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A TALE OF TWO CITIES: THE IMPACT OF AIRLINE MERGERS AND CONSOLIDATION AT LONDON AND NEW YORK

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ABSTRACT

This paper considers the changes to airline networks, service patterns and competition that have taken place as a result of recent airline mergers on both sides of the North Atlantic as well as through trans-atlantic alliances.

Capacity, frequency and the competitive position are studied at London and New York with the use of schedule data within different markets where measures of market concentration are evaluated. ICAO data is employed to examine load factors on international routes and UK CAA data to consider the distribution of traffic between airports in London.

It is shown that the effectiveness of the hubs has increased, with enhanced efficiency for surviving airlines, through fewer competitors, an enlarged network and greater control of capacity. Potential concerns are identified however, regarding passenger choice, pricing and service options that suggest the industry is moving towards an oligopoly. Smaller cities are also seen to be the losers from consolidation with slot divestments favouring increased service in the dense markets, with many regional links being axed altogether.

The paper supplements the literature on airline consolidation with a particular focus on the two biggest markets in the world - London and New York - which demonstrate some similar but also some different issues. Both airline network impacts and choice and service for local consumers are considered.

Keywords: Mergers, Alliances, Competition, Concentration, Networks, Slots

INTRODUCTION

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness.....

Charles Dickens, A Tale of Two Cities, 1859

The airline industry has seen major consolidation over the last decade, particularly in Europe and North America. In Europe, mergers have taken place between British Airways, Iberia, bmi British Midland and Aer Lingus to form International Airlines Group (IAG) (1) while Lufthansa has acquired Swiss, Austrian and more recently Brussels Airlines. In the United States, Delta and Northwest set off the current round of consolidation in 2008 followed by United-Continental, Southwest-Air Tran, American-US Airways and most recently Alaska-Virgin America.

On the North Atlantic, the market has become concentrated around four joint ventures where there were once many competing rival airlines. These mirror the three global alliance groups plus Delta with Virgin Atlantic which provides another alternative for traffic to and from the UK (2).

It was therefore considered interesting to assess the impact of these changes on air service provision at London and New York. These are still the two biggest air travel markets in the world and are served by a wide range of carriers through a number of different airports. London has six airports designated by IATA: Heathrow, Gatwick, Stansted, Luton, London City and Southend. New York has five: JFK, Newark, La Guardia, Westchester County and Newburgh-Stewart. Unlike dominated hubs such as Frankfurt, Amsterdam, Atlanta or Dallas Fort Worth where there has been little change as a result of the industry restructuring, London and New York offer the opportunity to review the impact on a broader and more diverse market. Another development at New York was the slot swap between Delta and US Airways in 2012 (3) which gave Delta an increased presence at JFK and La Guardia (in exchange for US Airways strengthening its position at Washington DC Reagan).

The time period from 2005 to 2015 was chosen for study. 2005 provides a good representation of the position after the industry had recovered from the terrorist attacks of 9/11 in 2001 but before the economic crisis and the 'credit crunch' hit in 2007. With the exception of Air France/KLM, the major merger activity also took place after this point. 2015 was selected because complete data was not yet available for 2016 from most sources at the time the research was undertaken. It also post-dated most of the recent industry consolidation.

Several different sources have been used to analyse the developments. Innovata schedule data, which provides capacity and frequency information by route and airline, has been collected for the second week in July 2005 and July 2015 at the London and New York airports. This is considered representative of the peak season schedule without holiday period adjustments. International Civil Aviation Organisation (ICAO) data has been obtained for the years 2005 and 2015 to study changes in the international traffic and capacity utilisation by route and airline. UK Civil Aviation Authority (CAA) traffic data has also been used to study the London airport market share by route.

There are always risks with the representativeness of comparative static analysis but it is felt that the findings vindicate the methods used as they appear intuitively correct and don't suggest the existence of different trends in intervening years or the need to investigate alternative principal causal factors besides mergers and consolidation.

MARKET CONCENTRATION

The first stage of the analysis aims to investigate the impact of airline mergers and transatlantic alliances on market concentration in London and New York. The Innovata data for July 2005 and July 2015 showed operations and seats per week by airline and alliance by route. This was turned into percentages to enable indices of market concentration to be calculated on both bases. Using the Herfindahl - Hirschman Index (HHI) to investigate the share by airline involved the aggregation of the percentages for each route for the airline examined. It should be noted that this involved the identification of airlines operating as franchisees for another such as GB Airways and British Mediterranean for British Airways or subsidiaries such as Envoy Air owned by American Airlines.

It is a standard and well-established means of measuring the acceptability of mergers and alliances and of their impact on market share and competition (4),(5). The calculation would show that an industry or sector totally dominated by one firm would score 10,000. The index is given by,

$$HHI = S_1^2 + S_2^2 + S_3^2 + S_4^2 + \dots + S_n^2$$

where S_i^2 is the market share of individual firms i (airlines here) and has been used by the UK Office of Fair Trading, the US Department of Justice (DOJ) and the US Federal Trade Commission. Values of HHI of less than 1000 are said to represent an unconcentrated and very competitive market whereas market values greater than 1800 represent concentration and a relative absence of competition. If mergers and alliances were to raise the HHI above 1800 then the merger would be challenged however when the statistic is already above 1800, any proposed merger should not result in an increase of more than 100. Alternative guides suggest these absolute numbers can change, for example, the US DOJ uses 2500 as an indication of a concentrated market.

Table 1 shows the HHI results on the basis of frequency, measured as operations per week, for the London area airports and the New York area airports for 2005 and 2015. Table 2 shows the results for the same airports on the basis of capacity, measured as seats per week. The airports for London are London City (LCY), London Gatwick (LGW), London Heathrow (LHR), London Luton (LTN) and London Stansted (STN). For New York, they are New York Newark (EWR), New York John F Kennedy (JFK) and New York La Guardia (LGA).

The comparison of these airports for each year is interesting showing that in 2005 measured in frequency, LCY and JFK were similar with relatively low values whereas LTN and EWR were similar with higher values. Looking at capacity, EWR was similar to both LTN and STN and JFK had the lowest concentration measured by both capacity and frequency. In 2015, JFK remains the lowest in frequency and capacity terms and STN and EWR still have similar high scores with STN the highest.

However, the instructive comparison is between the years. This shows that all airports had more concentrated traffic in 2015 with the exception of LTN. This is less concentrated as Ryanair and Wizz Air have more frequency and capacity than in 2005 when easyJet dominated. The figures for JFK show that this concentration is least pronounced for the HHI measure of capacity.

Consequently, it can be seen that the effectiveness of hubs has increased as the traffic has concentrated in fewer airlines and competition has declined. At congested airports, such as LHR, LGW and LGA, airlines may well reduce links to smaller markets as well as changing aircraft

gauge to maintain key international slots and in turn, this may impact services from other airports in the system but there are still implications for consumer welfare (6).

Tables 3 and 4 show the HHI calculations when in both 2005 and 2015, Air France and KLM are grouped together. In 2015, the other major groupings are of American Airlines and US Airways who merged in late 2013 but operated as separate subsidiaries until late in 2015 and the airlines in the IAG group, British Airways, Iberia and Vueling. Aer Lingus did not join IAG until after July 2015. In addition, there is the Lufthansa group that includes German Wings, Austrian and Swiss. Obviously, not all airports are affected and so their calculations are the same as shown in Tables 1 and 2. It is expected that these calculations will indicate increased levels of concentration by comparison to Tables 1 and 2 and that is largely the case.

In every case where the groupings have been taken into account except for London City, concentration is seen to be proportionately greater in 2015 than in 2005 by comparison to the airline analysis between the years. It is conclusive that the HHI has shown a greater inclination towards oligopoly as time has moved on. For London City in 2005, the operation of KLM and CityJet, then owned by Air France, is not mirrored in 2015 as CityJet was sold in 2014, so the increased concentration over the decade, although marked, is not as large as the airline analysis shown in Tables 1 and 2 where groupings are not taken into account. It is noteworthy that for New York JFK, the HHI scores are mostly below 1800.

It may also be interesting to examine alliance traffic across the North Atlantic where the anti-trust immunity has had profound impacts (7). Consequently, for the traffic from London, destinations were restricted to Canada and the USA. In the other direction, destinations in Europe were selected along with Moscow. These results are shown in Tables 5 and 6. In London airports, in both years, oneworld is the chief player with over 60 percent of the share. However, in New York, in 2005, SkyTeam had over 50 percent whereas Star Alliance is the largest alliance in 2015. New York is less concentrated and the HHI calculations indicate that. The switch of Continental from SkyTeam to Star has led to three more evenly matched Alliance groups in New York in 2015 which has reduced concentration in New York whereas it increased in London over the same period. Of course, a wider or different focus on transatlantic markets beyond London would yield somewhat different conclusions and some work by the authors, not reported here, shows this in terms of alliance domination. This could be the subject of further research.

TRAFFIC AND NETWORK DEVELOPMENTS

To consider in more detail the impact of the major changes in industry structure and slot allocation, several case studies have been conducted for London and New York. Previous research has identified differences in airline merger outcomes between Europe and the US (8).

Impact on individual routes at London Heathrow of British Airways merger with bmi British Midland

British Midland had built up a short-haul network at London Heathrow over many years, adding the 'shuttle' routes to Belfast, Edinburgh and Glasgow in 1982-84 to a few regional services it had long operated such as Birmingham, East Midlands, Leeds/Bradford and Teesside. After that, expansion followed to the major European destinations such as Paris, Brussels, Amsterdam and Dublin. Further European cities with a business travel focus were subsequently added including Frankfurt and Zurich. After Lufthansa acquired SAS's interest in bmi however, direct competition with the LH group was dropped in favour of more distant cities dominated by other alliances such as Milan and Madrid. There were also a few leisure routes at relatively low

frequencies to Alicante, Naples, Nice, Palma and Venice plus a lone long-haul service to Mumbai.

Thus in 2005 bmi served 21 destinations from Heathrow with a total of 535 weekly frequencies. Of these 21 routes, BA competed from Heathrow on 11 of them (545 frequencies) and other carriers contested 7 (314 frequencies). On 8 routes, bmi was the sole operator. By 2015, BA was serving 17 of these places from Heathrow with a total of 697 frequencies.

Table 7 considers only those routes that were duplicated by BA and bmi in 2005. Here the changes over the period 2005-15 are more pronounced.

The key points are that BA has largely removed former bmi frequencies and capacity altogether on routes where the airlines competed – actually offering fewer flights and seats than BA alone did in 2005. The beneficiaries in terms of market share have been easyJet in particular and other LCCs based at alternative London airports. BA has taken over the former bmi services from Heathrow to Belfast City, Dublin, Hanover, Leeds Bradford, Palma and Venice. Inverness has been also subsequently reinstated. Former bmi slots have been used by BA for more profitable opportunities elsewhere such as the long-haul market.

Other carriers on these routes (e.g. Air France, Alitalia, Virgin Atlantic) have increased frequency slightly but reduced aircraft size, also giving fewer seats in total. The main factor behind the increase in the other carriers' frequency is the 63 weekly slots that BA had to give up to a new entrant willing to serve Aberdeen and Edinburgh from Heathrow. These were used by Virgin Atlantic's Little Red in 2015 and now by flybe. This has still failed to generate more competition at Heathrow overall however. Virgin Atlantic has indeed been one of the main losers from bmi's demise as it received around a quarter of its transatlantic traffic from a code-share arrangement (9).

Table 8 analyses the load factors for the calendar years 2005 and 2015 using ICAO data. These are only available for international routes so only seven of the 11 routes in Table 7 are covered. It shows BA load factor on these routes has improved dramatically but the other carriers have done even better. In 2005 load factors were on the low side, suggesting bmi was generating excess capacity and competition - bmi itself only managed a 62% load factor. In 2015 load factors are much more in line with global averages (short-haul is generally lower than long haul for most airlines). The 'Other IAG' category is essentially Iberia, which seems to be running excess capacity in 2015; the ICAO figures do not allow London Heathrow and London Gatwick to be separated out, it is likely that Heathrow alone would have shown a stronger performance in 2015.

Table 9 examines the split of traffic between London airports in 2005 and 2015 on the routes formerly served by both BA and bmi from Heathrow. The total traffic on these routes is hardly changed over 10 years but Heathrow (and Luton) have lost ground with all the others gaining market share. This shows that changing airline strategies have reduced the role of Heathrow on short haul routes. We are perhaps seeing a segmentation of business passengers to London City, connecting passengers to Heathrow and leisure passengers to the other airports.

The implication of the various data above is that BA has prioritised yields over volume - and probably also connecting passengers over local traffic - after bmi was absorbed, on the combined network. Many previous Heathrow customers (presumably the lower yield point to point ones) are now having to use other London airports. Other research has shown that nearby airport pairs are imperfect substitutes of each other (10) and frequency choices of network airlines are not affected by competition from low-cost airlines operating in nearby secondary airports (11).

Impact on Individual Routes at New York Newark of the Merger between Continental and United

The routes from Newark that were served by both Continental and United in 2005 have been compared with United's service in 2015 (Table 10). There are only five such routes which are to other United hubs (Chicago O'Hare, Denver, Los Angeles, San Francisco and Washington Dulles).

In this case, the merger appears to have produced a positive outcome as total capacity has increased, total frequency has stayed the same and average aircraft size has got larger. Other airlines flying these routes have also increased seat capacity and aircraft size but with a slight decline in frequency. This is one of the 'silver linings' that can emerge from mergers in the longer term (12).

This is because these are the hub-hub routes for the enlarged United and hence critical to the new network. The other United routes from Newark in 2015 were only served by Continental originally and are now served by United instead so there is not much change on those. This conforms to other research suggesting connectivity has increased following the United-Continental merger (13).

Impact on Individual Routes at New York La Guardia of the Slot Swap between US Airways and Delta

At New York La Guardia, a rather different situation can be seen which is more analogous to the London one. US Airways and Delta arranged a slot swap whereby DL gained US slots at La Guardia while US acquired DL slots at Washington National together with a cash payment (14). The transaction was viewed negatively by many stakeholders (15).

As in London, Delta was obliged to cede some slots as part of the package to introduce new competition.

This has had a negative impact on travellers who were previously served by US Airways at La Guardia but are no longer part of the AA-US network. Table 11 shows that 10 routes have been dropped altogether. These typically each operated about three times per day to regional points in the northeast US using small aircraft (e.g. Albany, Ithaca, Providence). On the eight routes that were served by US Airways alone in 2005 but are now served only by Delta, frequencies and capacity have both been slashed although aircraft size has become larger. This suggests the consumer has seen a reduced level of service with the potential for higher fares and load factors for the airline. These are slightly larger cities than the first group such as Buffalo, Louisville, Rochester and Burlington VT. Some may be 'rust belt' locations with declining demand but others are clearly not. A further five destinations were served by both US Airways and Delta in 2005 (or Northwest with which Delta merged in 2008) but reduced to only Delta service by 2015. These have seen even more drastic cutbacks as the former US Airways capacity has been lost altogether and frequencies have more than halved. These are also significant centres: Charleston SC, Greenville/Spartanburg, Indianapolis, Manchester NH and Portland ME. Small and medium sized cities have been clearly identified as the big losers (16).

It is fair to say that there are other places which were served by both US and DL in 2005 and are still served by US (or AA) and DL in 2015 so the competitive position on those markets has not changed greatly. Delta has launched new service to large cities that neither it nor US Airways served from La Guardia before. New carriers have taken advantage of the slot divestments (16 pairs) to launch service on the busier routes such as WestJet to Toronto

(somewhat ironically code-shared with Delta). Southwest and Virgin America also gained some slots following the AA-US merger (17).

CONCLUSIONS

Airline market concentration has greatly increased over the time period 2005-15 at all airports in London and New York (except Luton where the growth of Wizz and Ryanair has diluted the previous dominance of easyJet) as shown by the HHI analysis. This is in-line with expectations. The two main hub airports, Heathrow and Newark have become heavily dominated by British Airways and United respectively. Gatwick is now the most important airport in easyJet's system while Stansted has become a massive fortress for Ryanair. JFK is still a relatively dispersed market amongst airlines while La Guardia has become dominated by Delta. When the airline groupings are considered, this accentuates the concentration at all airports except London City where Air France/KLM has become a weaker player. The oneworld alliance is now overwhelmingly dominant at Heathrow and with the loss of bmi, other alliances are focusing on their alternative hubs in Europe. There is an overall tendency towards greater monopoly power with its consequences for pricing and consumer choice.

An analysis of operations, load factors and market shares shows that the change in Newark has been positive in terms of increases in frequency and seat capacity on the duplicated routes between United and Continental as these are between the hubs of the merged airlines. The hub network has also been maintained intact.

At Heathrow and La Guardia however there is more evidence of benefits to the airlines in reduced capacity and higher load factors on duplicated routes which may have negative implications for consumers. It is notable that small cities have been the big losers from these changes, seeing their slots raided to provide the divestments required by regulators. In contrast, more services are available on the dense routes and in the case of Heathrow to long-haul destinations. It is debatable as to whether the slot divestments have been an entirely positive experience for consumers. Arguably, this has created more competition and frequency where there was already plenty - once other airlines and airports are taken into account - but reduced capacity or lost service altogether on thinner monopoly markets which may have heavily depended on these links. It also may have reduced the ability to connect from these smaller cities to the wider domestic and international networks, something that is rarely considered in competition assessments which focus on competition between carriers on direct routes. Without the divestment requirements, the dominant airlines may have sustained more of these services to the smaller cities. In London, point to point passengers seeking competitive fares are increasingly being forced to alternative airports with resultant inconvenience in overall journey times, while British Airways and Heathrow concentrate on connecting and high yield traffic. These are significant findings.

In the Transatlantic market from London, concentration has increased partly through the BA-American grouping but also the tie up between Delta and Virgin Atlantic which has significantly reduced the number of independent competitors. At New York however this is less marked as the split between the alliances has become more even, at least as far as direct flights are concerned. An area which merits further research is whether the decline in competition from rival airlines offering indirect routings on a city pair where other carriers have direct service, has led to higher fares on the direct flights or elimination of discounts for connecting services where they are now competing against a direct flight of the same merged airline or alliance group.

An awareness of these findings can inform airline and airport reactions to the market, in particular, whether regional links should be reinstated and also whether greater or different regulatory intervention is needed. Returning to where this paper started with the quotation from Charles Dickens, mergers and consolidation have led to the best of times for many of the airlines involved in the London and New York markets but the worst of times for some of the passengers. Regulatory approval and amelioration measures which may have appeared wise at the time may yet come to be seen as foolish with the evolution of the markets and the benefit of hindsight.

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TABLE 1 HHI Results, Operations/Week, London and New York, 2005, 2015

	Airport	2005	% of ops	2015	% of ops
London					
	LCY	1699	6.6	2758	7.0
	LGW	1979	22.6	2449	27.1
	LHR	2030	47.2	2738	43.4
	LTN	4595	7.0	2957	8.7
	STN	3944	16.6	5875	13.8
New York					
	EWR	4922	36.2	5413	32.7
	JFK	1704	29.0	1987	36.7
	LGA	2062	34.8	2745	30.6

Source: Analysis of Innovata schedules data for second week of July

TABLE 2 HHI Results, Seats/Week, London and New York, 2005, 2015

	Airport	2005	% of seats	2015	% of seats
London					
	LCY	1548	2.4	2774	3.2
	LGW	1584	20.1	2180	26.5
	LHR	1857	55.1	2289	48.4
	LTN	4380	6.5	2833	8.3
	STN	4472	15.9	6374	13.6
New York					
	EWR	4283	32.9	4813	29.7
	JFK	1381	40.0	1386	46.8
	LGA	1633	27.1	2258	23.5

Source: Analysis of Innovata schedules data for second week of July

TABLE 3 HHI results, Operations/Week, Airline Groups, London and New York, 2005, 2015

	Airport	2005	% of ops	2015	% of ops
London					
	LCY	1804	6.6	2758	7.0
	LGW	1979	22.6	2503	27.1
	LHR	2037	47.2	2919	43.4
	LTN	4595	7.0	2957	8.7
	STN	3944	16.6	5875	13.8
New York					
	EWR	4922	36.2	5434	32.7
	JFK	1705	29.0	2025	36.7
	LGA	2062	34.8	3125	30.6

Source: Analysis of Innovata schedules data for second week of July

TABLE 4 HHI Results, Seats/Week, Airline Groups, London and New York, 2005, 2015

	Airport	2005	% of seats	2015	% of seats
London					
	LCY	1683	2.4	2774	3.2
	LGW	1584	20.1	2226	26.5
	LHR	1861	55.1	2421	48.4
	LTN	4380	6.5	2833	8.3
	STN	4472	15.9	6374	13.6
New York					
	EWR	4283	32.9	4837	29.7
	JFK	1384	40.0	1425	46.8
	LGA	1633	27.1	2604	23.5

Source: Analysis of Innovata schedules data for second week of July

TABLE 5 HHI Results, Operations/Week, Transatlantic Alliances, London and New York, 2005, 2015

		2005	2015
London			
	All airports	4561	4665
New York			
	All airports	4159	3484

Source: Analysis of Innovata schedules data for second week of July

TABLE 6 HHI Results, Seats/Week, Transatlantic Alliances, London and New York, 2005, 2015

		2005	2015
London			
	All airports	4728	5055
New York			
	All airports	4035	3470

Source: Analysis of Innovata schedules data for second week of July

TABLE 7 Change in Operations at London Heathrow on Routes Duplicated between British Airways (BA) and bmi (BD), 2005, 2015

	2005 frequencies /week	seats /week	average aircraft size (seats)	2015 frequencies /week	seats /week	average aircraft size (seats)
BA	545	85300	157	541	84344	156
BD	343	48697	142	0	0	na
Other IAG	42	7560	180	56	10004	179
IAG Total	930	14557	152	597	94348	158
Others	224	39404	176	251	38969	155
Total	1154	180961	157	848	133317	157

BA – British Airways, BD – bmi British Midland, IAG – International Airlines Group
 Routes from London: Aberdeen, Amsterdam, Brussels, Edinburgh, Glasgow, Madrid,
 Manchester, Milan Linate, Mumbai, Nice, Paris CDG

Source: Analysis of Innovata schedules data for second week of July

TABLE 8 Change in Load Factor at London on International Routes Duplicated between British Airways (BA) and bmi (BD), 2005, 2015

	2005	2015
	% load factor	% load factor
BA	68.1	76.0
BD	62.2	na
Other IAG	77.1	68.7
IAG	67.3	74.9
Others	70.3	83.4
Total	68.0	77.5
BA Systemwide	76.3	81.5
IATA Scheduled	74.8	80.4

BA – British Airways, BD – bmi British Midland, IAG – International Airlines Group
 Routes from London: Amsterdam, Brussels, Madrid, Milan Linate, Mumbai, Nice, Paris CDG

IATA – International Air Transport Association

Source: ICAO (BA figures include LGW and LHR but not LCY)

TABLE 9 Change in Market Share of London Airports on Routes Duplicated between British Airways (BA) and bmi (BD), 2005, 2015

	2005		2015	
	scheduled passengers	market share (%)	scheduled passengers	market share (%)
London City	583416	2.9	1603178	7.8
Gatwick	3291794	16.3	4425408	21.6
Heathrow	12678597	62.9	10703996	52.3
Luton	2220175	11.0	1528828	7.5
Southend	0	0.0	214566	1.0
Stansted	1368812	6.8	1973703	9.7
Total	20142794	100.0	20449679	100.0

Routes from London: Aberdeen, Amsterdam, Brussels, Edinburgh, Glasgow, Madrid, Manchester, Milan Linate, Mumbai, Nice, Paris CDG

Source: UK Civil Aviation Authority

TABLE 10 Change in Operations at New York Newark on Routes Duplicated between Continental (CO) and United (UA), 2005, 2015

	2005 frequencies /week	seats /week	average aircraft size (seats)	2015 frequencies /week	seats /week	average aircraft size (seats)
CO	209	25001	120	0	0	na
UA	158	17590	111	366	52739	144
CO+UA	367	42591	116	366	52739	144
Others	124	12890	104	109	13451	123
Total	491	55481	113	475	66190	139

CO – Continental, UA – United

Routes from New York: Chicago O’Hare, Denver, Los Angeles, San Francisco, Washington Dulles

Source: Analysis of Innovata schedules data for second week of July

TABLE 11 Change in Operations at New York La Guardia on Routes No Longer Served by US Airways after the Slot Swap with Delta

	2005			2015		
	frequencies /week	seats /week	average aircraft size (seats)	frequencies /week	seats /week	average aircraft size (seats)
US routes lost	176	6628	38	0	0	na
US->DL	269	11705	44	163	9840	60
US & DL/NW ->DL	253	12651	50	117	7544	64

AA - American, DL – Delta, NW – Northwest, US – US Airways

Source: Analysis of Innovata schedules data for second week of July