# Quality of Service in Australian Passenger Aviation

## Report

Several important aviation reform initiatives have been taken in the past five years. These include the economic deregulation of interstate services, the establishment of the Federal Airports Corporation and the Civil Aviation Authority as statutory authorities, multiple designation of Australiaís international air services, the start of negotiations with New Zealand on a single trans-Tasman aviation market, and the merger and privatisation of Qantas and Australian Airlines.

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# REPORT 80

Bureau of Transport and Communications Economics

# QUALITY OF SERVICE IN AUSTRALIAN PASSENGER AVIATION


Australian Government Publishing Service, Canberra

ISSN 1034-4152
ISBN 0 644 27278 3



Printed for AGPS by Better Printing Service, 1 Foster Street, Queanbeyan NSW 2620

# FOREWORD

A key objective of the Government's transport reform agenda is to make service providers more responsive to consumer needs. It is therefore important in the evaluation of the reform programs that changes in the quality of transport services are measured and analysed. For this reason the Bureau has given increasing emphasis to service quality issues in the past two years.

The first results of the Bureau's work on quality of service in aviation were published in BTCE Report 73, *Deregulation of Domestic Aviation — The First Year*. This report updates and extends the work undertaken for the deregulation study.

The data used to construct the indicators of service quality were obtained from the Australian Customs Service, the Department of Transport and Communications, the Bureau of Air Safety Investigation and the Civil Aviation Authority. The assistance given by these organisations is gratefully acknowledged. Useful discussions were also held with staff of Australian Airlines and the Federal Airports Corporation, and valuable comments on a draft report were provided by Ansett Australia, Australian Airlines and Departmental staff.

The report was prepared by Norm Wuest under John Street's supervision. The foundations for the work were laid by Curt Grimm and editorial assistance was provided by Kym Starr. Anne Paal's assistance with data processing is also gratefully acknowledged.

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November 1992

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## ABSTRACT

Several important aviation reform initiatives have been taken in the past five years. These include the economic deregulation of interstate services, the establishment of the Federal Airports Corporation and the Civil Aviation Authority as statutory authorities, multiple designation of Australia's international air services, the start of negotiations with New Zealand on a single trans-Tasman aviation market, and the merger and privatisation of Qantas and Australian Airlines.

In evaluating the impact of these reforms it was essential to measure changes in the quality of service provided to passengers. This study describes a methodology for determining which aspects of quality of service should be measured. Where data were available, indicators for the key aspects of service quality were constructed. For other key aspects, an assessment of changes in service quality was made on the basis of qualitative information obtained from various sources.

There was an overall improvement in the quality of service provided to passengers in the post-reform period. Service quality improved in respect of frequency of service, availability of non-stop services, and on-time performance. For other key aspects of service (safety, accessibility, airport services and facilities, and on-board comfort and service) the available evidence indicated that levels of quality remained relatively constant.

The report also discusses the future development of service quality indicators, particularly in relation to passenger processing times in airport terminals. The development of a consumer complaints database is also discussed.

# SUMMARY

Over recent years the Government has implemented a number of reform measures in the Australian aviation industry. In order to gauge the success of these initiatives, it is important that all aspects of industry performance are assessed. This report deals with one of the most important aspects of industry performance, namely the quality of service provided to passengers.

The concept of quality of service refers to the degree to which the needs and wants of consumers are satisfied by the service provided. Although the concept is easily understood, it is not easily measured.

## CHARACTERISTICS OF THE REGULAR PUBLIC TRANSPORT PASSENGER AVIATION INDUSTRY

The organisations which have the greatest influence on aviation quality of service are the airlines, the providers of airport and airways services, and aviation regulatory agencies.

As at 31 December 1991 there were three domestic airlines or airline groups in Australia (Ansett, Australian and Eastwest)[1] and 45 commuter operators licensed to provide regular public transport air services. The domestic airlines operated 106 aircraft and commuter airlines operated 204 aircraft. Regular public transport air services were provided to some 230 locations as at the end of 1991.

The Federal Airports Corporation is the major provider of airport infrastructure in Australia. It operates 23 airports which account for approximately 90 per cent of annual domestic revenue passenger movements.

The Civil Aviation Authority is responsible for providing safety related infrastructure at airports and for regulating air safety in Australia.

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1. A fourth operator, Compass Airlines, commenced operations in December 1990 and ceased operations in December 1991. Compass Airlines was subsequently purchased by Southern Cross Airlines Holdings Ltd. and re-started operations on 31 August 1992. As at 1 November 1992, Qantas was allowed to use empty seats on existing domestic sectors of its international services such as Perth–Melbourne–Sydney.

The Bureau of Air Safety Investigation provides independent, professional advice on the efficacy of air safety regulation in Australia.

## ASPECTS OF SERVICE QUALITY IN AUSTRALIAN PASSENGER AVIATION

An *aspect* of service quality refers to a characteristic or group of characteristics of a service from which consumers derive utility. The Bureau has identified 26 aspects of service quality which are applicable to passenger aviation services. While some of these aspects are crucial to consumer welfare, others are of lesser importance.

The following key aspects of service quality were considered to be the most important to include in a quality of service measurement system:

- safety;
- passengers' accessibility to the regular public transport network;
- frequency of service;
- non-stop service;
- on-time performance;
- airport services and facilities; and
- on-board comfort and service.

## MEASURING SERVICE QUALITY

Assessing the impact of reform measures on quality of service required measurement of the key aspects of service quality over time. Availability of data at reasonable cost, and consistency of data over time, were the prime requisites for a measurement system.

The Bureau produced indicators of safety, frequency of service, non-stop service, on-time performance, and airport services and facilities. The data from which the indicators were produced are presently collected by the Bureau of Air Safety Investigation, the Department of Transport and Communications, the Civil Aviation Authority and the Australian Customs Service. Conclusions on changes in quality of service in regard to accessibility and on-board comfort and service were largely based on qualitative data from various sources.

## ASSESSMENT OF SERVICE QUALITY

The key aspects of service quality either improved or remained constant over the time period examined. A comparison of flight frequencies for all regular public transport operators on 40 major routes showed that the number of trips increased by 20 per cent from the September quarter 1990 (the last full quarter before deregulation) to the September quarter 1991. Flight frequency on the 50 busiest routes serviced by the domestic airlines increased by a weighted average of

22 per cent between the December 1990 and 1991 quarters, and by 13 per cent between the March 1991 and 1992 quarters.

Consumers also benefited from improvements in the on-time performance of regular public transport operators in the year to August 1992. An overall improvement in on-time performance was evident at each of the mainland State capital airports.

The level of non-stop service provided by the domestic airlines also improved. Over the year to June 1992 both the number of non-stop routes and the frequency of non-stop flights increased.

The available evidence for the service quality aspects of safety, passengers' accessibility to the regular public transport network, airport services and facilities, and on-board comfort and service supported the conclusion that the quality of service had remained relatively constant in these areas.

The only negative impact on quality of service was the increase in load factors which occurred in the second half of 1991 and the first half of 1992. Work undertaken in 1992 indicates that there was a net welfare loss to consumers during the second half of 1991 as a result of the high load factors during that period. However, the loss was offset by a net welfare gain during the first half of the year.

## FUTURE DEVELOPMENT OF QUALITY OF SERVICE INDICATORS

The most significant deficiency in the data required to measure changes in the key aspects of service quality was in regard to passenger processing delays in airport terminals.

Development of a consumer complaints database was mooted as a possible method to obtain direct consumer input on quality of service issues. It was considered that a consumer complaints database could provide an indicator of changes in quality of service and point to specific problems in particular market segments. However, further investigation of the potential benefits and the costs of a centralised consumer complaints database is required.

# CHAPTER 1 INTRODUCTION

## AVIATION REFORMS

Several important aviation reform initiatives have been taken in the past five years. The first of these was the Government's announcement in October 1987 to deregulate the interstate aviation market and allow it to operate under the competition policy controls which apply to industry generally. The decision took effect from 31 October 1990, when the Government withdrew from economic regulation of fares, market entry, capacity determination and aircraft importation.

A Bureau of Transport and Communications Economics report (BTCE 1991) indicated that the first year of domestic deregulation was successful in achieving the reform objectives, particularly from the consumers' perspective. Patronage on the domestic network increased to record levels, fares decreased by 29 per cent on average in real terms and there was an overall improvement in the quality of service provided by the carriers. From the carriers' perspective, production efficiency improved, with cost reductions in a number of areas. Also, the level of competition between the airlines increased dramatically in the first year of deregulation. Although the original Compass Airlines collapsed in December 1991, the level of competition between Ansett Australia and Australian Airlines has been more intense under deregulation. Overall, the Bureau estimates that there was a net welfare gain from domestic deregulation of about $105 million in 1991 (Smith & Street 1992).

Another important element of the reform agenda was the establishment in 1988 of the Federal Airports Corporation (FAC) to operate airports, their terminals, runways and associated facilities on a commercial basis. In the same year the Civil Aviation Authority (CAA) was set up to provide airways and safety regulatory services. By establishing these statutory authorities, the Government sought to ensure that airport infrastructure, airways and safety services were provided more efficiently than they had been under a departmental administration and that the organisations could respond more quickly and flexibly to the changing needs of the aviation industry.

The liberalisation of Australia's international aviation policy has been achieved through a two-step process. The first step, announced by Minister Willis in 1989, was to broaden our approach to bilateral negotiations by placing greater weight on the national benefits from trade in aviation services, as well as the benefits

for Qantas (Willis 1989). The second reform step was announced in February 1992 as part of the Prime Minister's 'One Nation' statement (Keating 1992). Included in the statement was the announcement of multiple designation of Australia's international air services, that Australia's domestic carriers would be given the opportunity to fly internationally[1], that Qantas would be given access to domestic sectors and that a single trans-Tasman market would be negotiated with New Zealand.

The privatisation of Australian Airlines and Qantas has also been an integral part of the reform process. In September 1990 the Government announced that it would sell 49 per cent of Qantas and 100 per cent of Australian Airlines. More recently, it was announced that the next stage of the privatisation process would be to merge Australian Airlines and Qantas and sell 100 per cent of the combined airline. In September 1992, Australian Airlines was sold to Qantas, and the sale of the merged airlines was proceeding at the time of writing.

## THE ROLE OF QUALITY OF SERVICE MEASUREMENT

An improvement in the quality of services provided may well be one of the more significant gains from the Government's micro-economic reform program. It could be more important to some consumers than a reduction in price, and of significance to Australia's economic competitiveness.

In aviation, operators are adopting an attitude towards service quality which is more customer and market oriented. The industry is becoming more aware of and responsive to what the customer is willing and able to pay for. Also, since deregulation, the airlines have been able to offer consumers a much greater range of fare – quality of service combinations from which to choose.

Reform measures which have been implemented over recent years will continue to affect the operations of the Australian aviation industry. Measurement of the quality of service provided by the industry in general and by individual operators will become increasingly important in evaluating the impact of the reform programs.

Measures of service quality complement other measures of industry performance, such as passenger numbers, price levels, and operators' financial performance. Indeed, it could provide a misleading impression of the progress of reform if, for example, it were publicised that prices had been reduced, if at the same time service quality was declining and this latter fact was not also brought to attention.

In the interim at least, it is important that quality of service be monitored, partly to ascertain whether the expected outcomes from reform are being achieved and partly to assist the process of reform itself, through providing information which

1. As at 1 November 1992, Ansett Australia was allowed to operate trans-Tasman services but did not commence these services at that time.

facilitates the efficient functioning of the reformed markets. For instance, quality of service indicators could provide a basis for consumers to make informed choices between operators and thereby encourage the provision of standards of quality appropriate to consumer needs.

## STUDY OBJECTIVES

The main objectives of this study were:

- to identify and measure the key aspects of service quality in the regular public transport (RPT) passenger aviation industry; and
- to analyse recent trends in the quality of service provided by the industry.

## OUTLINE OF THE REPORT

Chapter 2 provides a brief description of the RPT passenger aviation sector, to provide a context for the subsequent discussion of quality of service measurement.

Chapter 3 discusses conceptual issues in aviation quality of service and recommends a number of aspects of service quality which should be measured.

Chapter 4 outlines a system of measurement of the recommended aspects and provides indicators of quality of service where possible. Where data were available, an analysis of recent changes in quality of service was undertaken. For some quality measures, only the direction of change could be assessed, while for others it was possible to quantify the change.

Chapter 5 presents a summary of recent changes in quality of service in the Australian passenger aviation industry. Future development of quality of service indicators, including a consumer complaints database, is also discussed.

# CHAPTER 2 CHARACTERISTICS OF THE RPT PASSENGER AVIATION INDUSTRY

For the purposes of this study, the RPT passenger aviation industry comprises the domestic and commuter airlines, the organisations which provide airport and airways services, and regulatory agencies. This chapter presents some basic facts and figures on the industry as a context for the ensuing discussion of the quality of the services it provides to passengers.

## REGULAR PUBLIC TRANSPORT OPERATORS

The RPT operators are responsible for many of the aspects of the quality of service provided to passengers. However, for some aspects of service quality, such as safety and airport facilities, other agencies play a major role. The RPT operators are the primary source of much of the data required to measure quality of service.

Airlines operating scheduled RPT services are licensed by the CAA. Operators whose fleets include aircraft with more than 38 seats or with a payload of more than 4200 kilograms are designated as *domestic* airlines. All other RPT operators are designated as *commuter* airlines.

As at 31 December 1991 there were three domestic airlines or airline groups operating RPT services under separate Air Operators Certificates. These were Ansett Australia (including Ansett Express and Ansett WA), Australian Airlines (including Airlink), and Eastwest Airlines. A fourth domestic carrier, Compass Airlines, commenced operations in December 1990 and ceased operations in December 1991. Compass Airlines was subsequently purchased by Southern Cross Airlines Holdings Ltd., and restarted operations on 31 August 1992.

There were 45 commuter operators licensed to provide RPT air services in Australia at 31 December 1991. The number of commuter operators has varied slightly over recent years as indicated in table 2.1.

### Fleet characteristics

As at 31 December 1991, there were 310 licensed RPT aircraft in Australia, of which 106 were operated by the domestic airlines and 204 were operated by

TABLE 2.1 COMMUTER OPERATORS, BY STATE, 1986 TO 1991
*(number of airlines)*

| *State* | *1986* | *1987* | *1988* | *1989* | *1990* | *1991* |
|---|---|---|---|---|---|---|
| New South Wales | 11 | 10 | 10 | 10 | 10 | 14 |
| Victoria | 7 | 6 | 5 | 5 | 5 | 6 |
| Queensland | 9 | 11 | 12 | 10 | 9 | 6 |
| South Australia | 7 | 7 | 10 | 9 | 8 | 8 |
| Western Australia | 7 | 5 | 4 | 6 | 6 | 6 |
| Tasmania | 1 | 1 | 1 | 2 | 1 | 1 |
| Northern Territory | 4 | 4 | 5 | 3 | 3 | 4 |
| Total | 46 | 44 | 47 | 45 | 42 | 45 |

*Source* Department of Transport and Communications aviation statistics section.

TABLE 2.2 REGULAR PUBLIC TRANSPORT FLEET SIZE, 1985 TO 1991
*(number of aircraft)*

| | *1985* | *1986* | *1987* | *1988* | *1989* | *1990* | *1991* |
|---|---|---|---|---|---|---|---|
| Domestic airlines | 104 | 112 | 106 | 113 | 105 | 104 | 106 |
| Commuter airlines | 228 | 199 | 220 | 245 | 236 | 236 | 204 |
| Total | 332 | 311 | 326 | 358 | 341 | 340 | 310 |

*Sources* Department of Transport and Communications aviation statistics section; *Australian Aviation* (December 1991 and earlier issues).

commuter airlines. Table 2.2 shows the changes that have occured in the RPT fleet over the past six years.

### Network size

As at 31 December 1991 there were approximately 230 ports in Australia with RPT air services. The exact number was unavailable due to non-reporting by some commuter operators. The domestic airlines provided services to 43 ports and commuter airlines flew to all but 5 of the ports for which data were available.

## FEDERAL AIRPORTS CORPORATION

Through the provision of basic airport facilities, planning of airport layouts and leasing of facilities to airlines, the FAC has an effect on the quality of services provided to passengers.

The functions of the FAC which were most relevant to this study were (*Federal Airports Corporation Act 1986*):

- to operate Federal government-owned airports in Australia and participate in the operation of jointly used areas within these airports;

- to review the use and capacity of existing Federal airports, determine the necessity or desirability of extending or otherwise altering Federal airports, and to carry out necessary or desirable extensions to, or alterations of, Federal airports; and
- to provide, or arrange for the provision of, facilities and services at, or in relation to, Federal airports.

The FAC has responsibility for 23 airports, which accounted for approximately 90 per cent of domestic revenue passenger movements in the 12 months to 31 March 1991. Aircraft movements (including international and general aviation aircraft) at FAC airports during that period were 3 036 083 (FAC 1991a).[1] The FAC thus has responsibility for providing much of the airport infrastructure in Australia.

The range of facilities which must be provided in a large airport is vast, resembling a small city in complexity. For instance, in its Draft Planning Strategy for Sydney Airport (FAC 1990), the FAC makes plans not only for runways, terminals, cargo facilities, airport administration, ground support facilities and aircraft maintenance facilities, but also for catering, ground access (including roads, car parks, terminal driveways and public transport facilities) and utility services including electricity, fire and domestic water supply, gas, telecommunications, fuel, sewerage, other waste disposal and drainage.

The FAC is also responsible for airport security, including the counter-terrorist first response function at its security-designated airports, and for commercial developments such as airport shopping and recreation facilities. All of these aspects impinge upon the overall quality of service provided by the aviation industry as a whole.

Responsibility for quality of service provided at airports which are not operated by the FAC lies with the local owners and operators of the airports. These include local councils and, in Cairns, the Cairns Port Authority.

## CIVIL AVIATION AUTHORITY

The CAA has responsibility for providing safety-related infrastructure at airports and for regulating air safety in Australia. As a spin-off from its regulatory function the CAA also compiles an extensive database from which the BTCE has constructed on-time performance indicators.

The CAA was established under the provisions of the *Civil Aviation Act 1988*. Functions of the Authority which are relevant to this study include:

- conducting safety regulation of civil air operations in Australian territory;
- providing air route and airway facilities;

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1. Comparable data on total aircraft movements at all Australian airports were not available.

- providing air traffic control services, and flight service services, for surface traffic of aircraft and vehicles on the manoeuvring area of aerodromes; and
- providing services to the Bureau of Air Safety Investigation (BASI) in relation to the investigation of aircraft accidents and incidents.

## BUREAU OF AIR SAFETY INVESTIGATION

The Bureau of Air Safety Investigation is a source of independent, professional advice on the efficacy of air safety regulation in Australia. BASI promotes safer aviation by disseminating information and safety recommendations based on the investigation of selected accidents and incidents, and on the results of research.

Air safety regulations require all accidents and safety-related incidents to be reported to BASI. BASI compiles and publishes comprehensive data on aviation accidents, which have been used in this study as a quality of service indicator of safety.

# CHAPTER 3 THE CONCEPT OF SERVICE QUALITY IN AVIATION MARKETS

Consumers' perceptions of the importance of the different aspects of service quality depend on their priorities. For example, many business travellers place a high value on the quality of airport departure lounge facilities and on-time performance. Leisure travellers may be more ready to accept a trade-off in which they receive lower service quality but also a lower price.

To some extent consumers' perceptions of service quality are determined by external factors. For instance, travellers to and from remote locations may consider a daily service is adequate while travellers on inter-capital routes may expect a much higher service frequency.

This chapter establishes a set of criteria for determining which aspects of service quality should be monitored, and recommends a number of aspects for which indicators are subsequently developed.

## DEFINITION OF SERVICE QUALITY

The Bureau's work on the measurement of quality of service (BTCE 1992) builds on the framework developed by Lancaster (1966) for analysing service quality.

Under Lancaster's approach, a product or service is viewed as a bundle of characteristics. Consumers derive utility from the characteristics embodied in the product or service rather than from the product or service per se.

Characteristics are defined as 'those objective properties of things that are relevant to choice by people' (Lancaster 1971, p. 6). Several characteristics may be aggregated into an aspect of service quality.

The concept of service quality refers to the quantities of the characteristics that are embodied in a service and which directly interact with the utility functions of the consumers of that service.

## ASPECTS OF SERVICE QUALITY APPLICABLE TO AVIATION

As indicated above, measurement of changes in service quality may be facilitated by grouping characteristics into broad categories or aspects of service quality. Aspects of service quality which are applicable to aviation and which were initially identified in the Bureau's conceptual study (BTCE 1992, pp. 18–20) are shown (slightly modified) in table 3.1.

## SELECTING KEY ASPECTS OF SERVICE QUALITY

Any system which attempted to measure all of the aspects of service quality in table 3.1 would require considerable resources. While some of the aspects are crucial to consumer welfare, others are of lesser importance.

Key aspects of service quality were chosen on the criteria that:

- they have a direct impact on the welfare of a broad range of consumers; and
- they reflect the objectives of the aviation reform program.

The Bureau has examined a number of possible methods for identifying the key aspects of service quality (BTCE 1992, pp. 21–28). These include the hedonic method, consumer surveys, choice models, observation of comparable industries or situations, and the judgment of the analyst.

The hedonic method is a statistical technique for evaluating the contribution of various product characteristics to prices. It employs a regression equation, in which prices from an array of different varieties of a product or service are the dependent variable, and the characteristics of that product or service are the explanatory variables. Thus, for example, the first class, business class, economy and discount fares would be dependent variables and the characteristics of the service such as time and distance of the flight and aspects of service quality would be explanatory variables. If the market is competitive and the variables are properly chosen, the implicit prices for the characteristics which are derived from the hedonic function would be proportional to the marginal valuations which consumers placed on those characteristics (Triplett 1986).

The hedonic approach does not appear to have been used to date to derive consumer valuations for characteristics of air travel. This is possibly due to unavailability of data on actual fares paid for particular services. Consumer valuations will also vary over time and over different market segments. As mentioned earlier, the priorities of business travellers will differ from those of holiday travellers. Within these groups short-haul passengers may well have different priorities than long distance passengers. Use of the hedonic method would therefore require extensive data collection and would be very costly.

A consumer survey could provide information obtained directly from consumers on the relative importance of various aspects of service quality in RPT aviation. However, comprehensive coverage of all segments of the market would also require an extensive and costly data collection effort. Passenger surveys are

TABLE 3.1 ASPECTS OF SERVICE QUALITY APPLICABLE TO AVIATION

| *Aspect* | *Example* |
|---|---|
| Network coverage | Number of airports in an airline's network |
| Passengers' accessibility to network | Presence of an airport with regular public transport services |
| Service frequency | Number of flights per day |
| Convenience of service times | Departure times for flights relative to desired departure times |
| Non-stop service | Non-stop service between origin and destination airports |
| On-time performance | Difference between aircraft arrival and departure times and scheduled times |
| Ticket conditions | Advance purchase and minimum stay conditions for airline bookings |
| Clarity of service conditions | Understandability of options for discount and other air fares |
| Service continuity | Frequency of disruption of air services by mechanical problems or labour disputes |
| Restoration of interrupted services | Time to restore air services after disruption |
| Terminal services and facilities | Services and facilities available at airport terminals |
| Location of airport | Distance between a city's airport(s) and business and residential districts |
| Carrier or vehicle transfers | Number of changes of aircraft en route |
| Efficiency of booking arrangements | Speed and flexibility of airline booking system |
| Reliability of confirmed bookings | Likelihood of a seat being unavailable due to over-booking of a flight |
| Safety | Likelihood of arriving without an accident |
| Passenger security | Likelihood of being involved in a security-related incident |
| Baggage security | Likelihood of baggage being stolen |
| Loss or damage of articles | Likelihood of baggage being lost or damaged |
| Procedures for handling customer complaints | Friendliness and accessibility of complaints department |
| Assistance to disadvantaged consumers | Facilities for persons under a disability, such as wheelchair ramps, and multilingual signs |
| Service information | Flight arrivals and departures bulletin boards and screens |
| Liability for carrier underperformance | Ease of access to compensation for service failure |
| Staff courtesy and efficiency | Courtesy of airline personnel |
| On-board comfort | Distance between seats, width of seats |
| On-board services and facilities | Meals, drinks, in-flight entertainment, newspapers, magazines, cleanliness of aircraft |

*Source* BTCE.

regularly carried out by airlines. Although results are not publicly available, they are reflected in airline behaviour, as discussed later in this chapter.

Models of consumer choice use statistical techniques to estimate the values which consumers implicitly place on aspects of a service when they choose between alternative price–quality combinations. For example, a consumer who chooses to fly first class is valuing those characteristics of the first class service which are judged to be superior at the difference between the first class fare and alternative lower fares. Choice models were not employed in this study, partly because they require detailed fare data which were not publicly available.

Observation of the activities of the Australian RPT aviation industry and of comparable industries or situations overseas has been used in this study to obtain qualitative information on consumer valuations of some aspects of service quality. Information on which aspects the Australian industry considers to be of importance can be gleaned from observation of the activities of the industry and from advertisements by the airlines and other industry organisations. Examples of industry activities over recent years which have had an impact on the quality of service provided include:

- increasing the frequency of flights on many routes;
- the airlines' choices of aircraft type;
- the upgrading of the airlines' facilities at airports;
- changes in airline routes (for example, the introduction of non-stop flights on some routes) and types of aircraft operated on particular routes; and
- improvements in quality and availability of services and facilities both on-the-ground and on-board.

The quality of service aspects which are most frequently advertised by the airlines include terminal facilities, safety, service, on-board comfort, network size and convenience of schedules and routes.

Studies of quality of service and the effects of deregulation in overseas aviation markets also provide guidance on which aspects of service quality to assess when evaluating the impact of Australian domestic deregulation. The most frequently discussed aspects of service quality include safety, flight frequency, on-time performance, non-stop services, airport services, on-board comfort and service, and load factors (see table 3.2).

One of the main consumer benefits from deregulation in the United States, Canada and New Zealand has been an overall increase in frequency of flights. Improvements in the quality of on-board service were reported in Canada and New Zealand, while consumers in New Zealand also benefited from improved terminal facilities. Consumer disadvantages which arose shortly after deregulation in the United States and Canada included serious congestion problems at some airports and, in the United States, some small communities lost all RPT service.

TABLE 3.2 ASPECTS OF SERVICE QUALITY IN AVIATION: OVERSEAS STUDIES

| *Reference* | *Safety* | *Flight frequency* | *On-time performance* | *Non-stop service* | *Airport services* | *On-board comfort* | *Load factors* | *Other*[a] |
|---|---|---|---|---|---|---|---|---|
| Carlzon 1987 | * | * | * | * | * | * | | * |
| Craun 1990 | | * | | | | | | * |
| Cunningham & Brand 1989 | * | | * | | * | | | * |
| Dempsey 1990 | * | | * | * | * | * | | * |
| Ippolito 1981 | | * | | | | | * | |
| McGowan & Seabright 1989 | * | | | | | | * | * |
| Morrison & Winston 1986 | | * | | | | | | * |
| National Consumer Council 1986 | * | | | | * | | | * |
| Oum, Stanbury & Tretheway 1990 | * | * | * | * | | | | * |
| Russon & Hollingshead 1989 | | | | * | | * | | |
| Shaw 1990 | * | * | * | * | | * | * | |
| US DOT 1988 | | * | | * | | | * | * |
| Total occurrences | 7 | 7 | 5 | 6 | 4 | 4 | 4 | 9 |

* The aspect of service was included in the referenced study

a. Includes aspects such as accessibility, consumer compensation for underperformance, availability of a choice of carriers, services and routes, convenience of schedules, reservation systems, staff courtesy, and luggage handling.

From the foregoing discussion it is evident that a considerable element of judgment on the part of the analyst is involved in selecting the key aspects of service quality.

On the basis of the criteria established, and the evidence from overseas studies, the following aspects[1] were considered to be highest priority for inclusion in a quality of service measurement system for the Australian RPT aviation industry:

- safety;
- passengers' accessibility to the RPT network;
- frequency of service;
- non-stop service;
- on-time performance;
- airport services and facilities; and
- on-board comfort and service.

Measurement of these aspects of service quality is discussed in chapter 4.

1. Aspects are listed in random order as consumer valuations of the various aspects were unknown.

# CHAPTER 4 MEASURING SERVICE QUALITY WITH INDICATORS

For the purposes of this study, an indicator was defined as a statistical measure of an aspect of service quality. Indicators could be subjective measures of consumers' perceptions of service quality or objective measures of the quantities of various characteristics relevant to particular aspects of service quality.

Time series of indicators which show changes in quality are essential to the objective of assessing the impact of micro-economic reforms. Although both subjective and objective indicators have some advantages (BTCE 1992, pp. 29–33), the use of objective indicators is more suited to the purpose of measuring changes in quality levels over time. Subjective measures which require surveys of consumers do not meet the criteria of availability at reasonable cost and/or consistency of data over time.

This chapter discusses appropriate indicators or proxy indicators which could be used to measure changes in the key aspects of service quality. Where data were available, tables and figures are presented to demonstrate the use of indicators and to show recent changes in quality levels.

## CRITERIA FOR CONSTRUCTION OF INDICATORS

Criteria for construction of indicators are discussed in detail in the Bureau's conceptual study (BTCE 1992, pp. 33–37). The criteria which were applicable to this study were:

- coverage of the key aspects of service quality;
- availability of adequate data at reasonable cost;
- consistency of data over time;
- appropriate protection of commercial confidentiality;
- the possibility of significant change in performance; and
- promotion of appropriate incentives.

### Coverage of the key aspects of service quality

All key aspects of service quality should be measured to ensure that an accurate analysis of trends in service quality can be made. This is particularly critical in situations where the trends for the key aspects may be moving in different directions.

### Adequate data at reasonable cost

The data from which indicators are produced must be reasonably up-to-date and of acceptable accuracy. The data collection and compilation process should not absorb large amounts of resources relative to industry costs. However, there may be some special cases where a key indicator is prepared even though significant expense is involved.

### Consistency of data over time

The identification of trends in service quality requires that indicators are produced over a period of time. It is particularly important that the data are collected on a consistent basis over time so that data from different time periods are directly comparable.

### Appropriate protection of commercial confidentiality

There is an appropriate balance between a firm's desire to withhold commercially sensitive information from a competitor or potential competitors and the benefits to consumers from the release of information on service quality.

### The possibility of significant change in performance

Where the monitoring process is solely intended to measure changes in service quality over time, a particular aspect should only be monitored if performance can change significantly. As indicated in chapter 3, one of the main criteria for selecting the key aspects of service quality was the possibility that a particular aspect would be significantly affected by the Government's aviation reform program.

### Promotion of appropriate incentives

For some aspects of service quality, publicly available indicators can provide an incentive for service providers to maintain or improve service quality, particularly when consumers have a choice between alternative service providers.

Some of these criteria applied to all of the indicators discussed in the remainder of this chapter, while others were specific to individual service quality indicators.

## INDICATORS OF SAFETY

For the purposes of this study, safety in the aviation sector was defined in terms of the probability that an accident resulting in injury or death of passengers would

occur during any individual flight. Although many determinants of aviation safety have been documented, no system has been able to accurately predict aircraft accident rates based on changes in safety related factors. Safety levels are therefore measured after-the-fact through records of accidents, injuries, and fatalities. In this study the number of accidents per 100 000 hours flown by RPT aircraft and the total number of injuries suffered by RPT passengers were used as proxy indicators of safety.

Accidents were defined as occurrences which take place between the time any person boards an aircraft with the intention of flight until such time as all such persons have disembarked, in which:

- a person is fatally or seriously injured (except when the injuries are from natural causes, self inflicted or inflicted by other persons); or
- the aircraft incurs substantial damage, is destroyed or is missing or completely inaccessible.

Tables 4.1 and 4.2 show the number of accidents and injuries incurred by the domestic airlines and commuter operators respectively over the 1981 to 1991 period.

As indicated in tables 4.1 and 4.2, there were very few accidents in the RPT aviation industry. At the time of writing, the major domestic airlines in Australia had had no fatal accidents since 1968 and there had never been a fatal accident involving jet aircraft in the RPT sector.

TABLE 4.1 ACCIDENTS AND INJURIES — DOMESTIC AIRLINES IN AUSTRALIA, 1981 TO 1991

| | *Accidents* | | *Injuries* | | |
|---|---|---|---|---|---|
| *Year* | *Total number* | *Number per 100 000 hours flown* | *Minor* | *Serious* | *Total* |
| 1981 | 1 | 0.37 | 0 | 1 | 1 |
| 1982 | 1 | 0.37 | 0 | 0 | 0 |
| 1983 | 1 | 0.43 | 0 | 0 | 0 |
| 1984 | 0 | 0 | 0 | 0 | 0 |
| 1985 | 0 | 0 | 0 | 0 | 0 |
| 1986 | 1 | 0.37 | 0 | 0 | 0 |
| 1987 | 1 | 0.35 | 59 | 2 | 61 |
| 1988 | 0 | 0 | 0 | 0 | 0 |
| 1989 | 2 | 0.91 | 0 | 1 | 1 |
| 1990 | 2 | 0.79 | 1 | 2 | 3 |
| 1991 | 1 | 0.32 | 0 | 0 | 0 |
| Total | 10 | 0.34 | 60 | 6 | 66 |

*Source* Bureau of Air Safety Investigation.

TABLE 4.2 ACCIDENTS AND INJURIES — COMMUTER AIRLINES IN AUSTRALIA, 1981 TO 1991

| | *Accidents* | | *Injuries* | | | |
|---|---|---|---|---|---|---|
| *Year* | *Total number* | *Number per 100 000 hours flown* | *Minor* | *Serious* | *Fatal* | *Total* |
| 1981 | 5 | 3.40 | 0 | 0 | 0 | 0 |
| 1982 | 3 | 2.33 | 2 | 0 | 0 | 2 |
| 1983 | 3 | 2.38 | 1 | 0 | 0 | 1 |
| 1984 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1985 | 5 | 3.41 | 1 | 6 | 1 | 8 |
| 1986 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1987 | 1 | 0.65 | 0 | 0 | 0 | 0 |
| 1988 | 8 | 4.41 | 7 | 3 | 3 | 13 |
| 1989 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1990 | 7 | 3.47 | 0 | 0 | 0 | 0 |
| 1991 | 3 | na | 0 | 0 | 0 | 0 |
| Total | 35 | na | 11 | 9 | 4 | 24 |

na Not available

*Source* Bureau of Air Safety Investigation.

Accidents and injuries in RPT aviation occurred randomly over the 1981 to 1991 period. The large number of injuries incurred by domestic airline passengers in 1987 resulted from the use of escape slides in a single accident.

During the period September 1991 through March 1992 a comprehensive review of the capability of the Australian Air Traffic Services System to maintain safe separation between aircraft was undertaken (Ratner Associates Inc. 1992). The review team found Australia's existing system to be safe and endorsed the capability of the system changes under way to further improve safety. However, it was concluded that there is 'substantial room for improvement' and the review team made 24 recommendations for improving air safety. The CAA and BASI are planning to have all the recommendations in place before the end of 1992.

After several years of the aviation reform program, including the first full year of deregulated interstate operations, there was no evidence of an increase in accident rates in the domestic RPT aviation sector.

## INDICATORS OF PASSENGERS' ACCESSIBILITY TO THE RPT NETWORK

In the context of this study, accessibility refers to the availability of RPT aviation services within a particular community. In the United States a number of non-hub communities lost all RPT air service following deregulation (Morrison & Winston 1986). Loss of RPT services by communities in remote areas of Australia could be particularly disruptive to residents due to the long distance to the next airport.

The indicator of changes in passengers' accessibility to the network used in this study was incidents of withdrawal of all RPT services from an airport. In chapter 2 the number of airports serviced by RPT operators was given as approximately 230 as at 31 December 1991. However, the Department of Transport and Communications aviation statistics database cannot provide a consistently reliable figure for the number of airports serviced, due to non-reporting by some commuter operators. Monitoring of industry sources and press reports was therefore used to obtain information on changes in accessibility.

As at the end of August 1992, passengers' accessibility to the RPT network had not been adversely affected. There had been many changes in route networks, operators and types of aircraft used on particular routes, but no communities had lost all RPT services as a result of interstate deregulation or other aviation reform measures.

The same conclusions could be drawn from an analysis of intrastate services. The experience to the time of writing suggested that if there were disruptions to services, other operators, often using aircraft that they claimed were more suited to the particular routes, quickly recommenced services. For example, when Hazelton Airlines withdrew services to 14 New South Wales communities in September 1991, all of the routes were soon taken up by other operators.

## FREQUENCY OF SERVICE INDICATORS

Other things being equal, quality of service improves with increasing frequency of service because consumers have a greater choice of departure times and a greater probability of being able to book a flight at short notice.[1] Studies of the effects of deregulation in the United States have concluded that an increase in the frequency of flights between many locations has been one of the main benefits to consumers (US DOT 1990).

The Aviation Statistics Section of Department of Transport and Communications publishes frequency data for all city pairs for domestic airlines and commuter airlines on an annual basis (DTC 1991a, pp. 41–51, DTC 1991b, pp. 16–23). These tables are produced on a monthly basis and are publicly available on request. Frequency data are also published weekly for the top 20 routes served by domestic airlines (DTC 1992).

Service frequency data on 40 selected routes for both the domestic airlines and commuter operators were compiled for the June quarters in 1990 and 1991 (BTCE 1991). The routes chosen comprised the top 40 city pair routes in terms

1. The probability of being able to book a flight at short notice will only increase if the increase in flight frequency results in at least the same availability of seats. If an increase in flight frequency merely reflects increasing demand, or if there is a substitution of smaller aircraft on a particular route, an increase in the frequency of flights may not maintain or increase the availability of seats.

of the numbers of passengers carried (traffic on-board) by the domestic airlines during January 1990. Table 4.3 presents an updated comparison of service frequency on these routes for the September quarters of 1990 and 1991.

Table 4.3 shows that the number of trips[2] and passengers[3] on the selected routes increased by 20 per cent and 36 per cent respectively from the September quarter 1990 to the September quarter 1991. All of the major intercapital routes experienced large increases in flight frequency as did major tourist destinations such as Coolangatta, Cairns and Hamilton Island. Only eight of the 40 routes incurred a decrease in flight frequency.

A quarterly time series showing flight frequency by the domestic airlines (excluding commuter operators) on the selected routes from the March quarter 1990 to the June quarter 1992 is presented in appendix I. A comparison of the June quarters in 1990 and 1992 shows that the number of trips on these routes had increased by 28 per cent. A comparison of frequency for the June quarters in 1991 and 1992 shows an increase of 10 per cent. This increase occurred in spite of the fact that Compass Airlines was operating only in 1991, and two of the routes were no longer serviced by a 'domestic airline' during the June quarter 1992.

A quarterly index of flight frequency for the top 50 domestic airline routes[4] over the June 1990 to March 1992 period was also constructed (figure 4.1).

Figure 4.1 illustrates that flight frequency on the top 50 routes increased by about 22 per cent between the 1990 and 1991 December quarters and by 13 per cent between the 1991 and 1992 March quarters. The larger increase shown by the index, as compared to appendix table I.1, was due to the weightings given to the busier routes, which also had the largest percentage increases in flight frequencies.

The data in table 4.3, appendix table I.1 and figure 4.1 indicate that consumers benefited from an overall increase in flight frequency following deregulation. However, as shown in appendix table I.1, load factors increased substantially in the second half of 1991. High load factors may mean that some passengers were denied boarding on the flight of their choice, forcing them into a less convenient time for departure. It was concluded by Smith and Street (1992) that

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2. A trip is a one-way flight between the designated centres.

3. The passenger data are traffic on-board passengers travelling non-stop between the designated centres. The origin and destination of passengers was not considered. Thus, they were counted more than once if their journey involved intermediate stops.

4. The routes included in the index were those which were in the top 50 routes on the basis of passenger numbers during the June 1990 quarter, and which continued to be served in every subsequent period. The index was constructed according to Laspeyres formula (that is,

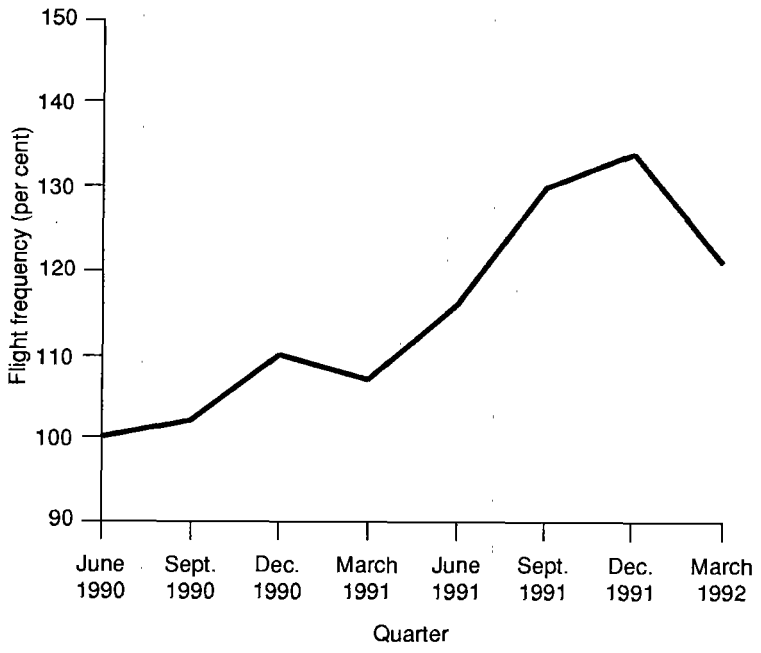
$$\frac{\Sigma q_{ni} p_{oi}}{\Sigma q_{oi} p_{oi}}$$

where $q_{ni}$ = number of flights in period $n$ on route $i$, and $p_{oi}$ = number of passengers in period 0 on route $i$ weighted by the number of passengers on each route in the June quarter 1990).

TABLE 4.3 COMPARISON OF REGULAR PUBLIC TRANSPORT SERVICE FREQUENCIES ON SELECTED ROUTES BETWEEN SEPTEMBER QUARTER 1990 AND SEPTEMBER QUARTER 1991

| | *September quarter 1990* | | *September quarter 1991* | | *Percentage change from September quarter 1990 to 1991* | |
|---|---|---|---|---|---|---|
| *Route* | *Trips* | *Passengers* | *Trips* | *Passengers* | *Trips* | *Passengers* |
| Melbourne–Sydney | 5 405 | 618 576 | 7 364 | 923 425 | 36 | 49 |
| Brisbane–Sydney | 3 925 | 444 995 | 4 749 | 658 341 | 21 | 48 |
| Adelaide–Melbourne | 2 169 | 218 737 | 2 808 | 295 016 | 29 | 35 |
| Coolangatta–Sydney | 1 982 | 166 273 | 2 569 | 236 819 | 30 | 42 |
| Brisbane–Melbourne | 1 604 | 161 416 | 2 023 | 223 880 | 26 | 39 |
| Hobart–Melbourne | 1 221 | 104 428 | 1 488 | 127 469 | 22 | 22 |
| Adelaide–Sydney | 1 356 | 129 509 | 1 636 | 175 491 | 21 | 36 |
| Melbourne–Perth | 878 | 99 363 | 1 734 | 208 850 | 97 | 110 |
| Launceston–Melbourne | 1 757 | 74 551 | 1 693 | 88 359 | –4 | 19 |
| Brisbane–Cairns | 987 | 95 425 | 1 722 | 197 466 | 74 | 107 |
| Perth–Sydney | 571 | 64 527 | 1 112 | 132 084 | 95 | 105 |
| Canberra–Sydney | 3 261 | 161 725 | 3 827 | 196 066 | 17 | 21 |
| Canberra–Melbourne | 1 929 | 109 578 | 1 920 | 130 446 | 0 | 19 |
| Brisbane–Townsville | 1 096 | 99 612 | 1 101 | 97 134 | 0 | –2 |
| Melbourne–Coolangatta | 570 | 64 020 | 918 | 96 624 | 61 | 51 |
| Adelaide–Perth | 685 | 66 198 | 725 | 73 428 | 6 | 11 |
| Adelaide–Alice Springs | 374 | 51 463 | 382 | 35 683 | 2 | –31 |
| Alice Springs–Darwin | 404 | 51 547 | 459 | 41 167 | 14 | –20 |
| Brisbane–Rockhampton | 895 | 51 742 | 757 | 41 771 | –15 | –19 |
| Karratha–Perth | 499 | 28 366 | 531 | 30 135 | 6 | 06 |
| Hobart–Sydney | 180 | 10 595 | 193 | 12 160 | 7 | 15 |
| Devonport–Melbourne | 736 | 25 375 | 828 | 29 943 | 13 | 18 |
| Hamilton Island–Sydney | 227 | 17 256 | 349 | 31 835 | 54 | 84 |
| Coffs Harbour–Sydney | 638 | 25 892 | 561 | 26 315 | –12 | 2 |
| Cairns–Townsville | 1 243 | 44 485 | 1 168 | 26 707 | –6 | –40 |
| Brisbane–Hamilton Island | 287 | 18 633 | 235 | 14 774 | –18 | –21 |
| Brisbane–Darwin | 282 | 26 576 | 305 | 28 673 | 8 | 8 |
| Kalgoorlie–Perth | 601 | 21 942 | 705 | 22 710 | 17 | 4 |
| Brisbane–Mackay | 458 | 24 568 | 467 | 24 538 | 2 | 0 |
| Alice Springs–Cairns | 336 | 20 042 | 341 | 20 701 | 1 | 3 |
| Alice Springs–Sydney | 365 | 31 071 | 393 | 39 229 | 8 | 26 |
| Darwin–Kununurra | 244 | 13 100 | 208 | 11 472 | –15 | –12 |
| Perth–Port Hedland | 207 | 11 817 | 246 | 11 510 | 19 | –3 |
| Cairns–Sydney | 312 | 32 488 | 469 | 67 782 | 50 | 109 |
| Devonport–Sydney | 223 | 13 856 | 184 | 12 369 | –17 | –11 |
| Alice Springs–Ayers Rock | 464 | 17 028 | 460 | 28 916 | –1 | 70 |
| Geraldton–Perth | 532 | 13 666 | 547 | 13 100 | 3 | –4 |
| Sydney–Wagga | 511 | 18 405 | 513 | 18 932 | 0 | 3 |
| Mackay–Rockhampton | 754 | 17 174 | 884 | 16 811 | 17 | –2 |
| Broome–Perth | 184 | 11 509 | 213 | 12 819 | 16 | 11 |
| Total | 37 264 | 3 234 885 | 44 756 | 4 413 161 | 20 | 36 |

*Source* BTCE (from Department of Transport and Communications aviation statistics database).




*Sources* BTCE, ( from Department of Transport and Communications aviation statistics database).

**Figure 4.1 Flight frequency index, top 50 routes**

the net impact on consumer welfare of greater frequency and higher load factors was a welfare gain in the first half of 1991 and a smaller welfare loss in the second half of the year.

## INDICATORS OF NON-STOP SERVICE

Consumer benefits from non-stop services include shorter transit times, reduced anxiety for passengers because of fewer landings and take-offs, greater security for luggage, and avoidance of the inconvenience of changing aircraft.

Consumers would generally prefer to fly non-stop between their origin and destination airports. However, there is often a trade-off between the service quality aspects of frequency and non-stop service. Thus, for example, following deregulation in the United States, there was a decrease in non-stop services between many locations due in large measure to the establishment of hub-and-spoke networks. The hub-and-spoke system enabled the airlines to offer increased frequency of service between hub-and-spoke locations at the expense of a decrease in non-stop services between many non-hub locations.

An analysis of non-stop passenger services provided by the domestic airlines indicated that the number of non-stop city pair routes had increased from 151 in the June quarter 1991 to 171 in the June quarter of 1992.

The available evidence on number of non-stop routes and frequency of non-stop services indicated that there was a small net benefit to consumers due to an increased availability of non-stop services to the end of June 1992.

## INDICATORS OF ON-TIME PERFORMANCE

On-time performance indicators will assist in evaluating the performance of the incumbent airlines and any new entrants, as well as in determining if aviation infrastructure is coping with changing demand patterns.[5]

By international convention, aircraft arrivals at and departures from the terminal within 15 minutes of the scheduled times are considered to be on-time. Delays of this magnitude can frequently be 'made up' or accommodated in the traveller's schedule with little or no inconvenience. However, consumer inconvenience may increase significantly with delays of longer duration.

From the consumer's point of view, the relevant aircraft departure and arrival times against which to measure on-time performance are the times which are listed in the airline's computer reservation system at the time the booking is made. Any change in arrival or departure times after the booking is made is likely to inconvenience the passenger. The degree of inconvenience can be assumed to increase as the remaining time before the scheduled departure decreases (see box 4.1).

On-time performance indicators for the five mainland State capital airports were derived from raw data available from the flow management system of the CAA. The data were collected for internal CAA administrative purposes and were not compiled in a format which could easily be used to measure on-time performance. Considerable processing of the data was required to match records of arrivals and departures from the CAA's charging system with scheduled arrival and departure data provided by the airlines from their computer reservation systems. This process provided a large sample of matched aircraft arrivals and departures from which percentages of on-time and delayed arrivals and departures were calculated.

Figures 4.2 to 4.6 show the on-time performance of RPT flights at Sydney, Melbourne, Brisbane, Adelaide and Perth airports in July, August and September of 1991 and 1992.

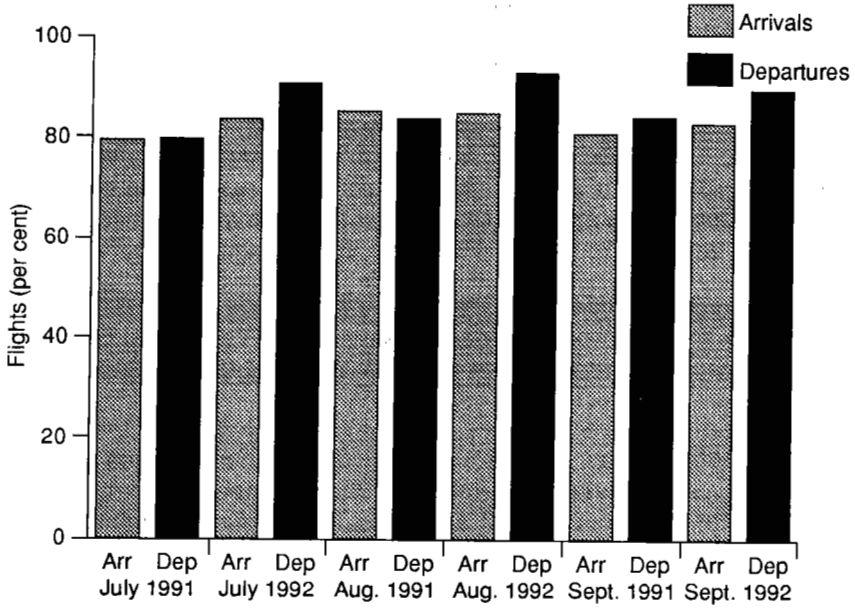
The figures show that there was an improvement in on-time performance at each of the airports in July, August, and September of 1992 in comparison to the same months in 1991, with the exceptions of arrivals during August in Sydney, and

5. A deterioration in on-time performance has been another major negative effect of deregulation in the United States. The increase in United States flight delays appears to have occurred primarily because infrastructure capacity has not kept pace with the increase in demand following deregulation (BTCE 1991, p. 54). On-time performance indicators for the ten largest US carriers are published in the monthly *Air Travel Consumer Report* of the US Department of Transportation (US DOT 1992).

BOX 4.1 ON-TIME PERFORMANCE

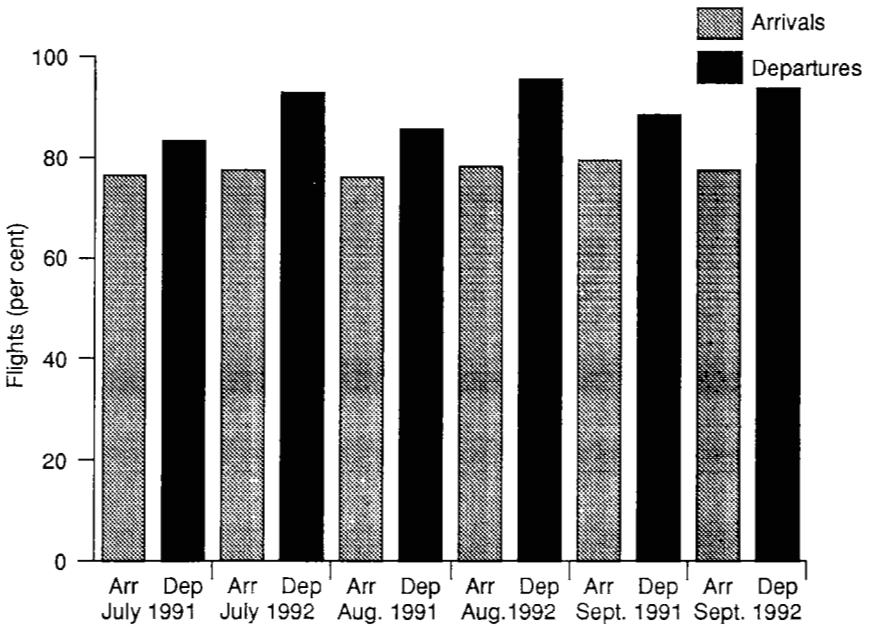
For the purposes of this study an aircraft arrival was considered to be on-time if the time of arrival at the terminal was within 15 minutes of the originally scheduled time. As the available arrival times were aircraft touchdown times, they were adjusted by 5 minutes to approximate arrival at the terminal. A departure was on-time if the aircraft pushed back from the gate or was given permission to taxi within 15 minutes of the originally scheduled departure time. The originally scheduled times were considered to be appropriate for measuring on-time performance as, according to industry sources, about 90 per cent of passengers book their flights more than 24 hours in advance of departure and the vast majority of schedule changes occur within 24 hours of departure. These schedule changes therefore represent an inconvenience to most passengers who must adjust their affairs at short notice.

September in Melbourne. The on-time performance of departures was better than that of arrivals in all cases except Sydney in August 1991. Sydney had the best record for arrival performance in 1992 (84 per cent on-time), followed by Brisbane with 82 per cent of arrivals on-time. Approximately 95 per cent of aircraft departed on-time from Adelaide in the September quarter 1992, followed by Brisbane and Melbourne with 94 per cent of departures on-time. For the five airports 80 per cent of arrivals and 93 per cent of departures were on-time during the September quarter 1992 compared to 76 per cent of arrivals and 85 per cent of departures on-time in 1991.



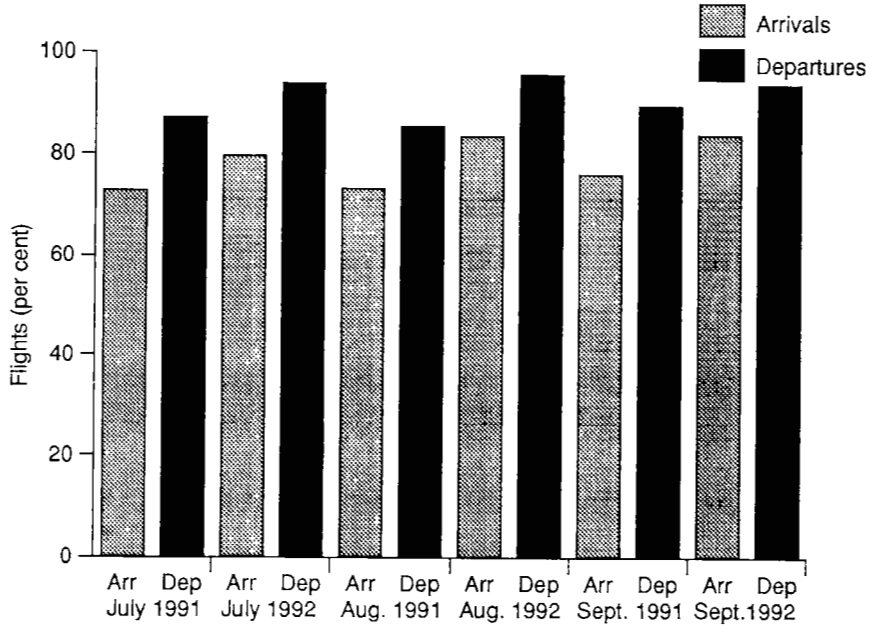

*Source* BTCE (from CAA flow management database).

**Figure 4.2 Percentage of flights arriving and departing within 15 minutes of the scheduled time — Sydney**



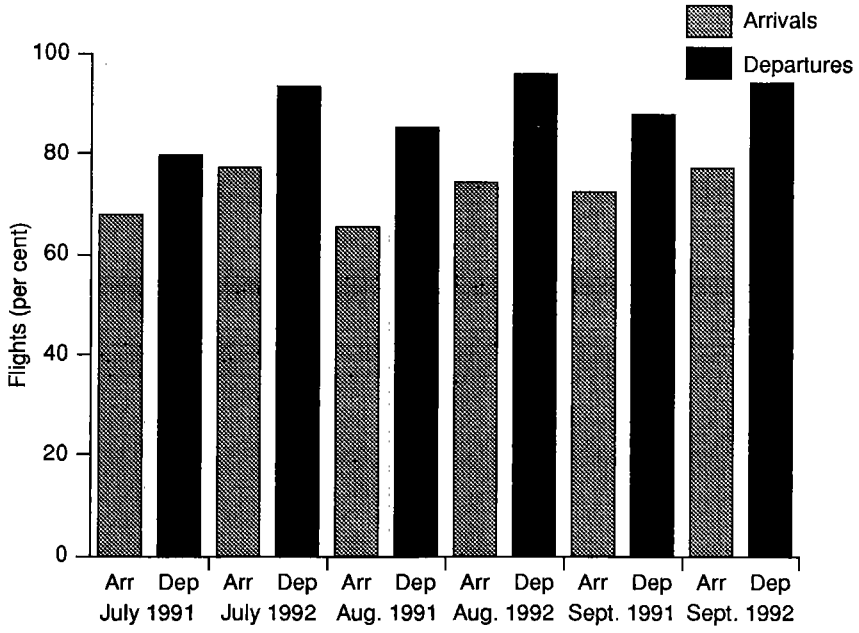

*Source* BTCE (from CAA flow management database).

**Figure 4.3 Percentage of flights arriving and departing within 15 minutes of the scheduled time — Melbourne**



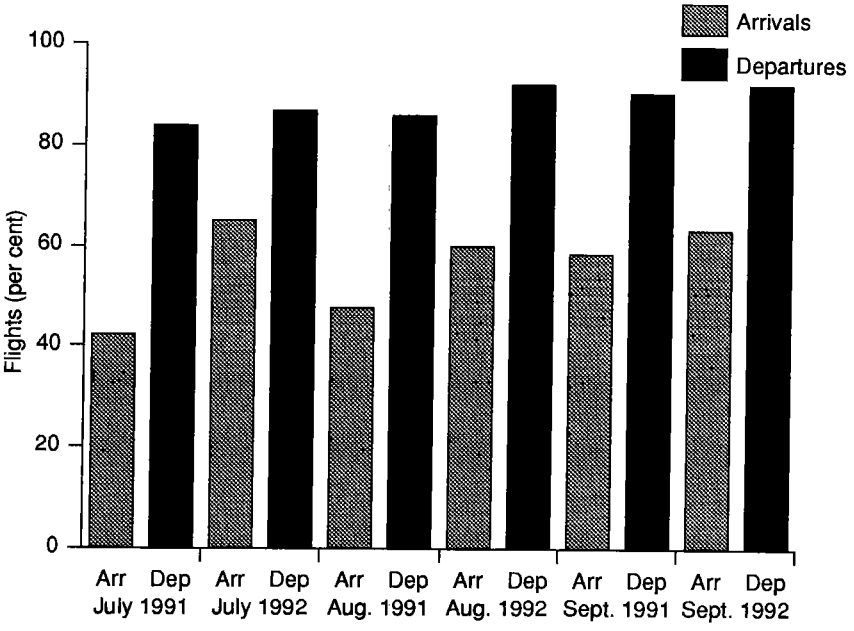

*Source* BTCE (from CAA flow management database).

**Figure 4.4 Percentage of flights arriving and departing within 15 minutes of the scheduled time — Brisbane**




*Source* BTCE (from CAA flow management database).

**Figure 4.5 Percentage of flights arriving and departing within 15 minutes of the scheduled time — Adelaide**




*Source* BTCE (from CAA flow management database).

**Figure 4.6 Percentage of flights arriving and departing within 15 minutes of the scheduled time — Perth**

Appendix figures II.1 to II.5 depict regular public transport flight delays at the five major airports. It must be remembered that, by definition, arrivals and departures are considered to be on-time if they are within 15 minutes of the originally scheduled times. The delay time categories presented therefore start at 15 minutes after the scheduled times.

For all airports the data showed that, for those aircraft which were delayed, the majority of both arrival and departure delays were between 15 and 29 minutes. Delays of 45 minutes or more occurred with about the same frequency as delays between 30 and 44 minutes. Additional information would have been required to determine to which of several possible causes, such as airline procedures, industrial practices, infrastructure shortcomings, or the weather, delays were attributable.

Measurement of congestion delays at airports is discussed in the following section.

## INDICATORS OF AIRPORT SERVICES AND FACILITIES

A number of recent events in Australia attest to the importance of airport services and facilities as an aspect of quality of service. In the lead-up to deregulation an extensive program of investment in airport ground facilities and terminal buildings was undertaken by the FAC and by Ansett and Australian Airlines. In the debate over the third runway at Kingsford Smith Airport and the second Sydney airport the advantages to the consumer and to the economy of having adequate airport facilities were stressed. The importance of terminal facilities and services such as airline club lounges and priority check-in procedures featured prominently in the debate over the Compass collapse (Nyathi, Hooper & Hensher 1992).

Quality of service of airports encompasses every aspect of their operations, including the infrastructure and facilities for handling aircraft in the air and on the ground and all facilities provided for passengers and other users. There is an extensive body of literature on the subject of airport planning and design and measurement of the quality of service at airports. A review of recent research in this field is provided in *Transportation Research* (1992).

Studies of quality of service in airport terminals have used consumer surveys to determine which aspects of service quality most affect consumers' perceptions of the level of quality provided. Martel and Seneviratne (1990) established an extensive framework for measuring the quality of service at airports, including parking and curbside facilities, check-in facilities, internal circulation areas, public waiting areas, concessions and amenities, security checking procedures, departure lounges, aircraft boarding procedures, and information systems.

Mumayiz and Ashford (1986) used a less complex framework for measuring the level of service at airports, comprising airline check-in, security screening, passport control, immigration, baggage claim, and customs control. This framework was based on the premise that delays in service are the most relevant

*Domestic air travel*
Ticketing
Check-in
Security clearance
Baggage delivery
*International air travel*
Ticketing
Check-in
Security clearance
Immigration
Customs clearance
Quarantine clearance
Baggage delivery

Indicators which measured delay due to these operations would show whether airport infrastructure and operating systems were coping with demand.

*Availability of data*

Passenger movements through airports can be separated into four streams:

- arriving international passengers;
- departing international passengers;
- arriving domestic passengers; and
- departing domestic passengers.

At the time of publication, indicators could not be compiled for delays experienced by outbound international passengers, or by arriving and departing domestic passengers. The only data which were publicly available related to arriving international passengers. Indicators of delays experienced by these passengers and data requirements for the other passenger streams are discussed below.

The Australian Customs Service (ACS) has responsibility for primary processing of all international passengers (including immigration and quarantine clearance for most passengers). Inwards passengers generally join only one queue for customs, immigration, and quarantine processing. Only a small percentage of passengers, usually those whose circumstances are not straightforward, are required to undergo additional clearance procedures.

Having only one agency clearing the vast majority of inbound passengers facilitates the collection and compilation of data on passenger processing delays. ACS have established a target rate of 95 per cent of passengers cleared within 30 minutes. Processing rates are monitored by the ACS and sufficient resources are allocated to meet the target rate under normal circumstances.

Table 4.4 and figure 4.8 show the percentage of passengers processed through the entry control point in under 30 minutes at Australia's international airports. The table and the figure show an overall improvement in the percentage of passengers cleared through the entry control point in less than 30 minutes in

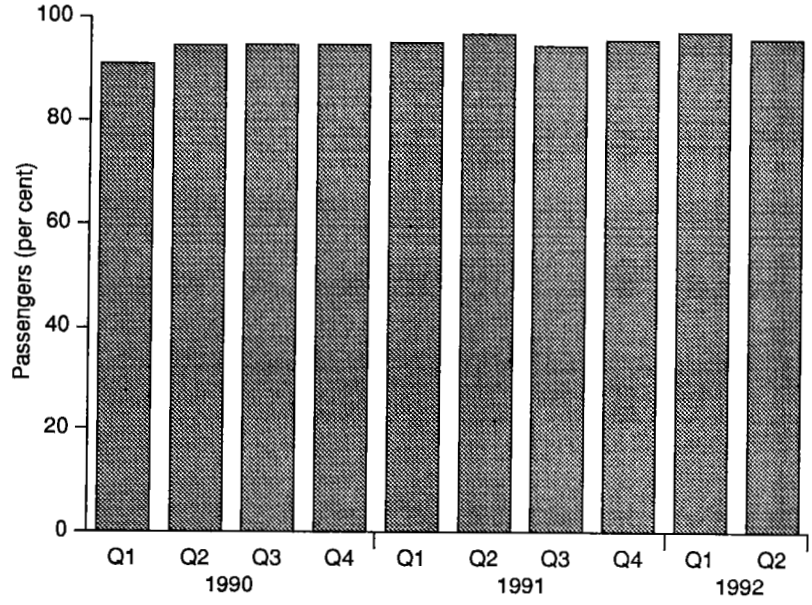
TABLE 4.4 PERCENTAGE OF PASSENGERS PROCESSED THROUGH THE CUSTOMS ENTRY CONTROL POINT IN LESS THAN 30 MINUTES, BY QUARTER, JANUARY 1990 TO JUNE 1992

*(per cent)*

| | *1990* | | | | *1991* | | | | *1992* | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Airport* | *March* | *June* | *Sept.* | *Dec.* | *March* | *June* | *Sept.* | *Dec.* | *March* | *June* |
| Sydney | 91.7 | 95.6 | 93.5 | 95.0 | 95.1 | 97.1 | 94.7 | 96.4 | 97.7 | 95.9 |
| Melbourne | 91.3 | 93.3 | 97.2 | 95.9 | 95.6 | 97.7 | 95.5 | 95.9 | 97.8 | 96.3 |
| Brisbane | 92.3 | 93.6 | 93.2 | 93.5 | 94.0 | 96.8 | 93.8 | 94.4 | 95.1 | 93.9 |
| Cairns | 89.8 | 93.0 | 94.6 | 95.7 | 97.4 | 97.1 | 94.1 | 95.9 | 97.5 | 97.3 |
| Townsville | 96.4 | 94.7 | 90.2 | 98.5 | 86.1 | 99.9 | .. | .. | .. | .. |
| Perth | 85.4 | 96.6 | 95.7 | 92.0 | 96.5 | 94.2 | 93.1 | 94.2 | 97.1 | 97.2 |
| Adelaide | 92.9 | 93.4 | 96.1 | 95.4 | 94.3 | 95.3 | 94.0 | 94.4 | 99.1 | 96.6 |
| Hobart | 97.9 | 97.5 | 93.7 | 92.7 | 87.7 | 97.4 | 94.8 | 97.9 | 97.7 | 93.5 |
| Darwin | 88.3 | 87.9 | 94.3 | 93.9 | 95.2 | 95.6 | 95.5 | 95.5 | 95.0 | 94.5 |
| Average | 90.8 | 94.5 | 94.6 | 94.7 | 95.2 | 96.8 | 94.5 | 95.7 | 97.2 | *95.9* |

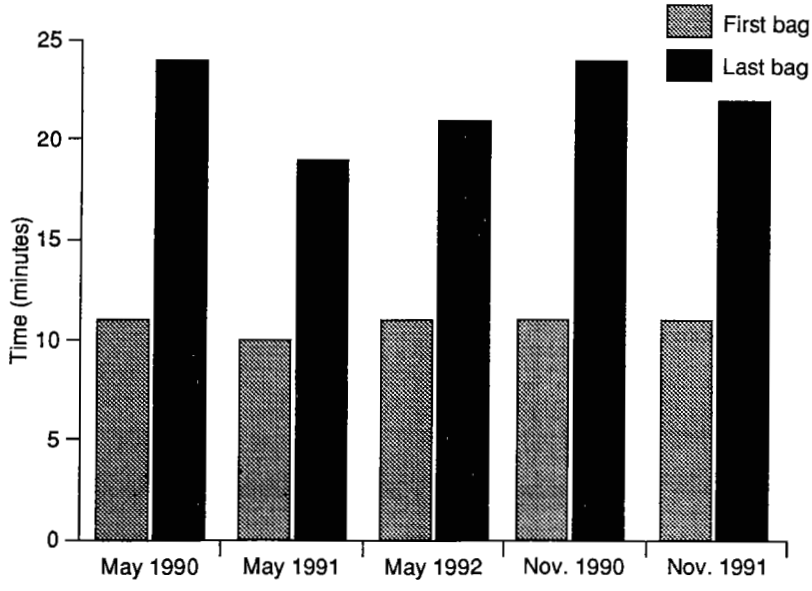
.. Figures are no longer kept for Townsville

*Source* Australian Customs Service.




*Source* Australian Customs Service.

**Figure 4.8 Percentage of passengers processed through customs in less than 30 minutes**




*Source* Australian Customs Service.

**Figure 4.9 Time required for the first and last bags to be delivered from international flights 1990–92**

TABLE 4.5 TIME REQUIRED FOR THE FIRST AND LAST BAGS TO BE DELIVERED FROM INTERNATIONAL FLIGHTS, 1990 TO 1992[a]
*(minutes)*

| | 1990 | | 1991 | | 1992 | |
|---|---|---|---|---|---|---|
| *Airport* | *First bag* | *Last bag* | *First bag* | *Last bag* | *First bag* | *Last bag* |
| Sydney | 15 (14) | 38 (35) | 13 (15) | 30 (33) | 15 | 32 |
| Melbourne | 14 (12) | 31 (26) | 12 (12) | 25 (30) | 13 | 26 |
| Brisbane | 9 (10) | 20 (20) | 7 (9) | 9 (18) | 10 | 19 |
| Perth | 9 (8) | 21 (23) | 8 (10) | 21 (24) | 6 | 20 |
| Adelaide | 11 (11) | 20 (25) | 10 (11) | 20 (22) | 11 | 20 |
| Cairns | 14 (11) | 21 (19) | 10 (8) | 15 (11) | 9 | 16 |
| Hobart | 7 (10) | 20 (25) | 7 (10) | 19 (22) | 8 | 18 |
| Average | 11 (11) | 24 (24) | 10 (11) | 19 (22) | 11 | 21 |

a. Surveys are undertaken in May and November each year. Figures in brackets are for November.

*Source* Australian Customs Service.

1991 and the first half of 1992, when compared to 1990. It was concluded that the level of service and infrastructure available for clearing inwards passengers adequately coped with the increase in demand over the study period.

ACS also conduct a survey of baggage processing rates in May and November each year. The standards set for baggage delivery are first bag to be delivered within 15 minutes and last bag to be delivered within 35 minutes.

Data for 1990, 1991 and the May 1992 survey are presented in table 4.5 and figure 4.9. The data show that the standards set by ACS were being met and baggage delivery times did not deteriorate over the May 1990 to May 1992 period.

The passenger processing operations for which there were no publicly available data were ticketing, check-in, and security clearance for both international and domestic passengers, baggage delivery for domestic air travel, and customs clearance of outward international passengers. With the exception of baggage delivery, measures of the average delay from the time the passenger arrives at the processing point, or joins a queue, until the procedure is complete were considered to be the most appropriate indicators for these operations. For domestic baggage delivery operations baggage processing rates as in table 4.5 would be the appropriate indicators.

Alternatives for obtaining the required data include requesting the voluntary reporting of data by service providers, extending data reporting requirements under existing legislation, or data collection by a single, external agency using sampling procedures. Ideally, the data obtained should allow indicators to be compiled which would show:

- individual airline performance, where applicable, as an incentive for airlines to provide appropriate levels of service;

- service levels available at all major airports, and at other airports on an ad hoc basis, to enable comparisons between airports;
- peak period delays as well as average times required to complete the various procedures during non-peak periods; and
- delays at comparable time periods each year so that changes in service quality over time can be monitored.

## INDICATORS OF ON-BOARD COMFORT AND SERVICE

The aspect of on-board comfort and service comprises numerous characteristics. Passenger comfort and service is a major consideration in any airline's choice of aircraft type. The airlines' marketing strategies and the overall economics of the aircraft are both important in decisions on aircraft type and fit-out options such as galleys, carry-on baggage storage areas, and the pitch and width of seats.

An important determinant of on-board comfort is the space available for individual passengers. The width and pitch of seats is determined by airline management, although larger aircraft provide increased scope to maximise passenger comfort. Other characteristics of on-board comfort, such as the quality of air conditioning and the stability of the aircraft, are determined by the aircraft design.

Passengers perceptions of on-board service are frequently based on the quality of the catering services provided. Other characteristics of service include the provision of newspapers and magazines, the friendliness of cabin attendants and more recently the availability of on-board movies.

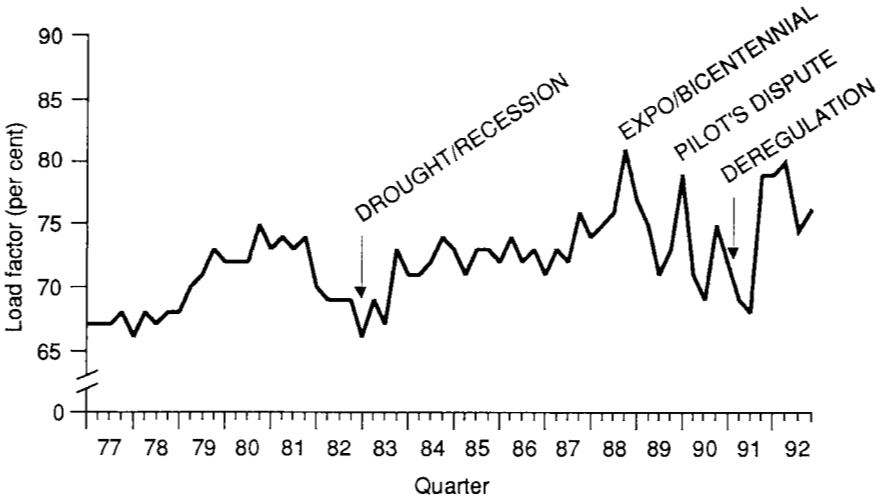
### Load factors

In BTCE (1991) the Bureau considered the impact of load factors on quality of on-board and on-the-ground service. High load factors result in more crowding in airport terminals (for example, during check-in and baggage retrieval) and on-board the aircraft, and in increased ratios of passengers to flight attendants.[7]

The Department of Transport and Communications publishes load factors on the top 20 routes in its *Domestic Airline Activity Weekly Status Report* (DTC 1992). Load factors on all routes serviced by both the domestic airlines and commuter airlines are also reported in the monthly traffic on-board tabulations produced by the Department.

Analysis of the load factor data presented in appendix table I.1 showed significant increases in the average load factors in the last two quarters of 1991 and the first two quarters of 1992, when compared to the same periods in the previous year. The increase was most pronounced on the routes between the five mainland

7. It can be argued that high load factors do not degrade on-board comfort and service, on the grounds that airline operations are geared to and staffed for full aircraft.




*Sources* BTCE, (from Department of Transport and Communications aviation statistics database).

**Figure 4.10 Domestic airline passenger load factors**

State capital cities, with the average load factor increasing from 69.4 per cent in the June quarter of 1991 to 77.7 per cent in the June quarter of 1992.

A long-term graph of load factors for the domestic airlines is presented in figure 4.10. With the exception of the third quarter of 1988 and the fourth quarter of 1989, more recent load factors were at historically high levels. The 1988 peak was attributable to demand generated by the Bicentennial celebrations. The 1989 peak was due to the restricted aircraft availability resulting from the airline pilots' strike. Lower load factors during the first half of 1991 reflected the increased airline capacity introduced by Compass. In the second half of 1991 load factors rose dramatically as a result of the increased demand generated by the extensive fare discount wars during that period. With the halt to Compass operations in December 1991, capacity was again reduced and load factors continued to rise in the first quarter of 1992.

A drop-off in demand during the June quarter 1992 resulted in a decrease in load factors to 74.6 per cent from 79.8 per cent in the March quarter. Beginning in mid July, weekly load factors dropped below their corresponding 1991 levels. This trend continued through August and September.

## Conclusions

With the exception of load factors, there were no systematic measures of on-board comfort and service which were publicly available. Airline advertisements and media reports were monitored for information such as changes in the quality of seating and catering. These sources were the basis of

Although some improvements in the quality of service provided by the domestic airlines were implemented prior to deregulation, the increased competition which resulted from deregulation was undoubtedly the major causal factor in the airlines' improved quality of service. It could also be argued that other reform measures such as the commercialisation of the FAC and the CAA enabled quality of service to be maintained in spite of increased demands on airport and safety infrastructure. The Australian Customs Service also increased its level of service to arriving passengers.

## INTERNATIONAL COMPARISONS OF QUALITY OF SERVICE

International comparisons of service quality as a basis for determining appropriate levels of quality are discussed in BTCE (1992). A number of difficulties in undertaking international comparisons of quality of service are mentioned. These include a lack of comparability of statistical measures, differences in the 'service' being compared, and differing consumer weightings on particular aspects of service.

Price–quality trade-offs present a particular problem with international comparisons in the case of domestic passenger aviation. Higher levels of quality are generally available in higher priced fare categories. Quality levels in all fare categories are, however, at least partially determined by the cost–price structure of the industry. The cost–price structure is determined by factors such as market size and the extent of regulation and competition in the industry. International comparisons of quality of service without reference to price may therefore present a misleading picture. It must also be kept in mind that the price to quality ratio will reflect consumers' preferences in competitive markets. Quality levels in any particular market may therefore not be useful as a guide to appropriate levels of quality in other markets.

Notwithstanding the above, on the basis of largely anecdotal evidence obtained from industry sources and media reports, the quality of service provided by the Australian domestic passenger aviation industry compared favourably in many respects with that available in other domestic markets. Safety, on-board comfort and service provided for discount and economy passengers, and facilities and services provided to airline club members, were most frequently reported as being generally superior to overseas. In addition, the latest International Air Transport Association figures showed that 20 per cent of all flights in Europe were delayed by an average of 20 minutes because of airport and air traffic congestion (*Australian Financial Review* 1992). This compared to the figure of approximately 13 per cent of flights at the five mainland State capital airports in Australia which arrived or departed more than 15 minutes late during the September quarter 1992.

## FUTURE DEVELOPMENT OF QUALITY OF SERVICE INDICATORS

A significant deficiency in the data required for a comprehensive aviation quality of service measurement system is in regard to the quality of service provided in

airport terminals. With the merger of Qantas and Australian Airlines in September 1992 and the progressive dismantling of the barriers between international and domestic aviation beginning in the second half of 1992, terminal facilities and operations at a number of Australia's airports may require major changes. Restructuring options might include changing existing terminals to common-user domestic terminals, converting existing international terminals to both international and domestic use, and the construction of new terminal buildings. There is a need for service quality indicators which would show the effect of the reforms and the restructuring options chosen.

Passenger processing delays are considered to be the best measure of quality of service levels in airport terminals. However, there were no publicly available data from which to construct indicators of delays for domestic passengers or for outbound international passengers. The passenger processing operations which are most subject to delay as demand increases are ticketing and check-in, security clearance, and baggage delivery.

It was also considered that an extension of the data available from the Australian Customs Service on baggage delivery times for international flights, to include indicators for individual airlines, would provide an incentive for airlines to improve their performance.

Publication of on-time performance data for individual airlines at selected airports, and reporting and publication of data on cancelled flights for individual airlines, would also encourage the provision of high standards of service quality.

Classification and reporting of the reasons for delays would highlight areas where improved performance could be achieved.

**Development of a consumer complaints database**

One means of obtaining consumers' direct views on various aspects of service quality is through compilation and analysis of consumer complaints. At time of publication there was no central complaints database for the aviation industry. Consumers lodge complaints with one or more of several State and Federal government agencies as well as with the operators. The Prices Surveillance Authority and the Trade Practices Commission respond to consumer complaints within their jurisdiction by querying the airline concerned.

Consumer complaints could be a very valuable indicator of changes in quality of service and could indicate specific problems developing in particular market segments. For some aspects of quality, such as loss of or damage to baggage, complaints are the only possible data source.

The US Department of Transportation publishes a monthly summary of aviation consumer complaints which have been filed with it (US DOT 1992). Airlines are listed individually if the Department receives five or more complaints against them during the reporting period. In addition, the Department requires the 12 largest

US airlines to report incidences of mishandled baggage. These data are also published on an individual airline basis.

It was considered that a central consumer complaints database in Australia could be a valuable tool in monitoring quality of service and in encouraging the provision of standards of quality appropriate to consumer needs. However, further investigation of the options for establishing a centralised consumer complaints database (including the costs involved) would be required before a conclusion on its feasibility could be reached.

# APPENDIX I FREQUENCY OF SERVICE PROVIDED BY DOMESTIC AIRLINES

This appendix presents data on flight frequencies, passenger numbers, route capacity and average load factors on 40 selected routes served by the domestic airlines in Australia during 1990, 1991 and the first half of 1992. It demonstrates the use of data provided by the airlines to the Department of Transport and Communications to produce time series of quality of service indicators for a particular set of routes.

The data in table I.1 were obtained from the Department of Transport and Communications traffic on-board tabulations for the domestic airlines. The passenger data represent passengers travelling non-stop between the designated centres regardless of origin and destination. Thus, passengers were counted more than once if their total journey involved intermediate stops (for example, Sydney–Melbourne–Perth).

Seating capacity on any individual route was derived by factoring up the passenger numbers by the average load factor. Passenger numbers and seat availability were included in table I.1 to enable the analyst to more accurately interpret the trends in frequency of service over time. For example, an increase in frequency may have been due to the substitution of smaller aircraft on a particular route. There may then have been an offsetting decrease in the quality of service in regard to aspects such as on-board comfort and service.

A comparison of the June quarters in 1990 and 1992 showed that the number of trips on the selected routes increased by 28 per cent. There was a 22 per cent increase in seat numbers, with seating capacity on the Melbourne–Sydney route exceeding 1 million in the last three quarters of 1991 and the second quarter of 1992. Passenger numbers rose by 31 per cent in the June quarter of 1992 when compared to the June quarter 1990.

Comparing the June quarter figures for 1991 and 1992 showed an increase of 10 per cent in the number of trips on the selected routes. This increase occurred in spite of the demise of the original Compass Airlines in December 1991 and the discontinuing of services to Devonport by Eastwest Airlines in 1992. Although Devonport was no longer serviced by a domestic carrier, two commuter operators continued to provide regular public transport services. The number of

passengers increased by 12 per cent from the June quarter 1991 to the June quarter 1992. The demise of the original Compass Airlines was reflected in a much smaller increase of 3 per cent in seat availability and an increase in the average load factor from 67.3 per cent to 71.1 per cent.

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992

| *Route* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *January–March 1990* | | | | |
| Melbourne–Sydney | 5 216 | 602 224 | 67.1 | 897 948 |
| Brisbane–Sydney | 3 258 | 383 059 | 74.3 | 515 557 |
| Adelaide–Melbourne | 1 816 | 186 027 | 74.1 | 250 936 |
| Coolangatta–Sydney | 1 556 | 138 617 | 81.0 | 171 203 |
| Brisbane–Melbourne | 1 200 | 132 026 | 73.1 | 180 693 |
| Hobart–Melbourne | 1 207 | 113 486 | 71.5 | 158 648 |
| Adelaide–Sydney | 1 203 | 122 871 | 78.9 | 155 796 |
| Melbourne–Perth | 804 | 100 686 | 77.8 | 129 361 |
| Launceston–Melbourne | 1 319 | 86 475 | 75.3 | 114 790 |
| Brisbane–Cairns | 766 | 71 361 | 70.5 | 101 269 |
| Perth–Sydney | 598 | 69 549 | 68.8 | 101 040 |
| Canberra–Sydney | 1 069 | 94 659 | 77.1 | 122 774 |
| Canberra–Melbourne | 1 119 | 93 085 | 69.3 | 134 322 |
| Brisbane–Townsville | 619 | 70 296 | 73.1 | 96 120 |
| Melbourne–Coolangatta | 471 | 48 465 | 76.8 | 63 078 |
| Adelaide–Perth | 482 | 45 564 | 75.3 | 60 510 |
| Adelaide–Alice Springs | 330 | 34 349 | 76.3 | 45 038 |
| Alice Springs–Darwin | 347 | 30 195 | 62.4 | 48 389 |
| Brisbane–Rockhampton | 340 | 25 245 | 68.2 | 37 034 |
| Karratha–Perth | 408 | 22 750 | 75.4 | 30 172 |
| Hobart–Sydney | 260 | 17 740 | 75.2 | 23 590 |
| Devonport–Melbourne | 361 | 21 164 | 83.4 | 25 366 |
| Hamilton Island–Sydney | 191 | 18 705 | 78.9 | 23 707 |
| Coffs Harbour–Sydney | 472 | 19 318 | 72.9 | 26 511 |
| Cairns–Townsville | 321 | 24 619 | 43.2 | 57 032 |
| Brisbane–Hamilton Island | 174 | 13 420 | 73.6 | 18 234 |
| Brisbane–Darwin | 186 | 12 327 | 53.0 | 23 273 |
| Kalgoorlie–Perth | 368 | 16 896 | 61.2 | 27 608 |
| Brisbane–Mackay | 174 | 15 596 | 65.6 | 23 774 |
| Alice Springs–Cairns | 263 | 16 719 | 65.3 | 25 603 |
| Alice Springs–Sydney | 171 | 12 912 | 64.8 | 19 926 |
| Darwin–Kununurra | 180 | 9 877 | 71.8 | 13 756 |
| Perth–Port Hedland | 196 | 10 573 | 73.7 | 14 340 |
| Cairns–Sydney | 93 | 7 661 | 65.5 | 11 690 |
| Devonport–Sydney | 187 | 11 836 | 89.5 | 13 225 |
| Alice Springs–Ayers Rock | 304 | 14 194 | 71.2 | 19 926 |
| Geraldton–Perth | 206 | 8 829 | 63.3 | 13 941 |
| Sydney–Wagga | 352 | 12 712 | 71.0 | 17 896 |
| Mackay–Rockhampton | 173 | 7 366 | 55.6 | 13 248 |
| Broome–Perth | 114 | 6 015 | 72.3 | 8 320 |
| Total | 28 874 | 2 749 468 | 70.9 | 3 835 645 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *April–June 1990* | | | | |
| Melbourne–Sydney | 5 624 | 603 795 | 65.4 | 922 764 |
| Brisbane–Sydney | 3 755 | 397 768 | 68.2 | 583 523 |
| Adelaide–Melbourne | 1 981 | 203 788 | 77.8 | 262 051 |
| Coolangatta–Sydney | 1 955 | 149 634 | 72.7 | 205 918 |
| Brisbane–Melbourne | 1 402 | 132 364 | 72.0 | 183 924 |
| Hobart–Melbourne | 1 284 | 101 463 | 68.0 | 149 283 |
| Adelaide–Sydney | 1 206 | 121 547 | 77.6 | 156 565 |
| Melbourne–Perth | 858 | 89 262 | 73.0 | 122 277 |
| Launceston–Melbourne | 1 429 | 70 741 | 65.2 | 108 443 |
| Brisbane–Cairns | 856 | 70 729 | 73.3 | 96 536 |
| Perth–Sydney | 554 | 61 039 | 63.8 | 95 672 |
| Canberra–Sydney | 2 043 | 133 184 | 69.2 | 192 370 |
| Canberra–Melbourne | 1 631 | 111 842 | 62.7 | 178 282 |
| Brisbane–Townsville | 1 027 | 92 126 | 71.0 | 129 75 |
| Melbourne–Coolangatta | 497 | 48 534 | 70.8 | 68 55 |
| Adelaide–Perth | 632 | 53 714 | 65.3 | 82 299 |
| Adelaide–Alice Springs | 368 | 41 041 | 83.1 | 49 368 |
| Alice Springs–Darwin | 399 | 42 280 | 79.0 | 53 542 |
| Brisbane–Rockhampton | 523 | 33 635 | 63.6 | 52 85 |
| Karratha–Perth | 477 | 26 754 | 77.2 | 34 670 |
| Hobart–Sydney | 195 | 11 055 | 69.6 | 15 876 |
| Devonport–Melbourne | 415 | 20 300 | 69.1 | 29 364 |
| Hamilton Island–Sydney | 239 | 15 190 | 59.9 | 25 345 |
| Coffs Harbour–Sydney | 578 | 21 788 | 64.9 | 33 554 |
| Cairns–Townsville | 462 | 31 368 | 47.8 | 65 669 |
| Brisbane–Hamilton Island | 247 | 14 566 | 60.1 | 24 236 |
| Brisbane–Darwin | 234 | 21 109 | 74.9 | 28 170 |
| Kalgoorlie–Perth | 413 | 18 918 | 63.1 | 29 981 |
| Brisbane–Mackay | 359 | 21 714 | 68.1 | 31 870 |
| Alice Springs–Cairns | 357 | 16 114 | 50.6 | 31 825 |
| Alice Springs–Sydney | 354 | 24 764 | 61.9 | 40 028 |
| Darwin–Kununurra | 190 | 10 514 | 73.7 | 14 266 |
| Perth–Port Hedland | 215 | 12 276 | 79.3 | 15 474 |
| Cairns–Sydney | 249 | 21 330 | 76.2 | 28 004 |
| Devonport–Sydney | 244 | 13 631 | 79.6 | 17 132 |
| Alice Springs–Ayers Rock | 429 | 13 833 | 52.2 | 26 517 |
| Geraldton–Perth | 281 | 10 041 | 49.9 | 20 109 |
| Sydney–Wagga | 514 | 17 983 | 70.0 | 25 690 |
| Mackay–Rockhampton | 223 | 8 068 | 40.6 | 19 888 |
| Broome–Perth | 124 | 6 932 | 77.6 | 8 929 |
| Total | 34 823 | 2 916 734 | 67.7 | 4 260 578 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *July–September 1990* | | | | |
| Melbourne–Sydney | 5 404 | 618 548 | 71.9 | 859 891 |
| Brisbane–Sydney | 3 912 | 444 744 | 74.7 | 595 108 |
| Adelaide–Melbourne | 2 165 | 218 701 | 73.3 | 298 229 |
| Coolangatta–Sydney | 1 976 | 166 156 | 81.9 | 202 794 |
| Brisbane–Melbourne | 1 604 | 161 416 | 79.4 | 203 209 |
| Hobart–Melbourne | 1 221 | 104 428 | 72.9 | 143 183 |
| Adelaide–Sydney | 1 356 | 129 509 | 75.0 | 172 679 |
| Melbourne–Perth | 878 | 99 363 | 80.1 | 124 049 |
| Launceston–Melbourne | 1 571 | 70 657 | 62.0 | 113 902 |
| Brisbane–Cairns | 987 | 95 425 | 79.9 | 119 431 |
| Perth–Sydney | 571 | 64 527 | 79.4 | 81 268 |
| Canberra–Sydney | 2 597 | 151 305 | 61.3 | 246 827 |
| Canberra–Melbourne | 1 855 | 108 905 | 56.7 | 191 959 |
| Brisbane–Townsville | 1 096 | 99 612 | 77.2 | 128 975 |
| Melbourne–Coolangatta | 570 | 64 020 | 83.9 | 76 335 |
| Adelaide–Perth | 685 | 66 198 | 76.3 | 86 722 |
| Adelaide–Alice Springs | 374 | 51 463 | 78.7 | 65 364 |
| Alice Springs–Darwin | 404 | 51 547 | 74.3 | 69 377 |
| Brisbane–Rockhampton | 730 | 48 916 | 61.4 | 79 625 |
| Karratha–Perth | 499 | 28 366 | 75.9 | 37 389 |
| Hobart–Sydney | 180 | 10 595 | 77.9 | 13 607 |
| Devonport–Melbourne | 393 | 20 677 | 75.3 | 27 472 |
| Hamilton Island–Sydney | 227 | 17 256 | 69.5 | 24 817 |
| Coffs Harbour–Sydney | 633 | 25 831 | 68.8 | 37 527 |
| Cairns–Townsville | 448 | 33 164 | 58.9 | 56 274 |
| Brisbane–Hamilton Island | 287 | 18 633 | 64.4 | 28 933 |
| Brisbane–Darwin | 282 | 26 576 | 78.2 | 33 985 |
| Kalgoorlie–Perth | 405 | 19 920 | 66.4 | 30 000 |
| Brisbane–Mackay | 457 | 24 567 | 62.3 | 39 433 |
| Alice Springs–Cairns | 336 | 20 042 | 58.1 | 34 476 |
| Alice Springs–Sydney | 365 | 31 071 | 72.4 | 42 896 |
| Darwin–Kununurra | 244 | 13 100 | 75.3 | 17 405 |
| Perth–Port Hedland | 207 | 11 817 | 80.2 | 14 741 |
| Cairns–Sydney | 312 | 32 488 | 88.0 | 36 904 |
| Devonport–Sydney | 223 | 13 856 | 87.1 | 15 908 |
| Alice Springs–Ayers Rock | 464 | 17 028 | 61.3 | 27 763 |
| Geraldton–Perth | 312 | 11 910 | 55.0 | 21 655 |
| Sydney–Wagga | 511 | 18 405 | 72.1 | 25 539 |
| Mackay–Rockhampton | 339 | 12 634 | 34.3 | 36 798 |
| Broome–Perth | 184 | 11 509 | 84.3 | 13 652 |
| Total | 37 264 | 3 234 885 | 71.7 | 4 476 099 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *October–December 1990* | | | | |
| Melbourne–Sydney | 5 988 | 690 323 | 71.1 | 971 374 |
| Brisbane–Sydney | 3 991 | 454 351 | 73.4 | 619 007 |
| Adelaide–Melbourne | 2 398 | 233 536 | 70.1 | 332 989 |
| Coolangatta–Sydney | 2 247 | 196 127 | 80.8 | 242 631 |
| Brisbane–Melbourne | 1 665 | 159 020 | 78.6 | 202 316 |
| Hobart–Melbourne | 1 390 | 120 061 | 75.5 | 158 951 |
| Adelaide–Sydney | 1 477 | 141 240 | 73.7 | 191 555 |
| Melbourne–Perth | 1 159 | 138 370 | 78.6 | 176 043 |
| Launceston–Melbourne | 1 684 | 81 045 | 69.0 | 117 400 |
| Brisbane–Cairns | 1 119 | 90 253 | 72.2 | 125 062 |
| Perth–Sydney | 775 | 81 976 | 74.2 | 110 480 |
| Canberra–Sydney | 2 531 | 141 902 | 57.4 | 247 216 |
| Canberra–Melbourne | 1 907 | 114 134 | 57.5 | 198 609 |
| Brisbane–Townsville | 1 092 | 82 400 | 68.0 | 121 176 |
| Melbourne–Coolangatta | 679 | 67 487 | 80.3 | 84 009 |
| Adelaide–Perth | 737 | 70 388 | 76.0 | 92 656 |
| Adelaide–Alice Springs | 392 | 48 272 | 72.9 | 66 186 |
| Alice Springs–Darwin | 433 | 40 257 | 56.7 | 71 000 |
| Brisbane–Rockhampton | 837 | 51 378 | 64.8 | 79 246 |
| Karratha–Perth | 493 | 27 977 | 78.5 | 35 655 |
| Hobart–Sydney | 337 | 20 514 | 74.9 | 27 389 |
| Devonport–Melbourne | 377 | 22 908 | 77.1 | 29 712 |
| Hamilton Island–Sydney | 277 | 25 173 | 71.1 | 35 405 |
| Coffs Harbour–Sydney | 662 | 28 007 | 69.8 | 40 125 |
| Cairns–Townsville | 247 | 15 092 | 54.2 | 27 845 |
| Brisbane–Hamilton Island | 322 | 22 217 | 71.9 | 30 900 |
| Brisbane–Darwin | 280 | 19 594 | 60.9 | 32 174 |
| Kalgoorlie–Perth | 388 | 19 318 | 68.6 | 28 147 |
| Brisbane–Mackay | 464 | 25 574 | 62.2 | 41 138 |
| Alice Springs–Cairns | 313 | 19 606 | 65.6 | 29 902 |
| Alice Springs–Sydney | 345 | 24 891 | 64.4 | 38 651 |
| Darwin–Kununurra | 200 | 9 887 | 65.9 | 15 011 |
| Perth–Port Hedland | 254 | 12 958 | 71.0 | 18 242 |
| Cairns–Sydney | 314 | 29 251 | 78.6 | 37 215 |
| Devonport–Sydney | 199 | 11 825 | 73.4 | 16 118 |
| Alice Springs–Ayers Rock | 864 | 21 698 | 58.9 | 36 839 |
| Geraldton–Perth | 265 | 11 532 | 62.4 | 18 481 |
| Sydney–Wagga | 507 | 17 959 | 70.6 | 25 438 |
| Mackay–Rockhampton | 385 | 13 327 | 37.6 | 35 476 |
| Broome–Perth | 111 | 6 890 | 83.3 | 8 271 |
| Total | 40 105 | 3 408 718 | 69.3 | 4 816 037 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *January–March 1991* | | | | |
| Melbourne–Sydney | 5 805 | 687 776 | 69.9 | 983 943 |
| Brisbane–Sydney | 4 048 | 452 873 | 71.8 | 630 742 |
| Adelaide–Melbourne | 2 147 | 215 239 | 74.5 | 288 782 |
| Coolangatta–Sydney | 2 303 | 193 552 | 73.6 | 262 978 |
| Brisbane–Melbourne | 1 548 | 143 884 | 76.7 | 187 593 |
| Hobart–Melbourne | 1 656 | 134 058 | 71.8 | 186 710 |
| Adelaide–Sydney | 1 378 | 130 865 | 75.7 | 172 873 |
| Melbourne–Perth | 1 379 | 145 585 | 71.1 | 204 857 |
| Launceston–Melbourne | 1 617 | 96 430 | 74.5 | 129 436 |
| Brisbane–Cairns | 1 094 | 90 249 | 74.5 | 121 194 |
| Perth–Sydney | 894 | 91 884 | 62.8 | 146 390 |
| Canberra–Sydney | 2 175 | 126 120 | 59.5 | 212 085 |
| Canberra–Melbourne | 1 595 | 106 412 | 63.3 | 168 107 |
| Brisbane–Townsville | 1 072 | 78 653 | 66.9 | 117 568 |
| Melbourne–Coolangatta | 760 | 70 940 | 76.2 | 93 056 |
| Adelaide–Perth | 644 | 58 761 | 74.2 | 79 157 |
| Adelaide–Alice Springs | 379 | 47 015 | 74.0 | 63 505 |
| Alice Springs–Darwin | 418 | 36 146 | 53.0 | 68 157 |
| Brisbane–Rockhampton | 609 | 32 294 | 62.4 | 51 781 |
| Karratha–Perth | 428 | 23 690 | 77.3 | 30 634 |
| Hobart–Sydney | 426 | 24 552 | 67.5 | 36 391 |
| Devonport–Melbourne | 366 | 23 810 | 79.2 | 30 050 |
| Hamilton Island–Sydney | 300 | 21 071 | 58.8 | 35 835 |
| Coffs Harbour–Sydney | 600 | 25 311 | 67.8 | 37 332 |
| Cairns–Townsville | 208 | 11 885 | 52.4 | 22 681 |
| Brisbane–Hamilton Island | 235 | 14 794 | 64.6 | 22 889 |
| Brisbane–Darwin | 240 | 16 438 | 59.7 | 27 550 |
| Kalgoorlie–Perth | 321 | 15 324 | 66.1 | 23 183 |
| Brisbane–Mackay | 414 | 21 374 | 58.6 | 36 474 |
| Alice Springs–Cairns | 330 | 19 727 | 67.2 | 29 370 |
| Alice Springs–Sydney | 353 | 24 749 | 62.9 | 39 347 |
| Darwin–Kununurra | 189 | 9 274 | 66.3 | 13 988 |
| Perth–Port Hedland | 216 | 10 805 | 69.4 | 15 577 |
| Cairns–Sydney | 315 | 26 443 | 69.4 | 38 121 |
| Devonport–Sydney | 181 | 10 272 | 69.5 | 14 787 |
| Alice Springs–Ayers Rock | 619 | 21 806 | 63.0 | 34 631 |
| Geraldton–Perth | 210 | 10 130 | 70.1 | 14 444 |
| Sydney–Wagga | 517 | 17 101 | 66.3 | 25 806 |
| Mackay–Rockhampton | 301 | 9 805 | 37.8 | 25 962 |
| Broome–Perth | 92 | 5 197 | 77.8 | 6 680 |
| Total | 38 382 | 3 302 294 | 67.4 | 4 730 649 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *April–June 1991* | | | | |
| Melbourne–Sydney | 6 468 | 729 284 | 66.4 | 1 098 319 |
| Brisbane–Sydney | 4 440 | 508 135 | 68.6 | 740 722 |
| Adelaide–Melbourne | 2 339 | 223 192 | 75.9 | 294 190 |
| Coolangatta–Sydney | 2 234 | 154 892 | 66.2 | 234 094 |
| Brisbane–Melbourne | 1 784 | 165 834 | 73.5 | 225 624 |
| Hobart–Melbourne | 1 550 | 119 830 | 70.0 | 171 186 |
| Adelaide–Sydney | 1 422 | 127 222 | 74.9 | 169 931 |
| Melbourne–Perth | 1 355 | 132 778 | 66.7 | 199 167 |
| Launceston–Melbourne | 1 440 | 76 976 | 70.1 | 109 757 |
| Brisbane–Cairns | 1 477 | 132 640 | 71.0 | 186 905 |
| Perth–Sydney | 945 | 97 308 | 62.9 | 154 621 |
| Canberra–Sydney | 2 624 | 143 324 | 57.9 | 247 537 |
| Canberra–Melbourne | 1 751 | 113 820 | 61.5 | 185 073 |
| Brisbane–Townsville | 1 092 | 77 164 | 66.7 | 115 746 |
| Melbourne–Coolangatta | 719 | 56 050 | 68.7 | 81 626 |
| Adelaide–Perth | 657 | 53 430 | 66.0 | 80 955 |
| Adelaide–Alice Springs | 377 | 43 341 | 76.7 | 56 483 |
| Alice Springs–Darwin | 422 | 40 902 | 67.2 | 60 836 |
| Brisbane–Rockhampton | 731 | 44 327 | 70.6 | 62 816 |
| Karratha–Perth | 485 | 27 896 | 81.1 | 34 383 |
| Hobart–Sydney | 214 | 10 610 | 57.6 | 18 409 |
| Devonport–Melbourne | 359 | 19 154 | 65.9 | 29 065 |
| Hamilton Island–Sydney | 269 | 20 446 | 67.3 | 30 380 |
| Coffs Harbour–Sydney | 560 | 22 256 | 63.7 | 34 957 |
| Cairns–Townsville | 161 | 8 773 | 51.9 | 16 915 |
| Brisbane–Hamilton Island | 223 | 13 496 | 65.9 | 20 480 |
| Brisbane–Darwin | 251 | 21 469 | 72.7 | 29 544 |
| Kalgoorlie–Perth | 339 | 16 336 | 65.9 | 24 777 |
| Brisbane–Mackay | 378 | 19 772 | 60.9 | 32 466 |
| Alice Springs–Cairns | 309 | 15 271 | 56.3 | 27 124 |
| Alice Springs–Sydney | 378 | 30 245 | 73.6 | 41 075 |
| Darwin–Kununurra | 190 | 10 031 | 71.4 | 14 056 |
| Perth–Port Hedland | 216 | 10 861 | 70.7 | 15 362 |
| Cairns–Sydney | 394 | 43 313 | 79.2 | 54 711 |
| Devonport–Sydney | 182 | 11 354 | 70.0 | 16 212 |
| Alice Springs–Ayers Rock | 370 | 21 127 | 59.8 | 35 310 |
| Geraldton–Perth | 214 | 9 484 | 61.3 | 15 471 |
| Sydney–Wagga | 526 | 19 070 | 77.4 | 24 628 |
| Mackay–Rockhampton | 370 | 12 690 | 38.8 | 32 678 |
| Broome–Perth | 174 | 10 113 | 80.1 | 12 625 |
| Total | 40 389 | 3 414 216 | 67.3 | 5 036 216 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *July–September 1991* | | | | |
| Melbourne–Sydney | 7 364 | 923 425 | 77.3 | 1 194 084 |
| Brisbane–Sydney | 4 749 | 658 341 | 85.3 | 771 795 |
| Adelaide–Melbourne | 2 808 | 295 016 | 82.1 | 359 483 |
| Coolangatta–Sydney | 2 569 | 236 819 | 84.0 | 281 927 |
| Brisbane–Melbourne | 2 023 | 223 880 | 86.1 | 260 023 |
| Hobart–Melbourne | 1 488 | 127 469 | 76.2 | 167 282 |
| Adelaide–Sydney | 1 636 | 175 491 | 82.0 | 214 013 |
| Melbourne–Perth | 1 734 | 208 850 | 78.3 | 266 617 |
| Launceston–Melbourne | 1 440 | 82 216 | 71.6 | 114 827 |
| Brisbane–Cairns | 1 722 | 197 466 | 89.8 | 219 895 |
| Perth–Sydney | 1 112 | 132 084 | 76.1 | 173 490 |
| Canberra–Sydney | 2 893 | 176 995 | 64.4 | 274 837 |
| Canberra–Melbourne | 1 830 | 128 942 | 67.0 | 192 355 |
| Brisbane–Townsville | 1 101 | 97 134 | 83.9 | 115 728 |
| Melbourne–Coolangatta | 918 | 96 624 | 88.4 | 109 262 |
| Adelaide–Perth | 725 | 73 428 | 76.7 | 95 734 |
| Adelaide–Alice Springs | 382 | 35 683 | 83.6 | 42 683 |
| Alice Springs–Darwin | 459 | 41 167 | 77.1 | 53 394 |
| Brisbane–Rockhampton | 757 | 41 771 | 71.9 | 58 096 |
| Karratha–Perth | 531 | 30 135 | 78.0 | 38 651 |
| Hobart–Sydney | 193 | 12 160 | 64.8 | 18 765 |
| Devonport–Melbourne | 372 | 22 569 | 64.1 | 35 209 |
| Hamilton Island–Sydney | 349 | 31 835 | 80.5 | 39 563 |
| Coffs Harbour–Sydney | 561 | 26 315 | 74.5 | 35 338 |
| Cairns–Townsville | 116 | 8 107 | 68.3 | 11 870 |
| Brisbane–Hamilton Island | 235 | 14 774 | 64.9 | 22 753 |
| Brisbane–Darwin | 305 | 28 673 | 81.4 | 35 239 |
| Kalgoorlie–Perth | 381 | 18 592 | 67.1 | 27 722 |
| Brisbane–Mackay | 467 | 24 538 | 68.9 | 35 614 |
| Alice Springs–Cairns | 341 | 20 701 | 77.7 | 26 642 |
| Alice Springs–Sydney | 393 | 39 229 | 87.0 | 45 108 |
| Darwin–Kununurra | 208 | 11 472 | 72.6 | 15 794 |
| Perth–Port Hedland | 246 | 11 510 | 67.6 | 17 027 |
| Cairns–Sydney | 469 | 67 782 | 95.9 | 70 704 |
| Devonport–Sydney | 184 | 12 369 | 70.1 | 17 645 |
| Alice Springs–Ayers Rock | 460 | 28 916 | 63.5 | 45 513 |
| Geraldton–Perth | 231 | 9 886 | 63.0 | 15 692 |
| Sydney–Wagga | 513 | 18 932 | 80.2 | 23 606 |
| Mackay–Rockhampton | 278 | 9 046 | 42.8 | 21 152 |
| Broome–Perth | 213 | 12 819 | 82.7 | 15 494 |
| Total | 44 756 | 4 413 161 | 75.4 | 5 580 629 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *October–December 1991* | | | | |
| Melbourne–Sydney | 7 164 | 979 432 | 83.1 | 1 178 146 |
| Brisbane–Sydney | 5 207 | 682 823 | 82.9 | 823 340 |
| Adelaide–Melbourne | 2 904 | 319 424 | 84.6 | 377 719 |
| Coolangatta–Sydney | 3 203 | 289 443 | 81.4 | 355 436 |
| Brisbane–Melbourne | 2 111 | 235 238 | 84.4 | 278 718 |
| Hobart–Melbourne | 1 514 | 143 355 | 83.1 | 172 509 |
| Adelaide–Sydney | 1 818 | 205 883 | 84.4 | 243 841 |
| Melbourne–Perth | 1 735 | 216 669 | 83.3 | 260 211 |
| Launceston–Melbourne | 1 668 | 99 492 | 78.8 | 126 205 |
| Brisbane–Cairns | 1 760 | 172 375 | 79.9 | 215 648 |
| Perth–Sydney | 1 148 | 150 786 | 84.3 | 178 868 |
| Canberra–Sydney | 2 768 | 170 118 | 63.7 | 267 061 |
| Canberra–Melbourne | 1 798 | 136 536 | 70.2 | 194 496 |
| Brisbane–Townsville | 1 102 | 89 603 | 76.4 | 117 333 |
| Melbourne–Coolangatta | 857 | 91 576 | 89.4 | 102 434 |
| Adelaide–Perth | 844 | 98 383 | 81.3 | 121 012 |
| Adelaide–Alice Springs | 382 | 32 922 | 78.6 | 41 868 |
| Alice Springs–Darwin | 457 | 30 874 | 59.9 | 51 543 |
| Brisbane–Rockhampton | 1 004 | 48 922 | 72.1 | 67 884 |
| Karratha–Perth | 565 | 30 919 | 76.6 | 40 364 |
| Hobart–Sydney | 497 | 28 299 | 58.7 | 48 237 |
| Devonport–Melbourne | 107 | 6 560 | 21.3 | 30 798 |
| Hamilton Island–Sydney | 268 | 27 899 | 73.0 | 38 218 |
| Coffs Harbour–Sydney | 595 | 29 644 | 77.8 | 38 087 |
| Cairns–Townsville | 87 | 5 106 | 56.4 | 9 048 |
| Brisbane–Hamilton Island | 373 | 26 716 | 72.7 | 36 731 |
| Brisbane–Darwin | 358 | 22 419 | 54.2 | 41 338 |
| Kalgoorlie–Perth | 393 | 19 288 | 67.4 | 28 603 |
| Brisbane–Mackay | 662 | 30 659 | 68.9 | 44 476 |
| Alice Springs–Cairns | 507 | 27 258 | 75.6 | 36 040 |
| Alice Springs–Sydney | 370 | 32 794 | 76.8 | 42 719 |
| Darwin–Kununurra | 199 | 10 563 | 69.3 | 15 242 |
| Perth–Port Hedland | 256 | 12 498 | 69.4 | 18 000 |
| Cairns–Sydney | 477 | 60 685 | 85.1 | 71 282 |
| Devonport–Sydney | 50 | 3 758 | 26.1 | 14 398 |
| Alice Springs–Ayers Rock | 549 | 33 628 | 64.1 | 52 462 |
| Geraldton–Perth | 241 | 9 868 | 59.9 | 16 483 |
| Sydney–Wagga | 597 | 21 043 | 76.0 | 27 676 |
| Mackay–Rockhampton | 315 | 9 144 | 42.6 | 21 465 |
| Broome–Perth | 187 | 10 903 | 80.3 | 13 578 |
| Total | 47 097 | 4 653 505 | 73.8 | 6 859 517 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *January–March 1992* | | | | |
| Melbourne–Sydney | 6 219 | 825 538 | 84.2 | 980 449 |
| Brisbane–Sydney | 4 767 | 544 005 | 77.2 | 704 670 |
| Adelaide–Melbourne | 2 604 | 259 524 | 83.2 | 311 928 |
| Coolangatta–Sydney | 3 205 | 279 183 | 75.2 | 371 254 |
| Brisbane–Melbourne | 2 027 | 199 438 | 84.5 | 236 021 |
| Hobart–Melbourne | 1 589 | 145 741 | 80.7 | 180 596 |
| Adelaide–Sydney | 1 648 | 166 832 | 85.5 | 195 125 |
| Melbourne–Perth | 1 529 | 181 299 | 91.0 | 199 230 |
| Launceston–Melbourne | 1 658 | 107 054 | 80.1 | 133 650 |
| Brisbane–Cairns | 1 514 | 127 162 | 75.8 | 167 760 |
| Perth–Sydney | 1 050 | 132 476 | 87.6 | 151 228 |
| Canberra–Sydney | 2 490 | 148 748 | 62.1 | 239 530 |
| Canberra–Melbourne | 1 628 | 122 449 | 68.8 | 177 978 |
| Brisbane–Townsville | 1 089 | 76 511 | 65.9 | 116 102 |
| Melbourne–Coolangatta | 939 | 98 356 | 83.3 | 118 074 |
| Adelaide–Perth | 721 | 77 920 | 90.2 | 86 386 |
| Adelaide–Alice Springs | 369 | 32 847 | 83.1 | 39 527 |
| Alice Springs–Darwin | 408 | 28 549 | 67.0 | 42 610 |
| Brisbane–Rockhampton | 992 | 46 668 | 69.6 | 67 052 |
| Karratha–Perth | 525 | 29 351 | 77.3 | 37 970 |
| Hobart–Sydney | 618 | 38 240 | 60.3 | 63 416 |
| Devonport–Melbourne | .. | .. | .. | .. |
| Hamilton Is–Sydney | 195 | 20 791 | 67.4 | 30 847 |
| Coffs Harbour–Sydney | 589 | 27 469 | 74.0 | 37 120 |
| Cairns–Townsville | 48 | 2 890 | 58.2 | 4 966 |
| Brisbane–Hamilton Is | 309 | 20 332 | 64.2 | 31 670 |
| Brisbane–Darwin | 309 | 23 343 | 63.7 | 36 645 |
| Kalgoorlie–Perth | 342 | 16 145 | 64.6 | 24 992 |
| Brisbane–Mackay | 604 | 26 745 | 66.6 | 40 158 |
| Alice Springs–Cairns | 474 | 25 660 | 75.8 | 33 852 |
| Alice Springs–Sydney | 363 | 31 576 | 81.2 | 38 887 |
| Darwin–Kununurra | 186 | 9 605 | 67.3 | 14 272 |
| Perth–Port Hedland | 206 | 10 203 | 67.8 | 15 049 |
| Cairns–Sydney | 418 | 48 254 | 85.6 | 56 371 |
| Devonport–Sydney | .. | .. | .. | .. |
| Alice Springs–Ayers Rock | 501 | 31 860 | 65.7 | 48 493 |
| Geraldton–Perth | 185 | 9 538 | 75.6 | 12 616 |
| Sydney–Wagga | 543 | 20 559 | 81.5 | 25 226 |
| Mackay–Rockhampton | 362 | 9 862 | 40.1 | 24 594 |
| Broome–Perth | 155 | 8 670 | 77.5 | 11 187 |
| Total | 43 378 | 4 011 393 | 73.9 | 5 107 502 |

TABLE I.1 SERVICE FREQUENCY — SELECTED ROUTES SERVED BY DOMESTIC AIRLINES BY QUARTER, JANUARY 1990 TO JUNE 1992 (CONT.)

| *Routes* | *Trips* | *Passengers* | *Average load factor* | *Seats* |
|---|---|---|---|---|
| *April–June 1992* | | | | |
| Melbourne–Sydney | 6 649 | 794 445 | 78.3 | 1 014 617 |
| Brisbane–Sydney | 4 901 | 517 877 | 72.4 | 715 300 |
| Adelaide–Melbourne | 2 800 | 252 908 | 74.6 | 339 019 |
| Coolangatta–Sydney | 3 095 | 239 249 | 68.4 | 349 779 |
| Brisbane–Melbourne | 2 174 | 197 268 | 77.8 | 253 558 |
| Hobart–Melbourne | 1 469 | 122 930 | 72.4 | 169 793 |
| Adelaide–Sydney | 1 821 | 162 335 | 75.8 | 214 162 |
| Melbourne–Perth | 1 341 | 139 723 | 80.7 | 173 139 |
| Launceston–Melbourne | 1 520 | 82 734 | 69.3 | 119 385 |
| Brisbane–Cairns | 1 698 | 146 539 | 78.0 | 187 871 |
| Perth–Sydney | 936 | 104 333 | 79.1 | 131 900 |
| Canberra–Sydney | 2 891 | 160 991 | 58.7 | 274 261 |
| Canberra–Melbourne | 1 928 | 130 468 | 61.4 | 212 489 |
| Brisbane–Townsville | 1 100 | 88 201 | 74.9 | 117 758 |
| Melbourne–Coolangatta | 745 | 74 207 | 77.6 | 95 628 |
| Adelaide–Perth | 640 | 66 253 | 82.9 | 79 919 |
| Adelaide–Alice Springs | 374 | 35 736 | 79.5 | 44 951 |
| Alice Springs–Darwin | 398 | 34 180 | 69.6 | 49 109 |
| Brisbane–Rockhampton | 1 007 | 49 298 | 73.3 | 67 255 |
| Karratha–Perth | 550 | 32 318 | 79.9 | 40 448 |
| Hobart–Sydney | 541 | 32 503 | 59.2 | 54 904 |
| Devonport–Melbourne | .. | .. | .. | .. |
| Hamilton Is–Sydney | 187 | 18 319 | 68.9 | 26 588 |
| Coffs Harbour–Sydney | 581 | 24 812 | 67.3 | 36 868 |
| Cairns–Townsville | 62 | 3 533 | 54.8 | 6 447 |
| Brisbane–Hamilton Is | 250 | 18 751 | 62.8 | 29 858 |
| Brisbane–Darwin | 345 | 29 005 | 70.9 | 40 910 |
| Kalgoorlie–Perth | 372 | 18 238 | 67.2 | 27 140 |
| Brisbane–Mackay | 665 | 32 839 | 74.3 | 44 198 |
| Alice Springs–Cairns | 499 | 23 939 | 67.6 | 35 413 |
| Alice Springs–Sydney | 364 | 31 755 | 76.2 | 41 673 |
| Darwin–Kununurra | 206 | 11 442 | 74.2 | 15 420 |
| Perth–Port Hedland | 214 | 10 191 | 67.9 | 15 009 |
| Cairns–Sydney | 439 | 47 236 | 83.2 | 56 774 |
| Devonport–Sydney | .. | .. | .. | .. |
| Alice Springs–Ayers Rock | 466 | 28 513 | 63.9 | 44 621 |
| Geraldton–Perth | 229 | 9 797 | 61.1 | 16 034 |
| Sydney–Wagga | 531 | 19 963 | 81.0 | 24 646 |
| Mackay–Rockhampton | 313 | 9 362 | 44.5 | 21 038 |
| Broome–Perth | 170 | 8 655 | 71.5 | 12 105 |
| Total | 44 471 | 3 810 846 | 71.1 | 5 199 986 |

.. Service by domestic carrier discontinued

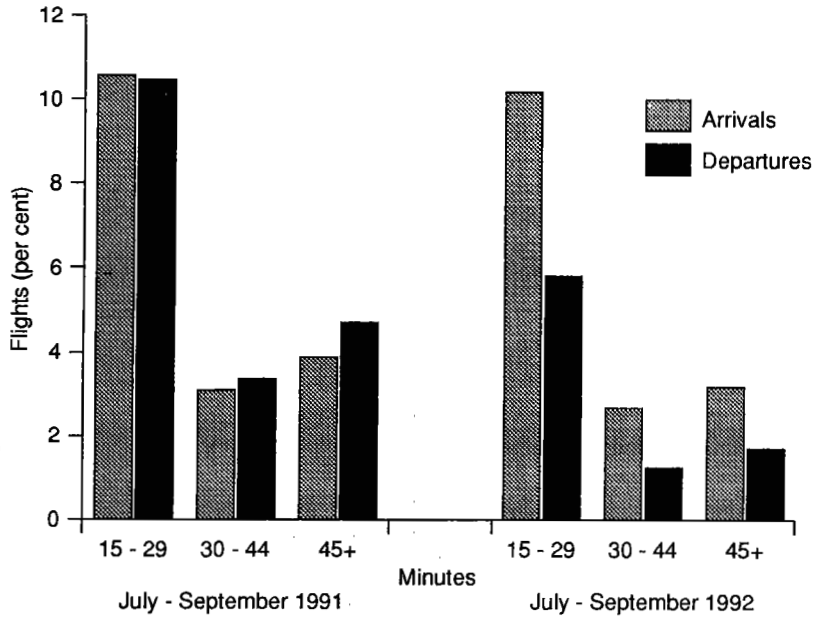
*Source* BTCE (from Department of Transport and Communications aviation statistics database).

# APPENDIX II AIRCRAFT ARRIVAL AND DEPARTURE DELAYS AT MAJOR AIRPORTS

By international convention, aircraft arrivals at and departures from the terminal within 15 minutes of the scheduled times are considered to be on-time. Arrival and departure delays therefore refer to delays of 15 minutes or more.

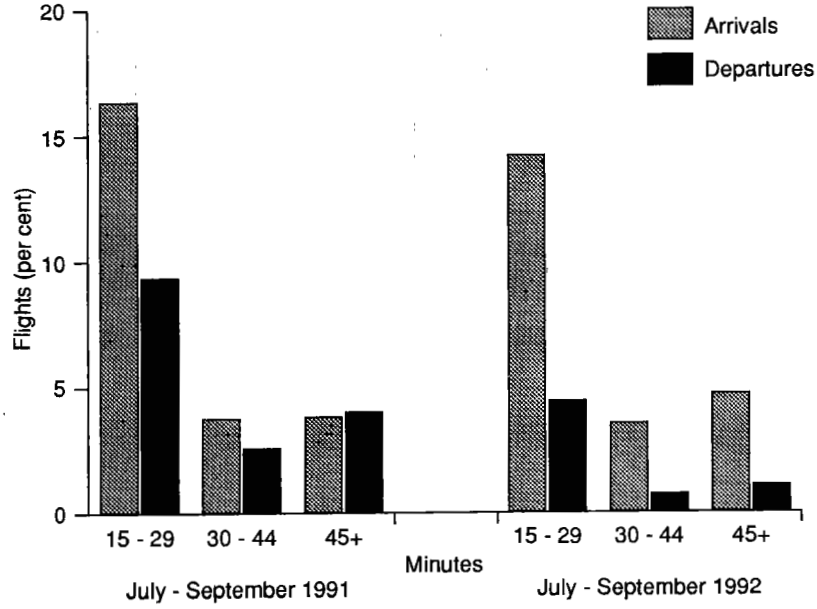
This appendix presents a series of graphs which depict aircraft arrival and departure delays at Sydney, Melbourne, Brisbane, Adelaide and Perth airports for the September quarter in 1991 and 1992. Figures II.1 to II.5 show the percentage of flights which arrived at and departed from the various airports within 15 to 29 minutes, 30 to 44 minutes, and 45 minutes or more of the scheduled times. These delay categories were chosen on the basis that delays of varying duration represented differing degrees of inconvenience to consumers. While short delays could often be accommodated in the traveller's schedule, delays of longer duration might have serious consequences.

Figures II.1 to II.5 show that most arrival and departure delays were within the 15 to 29 minutes category while delays of 45 minutes or more occurred as frequently as delays in the 30 to 44 minutes category. For all airports there was a significant decrease in the percentage of regular public transport aircraft arrivals and departures which were delayed in 1992 when compared to 1991.



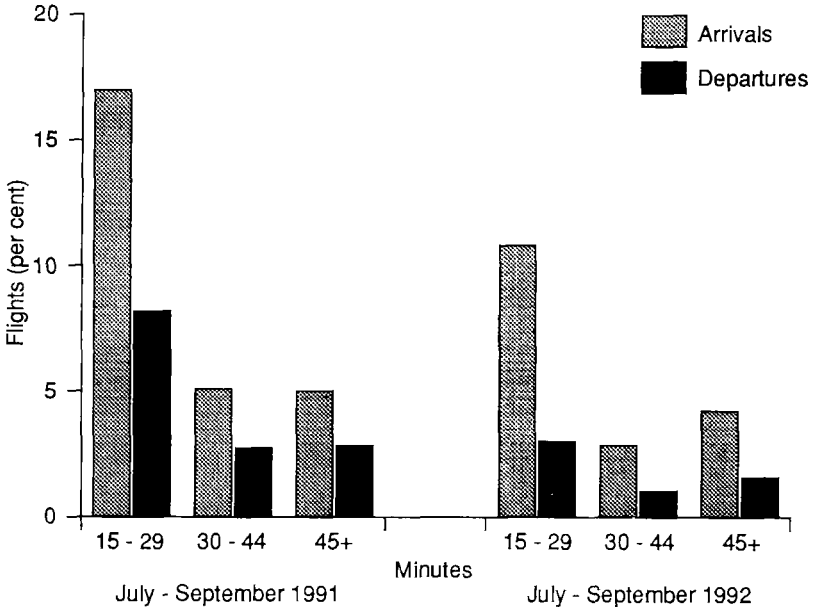

*Source* BTCE (from CAA flow management database).

**Figure II.1 Regular public transport flight delays at Sydney airport**



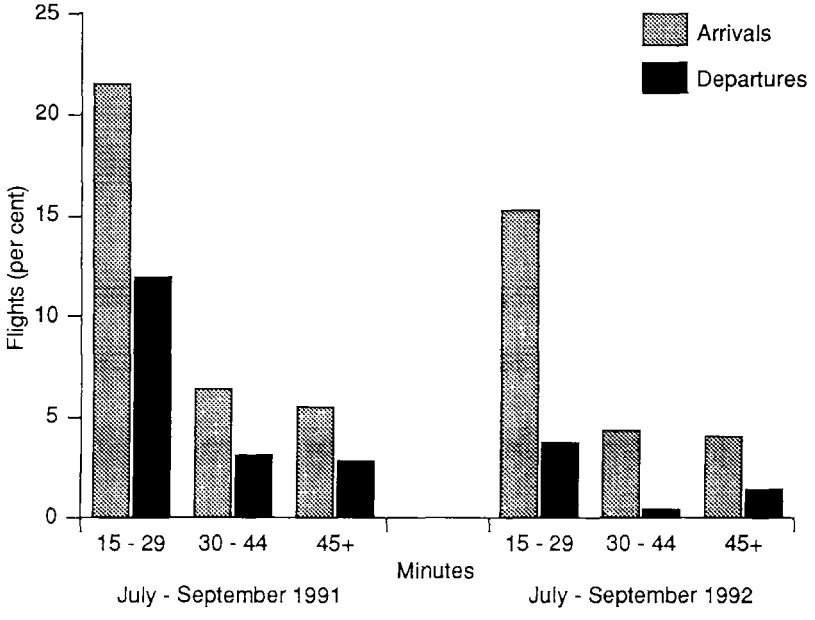

*Source* BTCE (from CAA flow management database).

**Figure II.2 Regular public transport flight delays at Melbourne airport**



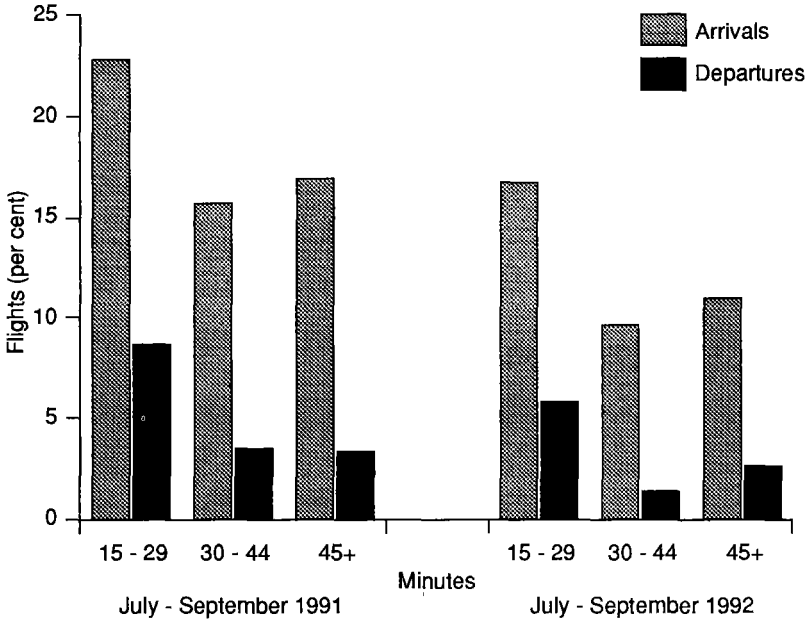

*Source* BTCE (from CAA flow management database).

**Figure II.3 Regular public transport flight delays at Brisbane airport**




*Source* BTCE (from CAA flow management database).

**Figure II.4 Regular public transport flight delays at Adelaide airport**




*Source* BTCE (from CAA flow management database).

**Figure II.5 Regular public transport flight delays at Perth airport**

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## Abbreviations

| | |
|---|---|
| AGPS | Australian Government Publishing Service |
| BTCE | Bureau of Transport and Communications Economics |
| DTC | Department of Transport and Communications |
| FAC | Federal Airports Corporation |
| US DOT | United States Department of Transportation |


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## ABBREVIATIONS

| | |
|---|---|
| ACS | Australian Customs Service |
| BASI | Bureau of Air Safety Investigation |
| BTCE | Bureau of Transport and Communications Economics |
| CAA | Civil Aviation Authority |
| DTC | Department of Transport and Communications |
| FAC | Federal Airports Corporation |
| RPT | Regular public transport |
| US DOT | United States Department of Transportation |