



# Australian Aviation & Economy



PRESENTED BY:

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August 20, 2021



# Introduction

The basis for this project is to explore airline data through objective analysis and provide insights on the Australian aviation community by comparing it to economic data, such as GDP Per Capita. I will be analysing Australian aviation data that spans from the years 1990 through 2018. My motive for this project is to transform the datasets by way of data analysis and tell a story with my findings about how the Australian economy has an impact on the aviation community.



# Why? Who?

- Why Australia?
  - I hit paywalls when looking for data on American airliners
  - I found this dataset on Australia's government website and thought it was robust
  - Australia is unique because you need to fly in order to get to a foreign destination, there's challenges to flying (long distances, travel time)
  - Western nation
- Intended Audience?
  - The intended audience for this analysis is the Australian aviation community
  - Any aviation enthusiast who is interested in looking at flight and economics over time



# Motivation

My motivation for this project stems from my extensive federal career within the aviation community and my love for travel (wanderlust). Now that I have been exposed to data analytics and have used various technologies in order to transform data, I am now in a position to be able to tell a story with data. My ways of seeing the aviation community from an analytics decision making point of view will never be the same and only improve.

***“Travel is the only thing you buy that makes you richer” – Anonymous***



# Core Questions

1. Is there a correlation between Australian GDP Per Capita and international travel?
2. How do Australian international flight patterns change over time and are those changes correlated with destination GDP Per Capita?



# Project Analysis Approach

Cleaning/Categorizing Data in Python and Excel

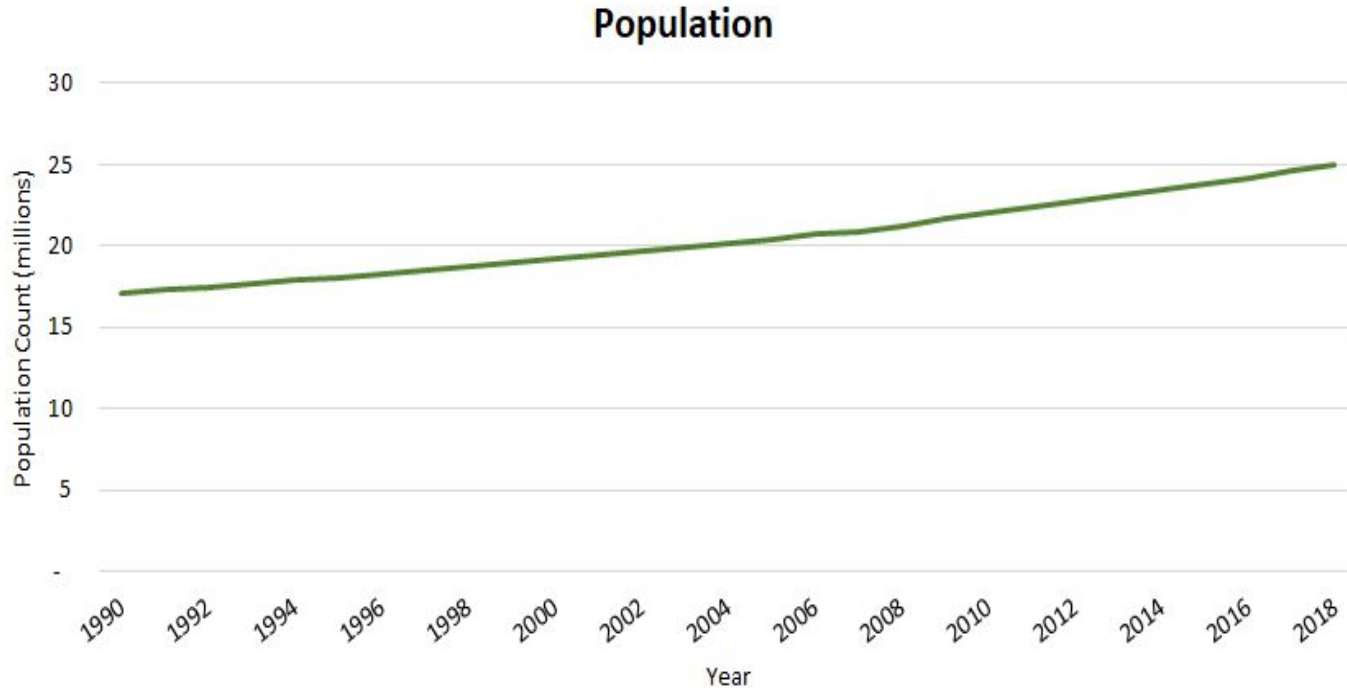
Analyzing Key Measures

Charting/Graphing Key Measures

Presentation - Google Slides

Dashboard - Power BI

# Population of Australia

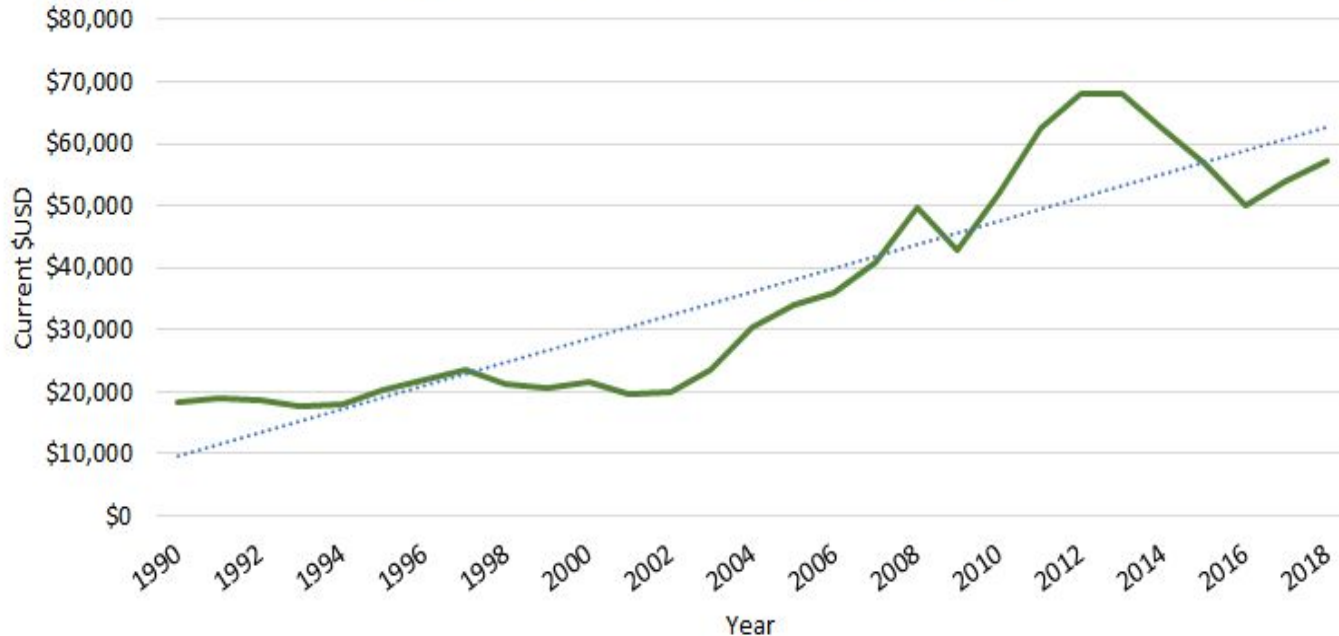


- In 1990, the population was 17m
- Fast forward to 2018, the population is now 25m
- In the span of 29 years, the population rose by 146.4%

# GDP Per Capita



**Australia GDP Per Capita (1990-2018)**



- In 1990 the GDP Per Capita was \$18,211.50
- In 2018 the GDP per Capita rose to \$57,354.96
- Between 1990 and 2018 the GDP Per Capita rose by 214.94% in a 29 years span

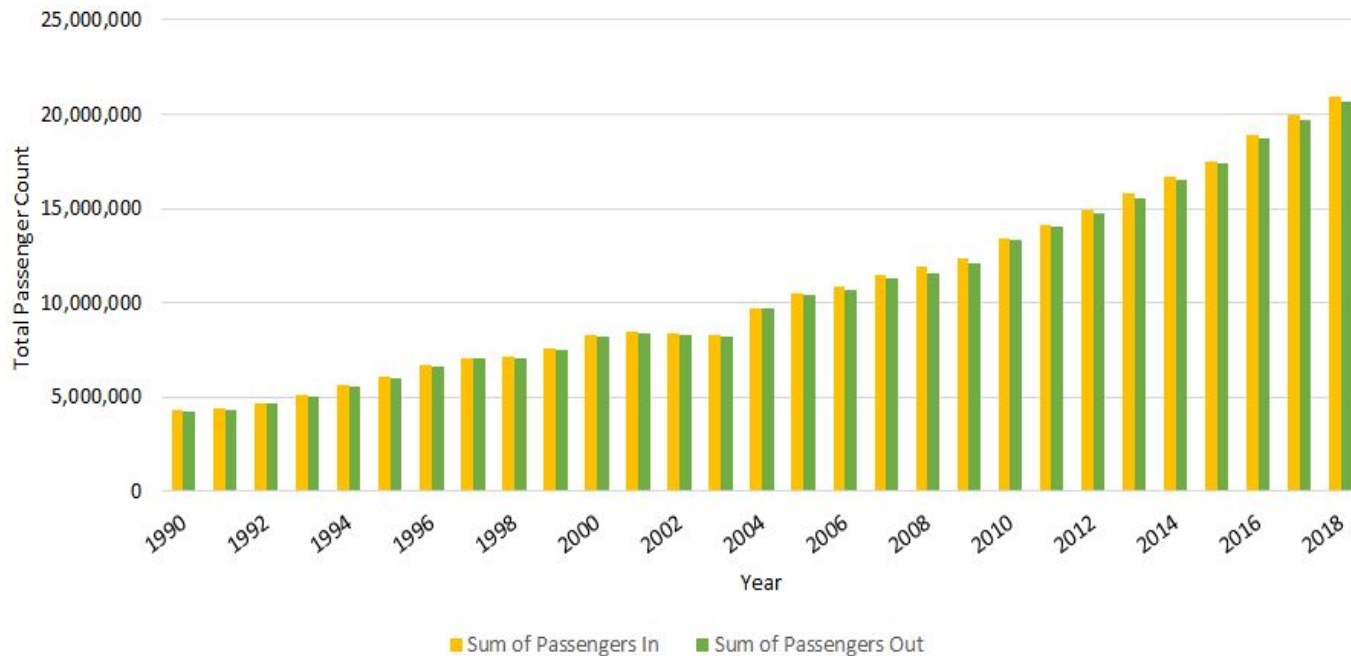
SOURCE:  
<https://www.theguardian.com/business/2016/mar/02/australian-economy-grew-3-in-2015-to-defy-end-of-mining-boom>





# Passenger Count In and Out of Australia

Total Passenger Count In/Out by Year



- In 1990, 4.3m passengers were flown in and 4.22m were flown out of the country
- Compared to 1990, 2018 saw 20.9m passengers go in and 20.7m go out
- In the 29 years span, the passenger count for both in/out rose by 387.84%



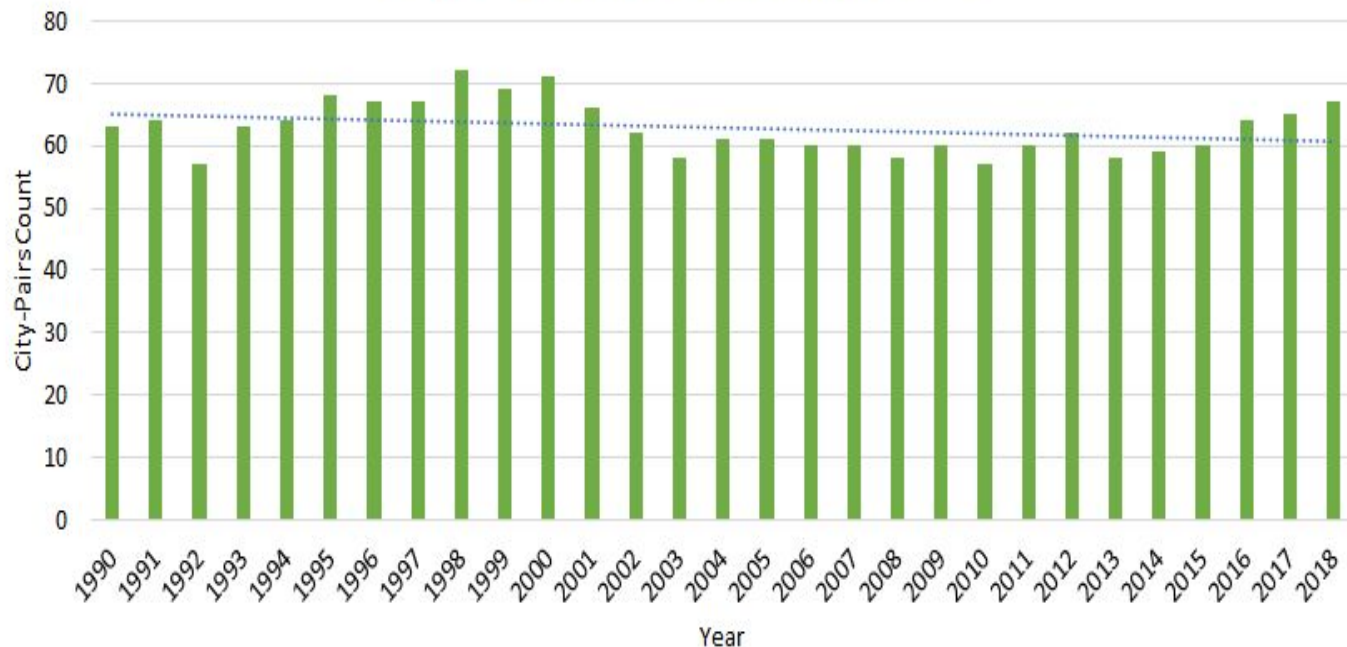
## Before We Move Forward...

- A City-Pair is simply a connection between two ports
  - For example:
    - Melbourne ----- Los Angeles, USA
    - Sydney ----- Los Angeles, USA
    - Sydney ----- Auckland, New Zealand
- It is reported in the data by month and year, with totals of passengers going *in* and *out* of Australia
  - For example:
    - Sydney --- Auckland, New Zealand will be reported 12 times in a year because it's a popular route



# City-Pairs Count Over The Years

City-Pairs Destination Count by Year

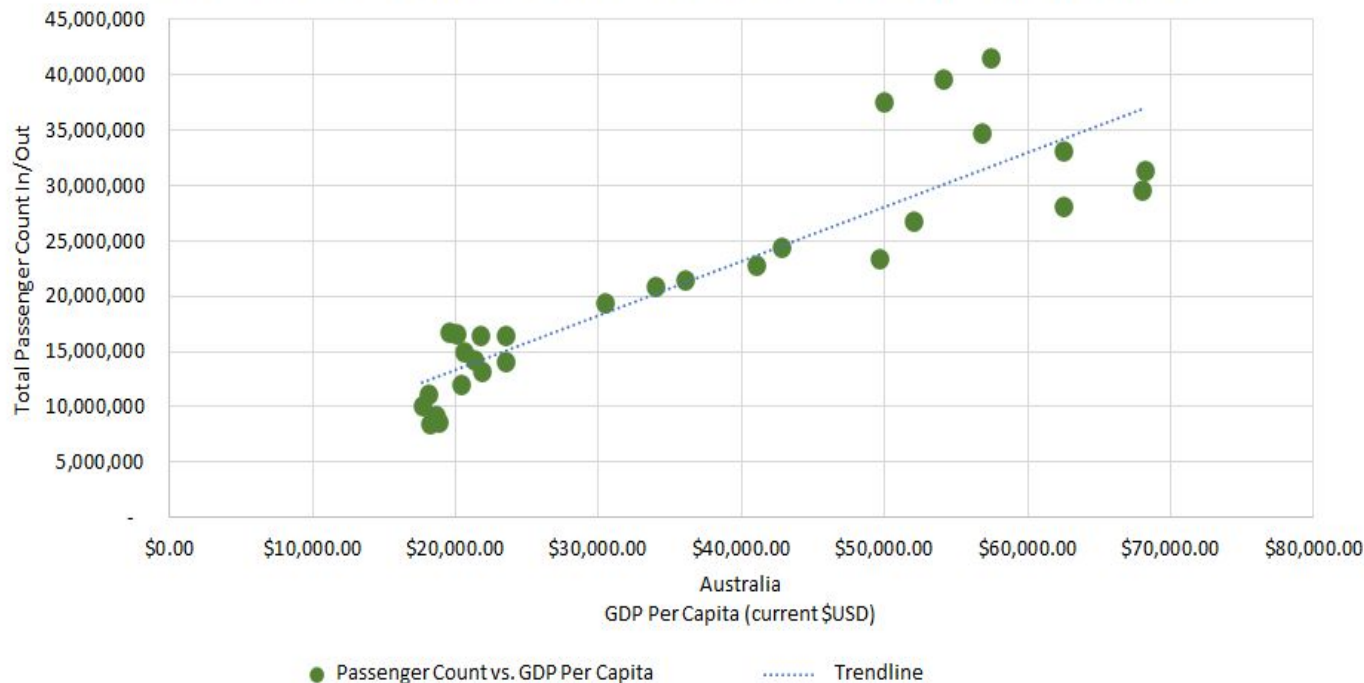


- In 1990 there were 63 City-Pairs that flew in/out of Australia
- 1998 saw the greatest number of City-Pairs at 72
- There's a slightly visible downwards trend in the number of City-Pairs



## Passenger Count vs. GDP Per Capita: Correlation?

Total Passenger Count (In/Out) vs. Australia GDP Per Capita (current \$USD)



- The relationship between these two quantitative variables show that there is a positive correlation with a few outliers in the later years



# Before We Move Forward...

- GDP Per Capita, PPP:
  - A PPP (purchasing power parity) is a price relative which measures the number of units of country B's currency that are needed in country B to purchase the same quantity of an individual good or service as 1 unit of country A's currency will purchase in country A.
- GDP Per Capita, PPP will be used for *foreign* countries in the following display
- GDP Per Capita (Current \$USD) will be used for *domestic* (Australia) in the following display

Transition to Dashboard...



DASHBOARD...



Power BI



LOADING...

# Summary



- Is there a correlation between Australian GDP Per Capita and international travel?
  - Yes, in the big picture of things the GDP Per Capita rose along with the passenger load. It would be hard to concretely suggest the correlation is strong
- How do Australian international flight patterns change over time and are those changes correlated with destination GDP Per Capita?
  - The international flight patterns depended more on being in the vicinity to Australia than actual GDP Per Capita



# Insights

- Despite the 2008 financial crisis felt by the world and the end of the mining boom in 2015, passenger loads continually climbed
- There's a total of 11 Foreign Ports that make the Top 10 City-Pairs by passenger load list, with only six 6 countries making the list



# Questions and/or Comments



# Data Sources

## Aviation data source:

- [https://data.gov.au/data/dataset/international-airlines-traffic-by-city-pairs/resource/ebcafd83-9514-4f72-a995-fe7ee90cb9da?view\\_id=4ad7311e-83a6-49fb-a9f6-9a7215000b30](https://data.gov.au/data/dataset/international-airlines-traffic-by-city-pairs/resource/ebcafd83-9514-4f72-a995-fe7ee90cb9da?view_id=4ad7311e-83a6-49fb-a9f6-9a7215000b30)

## Australian economic data:

- <https://data.worldbank.org/country/AU>
- csv link: <https://api.worldbank.org/v2/en/country/AUS?downloadformat=csv>

## World economic data:

- [http://data.un.org/Data.aspx?d=WDI&f=Indicator\\_Code%3aNY.GDP.PCAP.PP.KD](http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code%3aNY.GDP.PCAP.PP.KD)

# Dataset Key Terms

- AustralianPort - Australian port where traffic is uplifted or discharged within a single flight number
- ForeignPort - Foreign port where traffic is uplifted or discharged within a single flight number
- Port\_Country - Based on the international uplift or discharge port within a single flight number
- Passengers\_In - Passengers inbound to Australia
- Passengers\_Out - Passengers outbound from Australia

# Thank You

## Special Thanks To:

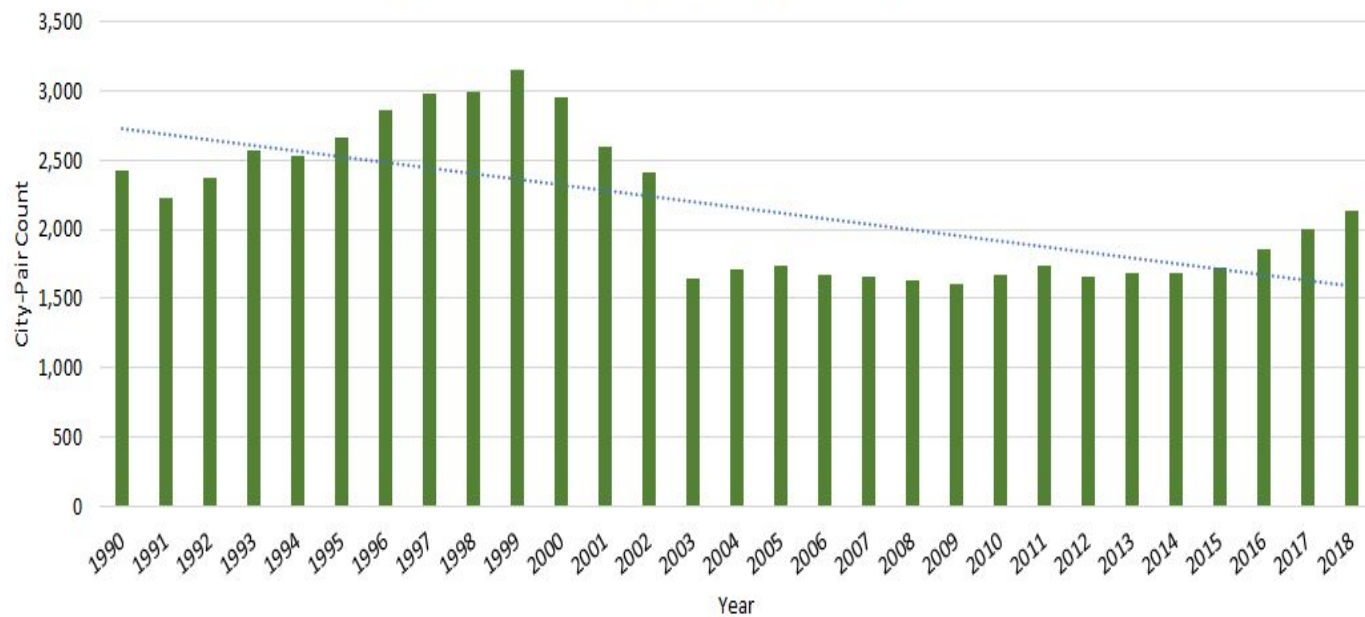
- My cohort for having my back when I get stuck
- My instructor, Chris, and co-instructors, Josh and Cristina for giving me the tools and knowledge I need to move forward
- The volunteers who helped Nashville Software School's Full-Time Data Analytics Program - Cohort 4 with mock interviews, real-world projects, and preparation for a technical interview
- NSS staff, such as Career Development (Julie H.), Mahesh R., and Michael H., for providing the extra resources we need in order to succeed
- Michael Zarzana, an NSS alumni and friend, for being nothing but inspirational and motivational and wanting nothing but the best for me





# City-Pair Counts Over The Years and Months

**Total City-Pair Count by Year**  
(including monthly reportings of City-Pairs)



- 1990 had 2,419 City-Pair recordings
- 2003 dropped off to a new low with 1,649 City-Pair recordings
- The significant drop leads to further research as to why such a took place in 2003









Country and City data - reporting of Uplift/Discharge data by Qantas Airways:

Prior to January 2003: Uplift/Discharge within Qantas Airways' international network.

For January 2003 and onwards: Uplift/Discharge within flight number - as per the standard definition.

For example, what was reported as Adelaide to London in January 2002 (no direct services between these two cities), would be reported in January 2003 as either Adelaide to Singapore or Melbourne/Sydney to London.

This change was introduced in order to make the data comparable across all airlines operating services to/from Australia.

The effect of this change - comparing data under the two methods of reporting:

Country of Port data - There will be a shift in traffic to countries such as Singapore and United Arab Emirates (from 2013) which are used as hubs and away from countries such as France, Germany and Italy which previously received traffic channelled through hubs. The total volume of traffic is not affected.

City Pairs - There will be a shift in traffic to cities such as Singapore and Dubai (from 2013) which are used as hubs and away from cities such as Paris, Frankfurt and Rome which previously received traffic channelled through hubs. The total volume of traffic is not affected.

Prior to the change, statistics reported for city pairs without "single flight number" international flight connections mainly reflected carriage on interconnecting international services by Qantas Airways. That traffic should have been interpreted as increasing the volume of traffic between the primary international ports rather than as an indicator of traffic volumes between ports without "single flight number" international flight connections. It should be noted however, that there was no double counting of traffic.