



# AMERICAN AIRPORT CITIES: LESSONS FOR WESTERN SYDNEY AIRPORT

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*May 2018*



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**This report may be cited as:**

Justin Wastnage, "American airport cities: Lessons for Western Sydney Airport," United States Studies Centre at the University of Sydney, May 2018.

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# Executive summary and recommendations

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As Australia embarks on its first publicly-funded airport project in more than three decades with Western Sydney Airport in Badgerys Creek, there are lessons and insights to be taken from the US experiences of airport cities.

The stated ambition of the federal, state and local governments is to create an aerotropolis around the new facility, which will later be sold to a private entity. There is a twin consideration to both create employment around the site, but also to create value in the asset ahead of a future sale.

Looking at US examples, it is possible to draw some conclusions about the path these Australian governments should tread if they are to emulate any of the experiences of US cities in using airports as economic drivers.

It is important to recognise fundamental structural differences between the US air transport landscape and that found in Australia. In addition to a smaller population base and having airports largely in private hands, Australia also faces challenges in achieving the critical mass required for efficient air freight. Furthermore, some of the industries targeted for growth in the airport precinct — notably defence aerospace — rely on supply chains and prime manufacturing capabilities that do not exist in Australia.

Despite these considerations, there are a number of recommendations that government should heed in ensuring that Western Sydney Airport is able to achieve its maximum economic potential:

## **1. Allow Western Sydney Airport to compete on airline charges**

Airports in the United States faced with declines in traffic are able to vary landing and terminal charges at the city government's discretion. Airlines are not charged for air navigation services for domestic flights. In contrast, Australian airports' charges are mandated by a combination of the Australian Competition and Consumer Commission and Airservices Australia. All levels of government, including government agencies will need to work together to enable competitive pricing of air traffic management services, firefighting services and landing charges at Western Sydney Airport to ensure the new airport can attract low cost carriers.

## **2. Build a complementary multi-airport system**

In the United States, secondary airports in greater metropolitan areas have provided opportunity for local populations as low-cost carriers have moved in. Despite being 61 km (38 mi) from the downtown, Ontario International Airport (ONT) in Los Angeles's San Bernardino Valley has prospered due to the sizeable population base nearby. Similarly, Greater Sydney needs to function as a multi-airport system, with the new airport able to respond to ongoing capacity constraints at Sydney Airport. Policymakers need to consider the mechanisms by which they can make Western Sydney attractive to point-to-point traffic to Asia.

## **3. Prize the value of 24-hour operations**

In the United States, cities with multiple airports often ensure at least one remains open 24-hours per day when others are restricted due to evening noise restrictions. Los Angeles, Washington DC and New York, for example, all have night-time flight restrictions on suburban airports, but allow others to operate around the clock. No curfew or night-time operating restrictions can be placed on Western Sydney Airport if it is to maximise its attractiveness to low-cost carriers seeking to achieve high aircraft utilisation rates overnight.

## **4. Celebrate Western Sydney (Running Water Country) as a meeting place**

Atlanta has an internationally-sized convention and exhibition centre within the airport perimeter, despite also having another downtown. Chicago's Rosemont suburb, neighbouring O'Hare Airport also houses a world-class convention centre. In Sydney, governments need to investigate the potential for a convention and exhibition centre within the Western Sydney Airport precinct to maximise its appeal to business travellers as a conference destination.

## 5. Smooth the path for logistics and distribution

In the Dallas-Fort Worth area of Texas, the connectivity of road transport networks to the intermodal freight and logistics hub at the twin cities' international airport is enshrined in local legislation. Air freight and logistics offers Western Sydney Airport its single largest opportunity for mass employment growth in the region. As such, governments need to ensure the road network around Western Sydney Airport is completed as projected to ensure the multimodal freight capability of the new airport is maximised.

### Definitions: Two US airport models

#### aerotropolis

First coined by New York commercial artist Nicholas DeSantis in the 1930s,<sup>1</sup> the term aerotropolis was popularised by John D. Kasarda in the early 2000s, who is now one of the world's most prominent thinkers on airport cities. He defines an aerotropolis as a part of a city centred on an airport, where the layout, infrastructure and economy is planned to maximise the ease of access to air transport.<sup>2</sup>

Airports have evolved as the drivers of business location and urban development in the twenty-first century in the same way as highways did in the twentieth century, railroads in the nineteenth century, and seaports in the eighteenth century, Dr Kasarda argues. Just as digital connectivity connects trade and traders in goods virtually, so too does air transport connect trade and traders in people and services physically.

An aerotropolis is thus considered: a planned and coordinated multimodal freight and passenger transportation complex which provides efficient, cost-effective, sustainable, and intermodal connectivity to a defined region of economic significance centred on a major airport.<sup>3</sup>

Airport cities have developed along different paths. A portion of them were planned from the start, while many others evolved organically.

#### hub-and-spoke air transport

The hub-and-spoke system referenced in the business model of major international airports is a means by which thin air traffic routes are organised as a series of 'spokes' that connect a collection of smaller airports to a central 'hub' airport in a major city. Rather than fly from secondary airport to secondary airport, travellers move from a spoke airport through the hub airport to another airport on a spoke. This enables airlines to maximise aircraft capacity.

This model evolved in contrast to the point-to-point travel system of air transport that dominated before the 1970s. The hub-and-spoke model for aggregating airline passengers is credited to Delta Air Lines in 1955,<sup>4</sup> and was first applied to air cargo by Federal Express in the early 1970s.

*A note on airport names: To avoid confusion in cities where there are multiple airports, the three-letter International Air Transport Association (IATA) code for referenced airports has been used in parentheses after all mentions.*

# Introduction

Airports have always had great public relations appeal. Nothing embodies civic pride, modernity and progress for a city quite like a gleaming airport terminal. Airports, too, are often credited with economic growth. Although current research is pointing towards a unidirectional causality between economic growth<sup>5</sup> and air transport growth — rather than vice-versa — the link between airports and jobs is often made by governments.

Luckily for US politicians, all but a handful of airports in the United States are owned and operated by municipal or state governments.<sup>6</sup> This is in stark contrast to Europe where more than 40 per cent of airports are wholly or partially privatised<sup>7</sup> or Australia where major

airports were sold off by the federal government in the 1990s.<sup>8</sup> In Canada, airports are currently run as not-for-profit semi-privatised entities under long-term leases.<sup>9</sup>

But in the United States, airports remain steadfastly in public hands despite

a 20-year federal program to entice private-public partnerships.<sup>10</sup> Although many commentators — including US President Donald Trump<sup>11</sup> — link public ownership with perceived failings in customer service and infrastructure investment, the fact that it is elected officials who hold the purse strings gives US lawmakers an ability to not only mould airport development projects, but also use public policy levers to influence traffic flow that is not open to Australian politicians.

Yet in Australia, after years of airports being considered as federally-controlled, privately-owned islands within state road networks, there are today major infrastructure investments being made by all levels of government in and around our major airports.<sup>12</sup> Many of these focus on passenger connectivity, such as rail links to Melbourne (MEL) and Perth (PER) airports and road upgrades surrounding Adelaide Airport (ADL).

The largest airport investment project in Australia will be the new Western Sydney Airport in Badgerys

Creek. After Sydney Airport Corporation declined the right to develop the greenfield airport site, the federal government has established a special purpose company to construct and develop the airport. Although there are multiple examples in Asia and Europe of new build airports, it is useful to consider Western Sydney Airport in the context of the US experience of constructing airport cities, or interdependent economic zones, around its airports.

Whether generators of economic growth or beneficiaries of economic growth, airports nonetheless have thousands of jobs both on-site and in related industries downstream. Oxford Economics estimates that on-airport jobs are, on average, around 3.6 times more productive than other semi-skilled occupations.<sup>13</sup> For every on-airport job, there are an equal number of directly related jobs (like airline catering) and almost half as many again induced jobs. These jobs are also well paid: The 3.1 million jobs located within 4 km (2.5 mi) of a major US airport made up some 2.8 per cent of total US jobs in 2012, but 3.4 per cent of the total salaries.<sup>14</sup>

This has led to a popularisation of the concept of airports as economic entities in their own right. No longer merely complex transport infrastructure assets, airports had become economic powerhouses for cities that were rivaling the city centres.

There has been significant study in recent years around the economic causality of the impact of airports. Much of this has led to innovations in airport precinct planning. Scarred by several “ghost airport” terminals built at great expense in countries such as Spain during boom times, authorities around the world have attempted to build industrial bases around airport precincts.<sup>15</sup> They look to the long-term approaches to airport cities in places like the Zuidas business district, which hugs the ring road at Amsterdam Airport Schiphol (AMS), or the New Songdo International Economic Development Zone surrounding Seoul’s Incheon International Airport (ICN).

These projects have been promoted as prime examples of the term aerotropolis. But the world’s original aerotropolises were a US invention. In 2013

No longer merely complex transport infrastructure assets, airports have become economic powerhouses that are rivaling city centres.

there were 38 operational or developing airport cities or aerotropolises in North America, compared with 20 in Europe, 17 in Asia-Pacific — including Brisbane International Airport (BNE) — and just 12 elsewhere.<sup>16</sup>

Creating an aerotropolis around an airport is now mainstream economic development policy in the United States. Just as the railroads opened up the US western states and freeways opened up suburbia, so too has air travel opened up the world to knowledge-based industries. US cities that want to grow their digital industries need both the flight connections for residents to travel easily and the advanced warehousing and logistics that underpin the physical fulfilment of digital commerce.

Aerotropolis is so ubiquitous as a concept that it even has its own bill introduced into Congress in an attempt to make any airport city project deemed of national or state significance eligible for federal funds.<sup>17</sup> Cities large and small in the United States have jumped on the aerotropolis bandwagon, including sparsely populated parts of the country like the panhandle coast of Florida.<sup>18</sup>

It is not surprising, therefore, that the concept and nomenclature of an aerotropolis has been embraced by the government of New South Wales.

Unlike many government-planned airport developments in Europe, US airports have managed to attract major corporations to locate their headquarters outside downtown office buildings and near the terminal. For example, five Fortune 500 companies are located in the seemingly anonymous industrial zone called Las Colinas, on the outskirts of Irving, Texas.<sup>19</sup> But Las Colinas is within the greater Dallas-Fort Worth

metropolitan area, an entirely artificial region that emerged only once federal government mandated the closure of two north Texas airports of Dallas and Fort Worth,<sup>20</sup> replacing it with a brand new mega structure, Dallas/Fort Worth International Airport (DFW).

Similarly, Dulles International Airport (IAD) in northern Virginia went from being considered one of the country's greatest white elephant projects to sitting inside the United States' single most prosperous county. Much of that was due to the desire of urban planners to shift noisy aviation traffic from Washington, DC.

As Australia embarks on its first publicly-funded airport project in more than three decades, there are lessons and insights to be taken from the US experiences of airport cities. Some may have been accidental and others exceeded expectations, but this paper highlights some of the elements of their success.



Zuidas business district near Amsterdam Airport Schiphol  
Photo: Getty

**Table 1: Busiest airports in the world by passenger numbers (2016)**

Rank	Location	Airport	IATA code	Passengers	1 yr growth
1	Atlanta, GA, USA	Hartsfield-Jackson Atlanta International Airport	ATL	104,171,935	2.64%
2	Beijing, China	Beijing Capital International Airport	PEK	94,393,454	4.95%
3	Dubai, UAE	Dubai International Airport	DXB	83,654,250	7.23%
4	Los Angeles, CA, USA	Los Angeles International Airport	LAX	80,921,527	7.96%
5	Tokyo, Japan	Tokyo International Airport (Haneda)	HND	79,699,762	5.46%
6	Chicago, IL, USA	Chicago O'Hare International Airport	ORD	77,960,588	1.31%
7	London, UK	Heathrow Airport	LHR	75,715,474	0.97%
8	Hong Kong, China	Hong Kong International Airport	HKG	70,305,857	2.96%
9	Shanghai, China	Shanghai Pudong International Airport	PVG	66,002,414	9.82%
10	Paris, France	Aéroport International Paris-Charles de Gaulle	CDG	65,933,145	0.25%
11	Dallas, TX, USA	Dallas/Fort Worth International Airport	DFW	65,670,697	0.24%
12	Amsterdam, Netherlands	Amsterdam Airport Schiphol	AMS	63,625,534	9.16%
13	Frankfurt, Germany	Frankfurt Airport	FRA	60,786,937	-0.40%
14	Istanbul, Turkey	Istanbul Atatürk Airport	IST	60,422,847	-1.51%
15	Guangzhou, China	Guangzhou Baiyun International Airport	CAN	59,732,147	8.21%
16	New York, NY, USA	John F. Kennedy International Airport	JFK	59,105,513	3.90%
17	Singapore, Singapore	Singapore Changi Airport	SIN	58,698,000	5.86%
18	Denver, CO, USA	Denver International Airport	DEN	58,266,515	7.87%
19	Jakarta, Indonesia	Soekarno-Hatta International Airport	CGK	58,195,484	7.19%
20	Incheon, South Korea	Incheon International Airport	ICN	57,849,814	17.07%

**Table 2: Busiest airports in the world by freight (2016)**

Rank	Location	Airport	IATA code	Freight (tonnes)	1 yr growth
1	Hong Kong, China	Hong Kong International Airport	HKG	4,615,241	3.48%
2	Memphis, TN, USA	Memphis International Airport	MEM	4,322,071	0.73%
3	Shanghai, China	Shanghai Pudong International Airport	PVG	3,440,280	5.04%
4	Incheon, South Korea	Incheon International Airport	ICN	2,714,341	4.57%
5	Dubai, UAE	Dubai International Airport	DXB	2,592,454	3.45%
6	Anchorage, AK, USA	Ted Stevens Anchorage International Airport	ANC	2,542,526	-3.35%
7	Louisville, KY, USA	Louisville International Airport	SDF	2,437,010	3.67%
8	Tokyo, Japan	Tokyo International Airport (Haneda)	NRT	2,165,427	2.03%
9	Paris, France	Aéroport International Paris-Charles de Gaulle	CDG	2,135,172	2.12%
10	Frankfurt, Germany	Frankfurt Airport	FRA	2,113,594	1.77%
11	Taipei, Taiwan	Taiwan Taoyuan International Airport	TPE	2,097,228	3.73%
12	Miami, FL, USA	Miami International Airport	MIA	2,014,205	0.45%
13	Singapore, Singapore	Singapore Changi Airport	SIN	2,006,300	6.32%
14	Los Angeles, CA, USA	Los Angeles International Airport	LAX	1,993,308	2.94%
15	Beijing, China	Beijing Capital International Airport	PEK	1,943,159	2.82%
16	Doha, Qatar	Hamad International Airport	DOH	1,758,074	20.83%
17	Amsterdam, Netherlands	Amsterdam Airport Schiphol	AMS	1,694,729	2.38%
18	Guangzhou, China	Guangzhou Baiyun International Airport	CAN	1,652,215	7.44%
19	London, UK	Heathrow Airport	LHR	1,640,400	3.06%
20	Chicago, IL, USA	Chicago O'Hare International Airport	ORD	1,528,136	0.17%

Source: Airports Council International Annual Traffic Data 2016



# US airports as regional economic accelerators

The importance of trade links to a city has long been understood. From the Hanseatic League to the development of the Panama Canal, maritime trade has long shaped urban development. Indeed, in the 18th and 19th centuries, the terms “port city” and “great city” were often synonymous.<sup>21</sup> Trade depended on well functioning harbours bonded by efficient entrepôts. The Singaporean government used the mercantile model of free trading port as its defining characteristic upon independence in 1961, crediting it with its five decades of double-digit economic growth.<sup>22</sup>

Given that some 90 per cent of the world’s trade in goods is still transported by sea,<sup>23</sup> the focus on seaports as economic generators is understandable. Yet airports move the highest value items, from perishable goods and specialised materials to people and ideas. Although the importance of airports to global cities has long been understood from the movement of people point of view, the impact of airports as economic enablers in their own right and as economic centres of activity is a relatively new concept.<sup>24</sup> There remains some debate about whether airports create economic growth or are beneficiaries of economic growth.

Despite this, the jobs figures look impressive: Some 17.2 per cent of all US employment was found within 16 km (10 mi) of a major airport. In Australia, the figure is thought to be closer to 25 per cent. A 2007 data study by economist Richard Green found a close correlation between US airport passenger growth and employment growth around airports.<sup>25</sup> The lure of economic growth has led successive US governments at a state and local level to use taxpayer funds to invest in airport infrastructure as a job creation tool.<sup>26</sup>

The busiest airports often require the greatest number of employees. Ranked purely by number of passengers, the busiest US airports look familiar to Australian eyes: Atlanta’s Hartsfield-Jackson (ATL) has been the world’s busiest airport by passenger traffic since 1998, largely due to its role as what is known as a ‘hub’ for Delta Air Lines. The hub-and-spoke concept of international airports refers to those where dozens of smaller airport cities act as spokes into an airport hub where passengers interconnect for other spoke destinations.

Similarly, two other US airports also sit in the global top ten by passenger numbers. Los Angeles International (LAX) ranks fourth just behind Beijing Capital International Airport (PEK) and Dubai International Airport (DXB) while Chicago O’Hare International Airport (ORD), Dallas/Fort Worth (DFW) and New York John F. Kennedy (JFK), at sixth, 11th and 16th respectively. Each handled more passengers in 2016 than Singapore Changi (SIN) and Seoul Incheon (ICN).<sup>27</sup>

But you need to look beyond passengers to get a real sense of the new economic power of airports to US regional economies. For example, Memphis International Airport (MEM) in Tennessee and Louisville International Airport (SDF) in Kentucky are home to two of the world’s busiest airports in terms of aircraft movements, but both have relatively few passenger services. Instead, the airports are home to FedEx Express and United Parcel Service cargo airlines respectively.

In 2016, more than four million tonnes (4.4 million US tons) of express freight passed through Memphis and some 2.5 million tonnes (2.7 million US tons) passed through Louisville.<sup>28</sup> The vast bulk of this was as small parcels and is thanks to the birth of the express freight industry. Just as passenger hubs aggregate people, so too cargo hubs aggregate parcels from all over the United States and dispatch on to domestic and international destinations.

Their location is chosen not for its population base, but for other logistical corridors that already exist (see case study page 15). For example, Memphis, Tennessee is located on five Class I railway lines and at the interconnection of four major interstate freeway systems. These cargo hubs then attract other retailers and manufacturers to cluster around for economies of scale.

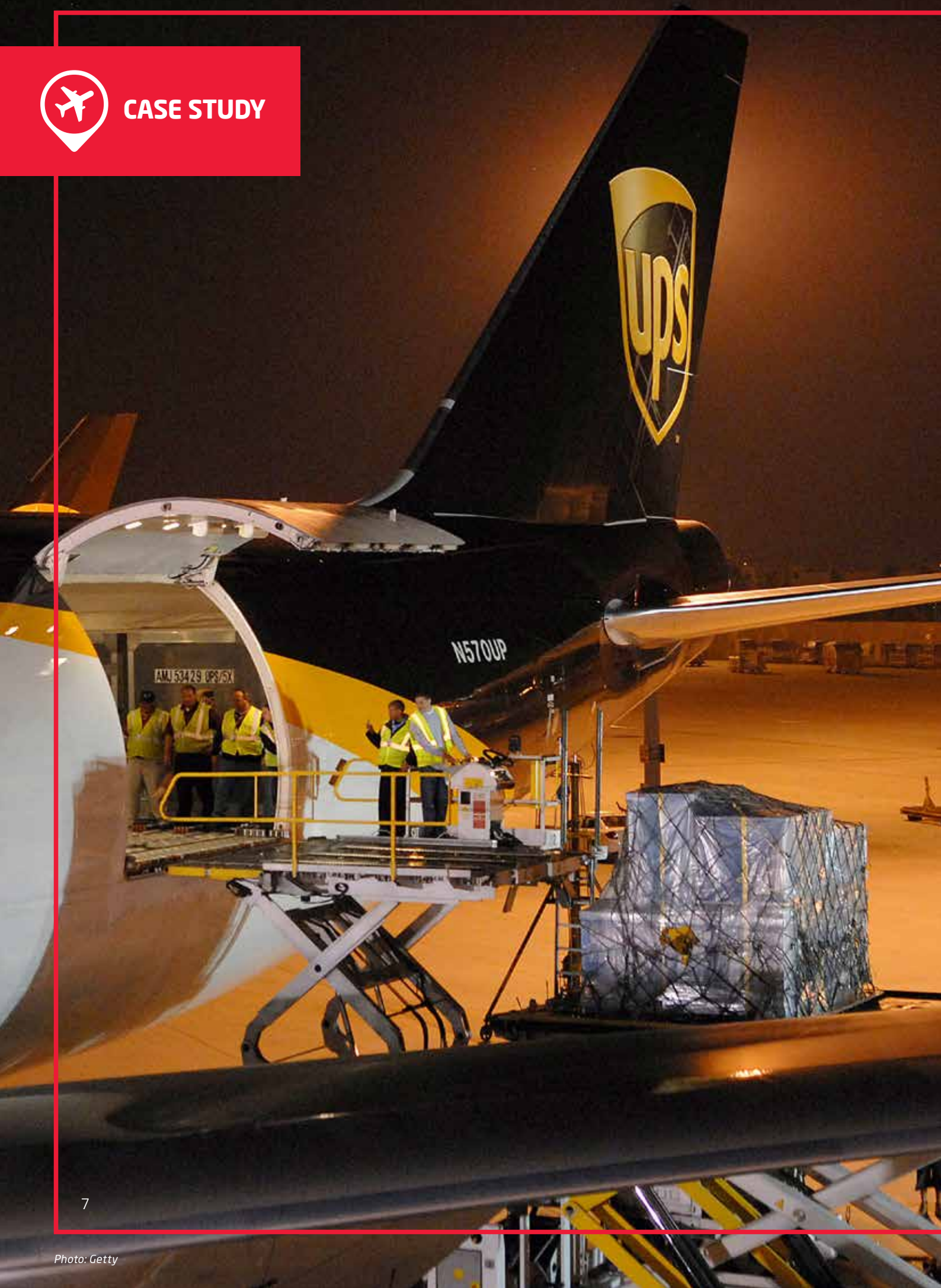
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## CASE STUDY



# Express freight logistics hub Louisville, Kentucky

Good Friday 1988 wasn't quite so good for Jerry Abramson, the then-mayor of Louisville, Kentucky. United Parcel Service (later simply UPS) had decided to relocate its fledgling airline to an alternate Midwest city. In response, by Easter Monday the city government had put together an ambitious rezoning and compulsory purchase plan that would allow the regional airport to quadruple in size and swallow entire suburbs in a bid to allow the airline to expand its premises.<sup>29</sup>

In terms of economic development, the bet paid off. UPS Airlines not only changed its decision and stayed at Standiford Field (SDF), but also based its new logistics hub and headquarters there.

The city invested in infrastructure upgrades to service UPS as it grew. Today, Louisville International Airport has two parallel runways, one 2,615 m long (8,578 ft) and the other 3,623 m (11,887 ft), far in excess of the requirements of a typical Midwest regional airport. The 152-metre (500 ft) wide runways handle cargo aircraft up to and including Boeing 747-400F freighters.<sup>30</sup>

UPS has expanded its facilities several times over the past 30 years and invested heavily in the process. Today, the UPS Worldport claims to be the largest express mail sorting centre in the world.<sup>31</sup> The 485,000 square metre (5.2 million square feet) facility sorts more than 400,000 packages-an-hour and connects some 381 US cities and 200 international cities.<sup>32</sup>

But the economic impact on Louisville has also been enormous in the three decades since UPS decided to stay. Today more than 20,000 people are employed by UPS,<sup>33</sup> which outsources logistics for online retailers including Amazon and Zappos. UPS is the largest private employer in the state of Kentucky and recruits its night-shift staff widely from universities, for which it sponsors thousands of scholarships.

By 2008 the metro chamber of commerce, Greater Louisville Inc, had already hailed the location of UPS as the economic miracle townsfolk had prayed for during the lean years of the 1990s.<sup>34</sup> Today, some seven per cent of the city's jobs are indirectly related to the logistics centre. The city, known best for its horse track that plays host to the Kentucky Derby, has become a company town, but a company town that has attracted dozens of other companies. With the advent of the internet, the need for just-in-time inventory and rapid distribution systems has flourished. In the ten years to 2013, Louisville attracted more than 150 companies to base their delivery centres near the UPS hub.<sup>35</sup>

The swift delivery of parts and product is core to the globalised economy and express freight companies have become the enablers. UPS's main rival, FedEx Federal Express, employs more than 30,000 people in the greater Memphis area.<sup>36</sup> Both cities rely on favourable geography in the centre of continental United States and good weather. Both also have river ports, freight rail and interstate highway connections.

Express freight sorting is done overnight, meaning late night arrivals and early morning departures from all over the United States and the world. Despite the rapid automation of the actual mail sorting process, that has led to thousands of workers moving to casual contracts, the growth of indirect employment has continued to outstrip the rest of the region.<sup>37</sup>

By betting on the new industry of express freight, Abramson backed the right horse. He served three terms as mayor of the city itself, then won a landslide of 73.4 per cent in 2002 to become the first mayor of the greater Louisville Metro area before going on to become Lieutenant Governor of Kentucky in 2003. Credited with turning the city's fortunes around, Abramson was named Kentucky's Best Civic Figure five times between 2002 and 2006 by readers of *Kentucky Monthly* magazine.<sup>38</sup>

The history of Louisville and its erstwhile rival, Memphis, Tennessee (where FedEx has its World Hub distribution centre) is not lost on today's lawmakers. In 2017 a total of 238 proposals from 54 US states, Canadian provinces and Mexican states, were put forward in a bid to house the second headquarters and logistics centre of the world's second most valuable company, global ecommerce behemoth, Amazon.<sup>39</sup> Amazon has down selected the expressions of interest to 20 possible locations and is talking to city governments over incentive packages. The prize at stake is investment by Amazon of more than US\$5 billion in construction and the creation of around 50,000 direct warehousing and logistics jobs paying at least \$100,000 per year.<sup>40</sup>

Back in 1998, the economic impact of having UPS remain in the Louisville area was not as clear as it is today — as evidenced in the overwhelming interest in hosting Amazon's second headquarters. But around the world the growth of express freight and its associated industries are a shining example of twenty-first century globalisation.

## Airports as drivers of economic activity

Airports are often claimed as drivers of economic activity. But most analysis of the relationship between economic growth and air passenger growth has focused on higher income parts of the world. Many concluded that airport development was the root cause of economic growth. However, a recent study by Md Mahbulul Hakim and Dr Rico Merkert looked specifically at lower income countries in the Indian subcontinent where there was economic growth but inconsistent airport development. Unlike previous papers, Hakim and Merkert concluded that economic growth flowed on to air passenger traffic and also on to air freight activity.<sup>41</sup>

The relationship between airports and job creation is understood well in terms of direct and indirect terms, but less clear in the flow-on benefits to jobs in associated industries. Employment with an airline or within the airport itself can be measured easily. So too can the indirect impacts of the airport to employment by its suppliers or through passenger expenditure on transport, dining and accommodation.

In the widest reaching study of the economic impact of air transport in the United States, the Federal Aviation Administration found that the 485 commercial airports in the United States generated US\$1.5 trillion in economic activity at the national level in 2012 through direct, indirect and induced spending, accounting for 5.4 per cent of GDP.<sup>42</sup>

**Table 3: Economic impact of commercial airports in the United States (2013)**

	Employees	Economic output
On-airport activity (direct)	1,179,170	US\$256.6b
Capital works (indirect)	50,750	US\$12.2b
Visitor economy (induced)	4,075,430	US\$228.1b
<b>Total</b>	<b>5,305,350</b>	<b>US\$496.9b</b>

Source: CDM Smith and IMPLAN (July 2014)

**Table 4: Economic impact of civil aviation – top 10 US states by % of GDP (2012)**

State	Contribution to GDP (%)
Hawaii	17.9
Nevada	12.1
Arizona	7.9
Alaska	7.5
Florida	7.2
Washington	6.7
Colorado	6.2
Georgia	5.7
Utah	5.6
California	4.7

Source: Federal Aviation Administration

To break this down, the almost 1.2 million jobs had a payroll of more than US\$72 billion in 2013, equating to an economic output of US\$257 billion. But add to this the 50,000 construction workers employed on capital projects at airports that contributed more than US\$12 billion in indirect economic activity and the four million jobs associated with visitors passing through the airports that added a further US\$228 billion in expenditure and you reach some US\$500 billion.<sup>43</sup>

The induced economic impact of air transport can be most closely observed in leisure-dependent destinations, such as Hawaii and Nevada, where civil aviation makes up 17.9 per cent and 12.1 per cent of state domestic product respectively.

Yet airports have further impacts on their regional economy, through the recirculation of money from these direct, indirect and induced impacts. This fourth impact — or catalytic impact — is subject to more debate. To what extent do airports act as a driver of productivity growth or as an attractor of new firms.<sup>44</sup> A 2014 study for the North American arm of the Airports Council International trade body estimated that a multiplier effect could add as much as US\$638 billion in catalytic economic impact to airport activity.

More recent analysis by the Massachusetts Institute for Technology unpicks this catalytic impact of airports. It suggests that air transport's role in enabling trade has been underestimated.<sup>45</sup> Justin Stilwell and John Hansman expanded the FAA's study to show that the enabling impacts of aviation connectivity are to drive greater economic activity, creating the potential for productivity and quality of life improvements. This, in turn, creates greater economic activity that generates an increased need for transportation of goods and people.

When the employment patterns around major US airports were analysed further by one of the world's most prominent thinkers on airport cities, Dr John Kasarda, and his colleague, Stephen Appold, they reported high levels of job concentration within 4 km (2.5 mi) of the airport — around half the level of concentration of jobs found in a corresponding radius around traditional 'downtown' centres, and far greater than traditional industrial areas. But in the 80 aerotropolises analysed, the job concentration levels were closer to 60 per cent of those of downtowns, as

office blocks and higher-density employment centres are introduced.<sup>46</sup>

In 2009, approximately 3.1 million jobs were located within the 4 km radius of the largest 25 airports in the United States. At the 8 km (5 mi) radius, this figure jumped to 7.5 million jobs, and expanding to 16.5 km (10 mi) meant 19 million jobs, or some 17.2 per cent of all US employment.

Breaking down these figures further, Stilwell and Hansman found that the half million people directly employed by an airport operator were dwarfed by the 5.5 million other on-airport workers, who were employed by tenants such as car rental companies, government border agencies or airport retailers. A further 2.7 million worked in some capacity for airlines, while more than a million worked in civil aerospace and 250,000 for air traffic navigation service providers.<sup>47</sup>

Yet it is the flow-on effects of connectivity for goods and people that cities are really trying to capture when embracing aerotropolises. This is a far harder metric at which to arrive.



## CASE STUDY



# The Dulles Technology Corridor

The fear for many new-build airports is becoming a white elephant. The globe is littered with architectural marvels of terminal design, often the vanity projects of politicians commissioned in times of economic boom, sitting idle in leaner times.

For a decade after its opening in 1962, the Eero Saarinen-designed terminal at Dulles International Airport (IAD), in Fairfax County, Virginia looked like it too was destined to be a rare US entry into this infamous club of underused, remote airports. Lying some 42 km (26 mi) west of downtown Washington, DC, it was viewed as an irrelevant folly in the early 1960s.

But the US federal government used a carrot and stick approach to growing the airport it had handsomely financed. Firstly, authorities introduced a series of successive noise abatement policies at the downtown Washington National Airport (DCA, now Reagan National). The combination of perimeter tightening, take-off slot restrictions and a ban on early era jet aircraft, effectively shifted the bulk of international and interstate aircraft to Dulles by the early 1970s.

But in parallel, the development of Fairfax County as a place to do business started to take off. It was the defence industry that led the charge. During the Vietnam War, defence spending as a percentage of gross national product reached an all time high.<sup>48</sup> Of all the spending, it was military aircraft that took the largest proportion of Department of Defence (DoD) funding both for research and development and for procurement. Yet many of the aerospace companies supplying the DoD were based on the West Coast with McDonnell Douglas in Long Beach, California, and Boeing in Seattle, Washington.

Noise abatement policies banned the transcontinental jets used to ferry West Coast aerospace executives from Washington National Airport (DCA) in the 1970s, making Dulles the west coast airport for DC. Direct flights from more US domestic cities grew, followed by airport hotels and serviced office space. In what was then revolutionary infrastructure planning, the Dulles Toll Road freeway lanes servicing the airport from downtown DC were separated from the Dulles Access Road lanes servicing local traffic. This made location alongside the 22 km (14 mi) Dulles Access Road prime real estate.

Defence companies were followed by aerospace satellite manufacturers. Associated businesses, like consultancies, accountancy firms and contractors

followed, sparking a construction boom in the 1980s and 1990s. Due to early adoption and heavy use among the defence communities, Fairfax and neighbouring Loudoun county also became the internet capitals of the United States. Until the late 1990s, the mainframe with the master list of every single internet domain name was located in Loudoun, while some 50 per cent of the world's internet traffic flowed through data centres in the Dulles corridor in the early 2000s.

By the time the Metropolitan Washington Airports Authority (MWAA) was formed in 1987 to take over control of both Dulles and National airports from the federal government,<sup>49</sup> Dulles had become a city in and of itself. Today, the headquarters of the United States' fourth and fifth largest defence contractors,<sup>50</sup> General Dynamics and Northrop Grumman, are both in the Dulles corridor town of West Falls Church, Virginia. While the world's largest defence contractor Lockheed Martin is based close by in Bethesda, Maryland.

Today Fairfax and Loudoun are the two most affluent counties in the United States.<sup>51</sup> The Dulles Corridor, as it has been baptised, is now packed with tens of thousands of homes as well as shopping malls that service them. But mostly it is a corridor of office blocks housing the world's largest companies. The Dulles Corridor contains more Class A office and retail space than does downtown Washington, DC itself.<sup>52</sup> In addition to US tech giants like Unisys, IBM and Oracle, the region around Dulles is the US base for around 400 foreign firms, including Volkswagen and Rolls-Royce.

The draw card is twofold: being close to government decision makers in the United States, but also access to a major international airport where executives can be on the US west coast or Europe within hours of leaving their office.<sup>53</sup>

Although Dulles wasn't entirely planned as an aerotropolis, it is the happy combination of ambitious urban planning and fortunate geography. It is, in many ways, an accidental aerotropolis, says Dr Kasarda.<sup>54</sup>

# A history of US trade by air and the growth of logistics

May 10, 1869 was an auspicious day for California. But the attention was on Promontory in northern Utah, where the California governor, Leland Stanford, travelled to witness the joining of the two railway tracks that linked his state with the prosperous US northeast.<sup>55</sup> At that time, the United States was already an enthusiastic embracer of railway construction. By 1860, there was almost 50,000 km (31,000 mi) of track across the country, more than in the rest of the world put together.<sup>56</sup> But the construction of the Transcontinental Railroad is credited by some economic historians as the single most important moment in the history of the development of the west.<sup>57</sup>

The track made the almost 5,000 km (3,100 mi) journey from east to west of continental United States a matter of days, not weeks by the horse and cart it replaced. In one direction migrants flowed, drawn initially by the goldfields, and in the other the supply of raw materials for the factories of the east.

If we look for parallels in the internet age, the establishment of air operations by Federal Express in April 1973 could be a breakthrough moment. On its first night FedEx delivered just 186 packages to 25 US cities from its base in Memphis, Tennessee.<sup>58</sup> Today the same airport is home to the FedEx World Hub, a distribution centre sprawling 3.5 square kilometres (850 acres) and processing more than 1.4 million packages a night.

FedEx and its two principal rivals, UPS and DHL, have their origins in the Postal Reorganization Act of 1970 that allowed private couriers to operate in US cities for the delivery of parcels. In 1977 a deregulation of the air cargo industry allowed them to join together city distribution networks by air.<sup>59</sup>

But although an already thriving business model by the 1990s, it was the internet and the establishment of just-in-time delivery that changed the course of global economics. Without express freight there would be no ecommerce. But more crucially, the delivery of time-critical inventory is essential to the functioning of today's manufacturing supply chains. The boom of personal computers in the 1990s and early 2000s,

**Table 5: Economic impact of air couriers – top 5 US states (2012)**

State	Economic impact
Tennessee	US\$11.2b
California	US\$6.7b
Kentucky	US\$5.6b
Texas	US\$4.2b
Indiana	US\$2.8b

Source: Federal Aviation Administration

for example, was only made possible by the disparate inventories held in warehouses across the world coming together on an assembly line within hours of an order being received. Computers customised to a customer's specific configuration and dispatched within a week became the norm thanks to express freight.<sup>60</sup>

What the express delivery industry has done is also raise the value of trade. Although more than 90 per cent of trade is delivered via ship, the eight per cent that flies by air is the most valuable cargo.<sup>61</sup> In the 30 years to 2006, global GDP rose 154 percent, but world trade grew by 355 per cent. In this time, the value of the air cargo industry grew by 1,400 per cent. Since then, despite the global economic crisis, the value of goods transported by air has continued to grow. Today some 40 per cent of the total economic value of all goods produced in the world is shipped by air but only one percent of the total weight.<sup>62</sup> In the United States, this figure is higher: more than half of all US exports fly out of the country, unlike countries who are dependent on exporting heavy raw materials or manufactured products.<sup>63</sup> Some US\$682.8 billion worth of goods was exported from the United States in air freight in 2016, with US\$114 billion of this exported from California alone.<sup>64</sup>

The interconnectedness of our lives depends not only on the human traffic through airports, but on the mass consumerism that the air cargo industry delivers.



The concept of transnationalism, of consumer goods beyond national borders is as relevant as ever.<sup>65</sup>

Express freight is the driver of this post-industrial, value-added economy. Supply chain dependent finished product tends to be shipped via air. This includes consumer electronics, pharmaceuticals, medical devices, as well as high-grade seafood and fresh produce. Almost everything consumers order on the internet comes by air and half of all the high-value products in stores travels by air.<sup>66</sup>

So, even as computer products have reduced in the air cargo value chain, chiefly due to a reduction in size and weight, their place in aircraft belly holds has been replaced by high-value seasonal produce and consumer items procured online.<sup>67</sup>

It is the delivery of parts and product that has transformed Shelby in Memphis into the county in the United States with the highest concentration of shipping and logistics workers, with almost 14 times as many as the US national average.<sup>68</sup> It is estimated that something like one in every four jobs in the Memphis area can be attributed to FedEx's presence, which is why the Tennessee government has continued to offer generous rent tax breaks and co-investment in airport infrastructure projects.<sup>69</sup>

Yet, although 11 April 1973 could be considered the birth of the modern global logistics system, Memphis almost missed out on this economic boom. FedEx founder Fred Smith initially looked at two other locations when moving from Little Rock, Arkansas: the Smyrna Airport (MQY) in Nashville and Shreveport Airport (SHV) in Louisiana. The Memphis city government at that time was looking for a cargo airline tenant to make

use of the new 2,850 m (9,000 ft) runway it had built. A staged loan of US\$6 million was offered to Smith, whose hometown was Memphis, in a gamble on the then-nascent industry. It was a bet that paid off and is credited with Memphis's economic revival of the late twentieth century.<sup>70</sup>

As FedEx invests in facilities around the world (its largest hub is now in Hong Kong), current Tennessee governor, Bill Haslam, makes sure the company doesn't feel taken for granted. At a recent ceremony to announce a further US\$1 billion modernisation of its global headquarters at Memphis airport (the FedEx Memphis World Hub), Haslam said the industry had totally transformed the city over the past 40 years. The city's former claim to fame, Elvis Presley, died just as the company was setting up shop.



Inside the FedEx Memphis, Tennessee, Headquarters and World Hub  
Photo: Getty



## CASE STUDY

# Southwest Airlines' use of secondary airports



The hub-and-spoke system of air transport, where dozens of flights arrive within an hour of each other in a connector airport, has been the defining model in the United States for many decades. Atlanta (ATL), Dallas/Fort Worth (DFW) and Houston's George Bush Intercontinental Airport (IAH) are among the busiest in the world due largely to the volume of transferring passengers they receive as hubs for American Airlines, Delta Air Lines and United Airlines, respectively.

In contrast, Australian capital city airports tend to offer connections from within their state on to international or domestic flights, but cannot be considered true hub airports in the accepted definition.

Smaller cities benefit too. On a per capita of population basis, Charlotte Douglas International Airport (CLT) in North Carolina is the busiest in the country, due to having been a hub for former US regional airline, US Airways, now merged with American Airlines. Millions of passengers pass through its airport without ever setting foot in (or spending money in) the city. However, thousands of airport jobs rely on the transiting nature of these passengers.<sup>71</sup>

Conversely, McCarran International Airport (LAS) in Las Vegas, Nevada and Florida's Orlando International Airport (ORL) are both in the top ten busiest airports in the country, without having much transfer traffic. This is due to the popularity of both airports as a leisure destination. Both cities have benefitted not from

hub-and-spoke traffic, but from point-to-point flights, much of which is offered at low prices.

The model of low-cost carriers, as we know them today, was pioneered by small Texan carrier Southwest Airlines in the 1970s. Today, Southwest is one of the largest low-cost carriers in the world. Although it now flies to major airports as well, Southwest's early use of secondary airports within major metropolitan areas is of most note.

Southwest, which today has more than 700 Boeing 737 Next Generation narrow bodies in its fleet, flies to 100 destinations, almost exclusively within the United States. Yet half of its ten most popular destinations are secondary airports. In Chicago, for example, the airline has almost 260 departures per day from Midway International Airport (MDW), located 13 km (8 mi) from the city's central business district, rather than Chicago's main airport at O'Hare International Airport (ORD). For Washington, DC, Southwest services 64 destinations from its base at Baltimore Washington International Airport (BWI), some 53 km (32.5 mi) from downtown.

Southwest's corporate headquarters are at Dallas Love Field Airport (DAL), which was the Texan city's main airport before Dallas/Fort Worth International Airport (DFW) opened in 1974. At that time, official US federal government policy was to close both Love Field and Greater Southwest Airport (GSW) in Fort Worth to consolidate air traffic for north Texas

at DFW.<sup>72</sup> Airlines serving either airport signed agreements that they would not continue operating at the two original airports. But Southwest, which only operated services between Dallas and the state's south-western cities, Houston and San Antonio, saw commercial advantage in continuing its commuter services from Love Field, which is only 10 km (6 mi) from the city centre. In 1973 it successfully sued the City of Dallas for the right to remain.<sup>73</sup> Just one year later, the fledgling airline became profitable and has remained so to this day.<sup>74</sup>

Southwest's business model of offering point-to-point services only, with no connections available, was also a product of government policy. Originally permitted under state transport laws only to operate services to Texas's neighbouring states of Arkansas, Oklahoma, Louisiana and New Mexico, the airline capitalised on the growing leisure popularity of New Orleans. The airline was also prohibited from servicing or ticketing through to beyond points.

The game changer was the opening up of broad interstate air traffic in 1978. The Airline Deregulation Act is widely considered the most important piece of aviation lawmaking in US history.<sup>75</sup> Although major airlines secured restrictions around the transfer of connecting passengers, Southwest turned this into a key plank of its business model. The airline typically offers 8-10 point-to-point routes from each airport it serves, allowing it to spread the operations cost across the day.<sup>76</sup>

Although those secondary airports that feature in Southwest's top ten are often more convenient than

the large international hubs with which they compete in each city, others are further out. For example, Long Island MacArthur Airport (ISP) in Islip, New York is an alternate for Southwest passengers travelling to New York City, despite being almost 100 km (62 mi) from Manhattan. Similarly, Ontario International Airport (ONT) is used by passengers living in the San Bernadino valley area of greater Los Angeles, being around 88 km (55 mi) closer than LAX.

The motivator here is often price. By 1998, after 30 years of deregulated air traffic, airfares across the United States are estimated to have dropped by around US\$13 billion (in year 2000 dollars).<sup>77</sup> Southwest alone was considered responsible for 53 per cent of the fare reductions attributed to airline deregulation. The presence of Southwest on a route was found to lowers fares by an estimated 46.2 per cent over the 1978-1998 period.<sup>78</sup>

This leisure traffic brings with it jobs. According to the Airports Council International, the rule of thumb is that every one million passengers that travel through an airport results in 1,000 jobs at the airport and another 2,700 in the local and regional area. According to the FAA, commercial airline visitor expenditures contributed US\$671 billion to the national economy and supported nearly six million jobs in 2012.<sup>79</sup> Airports in places such as Oakland, California (OAK), have dedicated terminals to Southwest, often funded in part or in whole by municipal governments. Although the FAA prohibits direct airline attraction funding, there are landing fee negotiations and destination marketing assistance to promote the airport to new passengers.

**Table 6: Southwest Airlines' top 10 served cities (as of 15 January 2018)**

City	Airport	IATA code	Distance to downtown	Daily Southwest departures	Number of gates	Cities served nonstop	Service began
Chicago, IL	Chicago Midway International Airport	MDW	13km	259	32	69	1985
Washington, DC	Baltimore/Washington International Airport	BWI	51km	227	32	64	1993
Las Vegas, NV	Las Vegas Municipal Airport	LVS	8km	219	24	57	1982
Denver, CO	Denver International Airport	DEN	37km	208	24	64	2006
Phoenix, AZ	Phoenix Sky Harbor International Airport	PHX	5km	189	24	53	1982
Orlando, FL	Orlando International Airport	MCO	10km	186	20	54	1996
Dallas, TX	Dallas Love Field	DAL	10km	180	18	57	1971
Houston, TX	William P. Hobby Airport	HOU	11km	168	25	57	1971
Los Angeles, CA	Los Angeles International Airport	LAX	30km	129	15	31	1982
San Francisco, CA	Oakland International Airport	OAK	32km	126	15	32	1989

Source: Southwest Airlines

## Growth of non-aeronautical industries adjacent to US airports

If airports benefit the entire community, there are certain industries with a much higher concentration around airports than others. Although air transport service industries (such as petrol stations, catering companies and baggage storage) tend to be within 6 km (4 mi) of an airport, it is the establishment of permanent offices of attracted industries that is most important to its economic development. These are companies drawn to the access an airport brings, but located close to the main arterial roads leading to it rather than inside its actual footprint.<sup>80</sup>

Many of those choosing to be close to major airports are those with travelling staff with a high propensity to fly. For example, two-thirds of US company headquarters<sup>81</sup> are within 30 km (20 mi) of a hub airport. This compares with under one-third of public utilities.<sup>82</sup>

High-growth services sectors of the economy are those with the greatest propensity to purchase airline tickets, rather than manufacturers of goods. Air transport accounted for some 66 per cent of all transport costs booked by information technology companies,<sup>83</sup> but only 12 per cent of those engaged in farming and

fishing.<sup>84</sup> Similarly, factories and industrial facilities in the United States are twice as likely to be located outside proximity to airports as service companies.<sup>85</sup>

Other industry sectors with a higher-than-average propensity to cluster around major hub airports include: professional services, educational services, wholesalers, researchers, real estate agents and office administrators.<sup>86</sup>

In the United States, the real estate surrounding an airport is often — although not exclusively — owned by the airport operator, often a state or municipal government entity. In many cases, this gives government an unprecedented hand in urban use planning and economic development. Take Dallas/Fort Worth International Airport (DFW) in Texas. It is one of the most advanced when it comes to filling the land around the airport with offices. As a greenfield site, DFW had some 25 square kilometres (6,000 acres) of land available for commercial development.<sup>87</sup> Furthermore, the economic development zone of Las Colinas, just east of the airport, is now a central business district in and of itself, with the headquarters of nine Fortune 1000 companies.



Dallas Area Rapid  
Transit trains  
Photo: Getty

For international businesses operating in the Dallas area, the global connections offered by American Airlines (AA) from DFW are the single most important factor in locating close to the airport. AA is part of the OneWorld airline alliance, meaning prestige carriers including Australia's Qantas, the UK's British Airways, and Qatar Airways are among the airlines to service 57 international destinations from Dallas. A further 159 domestic destinations were served as of March 2018.

This kind of connectivity matters in today's digital age. Although financial services firm Goldman Sachs recently vacated its offices in Las Colinas to be closer to its clients in downtown Dallas, its space was taken by global research and advisory leader Gartner. Gartner is typical of the digital services companies that prize connectivity for its staff above other considerations. Access to the Dallas Area Rapid Transit commuter train line is a key consideration for new tenants, a factor relatively new in US cities.<sup>88</sup> Residential dwelling is also growing in Las Colinas, with apartment blocks and a new entertainment centre aimed at widening the appeal to families.

A similar story can be told in Colorado. Denver International Airport (DEN) is the sixth-busiest airport in the country and also in the top 20 for international direct flights. Although considered part of the west, its Rocky Mountain location places the city strategically near the geographic centre of the United States, albeit with closer flight times to Asia and the north-west than Midwest cities.

Although it promotes its lifestyle and public transport, the city government has also made attracting international airlines a priority for more than a decade, in acknowledgment that global connections are crucial to keeping knowledge-based workers in the city.

It appears to have worked. The metropolitan Denver region ranked third in the United States for fostering entrepreneurs, with 360 people out of 100,000 adults becoming entrepreneurs each month.<sup>89</sup> Denver has good universities with specialised faculties, such as the University of Colorado in nearby Boulder, where the aerospace engineering sciences graduate program is ranked among the top four such curricula in the

country. Many students stay and, as a result, Colorado has the second-largest aerospace economy (behind California) in the United States, with 25,500 workers engaged in aerospace or defence.<sup>90</sup>

Another major industry starting to cluster around US airports is the visitor economy. Airport hotels, long the preserve of passengers with overnight connections, started to transform into business meeting venues in their own right. This was spurred on by the underperformance of US airport hotels relative to downtown hotels, with an average revenue per available room (RevPAR) some US\$6.70-\$9.30 lower than at hotels in city centres.<sup>91</sup> Yet hotels close to newly expanded or constructed convention centres recorded RevPAR growth of around 2.2 per cent per year (against an average increase of 0.4 per cent per year when no expansion occurred).<sup>92</sup> This led US cities to invest in convention infrastructure, with a 50 per cent increase in convention space in the United States over the last 20 years.<sup>93</sup>

Cities served by airports with a high number of domestic connections tend to be most suited to attracting large-scale conventions and in today's time-pressured business environment, many delegates would forego the restaurants and entertainment precincts of downtown for more fly-in, fly-out meetings. Twenty per cent of conference organisers cited proximity to the airport as the single most important factor in choosing a convention destination.<sup>94</sup>

This has led to a new trend of cities constructing convention centres adjacent to or very close to airports. For example, despite downtown Atlanta being home to the Georgia World Congress Center, a 360,000 square metre (3.9 million sq ft) convention and exhibition centre, the city has a second major events venue in the Georgia International Convention Center (GICC). The GICC is within the footprint of the world's busiest airport, Hartsfield-Jackson Atlanta International Airport (ATL), and has its own stop on the airport section of the Metropolitan Atlanta Rapid Transit Authority.<sup>95</sup> Opinion is divided, however, as to whether convention centres competing within one city will be sustainable in the long term.<sup>96</sup>

# The cultural shift in travel patterns around US airports

The twenty-first century is one built by ideas. Human talent and the flows of capital are as important as the mercantile trade of the nineteenth century. Those airports that are best connected, that allow their inhabitants to travel freely to other parts of the country and the world, that enable the exchange of ideas are those whose cities will prosper.

Just as people clustered around harbours in the eighteenth century, so too did cities form inland around train terminuses in the nineteenth century and around

well-connected road systems in the twentieth. What had previously stopped people clustering around airports was noise.<sup>97</sup>

As jet aircraft took over from turbines and turboprops in the 1960s and 1970s, airports needed to be located away from residential areas. But today's modern aircraft are 75 per cent quieter than the first jet aircraft of the 1960s and half as loud as

those operating 20 years ago. The use of composite materials, advanced engine technology and new air traffic navigation procedures have all contributed to a massive reduction in perceived aircraft noise around airports. For example, aircraft noise levels of 80dB (equivalent to the noise experienced at a typical street intersection) is now only usually heard within airport perimeters for aircraft such as the Airbus A350-XWB (introduced in 2013) or the Boeing 787-9 Dreamliner (introduced in 2009).<sup>98</sup>

This has led a move to build residential dwellings closer to airports than ever before. People fundamentally want to live close to where they work. This was first proved by the transportation analyst and engineer Yacob Zehavi who posited that, despite the construction of freeways, the most people would ever commute was one-hour in each direction.<sup>99</sup> The Italian physicist

Cesare Marchetti took this work further and found the optimal commute was closer to 30 minutes.<sup>100</sup>

In the United States, Marchetti's Law appears to apply. Despite the growth in city populations, commute times remained stable in US metropolitan areas in the three decades from 1980 to 2010, at around 23 minutes each way.<sup>101</sup>

In the age of air travel, this law can be extended to propensity towards air travel. Social media, rather than replace face-to-face meetings, actually stimulates it. Rather than forget about an old classmate, colleague or relative overseas or interstate, there is now more likelihood of taking a trip, detour or stopover to meet that person face to face.<sup>102</sup> This stimulatory effect also holds true for virtual meeting technology. Rather than replace meetings, video conferencing merely adds a layer of pre-meeting screening to sort the essential from the non-essential work travel.

The other, softer factor relevant in air travel is the aspirational nature. Despite the delays experienced in domestic travel, international air travel is still emblematic of the globalisation and cosmopolitisation of modern life.<sup>103</sup> Take, for example, the bible of the urbane urbanite, *Monocle* magazine. In its annual Quality of Life index, it places a premium on international air connectivity. Despite the fact that in the United States, only Portland, Oregon makes it into the global list of 25 most liveable cities, US cities do score highly for the domestic and international air connectivity of cities (but crime levels, lack of public transport, expensive health care and wage disparity drag them down the rankings).<sup>104</sup>

Modern aircraft are 75 per cent quieter than the first jet aircraft of the 1960s and half as loud as those operating 20 years ago. The use of composite materials, advanced engine technology and new air traffic navigation procedures have all contributed to a massive reduction in perceived aircraft noise around airports.



## CASE STUDY

# Chicago O'Hare employment hub

Richard J Daley, mayor of Chicago for two decades from the mid-1950s, was labelled as “napoleonic” by the jazz poet Gil Scott-Heron.<sup>105</sup> Like the French imperial leader, Daley left thousands of impressive infrastructure projects as his legacy. Daley understood the job creation (and thus voter popularity) potential of infrastructure building.

None has left more of an impact on Chicago than O'Hare International Airport (ORD).<sup>106</sup> For most of the second half of the twentieth century, the airport was the busiest by passenger numbers in the world.<sup>107</sup> Daley saw early on the decline happening in mid-western United States with the slowdown of the railroad system. And while Detroit flourished off the back of automotive production, Chicago instead bet on air travel.

Opened in 1944 on the back of military aircraft production, it was renamed Orchard Field Airport at the end of World War II but remained dominated by the US Air Force until the late 1950s. Chicago's Midway Airport (MDW), only 13 km (8 mi) from downtown Chicago, was already the world's busiest airport by the 1950s and airlines were reluctant to move to O'Hare, some 27 km (17 mi) north-west of The Loop central business district.<sup>108</sup>

Daley's government allocated as much as US\$15 billion (and potentially double that allowing for contractor commissions) into O'Hare, essentially to sure up construction jobs. The international terminal opened in 1958, followed by two domestic terminals a year later and a six-lane freeway in 1960.<sup>109</sup>

The Chicago city government, in concert with the federal and Illinois governments, used a series of levers, incentives and prohibitions to move commercial aviation traffic from Midway to O'Hare and by 1962, the last commercial airline service for almost a decade left Midway.<sup>110</sup>

The transformation was complete and O'Hare took Midway's mantle as busiest airport. But the connectivity that the integrated airport and its then-unique runway system provided airlines led to rapid growth in services. Chicago's position in the centre of the country allowed it to connect dozens of points on each coast without a stopover. O'Hare was in many ways the first hub airport as we know them today. It remains the United States' best internationally-connected airport, with 295 foreign destinations served.<sup>111</sup>

What these connections bring is visitors. Many stay overnight in airport hotels or fly in for meetings and conferences. The suburb surrounding O'Hare, Rosemont, has more hotel rooms than people and more office space than homes. Cook County, in which Rosemont sits, is a bigger business district than Midwest cities such as Milwaukee, Wisconsin or Detroit, Michigan. Facilities in Rosemont include a convention centre, sports arena and stadium that have been built due to the interstate air connectivity and abundant hotel room stock.<sup>112</sup>

Today Chicago is a tale of two cities. There are 500,000 jobs in and around O'Hare and some 400,000 in The Loop. As Downtown Chicago contracts in job numbers, Rosemont continues to grow.<sup>113</sup> Daley's son, Richard M. Daley, surpassed his father's tenure as mayor of Chicago, but it has taken another ambitious politician, current mayor Rahm Emanuel, to invest as heavily as Daley Snr. With an eye to the international mega hubs of the Middle East, Chicago's City Council approved a further US\$8.5 billion expansion plan to modernise the O'Hare International Airport in early 2018.<sup>114</sup>

The political power of the airport is still alive and well in Illinois. The expenditure on the modernisation plan was considered as a way to kill off the plan for a third airport in Chicago's southside, championed by congressman Jesse Jackson Jr. who saw the massive job creation potential for his maligned Second Congressional District.<sup>115</sup>

# Opportunities for Australia

Comparing the United States with Australia is not straightforward. The continental United States constitutes an internal market of 305 million people,<sup>116</sup> swelling to more than 480 million consumers including the North American Free Trade Area countries of Canada and Mexico. Australia, by contrast has a population of just over 24.9 million people,<sup>117</sup> which can be augmented by 4.9 million New Zealanders<sup>118</sup> in some aspects of free movement and trade.

In the field of airport economics, it is also a very different landscape. Australia not only has a small population base, but its airports are largely in private

With all eyes now on the form and function that the new Western Sydney Airport in Badgerys Creek will take, there are some lessons from successful airport cities in the United States as the planning phase enters its crucial stages.

hands (with the notable exception of some large regional airports owned by local councils). It would be misleading to draw too many direct comparisons between the United States and Australia.

However, with all eyes now on the form and function that the new Western Sydney Airport in Badgerys

Creek will take, there are some lessons from successful airport cities in the United States as the planning phase enters its crucial stages.

Having seen Sydney Airport Corporation refuse the rights to develop and operate the new greenfield terminal, the federal government has taken up the mantle. The stated ambition by the Australian, state and local governments is to create an aerotropolis around the new facility, which will later be sold to a private entity. There is a twin consideration by the government to both create employment around the site, but also to create value in the asset ahead of a future sale.

Looking at the US examples outlined in this paper, it is possible to draw some conclusions about the path these Australian governments should tread if they are to emulate any of the experiences of US cities in using airports as economic drivers. Possibly due to the report on Western Sydney commissioned from Dr Kasarda by the NSW Business Chamber, many involved in the public debate employ the term aerotropolis to describe

the potential for a high level of economic activity surrounding the new airport. Dallas-Fort Worth is cited as a comparable case study, as Fort Worth has become part of the Dallas metropolitan area as a result of the economic activity surrounding the airport precinct.<sup>119</sup>

However, as outlined here, there are some fundamental structural differences between the US air transport landscape and that found in Australia. In addition to the challenge faced by a smaller population base, Australia also faces challenges in achieving the critical mass required for efficient air freight.<sup>120</sup> Furthermore, some of the industries targeted for growth in the airport precinct — notably defence aerospace — rely on supply chains and prime manufacturing capabilities that do not exist in Australia.

Despite these considerations, there are a number of recommendations that government should heed in ensuring that Western Sydney Airport is able to achieve its maximum economic potential.

## 1. Allow Western Sydney Airport to compete on landing charges

Population matters when it comes to sustainable airline services. The larger the metropolitan area, the greater number of city-pairs that can be produced, allowing airline economies of scale and operational efficiencies.<sup>121</sup>

In the United States there are more than 300 cities with populations greater than 100,000 — often considered the benchmark for sustainable air transport services. Add in some 32 large metropolitan areas in southern Canada<sup>122</sup> and you have a highly competitive air transport market. This has often led to larger US cities having secondary airports to serve distinct geographies within the metropolitan area.<sup>123</sup> By the early 2000s, 16 metropolitan areas in the United States had two competing airports.

By contrast, the combined market of 30 million people in Australasia live in fewer than 17 cities in Australia larger than 100,000 inhabitants.<sup>124</sup> Even adding the five large cities in New Zealand<sup>125</sup> together with Noumea,



**Table 7: Busiest airports in the United States by passenger numbers (2016)**

US rank	Global rank	Location	Airport	IATA code	Passengers
1	1	Atlanta, GA	Hartsfield-Jackson Atlanta International Airport	ATL	104,171,935
2	4	Los Angeles, CA	Los Angeles International Airport	LAX	80,921,527
3	6	Chicago, IL	Chicago O'Hare International Airport	ORD	77,960,588
4	11	Dallas, TX	Dallas/Fort Worth International Airport	DFW	65,670,697
5	16	New York, NY	John F. Kennedy International Airport	JFK	59,105,513

**Table 8: Busiest airports in Australia by passenger numbers (2016)**

Australia rank	Global rank	Location	Airport	IATA code	Passengers
1	42	Sydney, NSW	Sydney Airport	SYD	42,600,308
2	-	Melbourne, VIC	Melbourne Airport	MEL	34,877,506
3	-	Brisbane, QLD	Brisbane Airport	BNE	22,652,864
4	-	Perth, WA	Perth Airport	PER	12,453,357
5	-	Adelaide, SA	Adelaide Airport	ADL	7,999,380

Sources: ACI Annual Traffic — Passenger (Final) 2016; Bureau of Infrastructure, Transport and Regional Economics  
 (Note: Global rank only available for top 50)

the capital of the French special collectivity of New Caledonia,<sup>126</sup> there are still only 23 cities larger than 100,000 inhabitants in highly developed economies within four hours' flight time of Sydney.

Of the eight criteria established by the Australian government as desirable in a secondary airport (such as an established destination brand and a good demographic mix), population catchment size is seen as most crucial.<sup>127</sup> Thus, until now, only Brisbane can have any claim to be a multi-airport system city, with the Gold Coast Airport (OOL), some 100 km (62 mi) to the south a secondary gateway to southeast Queensland.<sup>128</sup>

Looking at the United States, secondary airports succeed where they are the base for low-cost airlines and have a sufficiently large local population base to sustain several point-to-point air services. This is true of Gold Coast, with a population of around 600,000 and is true too of Western Sydney, with a population of almost two million by 2030.<sup>129</sup>

Yet there are some hurdles to jump first. In the United States, airports without hub traffic use airport fee reductions to entice low-cost carriers. Pittsburgh International Airport (PIT), for example, now charges airlines US\$2 less per passenger to use its facilities than in 2013, when it was still a secondary hub for US Airways.<sup>130</sup> When the carrier pulled out of the airport, city officials used airport charging to entice new carriers to serve the city. This is also possible because the Federal Aviation Administration only assesses air navigation charges for air traffic control services for flights that overfly the United States without landing. If they originate or land in any US airport, regardless of how much airspace they use, there are no air navigation charges.

By contrast, Australian airports often have less control over their aeronautical and terminal charges, which are either regulated by the Australian Competition and Consumer Commission or levied by air traffic

management and firefighting provider Airservices Australia, an Australian government-owned organisation.

This leaves less flexibility in charging regimes and can be seen as unfair on smaller airports with less international traffic, paying similar levies as major international airports. For example, Avalon Airport (AVV), near Geelong in Victoria, has struggled over the past 20 years to compete with Melbourne International Airport (MEL), despite generous state government underwriting of airline services.<sup>131</sup> Avalon Airport (AVV) argues its Airservices Australia defined terminal navigation charges are disproportionate considering the digitisation and centralisation of services between the two airports. The Australian government needs to consider the pricing and provision of firefighting and air traffic management services at Western Sydney Airport to ensure the new airport is able to competitively price its landing charges.

## 2. Build a multi-airport system that complements, not competes

The difference between the United States and Australia is the role of privatised companies in the operation of Australia's airport terminals. This has restricted the ability of governments to pursue new airport greenfield projects, as has happened in the United States.

For example, in many of the US cities with secondary airports, it was governments that forced the usage of purpose-built new terminals at the city's fringes in the 1970s and 1980s, ostensibly to protect city residents from aircraft noise. By concentrating services in the new megaterminals, airlines created the efficient hub-and-spoke airline system of the late twentieth century. Left without major carriers, many of the deserted downtown airports found new markets serving point-to-point traffic with commuter or low-cost carriers.

In many cases in the United States, the legislative hand of government has been used to force the movement of airline services from the once-dominant airport (see case study page 20). In Australia, the use of legislative instruments to artificially inflate air transport demand

at secondary airports has met with resistance from the lobbying efforts of existing airports<sup>132</sup> and the airline industry.<sup>133</sup>

History would also counsel against a heavy-handed approach by government in this regard. In Canada, federal and provincial authorities mandated the use of Montréal-Mirabel International Airport (YMX), 39 km (24 mi) north-west of central Montreal by all international airlines after its construction in 1975. Poor road and rail links and lack of connection with domestic flights contributed to passenger revolt and the eventual closure to passenger flights in 2004.<sup>134</sup>

However, the Australian government does not need to force carriers to move, as happened in the United States. Instead, as found by Bonnefoy and Hansman, congestion at existing airports is the biggest factor at determining success of secondary airports.<sup>135</sup> Sydney Airport (SYD) will be unable to meet aviation demand by around 2035,<sup>136</sup> although this is due in part to government-imposed operating restrictions at Sydney that include a movement cap of 20 take-offs or arrivals per 15 minutes, a night time curfew and a slot management regime.<sup>137</sup>

The Australian government appears unlikely to relax these operating restrictions, but should also resist imposing additional mechanisms to shift passenger traffic to Western Sydney Airport. Instead, existing capacity restraints will price newcomers and budget airlines west<sup>138</sup> as slots at Sydney cost more to acquire.

Yet more can be done explicitly by governments to ensure that Western Sydney Airport is attractive to international carriers, especially point-to-point low cost carriers from Asia. Many of these could be effectively priced out or slot constrained at Sydney Airport (SYD) and could find an alternative gateway in the west of the urban area attractive.

A key data point to consider is the percentage of residents of greater western Sydney either born overseas or with parents born outside Australia. In 2016, 33 per cent of people in the greater western Sydney region came from countries where English was not their first language.<sup>139</sup> India, China and Vietnam are the top three places of origin. With the growth in low-cost aviation in Asia continuing to outstrip Europe

and the United States, many secondary airlines are expected to start services to Western Sydney Airport due to its large pool of cost-sensitive air travellers keen to visit friends and relatives.

A parallel with the United States can be seen, with migrants returning to pay “kith and kin” visits to their home country becoming an important part of international air travel. Although the United States’ largest source of migration — Mexico — is predominantly served by inexpensive land transport, other countries making up the top four migration corridors for the United States result in more than 800,000 departures between the United States and China, more than 500,000 to India and 125,000 to the Philippines carrying either migrant workers or their family back and forth, according to World Bank figures.<sup>140</sup>

The same three nationalities also figure prominently in the flows of Australian travellers visiting friends and relatives. The advantage for Western Sydney Airport is that there are many dozens of secondary cities in China in particular with no direct air service to Australia. Of the one million Chinese nationals visiting Australia every year, some 163,100 are visiting friends and relatives in Australia.<sup>141</sup> A further 118,600 are attending higher education in Australia.

This would appear to point to an attractive market into which to launch low-cost carrier services to Asia from Western Sydney. But before this can happen, there are a range of measures that the Australian government must use to level the playing field between Sydney Kingsford Smith (SYD) and its erstwhile rival.

Australia’s secondary airports already have to clear two significant hurdles before opening up to international services. Firstly the capital outlay required to construct all the federally mandated border agency infrastructure is beyond the reach of most small airports. Secondly, new international airports have to pay an additional levy to the federal government for the provision of border services on top of the federal departure tax designed to fund such services. These combine to make new marginal services unfeasible.<sup>142</sup>

For Western Sydney, there could be a further barrier to jump. Avalon (AVV) will offer international air services

to Kuala Lumpur International Airport (KUL) from mid-2018, but only after the decision was taken by the Australian government to designate it a regional airport, rather than part of the greater Melbourne airport system under Australia’s system of bilateral air traffic rights treaties known as International Air Services Agreements.<sup>143</sup>

The distinction is important, for while the number of international flights from much of Asia to Australia’s four major gateway airports of Brisbane, Melbourne, Perth and Sydney is capped, access to regional airports is unlimited.<sup>144</sup> Prior to the decision to designate Avalon as a regional airport for international flights, airports within 100 km (62 mi) of the major gateway were also restricted.

Removing Avalon from the greater Melbourne airport system should provide the airport — some 62 km (40 mi) from Melbourne city centre — with an extra incentive to attract services from Asian territories including Malaysia, Hong Kong, Thailand, China and the Philippines where cap limits are close. This precedent needs to be applied equally to the new Western Sydney Airport.

More can be done explicitly by governments to ensure that Western Sydney Airport is attractive to international carriers, especially point-to-point low cost carriers from Asia.

### 3. Prize the value of 24-hour operations

The closest inhabited dwelling to the planned Western Sydney Airport is 10.5 km (6.5 mi) from the end of the runway. In Melbourne and Brisbane, this figure is 6.7 km (4 mi) and 4.4 km (3 mi) respectively and neither has significant impact on neighbouring communities. In contrast, runways at Sydney (SYD), Adelaide (ADL) and the Gold Coast (OOL) can be as little as 500 metres (1,640 ft) from people’s homes. This has led to operating restrictions being imposed on these three airports, notably an evening curfew.

In the United States, a more subtle approach to noise restrictions has been in place. Although some 25 international and 56 domestic airports across North

America are subject to some kind of night-time noise restriction,<sup>145</sup> in cities with multiple airports, one is usually permitted 24-hour operations. This is true in a multi-airport system like Los Angeles, where Los Angeles International (LAX) is curfew-free, but smaller airports such as John Wayne Airport (SNA) in Orange County have a curfew prohibiting departures from 10pm until 7am every day except Sundays, when it runs to 8am. Similarly, LaGuardia Airport (LGA) in New York City has a voluntary curfew between midnight and 6am, during which time airliners have to land at one of New York's six other commercial airports, usually John F. Kennedy International (JFK).

The JFK example also points to another piece of legislation used by US governments to move traffic from downtown airports to more remote airports. Formerly Idlewild Airport, JFK has a relatively large footprint within the New York Borough of Queens, allowing it to disrupt neighbours less than LaGuardia. So a perimeter limit was imposed on flights from LaGuardia, effectively banning transcontinental flights beyond Denver. In Washington Reagan/National Airport (DCA) similar rules apply. The airport there also has night-time flight restrictions. For example, the airport operator has the power to fine airlines who fly aircraft that do not meet night-time noise limits between 10pm and 6:59am.<sup>146</sup> Although initially this led to a *de facto* curfew, as aircraft technology has improved, newer, quieter aircraft have been allowed to operate during the night hours. However, at Dulles (IAD), aircraft can arrive at any time.

In contrast, Australia only has one airport in each capital city and this is often close to residential dwellings. As such, the only significant change to Australian curfew restrictions was the granting of early morning arrivals slots to Cathay Pacific at Adelaide Airport (ADL) conditional on the Hong Kong airline deploying new generation aircraft and using advanced air traffic management techniques to avoid overflying populated areas.<sup>147</sup>

Low-cost carriers in Asia seek to maximise aircraft usage across a 24-hour period.<sup>148</sup> Curfews effectively block out eight hours from this maximum equipment rotation and thus make those airports open during night times more attractive.

More than half of all Chinese visitors to Australia head to Sydney and there is evidence that capacity constraints at Sydney Airport (SYD) are starting to have some effect, principally in terms of preferred landing slots: There is a Chinese preference for overnight flights, especially among the value-conscious market from second-tier cities.<sup>149</sup>

The ambition of both the Australian and New South Wales governments is to retain 24-hour access to the Western Sydney Airport and to keep it free of any other slot constraints. Evidence from Melbourne Tullamarine (MEL) and Brisbane International (BNE) point to the availability of early morning landing slots being key to attracting new Chinese carriers from second-tier cities.

In order to maximise the attractiveness of secondary airports such as Avalon and Western Sydney Airport for marginal point-to-point services to Asia, their curfew-free status must be preserved.

## 4. Celebrate Running Water Country – Western Sydney as a meeting place

To the first Australians inhabiting the Dharug-speaking region of present-day Sydney, the areas of Gadigal and Birrabirragal people were in saltwater country. Those of the Burramattagal people were in muddy river country, while the Mulgoa people lived in running water country.<sup>150</sup>

Today, the Greater Sydney Commission has a vision for three distinct cities within the greater Sydney metropolis, reflecting these three aboriginal Australian areas. Thus, Saltwater Country becomes Eastern Harbour City (centred on the harbour); Muddy River country becomes the Central River City (centred on greater Parramatta), while Running Water country becomes the Western Parkland City (centred on the Nepean River system).<sup>151</sup>

Of these three areas, the first two are well developed. But the latter, including the city centres of Liverpool, Penrith and Campbelltown, has little common identity and also has slower employment growth than the more densely-populated areas of Sydney. At the heart of the

conceptual Western Parkland City is the new Western Sydney Airport site.

In his study on the aerotropolis potential of Western Sydney, Dr Kasarda points to the immediate aviation-related jobs that need to be created under the right conditions.<sup>152</sup> An airport has an impact on directly related jobs in a range of 20 km (13 mi), but on all economic activity in a range of 40 km (23 mi). These latter jobs take time to grow as new industries evolve and relocate. Air-transport related sectors such as freight forwarding, logistics, warehouse and distribution facilities should appear within years of any new, well-planned airport complex opening.

Air-transport related jobs are followed by visitor economy industries such as accommodation, convention and exhibition complexes. As seen with the example of Dulles, to complete the airport cities seen in the United States and elsewhere office buildings along with shopping, dining, leisure, entertainment, and finally residential developments emerge. As in the case of Chicago O’Hare (ORD) (see case study page 20) and Atlanta (ATL), convention centres located within close proximity of the airport terminal have become destinations in and of themselves.

This is even the case where the CBDs have large convention centres. In order to maximise the visitor economy around the new Western Sydney Airport, a convention and exhibition centre in the airport precinct should be considered to complement the International Convention Centre Sydney.

## 5. Smooth the path for logistics and distribution

Amazon, one of the world’s largest logistics companies has chosen Melbourne for its Australian base. The online retailer is also one of the largest mail sorting operators in the world. In early 2018, there was a battle going on between US states as to who could lure Amazon’s second headquarters and major fulfilment centre to their city.<sup>153</sup>

Amazon opened operations in Australia only in 2017 and has picked a new 24,000 square metre (6 acre) site in Dandenong South, close to Victoria’s main road

**Table 9: Busiest airports in Australia by freight (2012)**

Airport	IATA code	Freight (tonnes)
Sydney Airport, NSW	SYD	489,192
Melbourne Airport, VIC	MEL	290,827
Brisbane Airport, QLD	BNE	126,360
Perth Airport, WA	PER	100,954
Adelaide Airport, SA	ADL	25,722

*Source: Bureau of Infrastructure, Transport and Regional Economics 2012*

arteries.<sup>154</sup> Melbourne was the obvious choice: its airport has better connections with states like Tasmania and South Australia than Sydney, and it is closer to the Western Australian markets. But crucially its airport is open 24-hours a day. For similar reasons, the two major express parcel delivery companies in the United States, FedEx and UPS, are located in Memphis, Tennessee and Louisville, Kentucky respectively, chiefly due to transcontinental connectivity.

Yet what is different about Amazon is its use of local post providers. In the United States, it makes heavy use of the United States Postal Service. It is actually credited with saving the service once mail delivery declined with the advent of electronic mail.<sup>155</sup> Outside the United States, Amazon uses national postal services, often under the Express Mail Service (EMS) cooperative agreement between national postal authorities of the Universal Postal Union.<sup>156</sup> Australia Post’s Express Courier service is one of 180 EMS members.

Australia Post has also promoted its role in powering online commerce. It was a global pioneer in 24-hour delivery lockers and other factors of online retailing acceptance. The Australian government-owned corporation is also headquartered in Melbourne and benefits from the road connectivity in and around Victoria. Some 14,300 jobs around Melbourne Airport are related to freight and logistics, one-quarter of all airport-related jobs.

Yet despite Victoria’s toehold in the express freight market in Australia, air freight volumes are expected



Canberra Airport  
Photo: Canberra  
Airport

to double between 2012 and 2025.<sup>157</sup> Sydney Airport (SYD) as the country's main gateway, is constrained. This provides incentive for dedicated freight facilities in the new Western Sydney Airport city. As land prices continue to rise in eastern Sydney, the appeal of inland logistics hubs should support the momentum for major freight operations to gravitate further west.

Australia faces significant challenges in establishing an air freight industry, according to a recent study by the University of Sydney's Institute of Transport and Logistics Studies. It found, *inter alia*, that Australia lacks the basic trade capability (such as manufacturing and logistics) that underpins the air freight industry in the United States.<sup>158</sup>

Central to the success of any logistics operation is road (and to a lesser extent) rail access. In the Dallas-Fort Worth corridor, the International Commerce Park is an integrated warehousing and cargo zone close to the airport perimeter. The airport operators estimate its contribution to the Texan state economy to be around US\$330 million.<sup>159</sup> Road access to the facility stretches to 24 lanes in some points.<sup>160</sup>

Transposed on the Western Sydney Airport project and the signs look encouraging. The logistics industry, for example, argues that protecting freight corridors from urban encroachments is essential to ensuring the future growth of logistics industries and to accommodate current and future freight volumes.<sup>161</sup>

The Australian government is mindful of this and has proposed an access corridor to the airport some 100 metres (330 ft) wide with an initial six car lanes, two bus lanes and a rail corridor. The new major freeway, the M12, should be completed in time for the opening of the new airport and is planned to provide capacity for more than 5,000 vehicles per hour in each direction.<sup>162</sup>

Although Sydney Airport (SYD) was initially located to be close to Australia's main sea cargo terminal at Botany Bay — with which it was linked via the Alexandra canal<sup>163</sup> — the construction of the WestConnex road tunnel system, together with the freight hub at Moorebank is potentially a game-changer. Moorebank will be the largest intermodal terminal in Australia when it starts operating in 2018. The new partially automated warehouse will cover 850,000 square metres (10 acres) and be linked via a new rail line to the seaport and airport in Botany. Analysts expect this style of warehousing to continue to boom as retailers react to the threat of Amazon and look to automate and offshore much of their distribution and logistics activities.<sup>164</sup> This is further cemented by the fact that Amazon recently took a lease for its second Australian fulfilment centre in Moorebank.<sup>165</sup>

The efforts taken by both the New South Wales and Australian governments have been significant. The Western Sydney City Deal has been earmarked A\$125 million over five years from the federal government, with a similar sum matched by the state government. Much of this will fund infrastructure to the airport site and its surrounding suburbs, in line with advice around the creation of an integrated airport city economy.

The New South Wales government needs to ensure that its words are translated into actions to ensure the long-term viability of the multimodal freight hub at Western Sydney Airport.

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# Conclusion

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The United States pioneered and perfected air transport. From the hub-and-spoke system and low-cost carriers through to express freight carriers, it has been responsible for more than 80 per cent of the competitive innovation in air travel.<sup>166</sup>

Most recent of these is the development of aerotropolises. The word may be relatively new to Australia, but city and state governments all over the United States have been developing airport cities for over 40 years. Jobs are well-paid and plentiful near airports, just as they were near seaports or rail terminuses in the nineteenth or twentieth centuries.

The realisation that businesses want to be near well-connected airports is, nonetheless, a twenty-first century phenomenon. Before modern times, few wanted to live near airports. Airframe and engine technology have solved this, meaning that resident populations near airports are growing across the United States and the rest of the world.

In Australia, public policy often looks to the United States, but in the regard of airport ownership, we are out of alignment. Most major airports in the United States remain in public hands, unlike the privatised landscape in Australia. This has allowed US lawmakers to shift services to new, planned airports on the outskirts of metropolises.

The public development of Western Sydney Airport, thus, presents an opportunity to learn from seven decades of public policy in the United States towards airport construction. While interventionist policy around airline services is unlikely, the maximisation of services through more subtle means is in line with several US state policies around return on investment.

Some of the world's most prominent thinkers on airport cities appear to be in favour of state intervention within airport planning policy, while simultaneously espousing global free trade.<sup>167</sup> Trade by air already accounts for one-third of all global trade and governments around the world are betting on aerotropolises as engines of economic growth. Many fear that those countries that do not develop airport cities will become backwaters.

The boldest predictions put the eventual power of airports to be the engines of a new social order. As wealth concentrates into the hands of fewer individuals, airports become the tools of the well-heeled and well-connected to further the creation of the global elite.

The parallel would be the rivaling and eventual overtaking of established aristocratic feudal systems by urbanisation and wealthy city dwellers. Just as likely is that cities overtake nation states as the drivers of wealth, and airports are the assets by which they achieve this independence.

Thus it is crucial that Australia both cements the position of its nascent airport cities in Melbourne and Brisbane, and also ensures the planning for Western Sydney remains ambitious, open and transformative.

The guarantee of 24-hour operations, coupled with efficient road and rail connections will be key, too, if Sydney is to emulate the success of US cities such as Chicago, Louisville and Dallas in bucking expectations. So too is the requirement for highly-skilled workers on the doorstep of any major airport in Western Sydney.

The Australian and New South Wales governments are on track to create the conditions for an interconnected airport city in Western Sydney, judging by recent announcements. The experience of the United States in the creation and development of secondary airports provides some pointers for Australia in this journey.

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It is crucial that Australia both cements the position of its nascent airport cities in Melbourne and Brisbane, and also ensures the planning for Western Sydney remains ambitious, open and transformative.

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## About the author

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### **Justin Wastnage** Principal, Message Shapers

Justin Wastnage is the principal at aviation and tourism policy consultancy Message Shapers. In this position he has led research projects into cruise ship access options for Sydney Harbour, air transport access to New Caledonia and work around privatisation of council-owned airports in New South Wales.

Justin currently sits on the board of Aviation/Aerospace Australia, the country's peak body for the aviation and aerospace industries.

Previously, Justin was the director of aviation policy at the Australian industry group Tourism & Transport Forum. In this role he led several successful research projects around issues including the Australian-New Zealand air transport market, the impact of visa facilitation on air transport demand to Australia, and the integration of public transport to airport precincts.

Prior to this, Justin worked for more than ten years in aviation and travel journalism.

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