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Tourism Australia combines data and education to shape a more sustainable aviation industry

Data-driven recovery strategy is aimed at identifying and re-establishing sustainable air routes and empowering University of New South Wales students to develop new solutions.

Tourism Australia's strategy combines education and information to expedite the re-establishment of sustainable air routes from key markets.

As a government agency, Tourism Australia (TA) is responsible for attracting international visitors for leisure and business. The organisation is active in 15 key markets, where it conducts advertising, PR and media programs, trade shows as well as programs to nurture and enhance the industry. That includes partnering with the School of Aviation at the University of New South Wales (UNSW), whose aviation and environment-focused courses are designed to equip graduates with the aviation knowledge, skills, and scientific as well as economic literacy required to build successful careers in a rapidly changing industry.

TOURISM AUSTRALIA

UNSW SYDNEY

Overview

Tourism is an important part of the Australian economy. For over a decade it grew faster than the country's GDP, and in 2018/19, tourism was Australia's fourth-largest export.

Many aviation industry stakeholders have responded to the outbreak by accelerating digital transformation programs.

The pandemic changed that picture overnight. At the outset, Qantas and Virgin Australia grounded all international flights and halved domestic flights. The combination of dramatically reduced schedules and strict quarantine measures effectively isolated the country. The resulting 39% drop in annual tourism revenue left many airlines, hotels and restaurants struggling to stay afloat.

Many aviation industry stakeholders have responded to the outbreak by accelerating digital transformation programs. In addition to supporting new health measures by replacing face-to-face interactions with automated contactless solutions, this approach also strengthened the foundations for a sustainable, data-driven recovery.

Reviving Australia's aviation industry

Trent Banfield, TA's International Operations & Aviation Development Manager, is responsible for helping the aviation and tourism industries to bounce back. The organization's recovery strategy is aimed at expediting the re-establishment of sustainable air routes from key markets to Australia. A key part of the plan involves using data and detailed insights to identify and target international air routes that are either slower to return, or at risk of not returning in line with inbound demand.

"Aviation is critical to the tourism industry, especially for island nations like Australia. Gaining access to aviation data, such as forward schedules, is important in enhancing our ability to understand the short-term future of the industry. Forward schedules data is one of the few information sources available that can show future supply (seats), and also therefore predict the future demand for travel to Australia," said Banfield.

Trent Banfield
TA International Operations
& Aviation Development Manager

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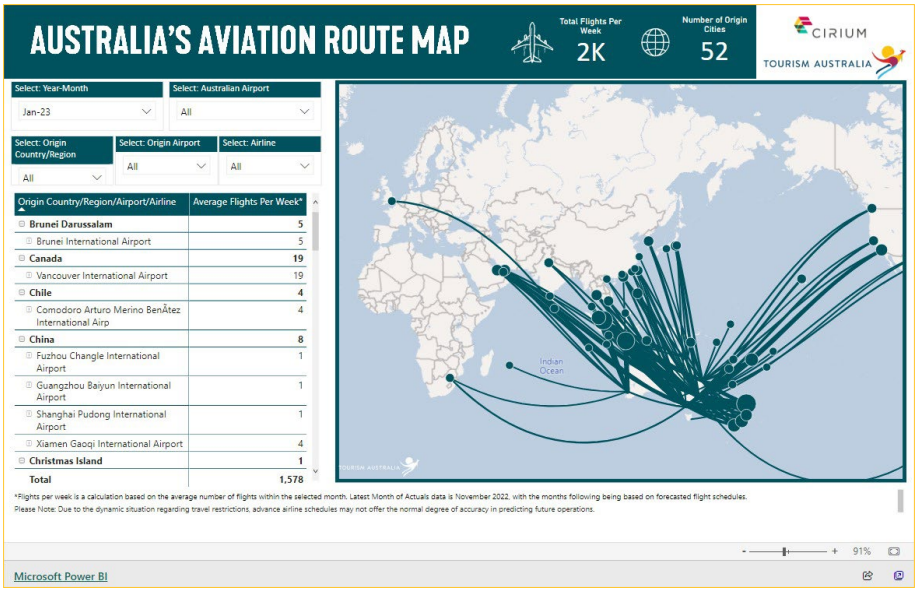

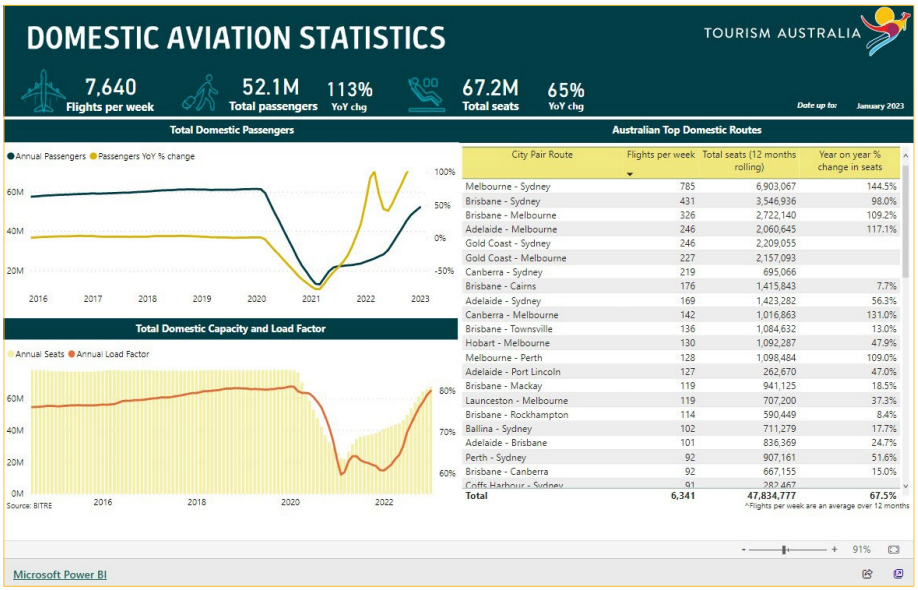

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TA's approach to aviation intelligence includes harnessing multiple data sources to ensure accuracy and develop actionable insights. It is using Cirium's SRS Analyser to look at forward schedules for inbound international passenger air services. The agency recently published an interactive International Aviation Route Map that features average weekly flight schedule forecasts, along with historical data as far back as 2019.

"This is just one of the ways in which we've been able to provide the Australian travel industry with access to up-to-date air schedule information and we've had great feedback on this as a valuable addition to research resources," he said.

According to Banfield, although combining multiple, complimentary data sources is an ongoing challenge, it can help close-the-loop on the traveller journey. Ultimately he hopes to integrate all the information about traveller intentions, available air travel options between various city pairs, airfares, forward travel bookings, load factors, airline route performance, emissions and other metrics into one complete view.

"With access to aviation data sources, TA is in a unique position to play a leadership role in the delivery of insights to the Australian industry. Making these insights accessible to our industry helps foster a collaborative approach toward airline attraction so that the benefits of overall sustainable capacity growth can be realised for all of Australia's destinations," he said.

An academic approach

One of TA's most innovative initiatives is an ongoing data science collaboration with the UNSW School of Aviation, which concentrates on applying academic rigor and resources to problems facing the aviation and tourism industries, including sustainability. For example, supported by UNSW Science's sustainability grant, Dr. Tay Koo and his team combined the managerial insights from TA and Cirium data to **scientifically quantify the sustainability impacts of different aspects of air travel in UNSW's "Environmental Performance Evaluation of Aviation" course.**

From left: Kan-lin Lu, Yi-lung Chen, Tay Koo, Yingbo Sun, Dylan Sanusi-Goh, Zelong Bi, Michael Tran, Brian Udugama, Shrey Dixit

To develop an awareness of responsible production and consumption of air travel, students adopt the viewpoints of different stakeholders, such as destination marketing organizations, Australia-based international carriers and international airports. Data analytics is used to explore each perspective in line with UNWTO's **Sustainable Development Goals #12**.

Together with UNSW and Cirium, the agency launched a series of Sustainable Aviation Data Science competitions. The events have encouraged some of the best and brightest under-grad and post-graduate students from a variety of disciplines, such as business, engineering and mathematics to investigate the most sustainable international air routes to Australia.

> "The Cirium dataset allowed us to understand what parameters influence air traffic, routes, and yield. This was then combined with our linear regression and neural network analysis in our attempt to predict the effects of route investments on economic growth, indigenous tourism, and the environment," said Dylan Sanusi-Goh, a final year UNSW engineering student.
>
> Dylan Sanusi-Goh

Predicting the impact of route investments on economic growth and the environment

The cross-disciplinary diversity stimulated imaginative and highly creative suggestions for enhancing the understanding of the role of aviation in promoting a more sustainable tourism destinations in air travel dependent regions.

> As Zelong Bi, one of UNSW's final year statistics students, pointed out, "It's interesting to get a look at the many statistics that can be derived from the data, especially with regards to international air routes into Australia."
>
> Zelong Bi

One of the winning teams applied deep learning to Cirium data to calculate the costs and benefits of a hypothetical change in aviation capacity on a given route. They examined how this translates into passenger flows, greenhouse gas emissions and indigenous tourism impact. The results were then converted into a dashboard to illustrate its value as a forecasting tool.

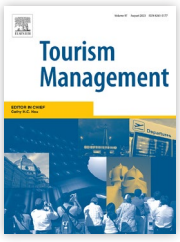
A runner-up submission from a mathematics team developed an entirely new set of metrics. These identified international aviation routes that deliver a "desired" combination of yield, low emissions and strong tourism potential. The team then used a proven modelling technique to forecast the overall sustainability of these routes.

Unlocking the potential for larger, long-term sustainability goals

Developing a clear picture of how traffic, revenue, seats, and route frequency vary over different years and regions is critical to understanding the scale and complexity of aviation operations.

Additional analysis and deeper dives into data unlocks the potential for attaining larger, long-term goals and reshaping the meaning of "sustainability." **The resulting insights enable governments everywhere – not just Australia – to formulate successful policies.**

For its part, TA is confident that encouraging data driven decision making will empower aviation players by enabling them to explore further innovation, exploit new opportunities and, ultimately, remain competitive.



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