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The New Zealand Aviation Operational Environment: A Guide for the Tourism Sector

Interim Summary

Tourism and Aviation: Critical Linkages

Authorship
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Introduction

The New Zealand tourism sector depends heavily on the aviation sector to bring international visitors to New Zealand – the vast majority of international visitors arrive and depart by air. Similarly, the New Zealand aviation sector depends on New Zealand's attractiveness as a destination to drive demand for air travel – short-term international visitors are responsible for 55% of air passenger traffic to and from New Zealand. Both sectors therefore depend on each other, however an obvious but important difference is that the tourism sector earns most of its revenues from tourist expenditure on the ground in New Zealand while the aviation sector earns most of its revenues from transporting visitors to and from New Zealand.

This difference means that the incentives of the New Zealand tourism sector and the airlines are not always aligned, and market outcomes that are profitable for one may not be for the other. Broadly speaking, the tourism sector benefits from high flight frequency, high connectivity, non-stop flights, intense competition among airlines, and low airfares. The extent to which these are achieved depends on the operating conditions and constraints faced by the airlines, and their strategic choices.

As part of the *Tourism and Aviation: Critical Linkages* project, we have analysed and described the key features of the operating environment of the New Zealand aviation sector and the drivers of strategic choices made by airlines. This is a three year project undertaken jointly by Covec and the University of Otago. This report summarises our findings from the first year of the project, where our objective was to understand the aviation operational environment and identify implications for the tourism sector. In future years we will consider the aviation regulatory environment.

To summarise our results from the first year, we have produced a detailed interim handbook, available online at http://catr.otago.ac.nz/storage/files/frst/NZ_Aviation_Operational_Environment_Guide_December_2010.pdf, containing data, results, and findings. This summary provides a brief overview of the key implications for the tourism sector. Other outputs from the project are available on the project website at http://catr.otago.ac.nz/reports/.

Overview

Our main objective s to explain the drivers of four key aviation *market outcomes*:

1. The *routes* that airlines choose to fly: We concentrate on economic factors affecting route choices. In practice, airlines must first be granted the right to fly a particular route by regulatory authorities. Later stages of this project will consider these issues in detail.

2. The *capacity* they provide on these routes: Capacity is the volume of passengers and freight that can potentially be carried on a route. It is determined by the type of aircraft that an airline operates on the route, and the frequency of flights on the route.

3. The *prices* that airlines charge: Airlines use complex pricing strategies to maximise revenues on the routes that they fly.

4. The passenger and freight *traffic* that is carried: Traffic on a route is measured by the number of passengers and volume of freight carried on the route in a given time period. On a route from A to B, this will consist of traffic originating in A destined for B, as well as traffic originating and/or destined for other places, which travels via the route from A to B.

We will use an economic framework to understand the drivers of these market outcomes. This approach gives a clear distinction between drivers and outcomes, and highlights the relationships between them. Ultimately, market outcomes depend on the strategic choices of airlines. These strategies are driven and constrained by four major external forces:

1. Demand

2. Technology

3. Costs

4. Government regulation and intervention

Demand for travel between an origin A and a destination B is the relationship between the volume of passengers and freight willing to travel from A to B and the price of travel. The actual traffic we observe between these two points depends on the price charged, and higher prices lead to lower traffic. Demand also depends on other factors such as income and exchange rates (for international travel).

Technology, namely the capabilities of aircraft and the capacities of airports and air traffic control systems, impose limitations on the routes that airlines can fly. For example, no current passenger aircraft can fly non-stop from New Zealand to Europe. The efficiency of aircraft (in terms of fuel consumption and other operating expenses such as maintenance) is also determined by technology and affects the costs that airlines face. Similarly, airports and air traffic control are limited in the volume of flights and passengers that they can process in a given amount of time.

Costs are also affected by a large number of other external factors, such as the cost of fuel, labour costs, airport charges, maintenance costs, and the cost of financing. Some costs are specific to operating a particular route and are determined by factors such as the type of aircraft used, the distance flown, and the number of passengers carried. Other costs are shared across routes or the entire operations of an airline.

Government regulations and intervention place constraints on the routes that airlines are allowed to fly, and how they may cooperate and compete with each other. The final version of our handbook will cover these issues in detail.

Below we summarise our findings in terms of specific implications for tourism.

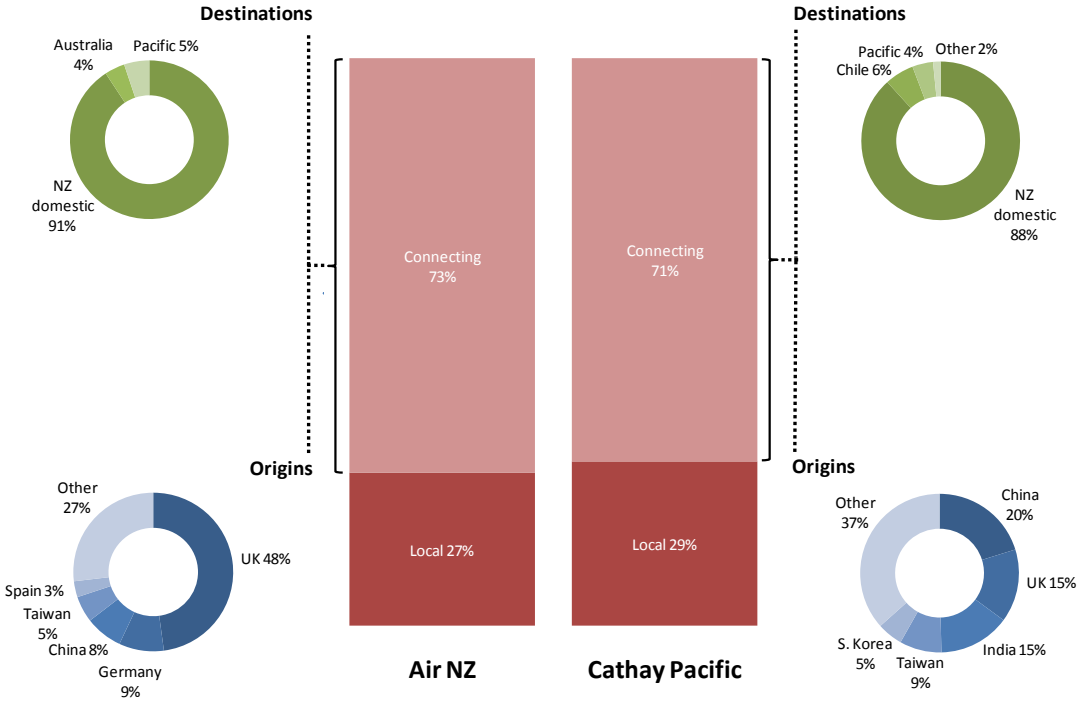
Individual routes must be examined as part of a network

Airlines operate networks of routes, and the value of any individual route depends partly on its contribution to traffic flows throughout the network. In turn the value of a route depends on the structure of the airline's broader network that it is a part of. This means that the incentives to fly any given New Zealand route may be very different for Air New Zealand and foreign airlines, due to their different network structures.

For many routes, connecting traffic from other routes is an important source of demand that makes the route profitable, particularly for full-service airlines. Alliances and other cooperative arrangements between airlines are crucial for generating connecting traffic on many New Zealand international routes.

For example, Figure 1 shows the composition of passenger traffic from Hong Kong to Auckland carried by Air New Zealand and Cathay Pacific in 2009. 'Local' traffic is passengers travelling only between these two cities. Most traffic on the route is connecting traffic with alternative origins and/or destinations. The origin and destination breakdown of connecting traffic depends on each airline's wider network of routes, as well as its alliances and other cooperative arrangements with other airlines.

Figure 1 Estimated passenger traffic composition from Hong Kong to Auckland in 2009.



Source: Sabre-ADI.

Many potential international routes to New Zealand are currently not viable

The basic economics of a route depend on the demand for travel on that route relative to operating costs, taking into account any contribution to generating traffic and profits throughout the airline's wider network. Demand includes traffic connecting from other routes (as discussed above), but must take into account competing routes (including indirect itineraries) that may be available to passengers. Costs depend on the size of aircraft required.

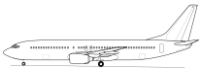
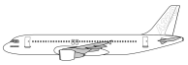
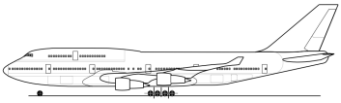
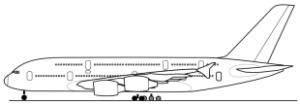
Many international routes to New Zealand are long distance, requiring relatively large aircraft. Airlines are generally unwilling to schedule flights less than three times weekly due to fixed route operating costs. In many cases, these factors in combination mean that capacity at a reasonable frequency would be too large relative to existing demand, making the route unprofitable. This may change over time as demand for travel between New Zealand and particular countries increases and/or technological improvements increase the range and efficiency of smaller aircraft.

Technology is a key constraint on airline operations and economics

Aircraft technology determines physical capabilities in terms of range and payload, and operating costs. This constrains the ability of airlines to profitably operate routes. New technology will change the economics of some routes, potentially allowing more competition and/or new routes. However, technological change takes place slowly and is uncertain, so increasing demand by increasing New Zealand's attractiveness as a destination is also important for route development.

Figure 2 shows basic performance characteristics of modern aircraft. There has been a shift away from large and towards medium aircraft on New Zealand long-haul routes, as these are better suited to the traffic loads on these routes. The new Boeing 787 and Airbus A350 aircraft are expected to further improve the economics of medium and long-haul routes.

Figure 2 Typical performance parameters of modern aircraft.

Type		Typical Passengers	Maximum Takeoff Weight (kg)	Maximum Range (km)
'Small': Low capacity; short/medium range				
	Boeing 737-800	162*	79,000	5,800
	Airbus A320	150*	78,000	6,100
'Medium': Medium capacity; medium/long range				
	Boeing 777-200ER	301**	298,000	14,300
	Boeing 777-200LR	301**	347,000	17,300
	Boeing 777-300ER	365**	352,000	14,700
	Airbus A330-200	253**	233,000	12,000
	Airbus A330-300	295**	230,000	10,800
	Airbus A340-300	295**	275,000	13,700
	Airbus A340-500	313**	380,000	16,700
	Airbus A340-600	380**	380,000	14,600
'Large': Large capacity; medium/long range				
	Boeing 747-400ER	416**	413,000	14,200
	Airbus A380	525**	560,000	15,200

* Typical two-class layout

** Typical three-class layout

Source: boeing.com and airbus.com

A few international routes provide the majority of international connectivity

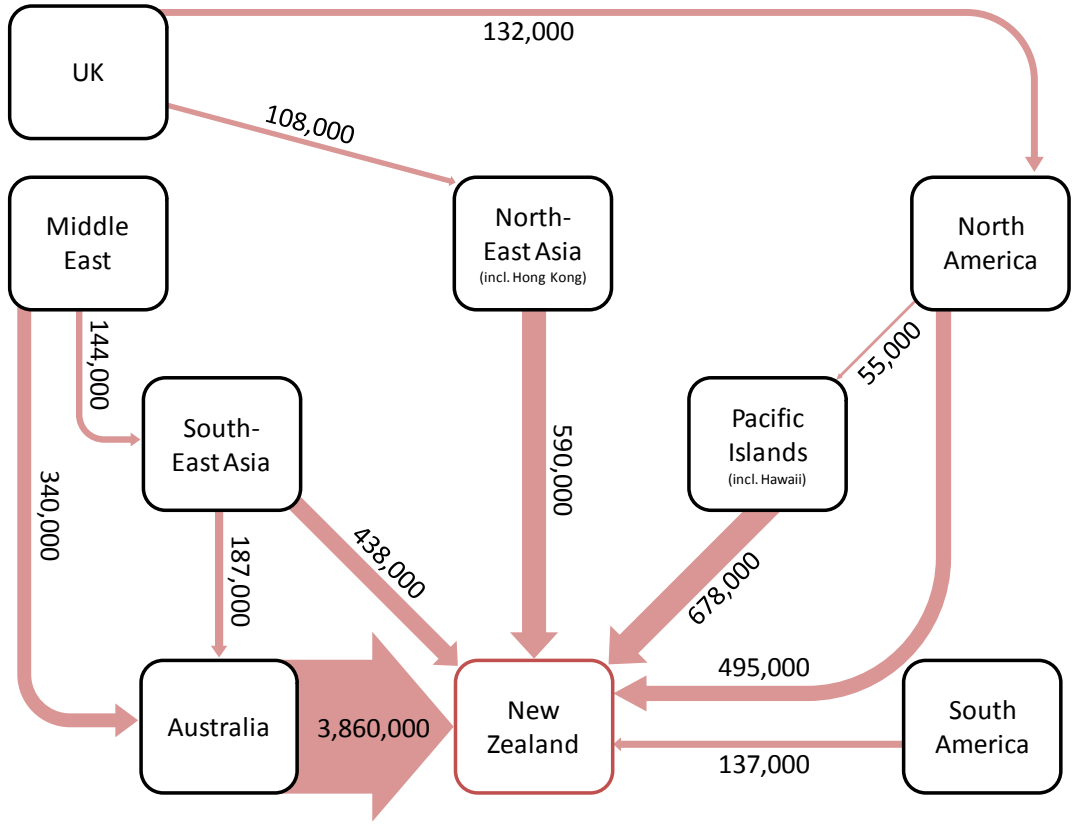
A few routes – to Singapore, Hong Kong and Los Angeles – provide the greatest connectivity between New Zealand and the rest of the world in terms of the combination of flight frequency and onward connection options. The health of these routes is critical for providing good access to New Zealand for international visitors. Cooperative arrangements between airlines such as code-sharing and alliances are crucial for generating traffic on some key international routes.

Figure 3 shows the international airports that New Zealand was connected with in 2009, and ranks them by frequency of flights to New Zealand, and connectivity options to other airports. This highlights the importance of Los Angeles (LAX), Hong Kong (HKG) and Singapore (SIN) in connecting New Zealand with the rest of the world. Bangkok (BKK), San Francisco (SFO) and Seoul (ICN) also provide high connectivity, but the frequency of flights to New Zealand is lower. Expected new routes in future include Houston (IAH), Taipei (TPE) and Suva (SUV).

Figure 3 Connectivity and frequency of New Zealand international non-stop routes in 2009, including expected additions and trends.

Figure 4 shows the maximum inbound seat capacity from various regions to New Zealand in 2009 on direct services. These are services that continue from their origin to New Zealand with the same flight number, although there may be one or more stops *en route*.

Figure 4 Seat capacity on direct (same flight number) services to New Zealand in 2009.



Source: Sabre-ADI.

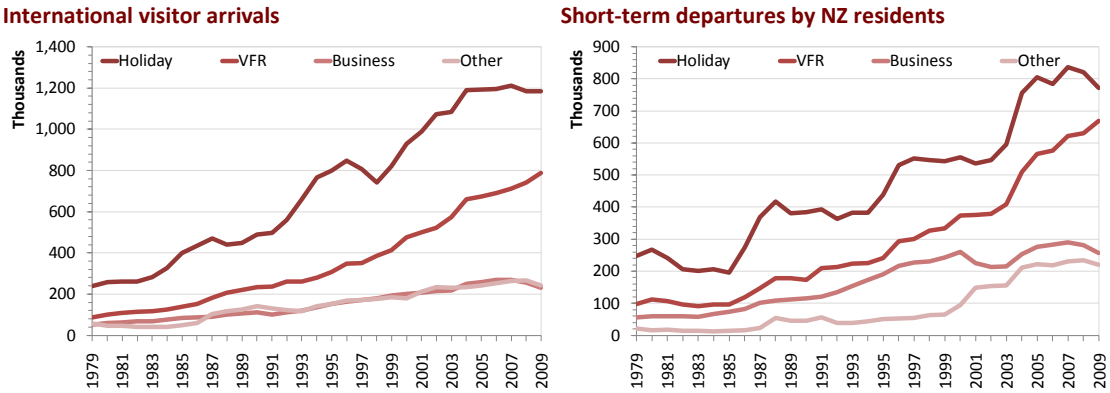
Key changes in capacity in the five years between 2004 and 2009 were:

- An increase of 185,000 seats (62%) from the Middle East, mostly via Australia.
- A reduction of 228,000 seats (55%) from South East Asia via Australia, and a reduction of 52,000 seats (12%) non-stop from South East Asia.
- A reduction of 132,000 seats (18%) from North East Asia, reflecting capacity reductions of around 50% from both Japan and Korea, partially offset by an increase in capacity from Hong Kong and China.
- An increase of 66,000 seats (93%) from South America.
- A new direct route from the UK via Hong Kong, together with a small reduction in capacity from the UK via North America.
- Some reduction in capacity from North America, however this is partially due to the global economic crisis in 2009, and is expected to be temporary.

The mix of international visitors matters and is changing

As well as the total number of international visitors to New Zealand, the mix in terms of origins, purpose of visit, and other characteristics is important as this affects expenditure on the ground in New Zealand and willingness to pay for airfares. Between 2004 and 2009, most of the growth of international visitors was in the 'visiting friends and relatives' (VFR) segment. This is illustrated in Figure 1, which shows that VFR travel to and from New Zealand has continued to grow strongly while holiday and business travel have stagnated.

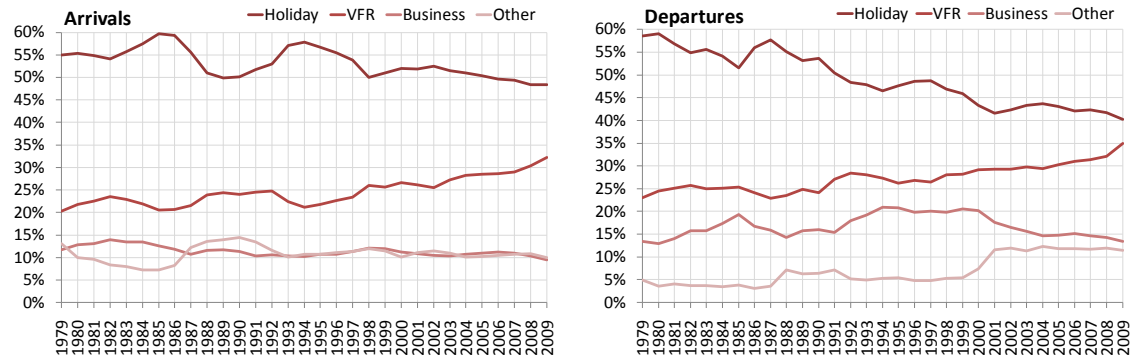
Figure 5 Annual visitor arrivals and short-term departures by NZ residents by purpose of travel.



Source: Statistics New Zealand.

This is leading to a change in composition of the visitor mix, as shown in Figure 6.

Figure 6 Proportion of total international visitor arrivals and New Zealand resident short-term departures for different purposes of travel



Source: Statistics New Zealand

A VFR visitor on average only spends half of what a holiday visitor spends in New Zealand, but VFR travel is still very important for opening up and sustaining air routes that provide access for all visitor types. For example, around a quarter of traffic between New Zealand and China is VFR, and without this source of demand, non-stop services between New Zealand and China are unlikely to be viable, leading to reduced quality of access for Chinese holiday visitors.

The mix of visitors also depends to some extent on competition between airlines and their business model choices. Greater competition and the introduction of low-cost carriers (LCCs) leading to lower airfares will attract relatively more budget-conscious tourists who may be individually less valuable to the tourism sector. Similarly, VFR travellers are relatively high yielding for airlines, but spend less when they are on the ground. Changes in flight frequency also have some effect on length of stay, with greater frequency promoting shorter stays. The mix of travellers that airlines attract through their pricing and marketing strategies may therefore not correspond with the optimal mix from the tourism sector's point of view.

Some New Zealand international routes are not highly competitive

The basic economics of international routes also means there is a lack of competition on many New Zealand international routes. Where alternative routes are not viable for travellers, this results in relatively high airfares. In many cases greater competition is not sustainable as two competing carriers would supply too much capacity relative to demand.

Another implication is that the New Zealand tourism sector is to some extent dependent on foreign airlines to provide international connectivity and bring tourists to New Zealand, and the incentives of these airlines may be very different to those of the New Zealand tourism sector, or Air New Zealand.

Table 1 shows the state of competition on all international routes to New Zealand in 2004 and 2009, distinguishing trans-Tasman and all other routes. There is relatively strong competition on the busiest trans-Tasman routes, but the majority of other routes have monopoly operators. Outside the trans-Tasman, it is very unusual to have more than two operators competing on New Zealand international routes.

Table 1 The state of competition on international non-stop routes to New Zealand.
(Note: Jetstar and Qantas are treated as independent competitors).

State of Competition	Number of Trans-Tasman Routes		Number of Other Routes	
	2004	2009	2004	2009
Monopoly	4	7	22	21
2 operators	4	7	11	8
3 operators	4	6	2	2
4 operators	1	1	0	0
5 operators	0	2	0	0
6 operators	0	0	0	0
7 operators	1	1	0	0
8 operators	1	0	0	0

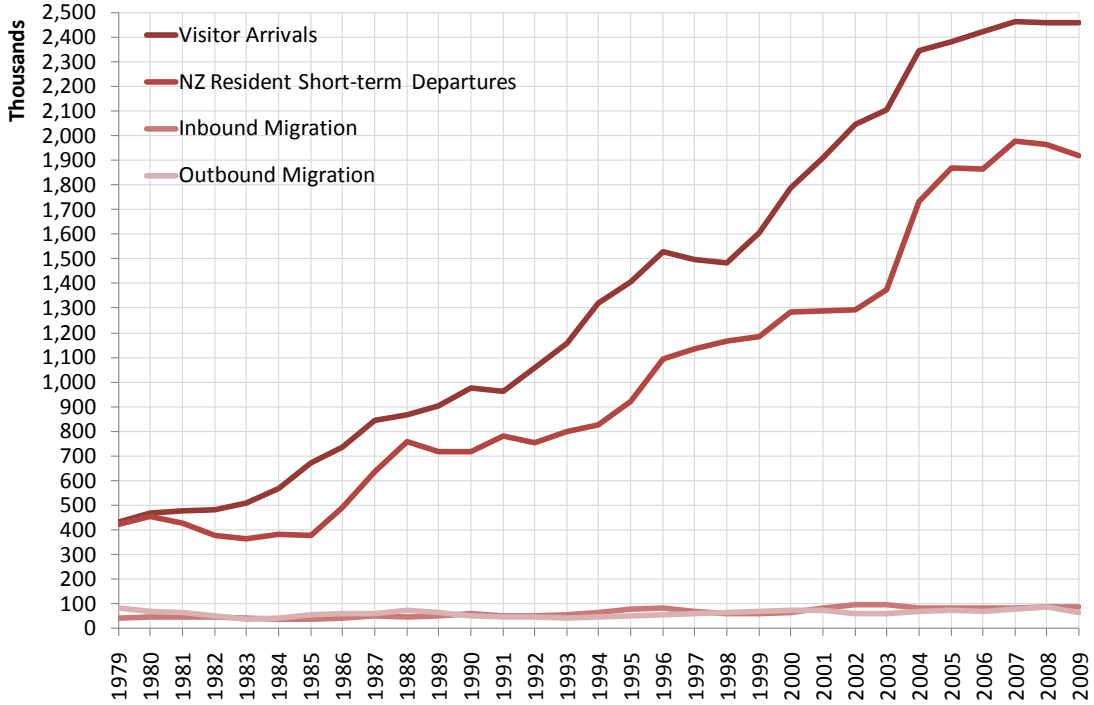
Source: Sabre-ADI.

International visitors are only one source of demand for air services

While outbound travel by New Zealand residents has limited benefit for the New Zealand tourism sector, this travel is an important source of revenue that helps to maintain international air routes. The same is true for air freight. Greater outbound travel, increased economic activity, and freer international trade indirectly benefit the New Zealand tourism sector by helping to sustain and expand international air routes to and from New Zealand.

Figure 7 shows total inbound and outbound travel to and from New Zealand over time. Short-term overseas trips by New Zealand residents accounts for around 30% of international passenger traffic on New Zealand routes, and without this traffic the current level of inbound services for international visitors could not be sustained.

Figure 7 Total inbound and outbound travellers to/from New Zealand.



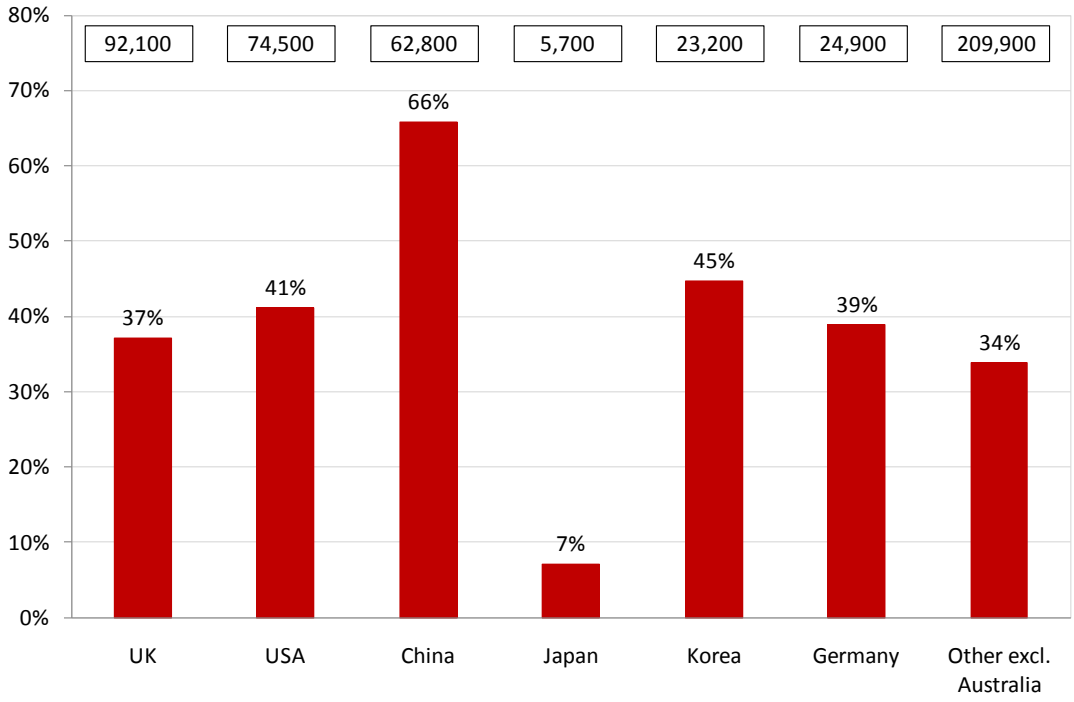
Source: Statistics New Zealand.

Many visitors view Australia and New Zealand as complementary destinations

A high number of international visitors to New Zealand also visit Australia, and this helps to maintain some New Zealand air routes that also stop in Australia, such as those operated by Emirates, LAN Airlines and Aerolineas Argentinas. This type of travel may also help to support other future routes to New Zealand via Australia from Asia. Trans-Tasman routes are also supported by some transit traffic between North/South America and Australia, and between South America and Asia.

Figure 8 shows the estimated proportion of visitors from different origins who visited Australia and New Zealand on the same trip in 2009. Overall, we estimate that about 40% of all non-Australian international visitors to New Zealand in 2009 also visited Australia on the same trip. This propensity varies somewhat across countries of origin. Chinese visitors are the most likely to undertake dual destination travel, with around two-thirds of Chinese visitors doing so in 2009. In contrast, very few Japanese visitors to New Zealand also visited Australia – likely due to the relatively short duration of trips by Japanese tourists.

Figure 8 Estimated proportion and number of international visitors to New Zealand who also visited Australia on the same trip in 2009.



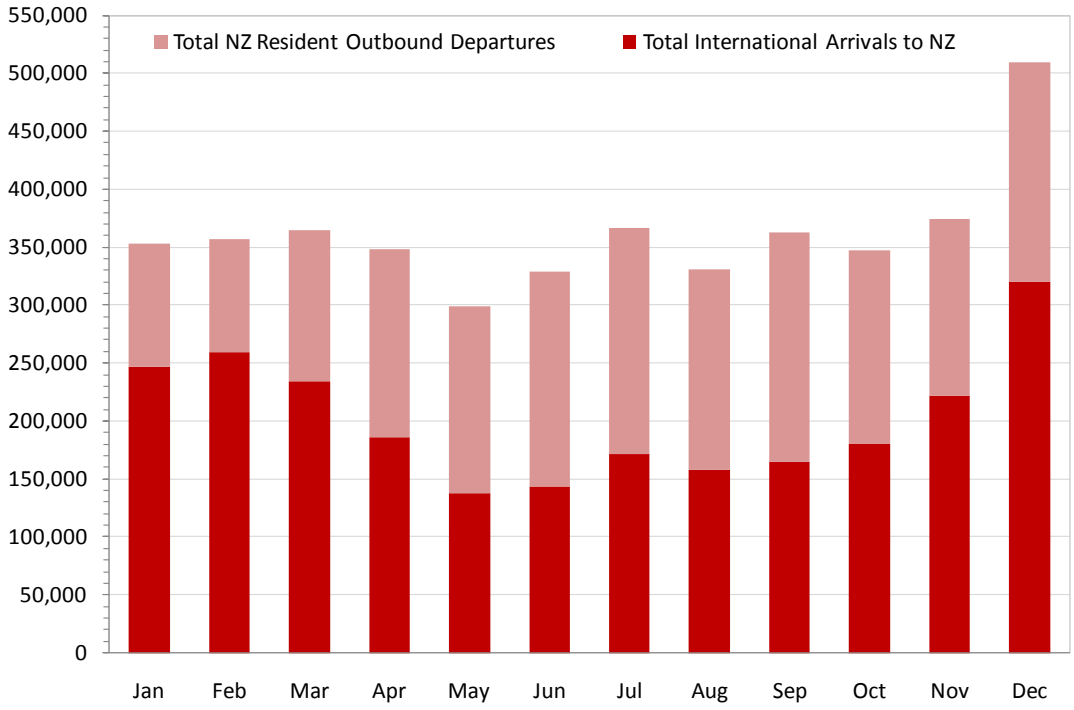
Source: Calculated from Statistics New Zealand data.

New Zealand outbound travel offsets the seasonality of inbound travel, leading to relatively stable air capacity levels throughout the year

The generally opposite seasonality of inbound and outbound travel means that the pattern of air traffic to and from New Zealand is relatively flat throughout the year. This means that airlines do not have to adjust overall New Zealand capacities dramatically during the year, and do not experience high costs associated with maintaining extra capacity to use only in peak periods. Capacities on some individual routes change significantly, but seasonality across New Zealand routes offsets to a large extent. These offsetting travel patterns benefit the tourism sector as a relatively high average level of air capacity can be maintained throughout the year.

Figure 9 illustrates seasonality by showing monthly international visitor arrivals and short-term departures by New Zealand residents in 2009. Aside from December, traffic volumes are relatively stable across the year, with low inbound visitors in winter being offset by high outbound travel, and vice versa in summer.

Figure 9 Arrivals by international visitors and short-term departures by New Zealand residents, 2009.

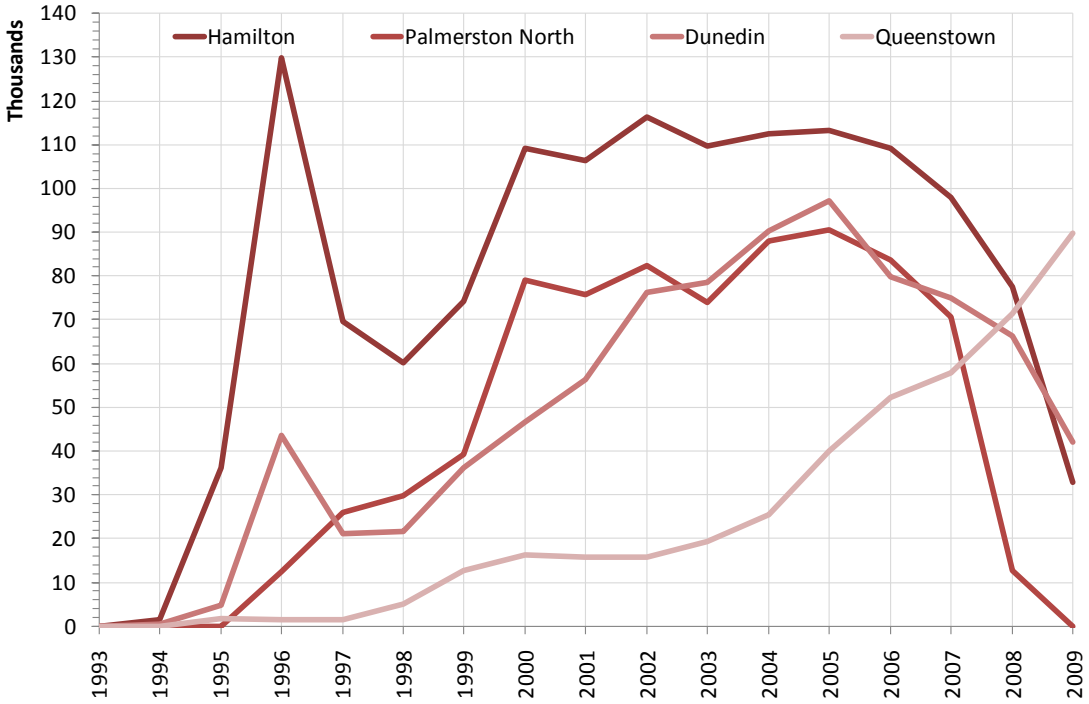


Source: Statistics New Zealand.

Most regional airports in New Zealand have not been successful at sustaining international services

With the exception of Queenstown, regional airports in New Zealand have not been able to sustain international air services with Australia or other countries. A small population base and limited onwards connectivity means there is insufficient demand for non-stop services to regional centres that are not a destination in their own right. Figure 10 shows the number of international passenger movements through regional New Zealand airports over time. Following initial rapid growth, traffic volumes through Hamilton, Palmerston North and Dunedin have stagnated and declined.

Figure 10 International passenger movements (arrivals + departures, excluding transits) through New Zealand regional airports.



Source: Statistics New Zealand.

Airlines segment the market to maximise their own revenue

Airlines use sophisticated pricing and revenue management strategies, leading to market segmentation and pricing designed to maximise their revenues, but the outcome may not be optimal for the tourism sector. The tourism sector may prefer a different mix of visitors and/or a different structure of prices across market segments. Airlines may use pricing to drive outbound travel when it suits them, e.g. in particular seasons. Airlines do not generally specialise in inbound or outbound travel, rather they seek to optimise their overall portfolio of passengers.