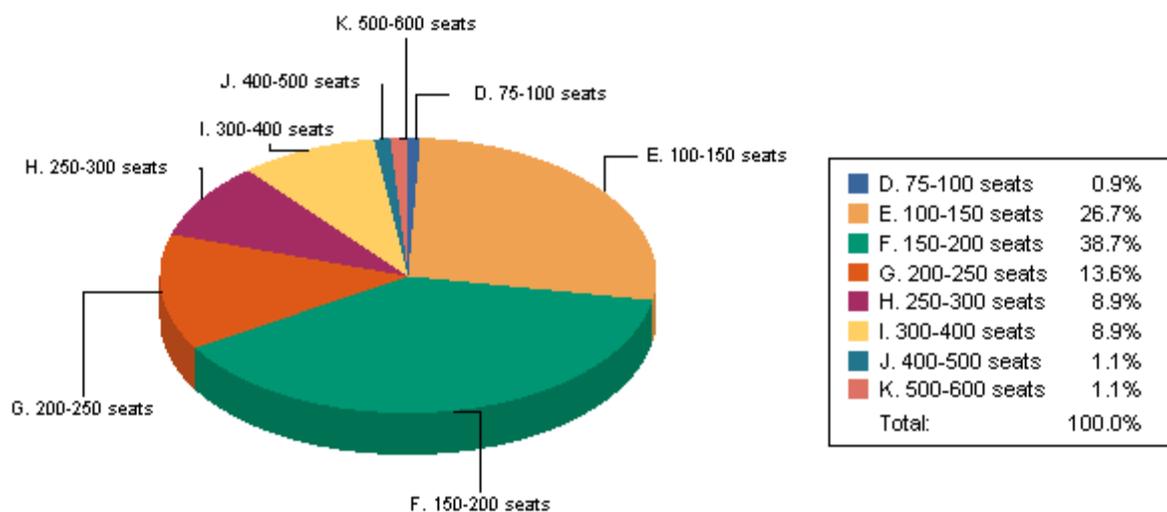


Figure 6: Flights by aircraft seating capacity

It can be seen that two-thirds of passenger flights to/from Heathrow are operated by aircraft with 200 or fewer seats.

### Segmentation by Route Competition

Many of the routes served from Heathrow have more than one carrier operating on them, in competition with each other. This is distinct from a "codesharing" arrangement where a flight operated by Airline X may also be sold by Airline Y under its own flight number (for example British Airways flight BA1511 to New York is actually American Airlines flight AA100).

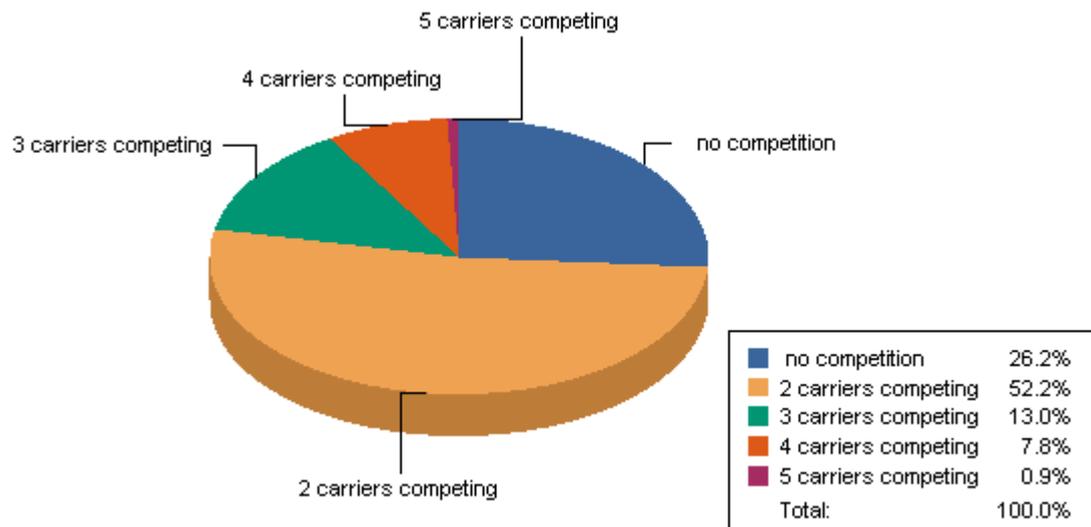


Figure 7: Flights by competition on route

More than a quarter of arrivals and departures at Heathrow are on routes operated by only one carrier, with no competition (for example Aer Lingus to Cork). Over half of Heathrow's flights are on routes where two carriers compete, typically British Airways in competition with a foreign carrier (e.g. BA and SAS to Copenhagen). One route (Los Angeles) is flown by 5 airlines (BA, Virgin Atlantic, American, United and Air New Zealand) with 5-7 flights daily in each direction.

### Segmentation by Time of Day

The final segmentation in this report looks at numbers of arriving and departing flights, hourly, on the sample day.

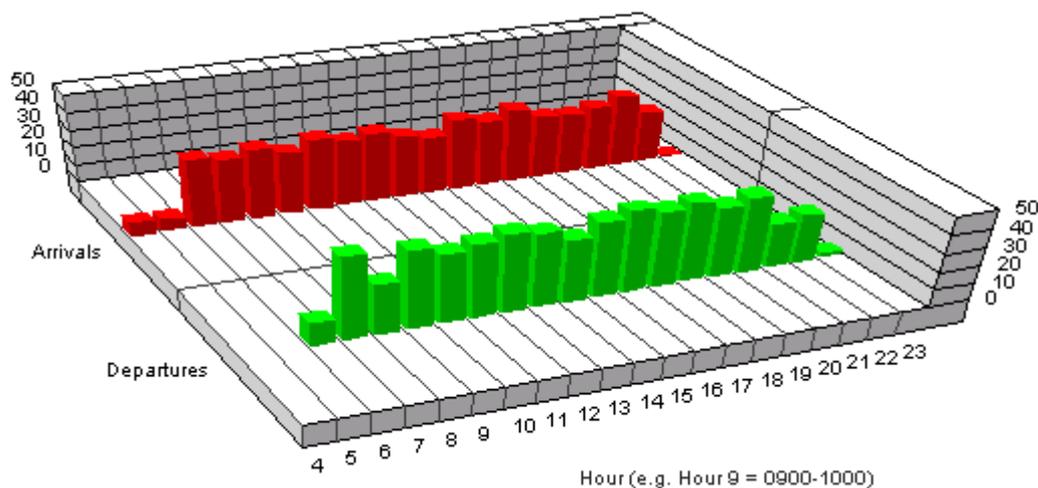


Figure 8: Arriving and departing flights by time of day (runway times)

The extent to which capacity is used during the course of the day can be readily seen. Arriving flights started at 04:32 on the day in question (Virgin Atlantic from Hong Kong), with the 15 flights that landed in Hours 4 and 5 (i.e. before 06:00) being subject to Heathrow's Night Quota. Departures commenced at 06:07 (Austrian Airlines to Vienna).

The day's last arriving flight was at 23:01 (Alitalia from Rome) and the final departure (a delayed El Al flight to Tel Aviv) was at 23:28.

### Changes for Summer 2013

The above statistics relate to a "snapshot" of activity at Heathrow on the date in question.

AvGen has subsequently performed a comprehensive analysis of Heathrow activity over a 7-year period from the start of the Summer season in April 2006 up to the present date. Space here does not permit the analysis results to be reproduced in full, but changes compared to the above February 2013 data are as follows:

#### New services:

- Air Canada to Saint John's
- British Airways to Ibiza and Palma
- Croatian Airlines to Split
- Qantas to Melbourne and Sydney via Dubai
- Tarom to Iasi
- Virgin Atlantic to Vancouver and Chicago
- Virgin (Little Red) to Manchester, Aberdeen and Edinburgh
- Vueling to Palma and Florence

#### Discontinued services:

- American Airlines to Boston
- Aegean Airways to Larnaca
- Air New Zealand to Auckland via Hong Kong
- British Airways to Dar Es Salaam
- Qantas to Melbourne and Sydney via Singapore
- TAP Air Portugal to Funchal

More detailed analysis, both current and historical, is available upon request.