# AVIATION SAFETY INDICATORS

1997 EDITION

CANBERRA

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# EXECUTIVE SUMMARY

## Background

Aviation Safety Indicators (ASI) was first published in December 1996 as a response to the recommendation to '...prepare and publish safety indicators' contained in the 'Plane Safe' report issued by the House of Representatives Standing Committee on Transport, Communications and Infrastructure.

ASI is produced jointly by the Civil Aviation Safety Authority, the Bureau of Air Safety Investigation and the Department of Transport and Regional Development. The first report brought together a wide range of data, primarily for the decade from 1986 to 1995, which set benchmarks for on-going monitoring of the safety of aviation in Australia.

The publication, to be published annually, contains data covering the period to the end of the previous calendar year. Thus this second issue, or 1997 edition, includes data to the end of 1996.

The 1997 edition of the ASI is also accessible through the internet and can be obtained at the following web site: www.dot.gov.au/programs/workwedo.htm

## Overview

### *Flying Activity*

In the Regular Public Transport sector (RPT), there has been an average annual increase of 6.3% in the number of hours flown over the period 1986 to 1996, but annual General Aviation (GA) activity has averaged only a 1.4% increase over that time. Within the GA sector however, growth has been relatively higher in the Charter (3.9%) and Flying Training (3.3%) sectors.

Whereas in 1995 Jandakot was the busiest airport in the country, in 1996 Bankstown had the highest number of aircraft movements (approximately 404,000). Sydney continues to be the busiest major city airport with approximately 277,000 movements in 1996. Traffic at Brisbane continues to show steady growth and in 1996 was up to about 165,000 aircraft movements, making it the second busiest of the major airports.

### *Industry Performance*

Over the years 1992 to 1996 there has been an increase in the median age of both fixed wing and rotary aircraft in both the Transport and Non-Transport categories. The median age of Transport category fixed wing aircraft increased from 7.7 years in 1992 to 10.24 years in 1996, representing an average annual increase of 7.4%.

Although load factors in Australian high capacity RPT domestic operations have decreased in recent years to about 73%, this remains well above the average world wide load factor of about 67%.

Within the regional airline market, load factors have continued to increase (approximately 58% in 1996) while there was also continued consolidation with the market share of the top 10 regional airlines in 1996 being over 90%.

The number of new issues of private pilot licences continued to decline in 1996, which was the fifth continuous decline since 1991. There were however slight increases in the number of new issues of the commercial and air transport licences in 1996.

While the total number of Aircraft Maintenance Engineer (AME) licence expiries still exceeded the number of new issues in 1996, there was some sign of an increase in the number of future licence holders as the number of AME examination attempts in 1996 exceeded those in 1995, the first such increase since 1993.

### *Accidents*

Over the past ten years the number of accidents involving Australian fixed wing aircraft has varied between a low of 171 in 1994 to a high of 214 in 1993. The number varies from year to year but shows no significant trend. Rotary wing aircraft accidents have shown a consistent decline since 1989.

Focussing solely on the number of accidents which occur from one year to the next can give a misleading impression of risk since it does not take into account changes in flying activity. The rates of accidents per 100,000 flying hours have remained relatively constant for all sectors of operation over the last decade. The average accident rate for charter operations is approximately 3 times higher than for the low capacity RPT sector.

With regard to *fatal* accidents, there were no such events in the high capacity RPT sector. While the number of fatal accidents is small and shows no consistent variation from year to year, the average fatal accident rate over the decade for charter operations was approximately 6 times the rate for low capacity RPT. The total general aviation fatal accident rate has remained relatively constant over the last ten years and averages 1.3 accidents per 100,000 flying hours. Approximately 1 in 10 accidents resulted in a fatality for all sectors of operation, except for flying training where the figure was 1 in 20.

### *Incidents*

The number of violations of controlled airspace was approximately 80 per quarter prior to 1992. Following the change to airspace procedures in December 1991, the number has been consistently more than 150 per quarter. The total annual number of occasions where there has been a technical breach of separation standards between aircraft has risen slightly from 1993 to 1996. The number of runway incursions has also increased over this period and differs significantly from one airport to another. Incursions per 100,000 aircraft movements at GA airports are typically much higher than at capital city locations.

# INTRODUCTION

## Report Format

Details for 25 safety indicators are provided with the majority showing data over the eleven year period 1986 to 1996. The indicators are divided into four groups: **Flying Activity** (6 Indicators); **Industry Performance** (9 Indicators); **Accidents** (5 Indicators); and **Incidents** (5 Indicators).

The **Flying Activity** indicators show the hours flown in commercial and general aviation together with the activity level at various airports. These indicators provide contextual data against which specific industry activity may be compared.

The **Industry Performance** indicators contain information about load factors and market share for regular public transport (RPT) regional operations. These indicators also provide data about the age of Australian registered aircraft, the numbers of new issue flight crew licences, and the numbers of aircraft maintenance engineer licences. This information relates to the physical and "human" infrastructure of the industry.

The **Accident** indicators cover accident numbers and rates for Australian registered fixed wing and rotary wing aircraft. **Incident** indicators relate to the more frequent safety breaches:- violations of controlled airspace, runway incursions and breakdown in separation standards.

There have been some **modifications to indicators** since the December 1996 publication. In the Flying Activity indicators, Aircraft Movements section, (Figure 5(a)) data for Cairns has replaced that for Wagga Wagga, for which data is no longer available. In the Industry Indicators section, the indicator "Median Age of Aircraft, Fixed Wing and Rotary Wing" has been included, while the indicator "Flight Crew Licences with Current Medicals" has been withdrawn as data is not available.

## Data Sources

All accidents and incidents involving Australian registered aircraft, or foreign registered aircraft in Australian Territory, must be reported to the **Bureau of Air Safety Investigation (BASI)**. The Bureau maintains a comprehensive database of the reported occurrences and publishes a range of reports, from statistical surveys to detailed accident investigation reports. Enquiries may be directed to BASI on (02) 6274 6440.

Activity data for general aviation and the commercial operators is collected routinely by the **Aviation Statistics Section (Avstats)** of the Department of Transport and Regional Development and regularly published as consolidated aviation performance data. Enquiries may be directed to Avstats on (02) 6274 7642.

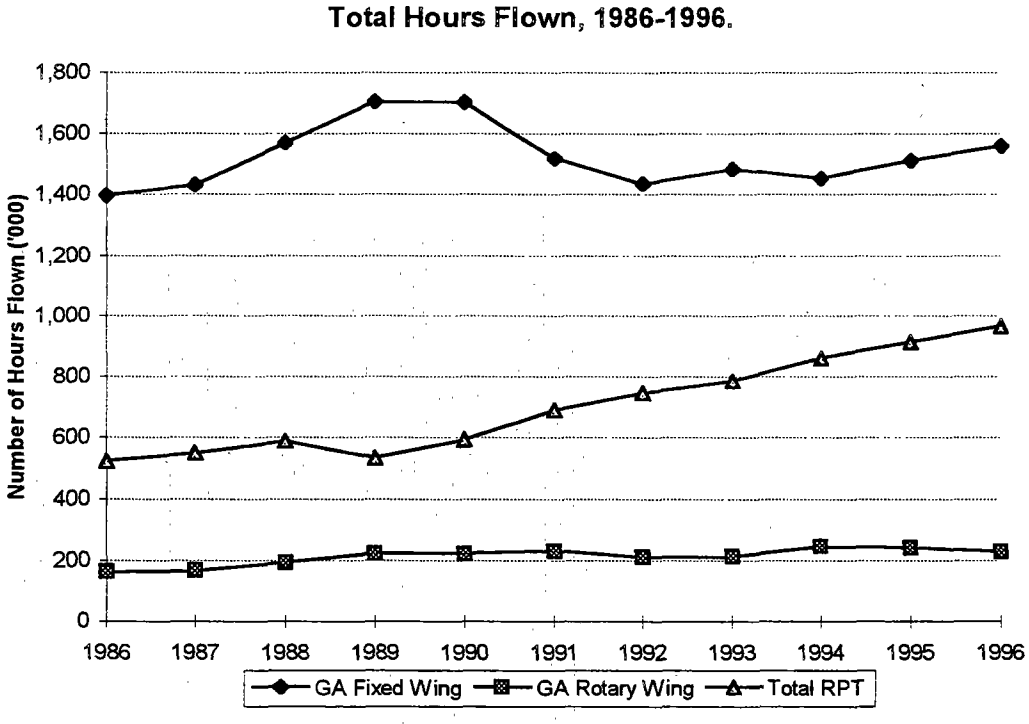
The **Civil Aviation Safety Authority (CASA)** holds information relating to organisations providing commercial aviation services, the number of registered aircraft, as well as the number of licensed aviation personnel such as pilots and aircraft maintenance engineers. Enquiries may be directed to the Office of Public Relations, CASA on (02) 62171015.

# Flying Activity Indicators

**Figure:**

1. Total Hours Flown.
2. **(a) & (b)** Total General Aviation Hours Flown by Sector.
3. **(a) & (b)** Total General Aviation Hours Flown by State.
4. **(a) & (b)** Aircraft Movements by Major GA Airports.
5. **(a) & (b)** Aircraft Movements by Regional City.
6. **(a) & (b)** Aircraft Movements by Capital City.

Figure 1




Source: Avstats.

Figure 1 shows annual hours flown in Australian-registered aircraft during the years 1986 to 1996, covering Regular Public Transport (RPT) services and general aviation (GA) fixed-wing and rotary-wing operations.

Apart from a downturn in 1989/90 caused by the domestic airline pilots' dispute, RPT hours have shown steady growth, particularly since deregulation of the domestic aviation market at the end of October 1990. Between 1986 and 1996, RPT hours grew at an average annual rate of 6.3 per cent.

General aviation activity, on the other hand, has remained relatively static. While the domestic airline pilots' dispute temporarily boosted demand for GA services, the average annual growth rate over the period 1986 to 1996 was only 1.4 per cent.

Figure 2(a)

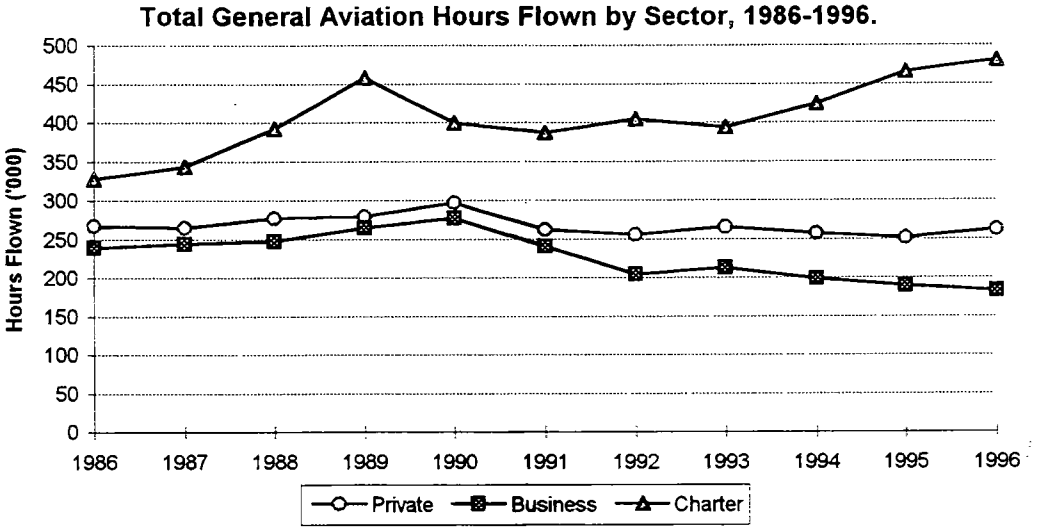
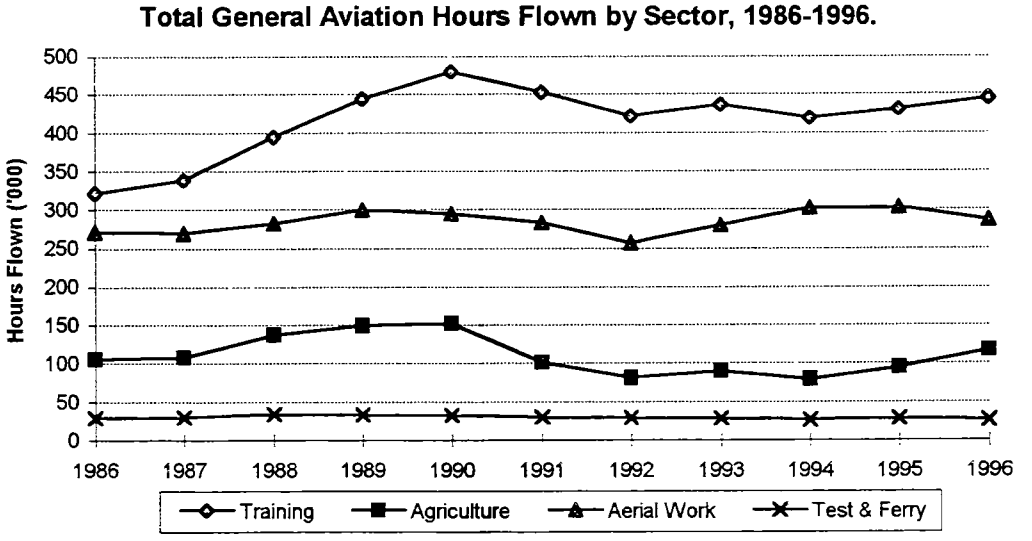



Figure 2(b)




Source: Avstats.

Figures 2(a) and 2(b) show general aviation hours flown, by major types of operation, for the period 1986 to 1996.

Charter activity has shown steady growth, with an average annual growth rate over the period of 3.9 per cent. Flying training has also grown substantially (average annual growth rate of 3.3 per cent), although activity has levelled out in more recent years.

The number of hours flown aerial work and private flying have remained fairly static, while business flying has shown an overall decline after peaking in 1990.

There was a significant decrease in aerial agricultural flying after 1990, reflecting both the state of the rural economy and the use of higher-capacity aircraft in the industry. The rate however has increased in the last two years.

**Figure 3(a)**

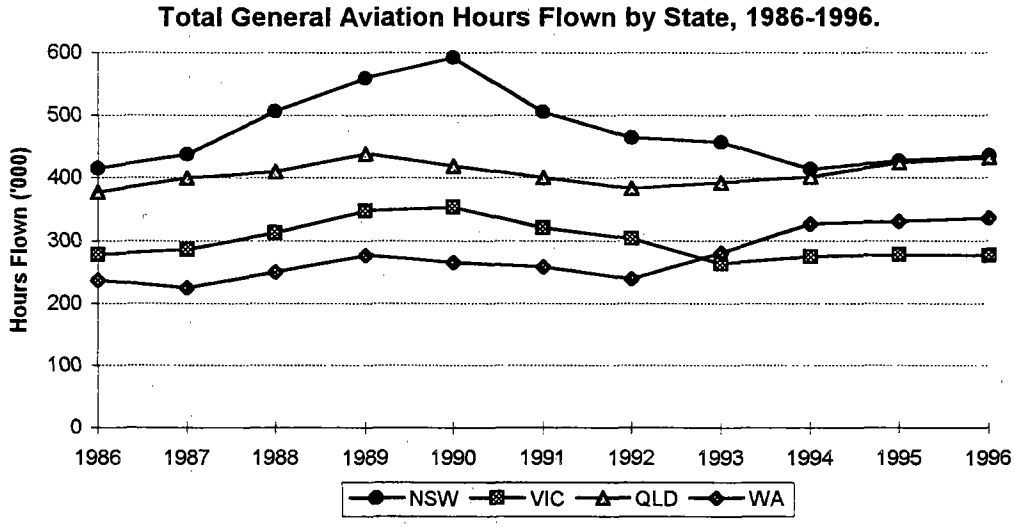
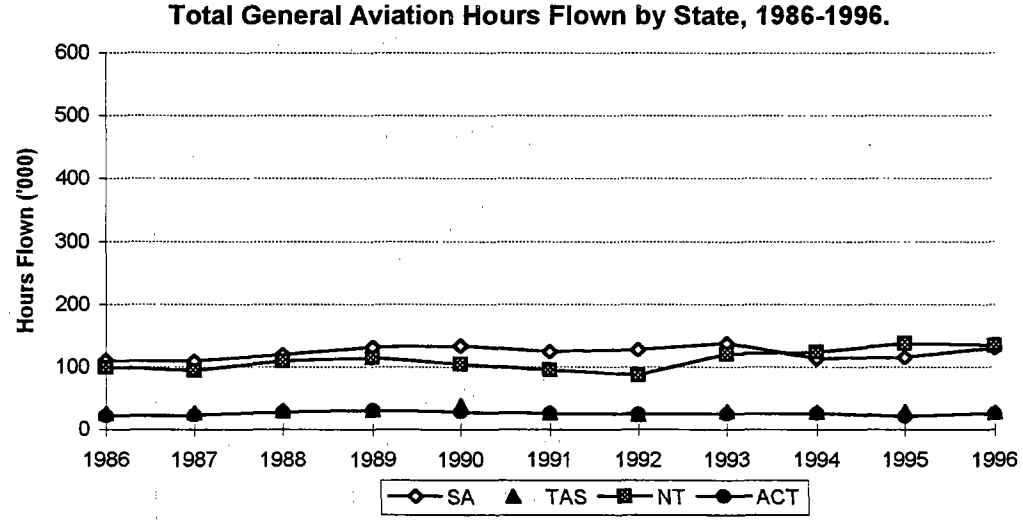



**Figure 3(b)**




Source: Avstats.

Figures 3(a) and 3(b) show general aviation (GA) hours flown by State for the years 1986 to 1996. Note that the statistics cover total GA flying by aircraft reported as based in each State, and may not necessarily reflect flying activity within each State.

GA flying in the individual States has generally followed national trends, with overall activity remaining relatively flat.

The upward trend in Western Australia flying in recent years is primarily due to increases in flying training and in the charter and aerial survey sectors. The decrease in GA activity in New South Wales since the 1990 peak is due to a decline in activity in all the GA sectors.

**Figure 4(a)**

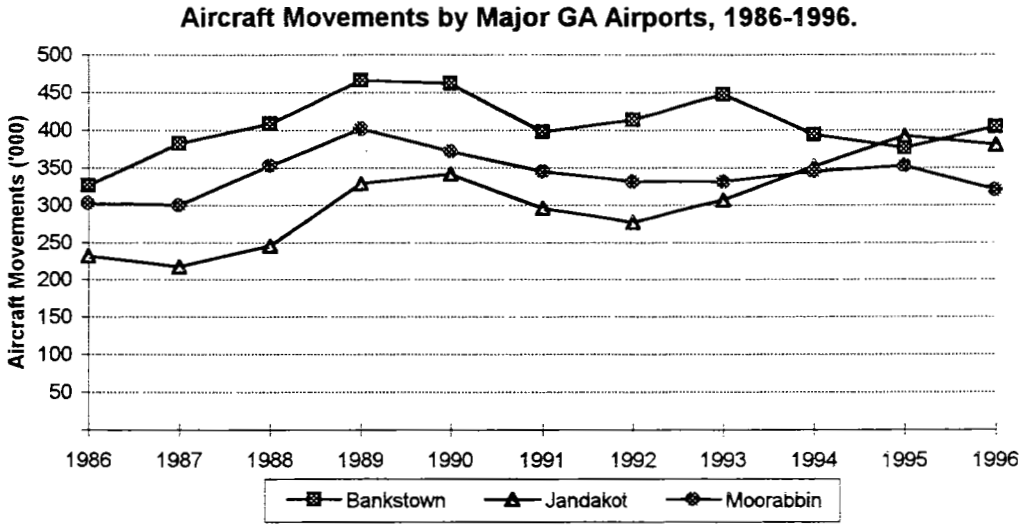
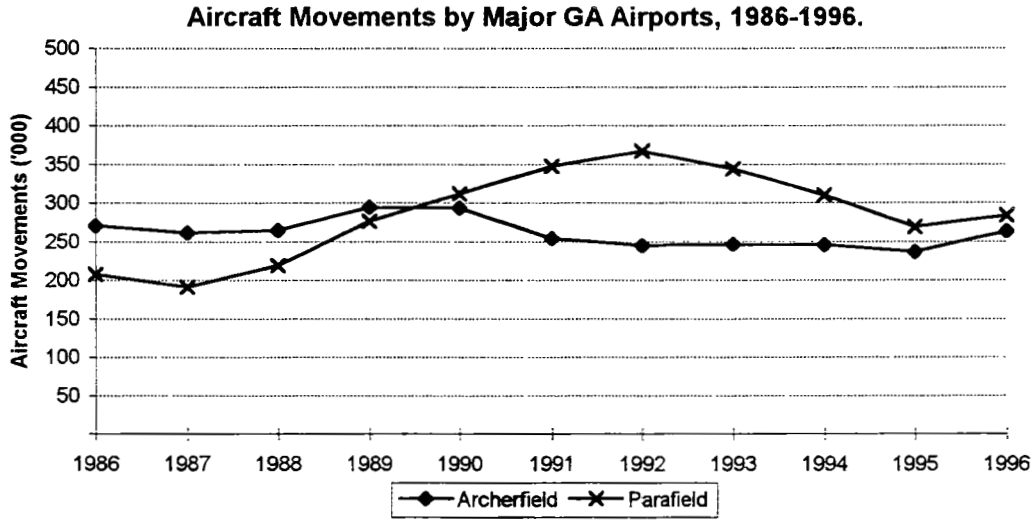



**Figure 4(b)**




Source: Avstats.

Figures 4(a) and 4(b) show total aircraft movements at the capital city secondary aerodromes from 1986 to 1996. The movements at these airports primarily relate to general aviation activity.

Changes in aircraft movements over the period are in line with State trends in GA flying hours as shown on Figures 3(a) and 3(b). Interestingly, the upward trend in Western Australia resulted in Jandakot becoming the busiest airport in the country in 1995. The downward trend at Bankstown in recent years is representative of decreasing general aviation activity in the entire Sydney basin, although the data for 1996 indicates that the trend may now be reversed.

**Figure 5(a)**

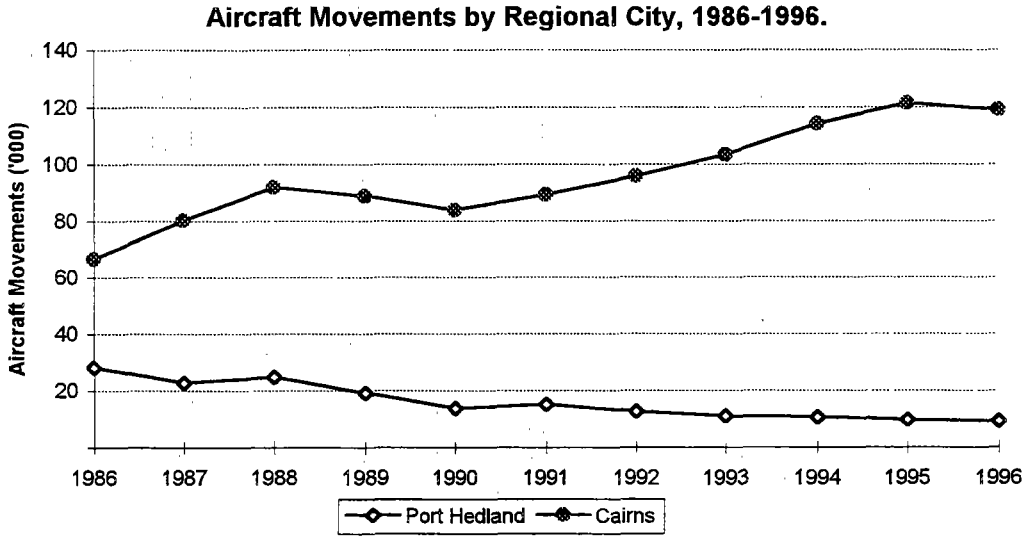
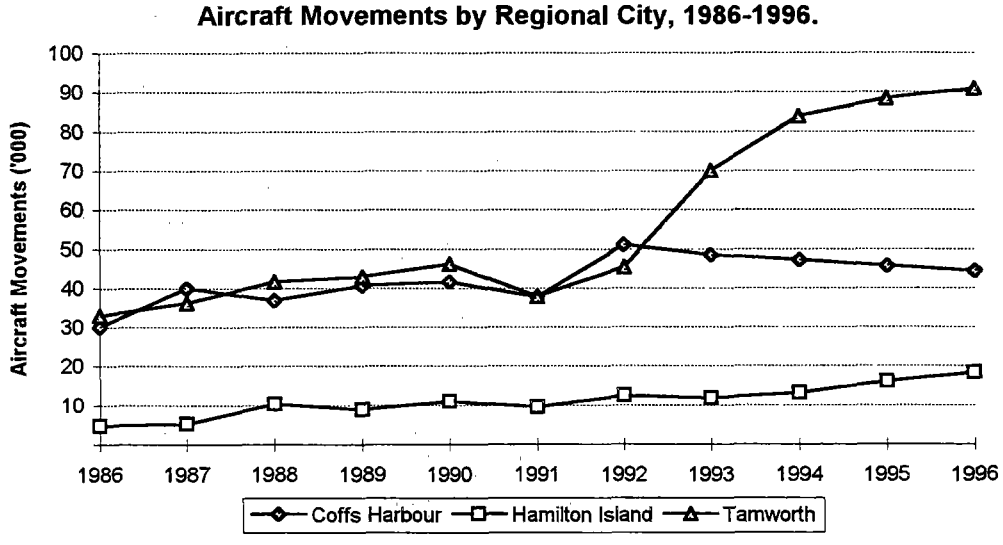



**Figure 5(b)**




Source: Avstats.

Figures 5(a) and 5(b) show total aircraft movements at selected regional airports for the period 1986 to 1996.

Port Hedland traffic has been affected by an increase in direct services between Perth and the north-west of the State, reducing Port Hedland's importance as a hub airport. Completion of major offshore resource work also led to a significant reduction in helicopter operations after 1988.

The increasing significance of Cairns as an international and domestic tourist destination has resulted in the scheduled airline component of aircraft movements, more than trebling since 1986.

The increase in traffic at Hamilton Island reflects its emergence as a major gateway to the Whitsunday region. Tamworth movements were affected by the opening of a major flying training college in 1992, and by utilising smaller aircraft on scheduled airline services with a commensurate increase in frequency.

Figure 6(a)

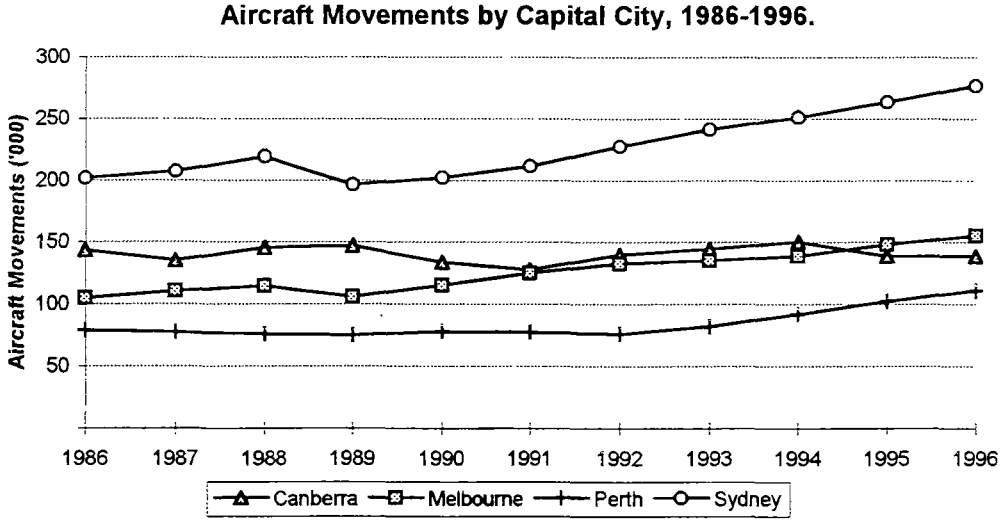
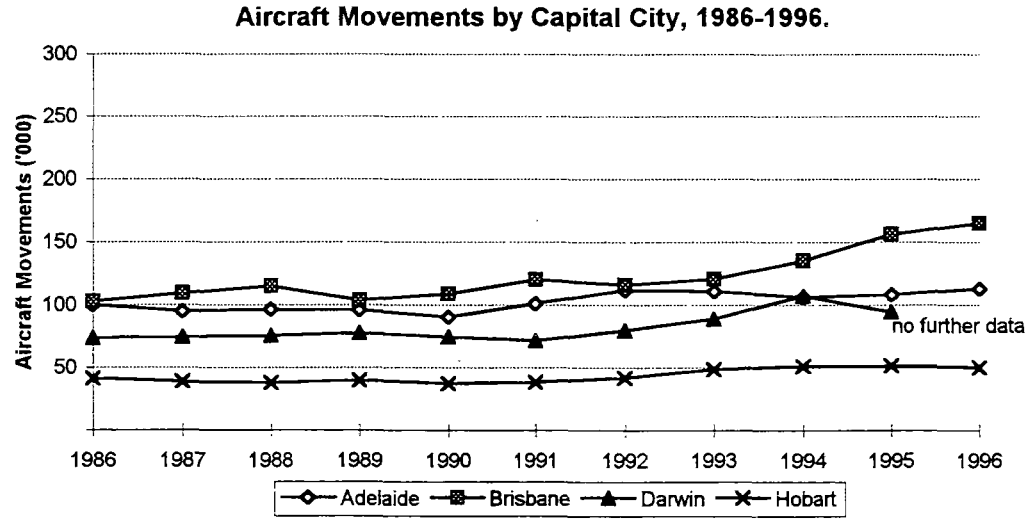



Figure 6(b)




Source: Avstats.

Figures 6(a) and 6(b) show total aircraft movements at the capital city primary airports from 1986 to 1996. The aircraft activity at these airports is a mixture of Regular Public Transport (RPT), general aviation and military activity, ranging from around 20 per cent RPT at Canberra, Darwin and Hobart to nearly 90 per cent at Melbourne and Sydney.

Those airports where RPT operations predominate show steady growth over the period. Brisbane Airport in particular has seen a sharp rise in movements since 1993, with tourism and international hubbing operations as contributing factors.

Lesser growth has been experienced at the airports with a larger general aviation component, due to the flattening effect of the relatively small rise in GA activity.

# Industry Indicators

**Figure:**

7. Year of Manufacture.
   (a) Total Fixed Wing Aircraft.
   (b) Fixed Wing Transport Aircraft.
8. Year of Manufacture.
   (a) Total Rotary Wing Aircraft.
   (b) Rotary Wing Transport Aircraft.
9. Median Age of Aircraft, Fixed Wing and Rotary.
   (a) Transport Category.
   (b) Non Transport Category.
10. Load Factor Percentages by RPT Sector.
11. Regional Airline Market Share.
12. Flight Crew Licences, New Issues.
   (a) Fixed Wing.
   (b) Rotary Wing.
13. Total Number of Exam Attempts for all AME Classifications.
14. Total Ratings Issued.
   (a) 'Specific' Type Aircraft.
   (b) 'Group' Type Aircraft.
15. AME licences: New Issues and Expiries.

**Figure 7(a)**

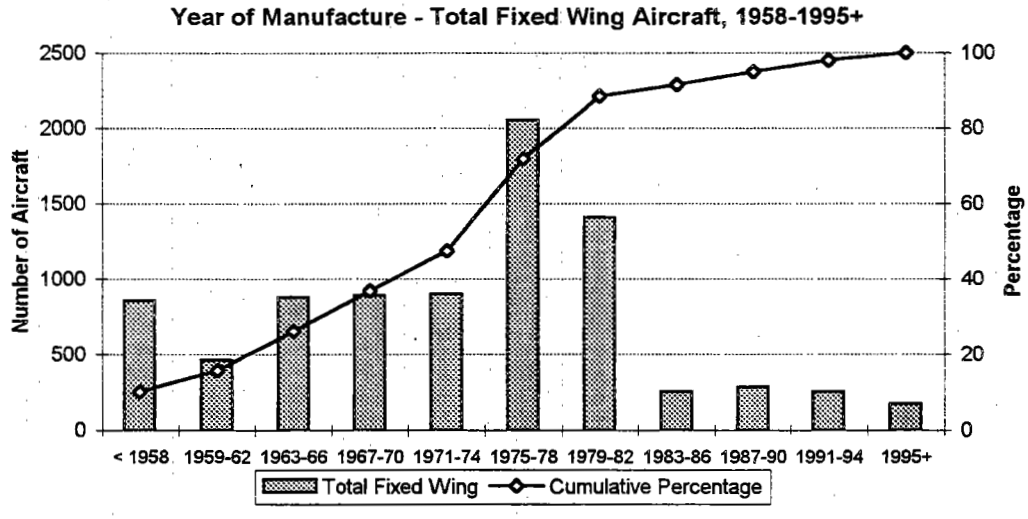
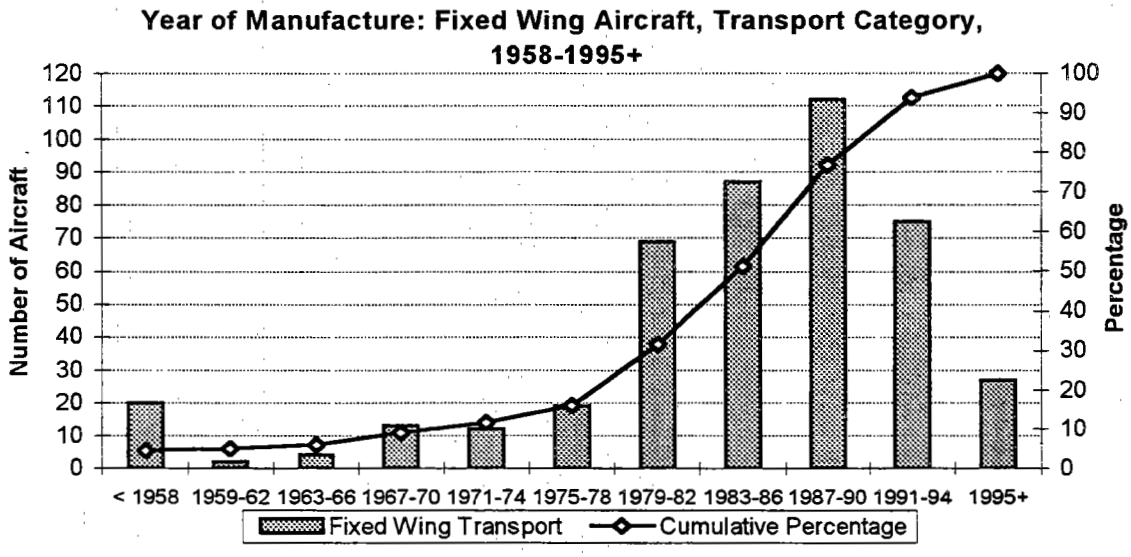



**Figure 7(b)**




Source: CASA.

Figure 7(a) shows the year of manufacture for all (8428) fixed wing aircraft registered in Australia as of December 1996.

About half of the registered fixed wing aircraft were manufactured after 1974, with approximately one fifth of aircraft on register being manufactured prior to 1965.

Figure 7(b) shows the year of manufacture for a subset of total fixed wing aircraft, i.e. those designed to the more demanding 'transport' category standards (440 in total). While there are exceptions to this, most aircraft in this category are of a maximum take-off weight above 5700kg for RPT operations.

While these aircraft are, in general, much newer with the mid-point for year of manufacture being in the late 1980's, about 23 per cent were manufactured in or before 1980.

Figure 8(a)

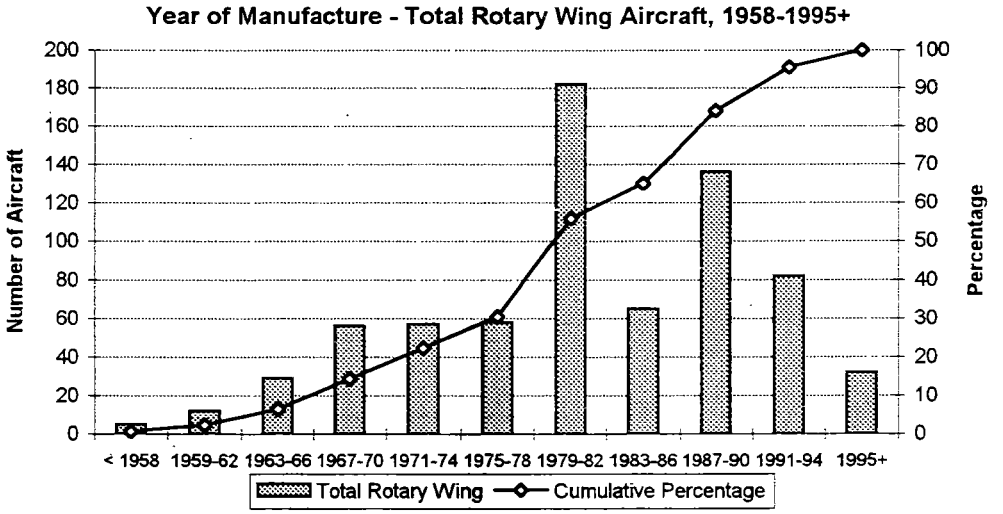
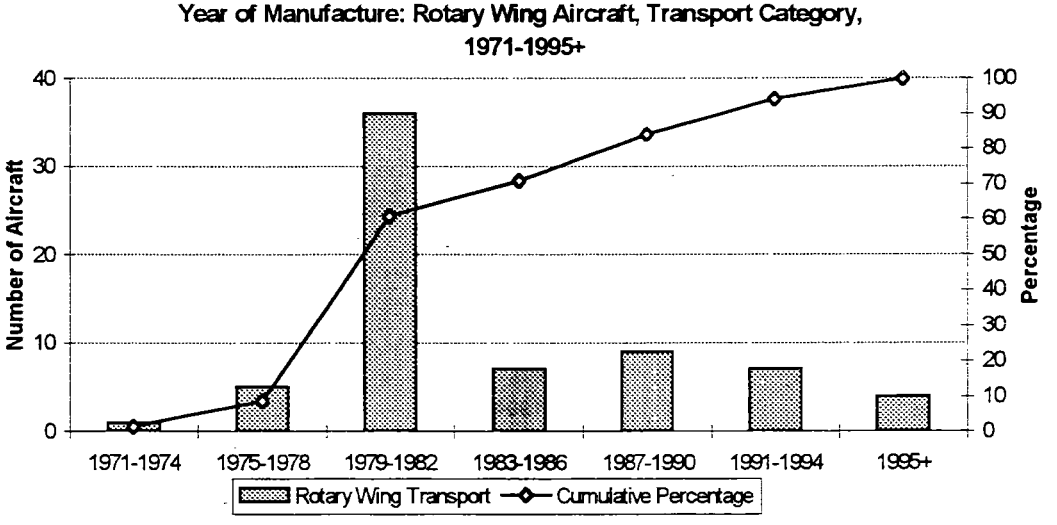



Figure 8(b)




Source: CASA.

Figure 8(a) shows the year of manufacture for all (714) rotary wing aircraft registered in Australia as of December 1996.

Compared with fixed wing aircraft, the average rotary wing aircraft is much newer with approximately half being manufactured after 1980.

Figure 8(b) shows data from the small number of 'transport' category helicopter aircraft (69) in total.

The average age of these aircraft is not significantly different to that of other helicopters on register.

**Figure 9(a)**

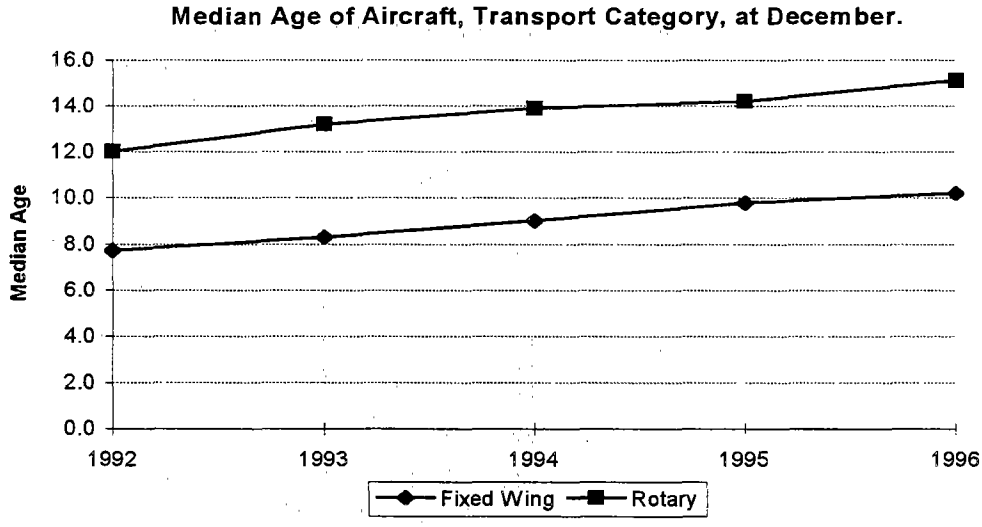
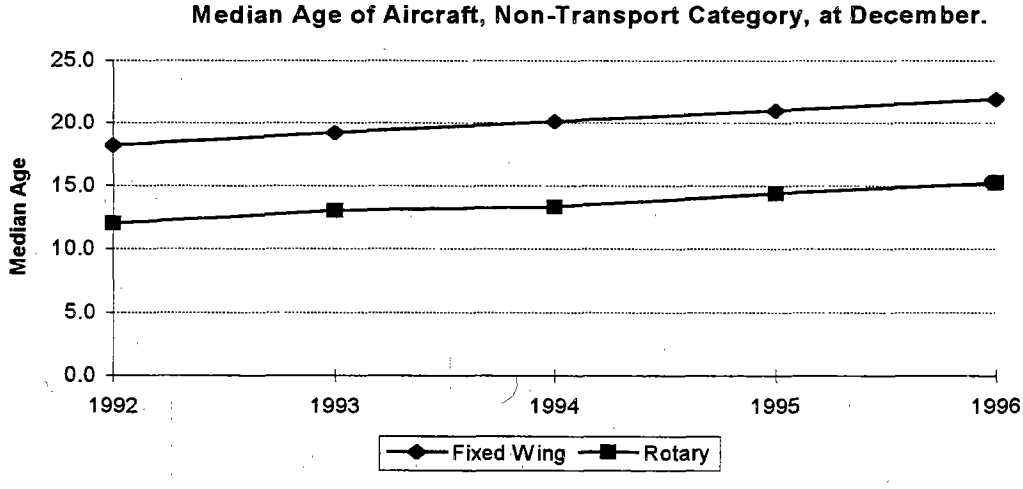



**Figure 9(b)**




Source: CASA.

Figures 9 (a, b) shows the median age of Fixed Wing and Rotary Wing aircraft in the Transport and Non-Transport categories.

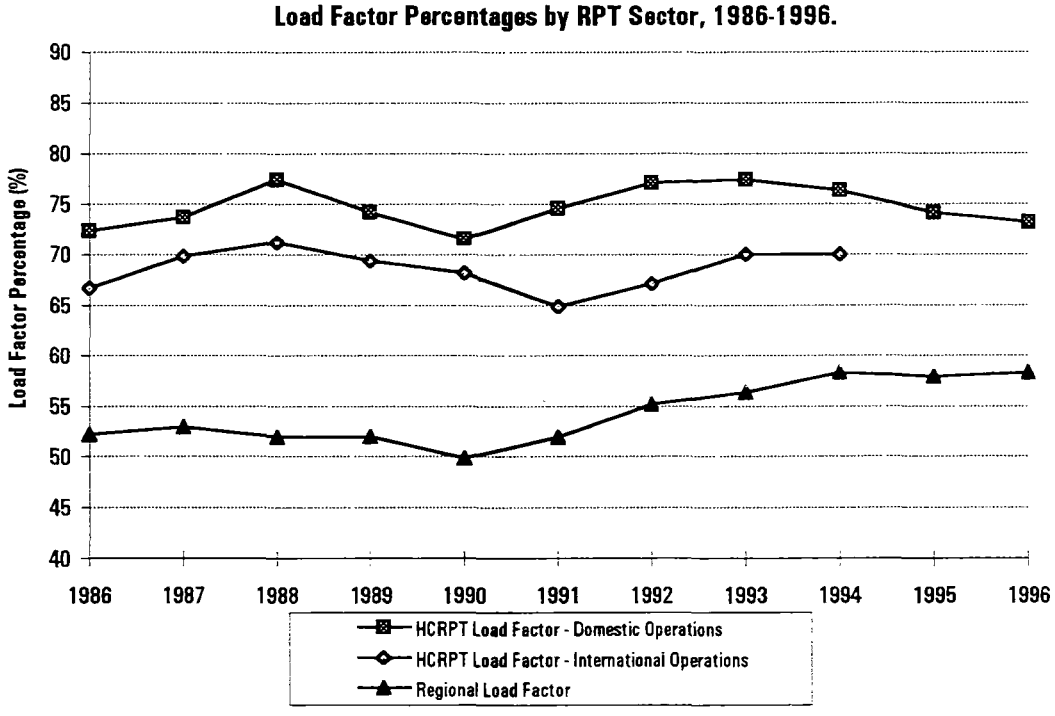
The median ages of aircraft in the Transport Category are generally lower than those for aircraft in the Non-Transport Category.

The median age for Fixed Wing aircraft in the Transport Category ranges between 7.7 and 10.24 years, while that of Non-Transport aircraft lies between 18.2 and 21.8 years.

For Rotary Wing aircraft, the median age for aircraft in the Transport sector is between 12.0 and 15.1 years while the median age for Non-Transport aircraft ranges from 12.0 to 15.2 years.

For the period under review, the median age for both Fixed and Rotary Wing aircraft has steadily increased for both Transport and Non-Transport aircraft.

Figure 10



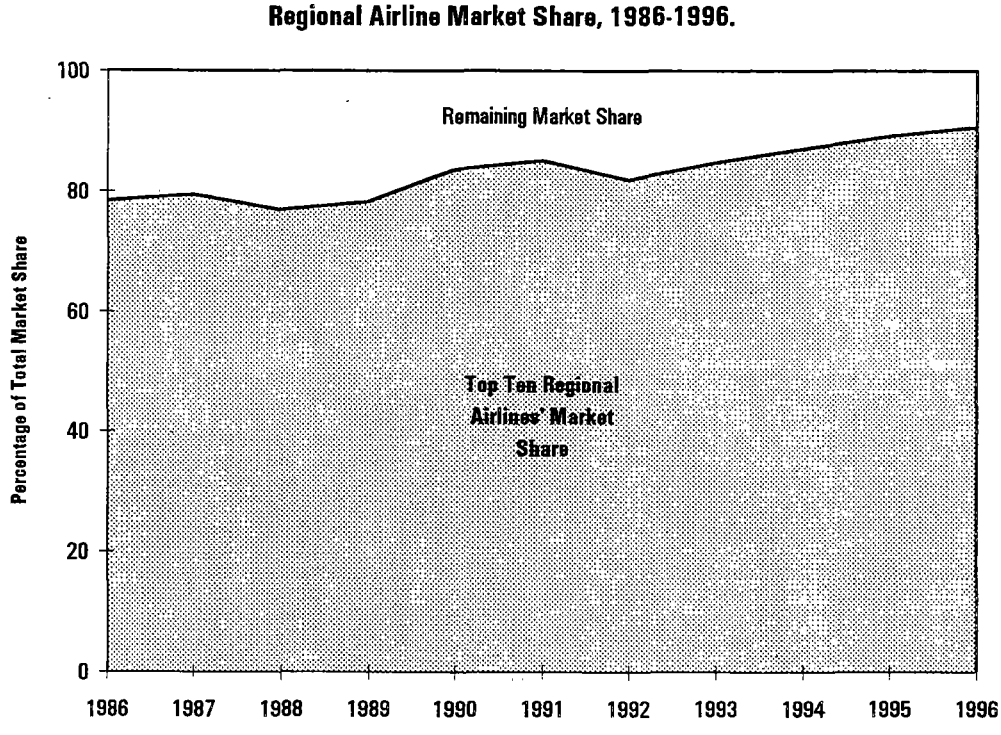

Note: From 1995 International Load factors are unavailable.
Source: Avstats.

Figure 10 shows average load factors for each of the major Regular Public Transport (RPT) sectors during the period 1986 to 1996. Load factors are calculated by expressing passenger kilometres as a percentage of available seat kilometres, and are one of the more important measures of productivity/efficiency.

Australia has high average load factors (about 73 per cent in 1996) in high capacity RPT operations. The average world-wide load factor in high capacity aircraft is around 67 per cent.

The regional airlines load factor has been increasing steadily through the period. This reflects, in part, the consolidation of the industry through stronger ties with the major (high capacity) airlines by means of commercial arrangements and outright purchases. The resulting higher traffic levels have led to efficiency gains such as load factor increases. See also Figure 11.

Figure 11




Source: Avstats.

Figure 11 shows the market share of passenger carriage achieved by the largest ten regional airlines (based on the number of passengers carried) from 1986 to 1996.

The rising market share over the period reflects the increasing consolidation of the larger regional airline carriers and stronger links with the two major airline groups (Ansett Australia and Qantas Airways). There has been a continuing trend over many years for the major airlines to withdraw, in whole or in part, from secondary routes in favour of regional airline subsidiaries or commercial partners. This has resulted in increased traffic levels for the regional airlines involved, and improved standards of quality and safety.

**Figure 12(a)**

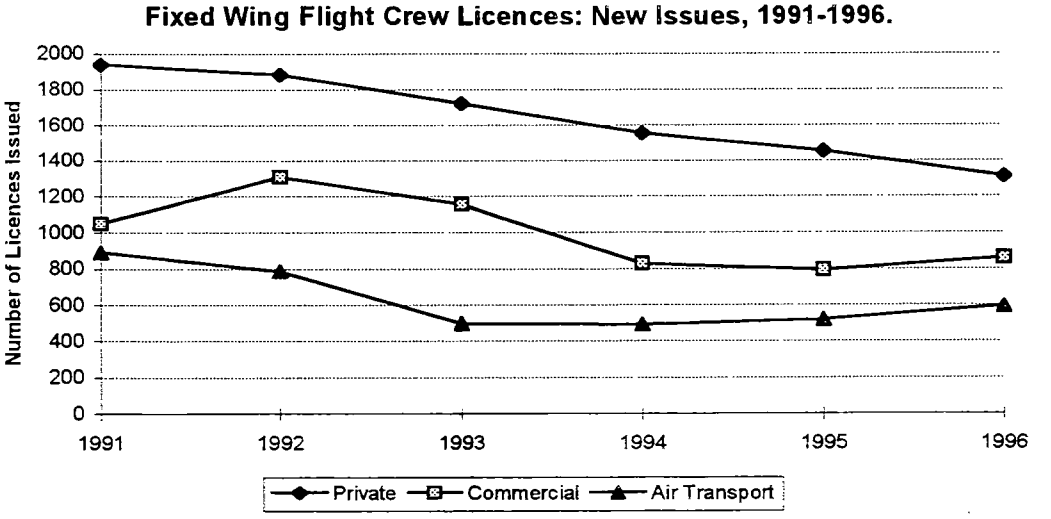
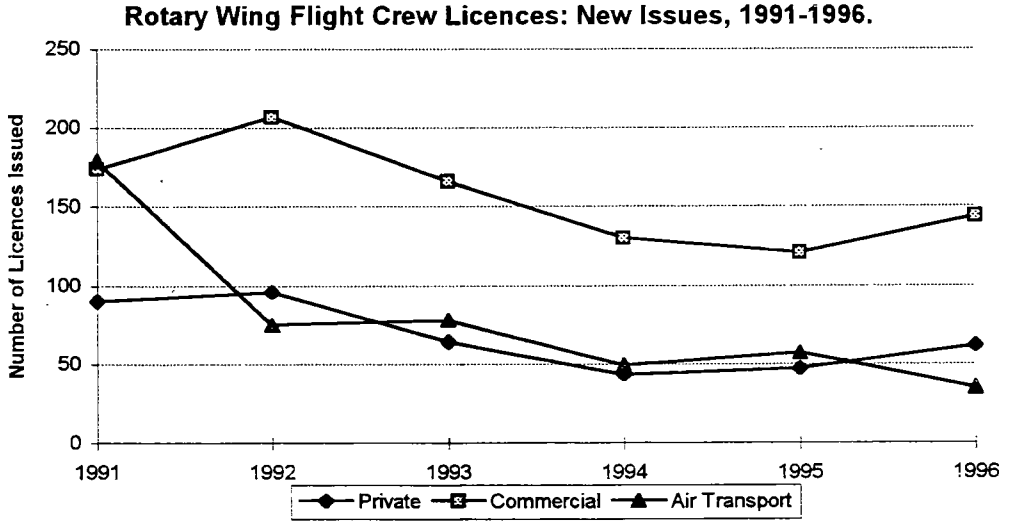



**Figure 12(b)**




Note: Rotary Wing Air Transport Licences were only offered for the first time in 1991.
Source: CASA.

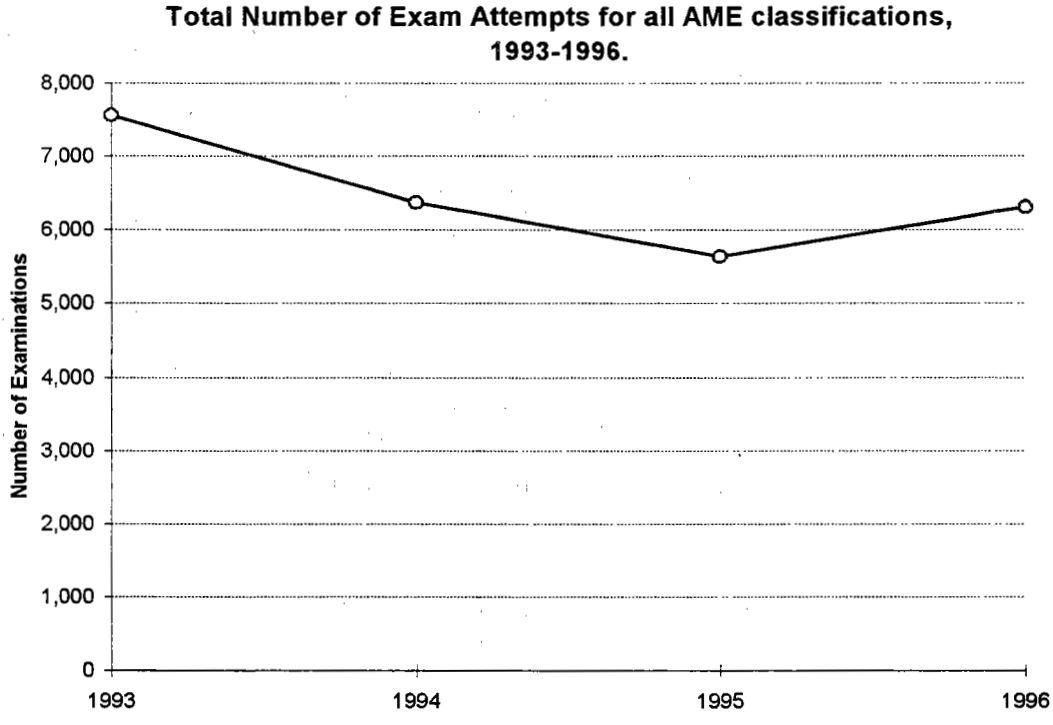
Figures 12(a) and 12(b) show the number of flight crew licences issued for fixed wing and helicopter aircraft from 1991 to 1996.

There are about twice the number of Private Pilot Licences (PPLs) issued as Commercial Pilot Licences (CPLs) with a smaller number yet of Air Transport Pilot Licences (ATPLs).

In the case of rotary wing aircraft the CPL accounts for the majority of licences issued.

The number of new issues since 1995 have increased slightly for all licence types except PPLs in the Fixed Wing category and ATPLs in the Rotary Wing category. The number of new issues for PPLs for Fixed Wing aircraft and ATPLs for Rotary Wing aircraft have declined by about 10 per cent and 39 per cent respectively between 1995 and 1996.

**Figure 13**




Source: CASA

Figure 13 provides data on the number of times various exams for Aircraft Maintenance Engineer (AME) licences were attempted from 1993 to 1996. Examinations can be attempted in eight classifications, such as Airframe, Engines, and Instruments. It should be noted that the same individual can sit examinations in more than one classification and that the same classification of exam may be attempted more than once in the event of a failure.

The number of examination attempts increased by about 11.8 per cent between 1995 and 1996.

**Figure 14(a)**

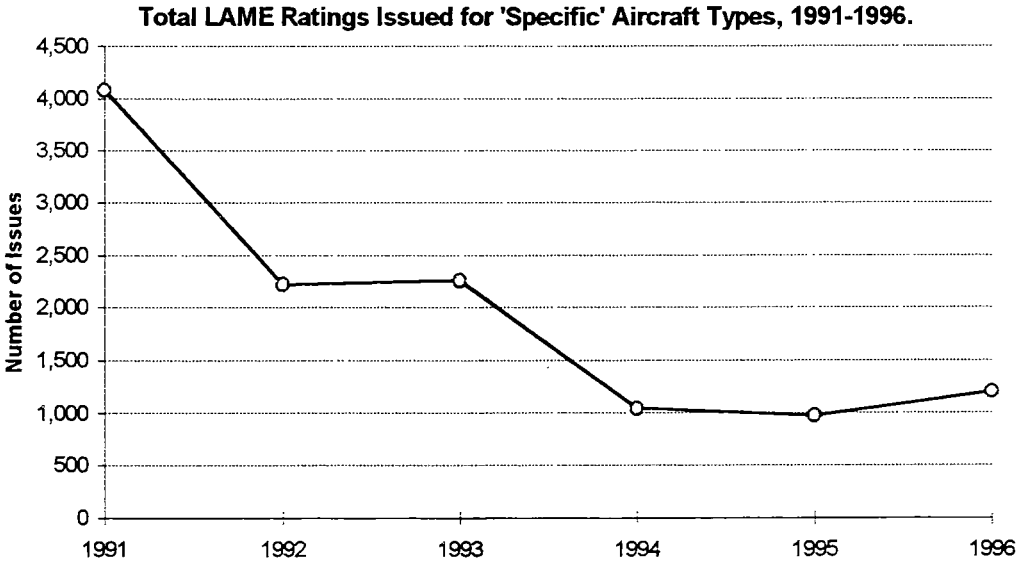
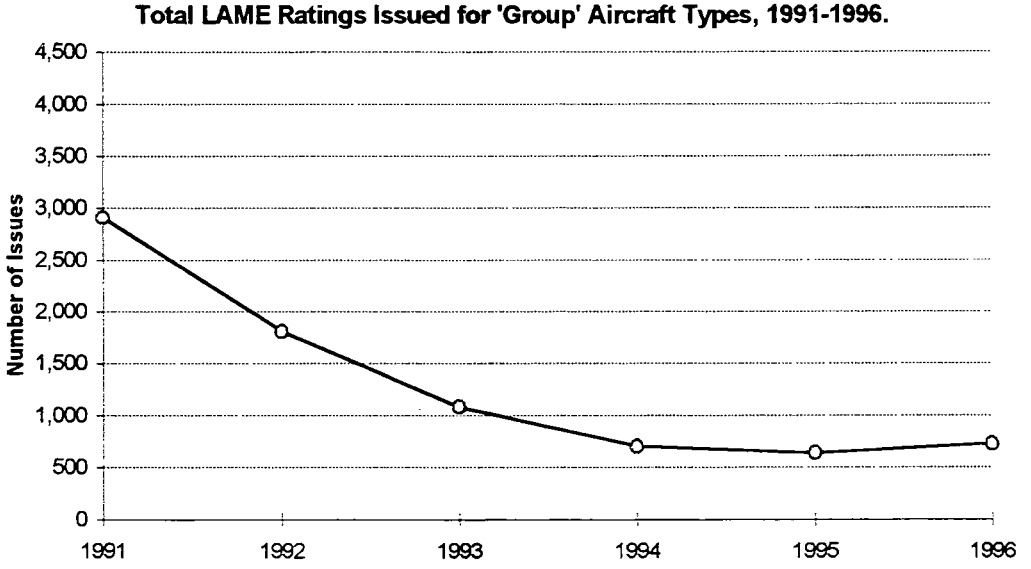



**Figure 14(b)**




Source: CASA.

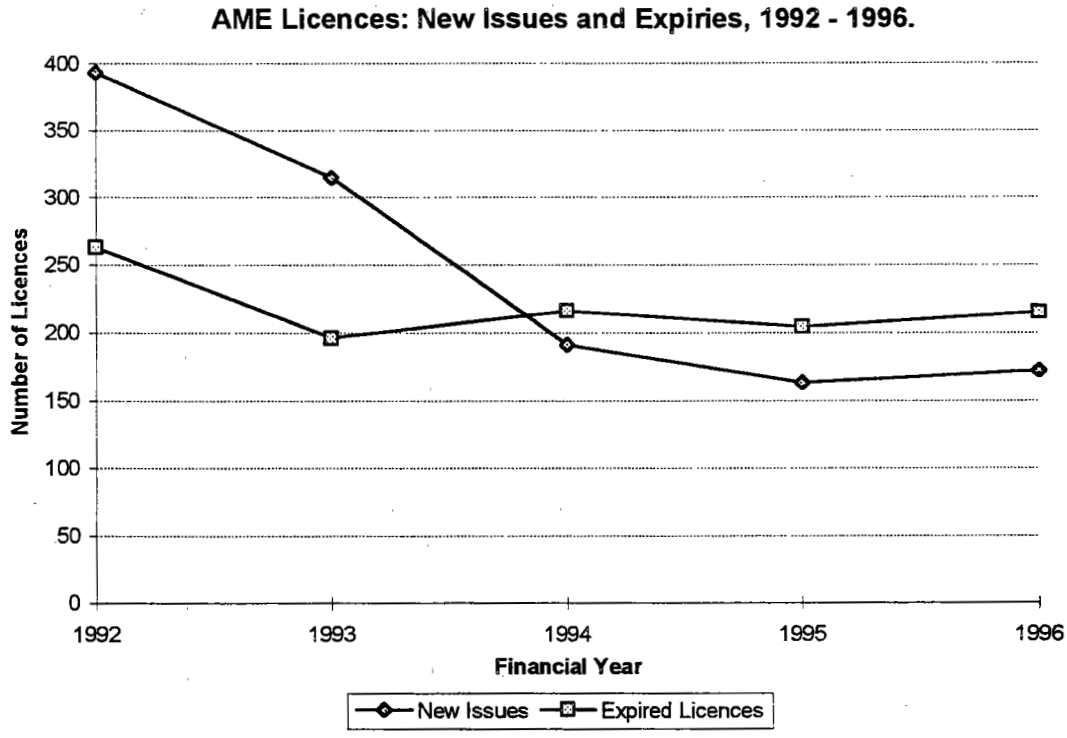
Figures 14(a) and 14(b) give the total number of aircraft ratings issued for 'Specific' and 'Group' aircraft types. Ratings refer to the type of aircraft on which Licensed Aircraft Maintenance Engineers (LAMEs) are able to certify for maintenance.

For the most part, 'Specific' aircraft ratings relate to aircraft used in airline and corporate service, whereas 'Group' ratings mainly refer to GA aircraft.

The number of ratings issued has declined substantially since 1991 for both airline and GA aircraft.

However, between 1995 and 1996, the number of ratings have increased by 23 per cent for 'Specific' ratings and 14.6 per cent for 'Group' ratings.

**Figure 15**




Source: CASA.

Figure 15 shows the number of individuals who were issued with an Aircraft Maintenance Engineer licence (in any category) for the first time. It also shows the number of individuals whose licences have expired in past years.

While the number of expired licences has been fairly static over the past five years, new issues have dropped rapidly. Since 1994 there has been a net decrease in the total number of licensed AME holders.

# Accident Indicators

**Figure:**

16. Total Accidents:
    **(a)** Fixed Wing Aircraft.
    **(b)** Rotary Wing Aircraft.
17. **(a) & (b)** General Aviation Accident Rates by Sector.
18. **(a) & (b)** General Aviation Fatal Accident Rates by Sector.
19. Total General Aviation Fatal Accident Rate.

**Table:**

1. Average Ratio of Fatal Accidents to Accidents by Sector.

Figure 16(a)

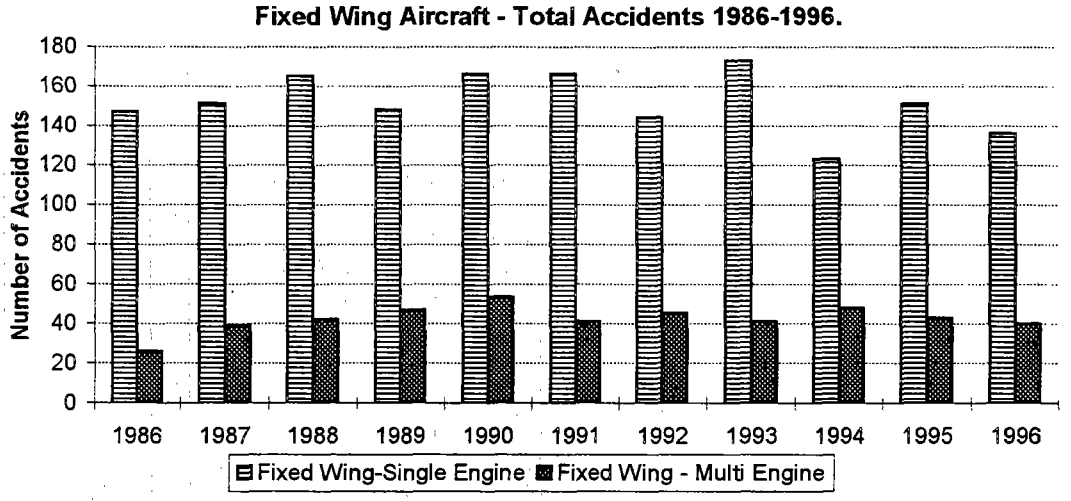
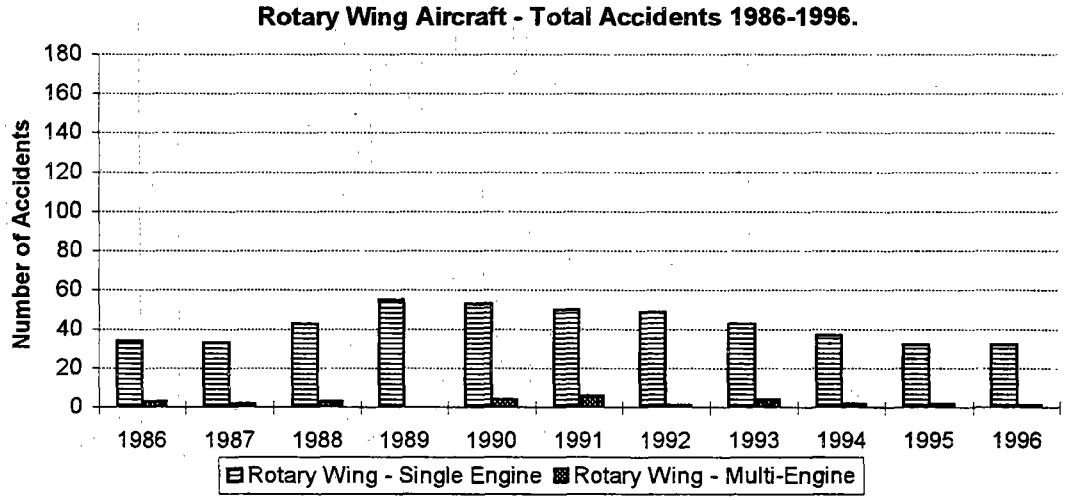



Figure 16(b)




Source: BASI.

Figures 16(a) and 16(b) compare the number of accidents involving fixed wing single engine aircraft to those involving fixed wing multi engine aircraft, and the number of accidents involving rotary wing single engine aircraft to those involving rotary wing multi engine aircraft, in terms of the actual number of accidents per calendar year involving Australian registered aircraft

While the lowest number of accidents for fixed wing single engine aircraft during this eleven year period occurred in 1994, the corresponding number of accidents involving multi engine aircraft was relatively high. The number of accidents for rotary wing aircraft has shown a decline from a high in 1989, although the numbers involved are relatively small.

**Figure 17(a)**

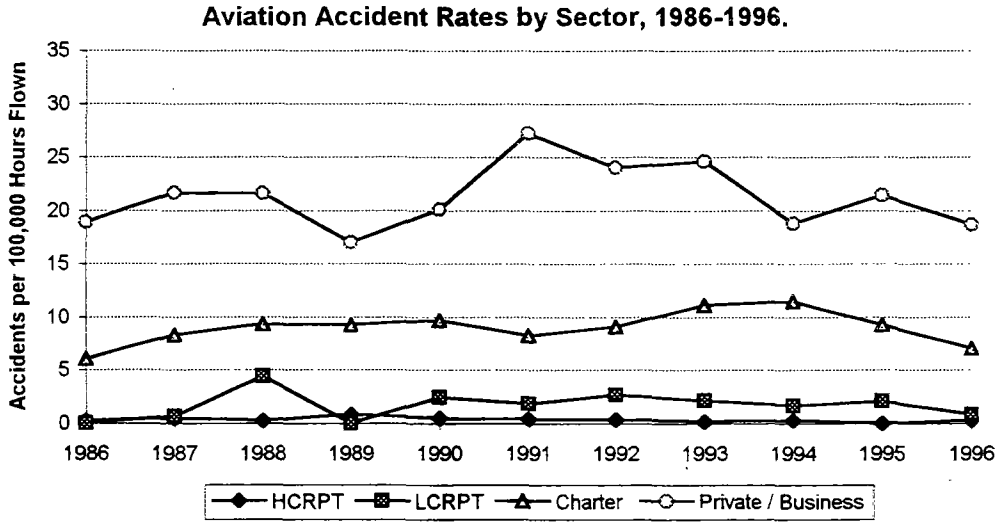
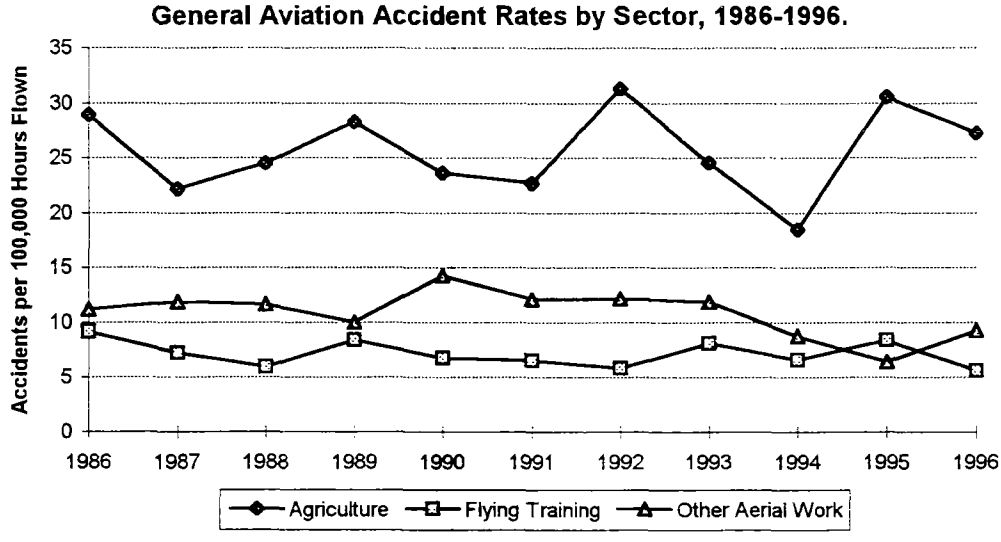



**Figure 17(b)**




Source: BASI.

The frequency of accidents on a calendar basis, is an important indicator from the public perspective. However, the number of accidents is correlated with flying activity and the accident rate per 100,00 hours of operation.

Figures 17(a) and 17(b) compare the accident rates for fixed wing and rotary wing aviation between sectors of operation.

The accident rate for Australian registered High Capacity RPT aviation has remained at a very low figure during the last ten years. The rate for Low Capacity RPT has remained around 3 accidents per 100,000 hours of operation. Charter operations typically have a rate around three times higher.

The highest rates of accidents occur in Agricultural operations and the Private/Business sector. None of these rates show a significant variation in the annual trends.

Figure 18(a)

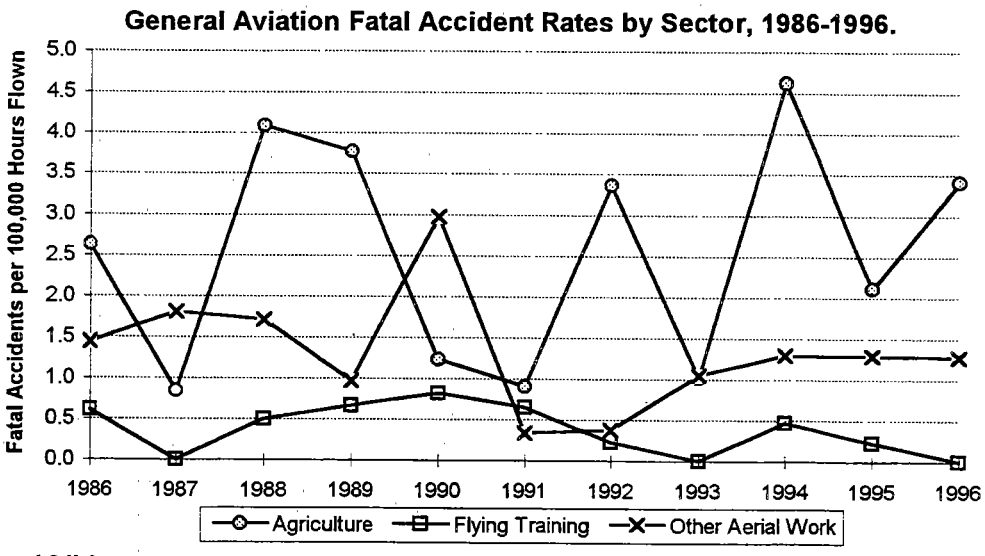
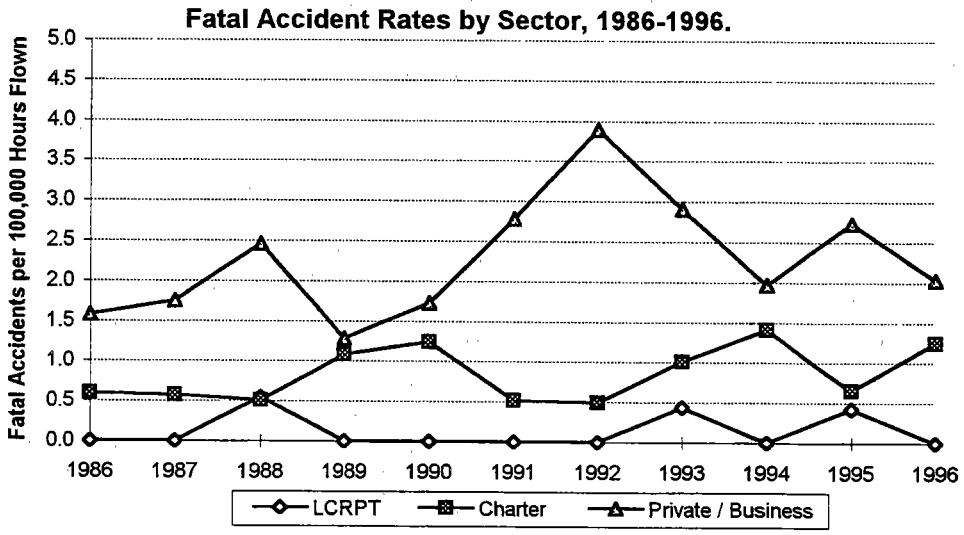



Figure 18(b)




Source: BASI.

Fatal accident rates for fixed wing and rotary wing aviation between sectors of operation are provided in Figures 18(a) and 18(b). The rate of accidents is defined as accidents per 100,000 hours of operation.

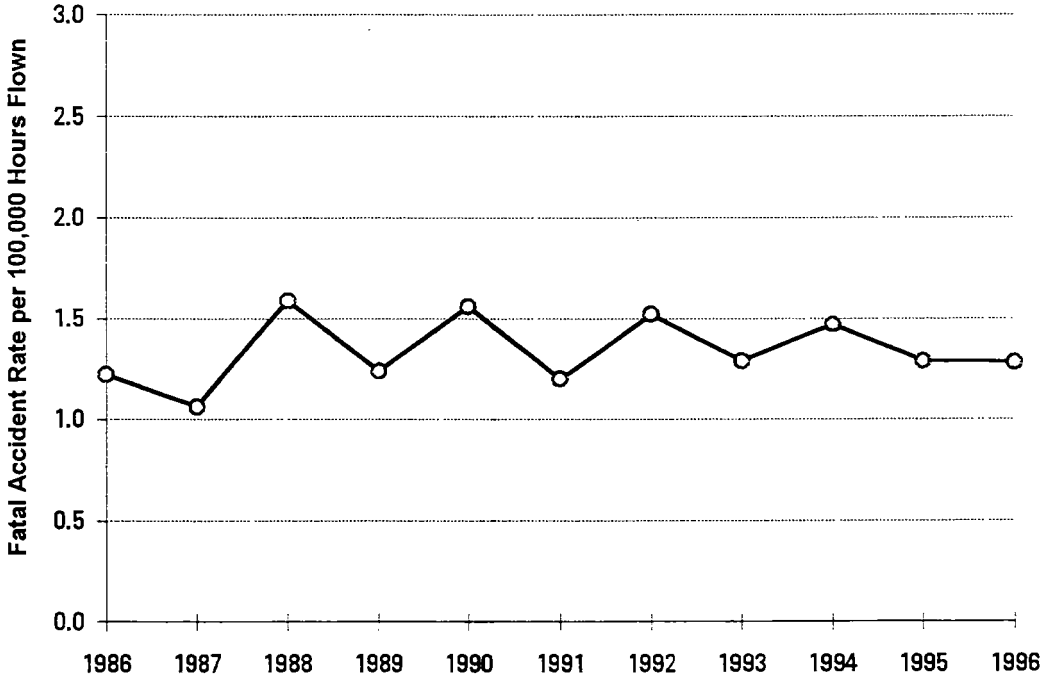
There have been no fatal accidents involving Australian registered High Capacity RPT aviation in the eleven year period.

The average fatal accident rate over the eleven year period for Low Capacity RPT aircraft was 0.13 per 100,000 hours and the corresponding figure for Charter operations was 0.85 per 100,000 hours. Thus the fatal accident rate for Charter was nearly six times that of Low Capacity RPT operations.

Similarly, fatal accident rates for Agricultural and Private/Business operations are influenced by a small number of accidents. The rates vary between 1.0 and 5.0 per year. There is no significant trend evident from these rates.

Figure 19

**Total General Aviation Fatal Accident Rate, 1986-1996.**




Source: BASI.

This indicator shows the fatal accident rate per 100,000 hours for the total General Aviation operations ( Private / Business, Agricultural, Flying Training and Charter).

The fatal accident rate for General Aviation varies between 1.0 and 1.5 fatal accidents per 100,000 hours per year. The data does not show any significant increase or decrease in the fatal accident rate.

**Table 1: Fatal Accidents as a Percentage of Total Accidents by Sector, 1986-1996.**

| Sector | Average (%) 1986-1996 |
|---|---|
| Flying Training | 5.7 |
| LCRPT | 8.0 |
| Charter | 9.6 |
| Agriculture | 9.9 |
| Private/Business | 10.7 |
| Other Aerial Work | 12.5 |

Table 1 shows the average percentage of fatal accidents to total accidents for the various sectors of operations, for the eleven year period 1986 - 1996.

The percentages are a measure of the crashworthiness or survivability of the aircraft, but are also strongly influenced by the types of accidents. For example in Flying Training activities the majority of accidents are related to loss of control on landing resulting in damage to undercarriages, propellers and airframes. However most accidents of this type do not involve serious injury.

The percentages suggest that across all sectors approximately one accident in ten would be fatal, except for Flying Training, where the rate is closer to one in twenty.

# Incident Indicators

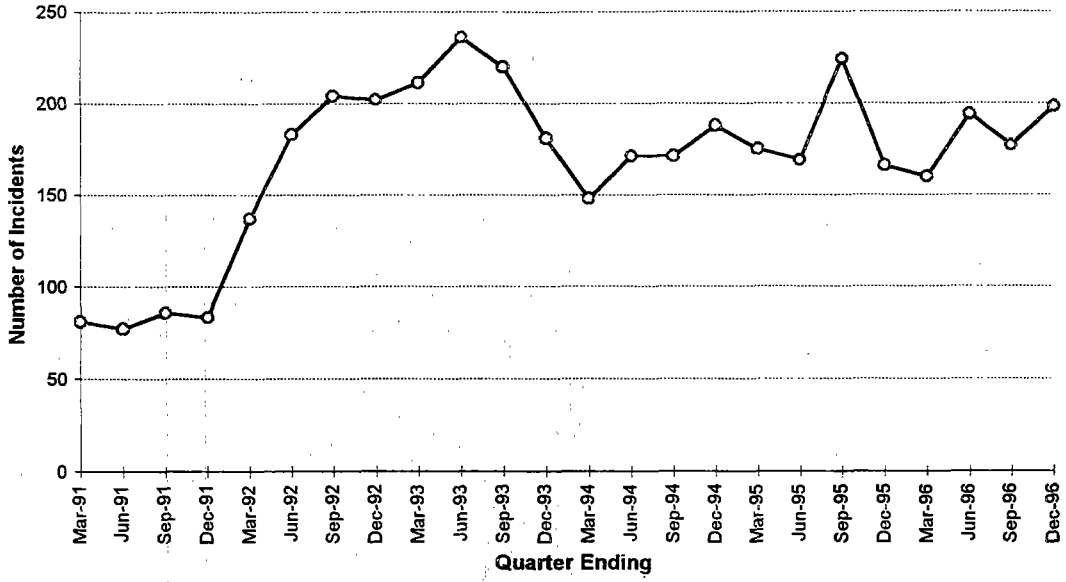
**Figure:**



**Table:**

Figure 20

Reported Violation of Controlled Airspace Incidents, 1991-1996.



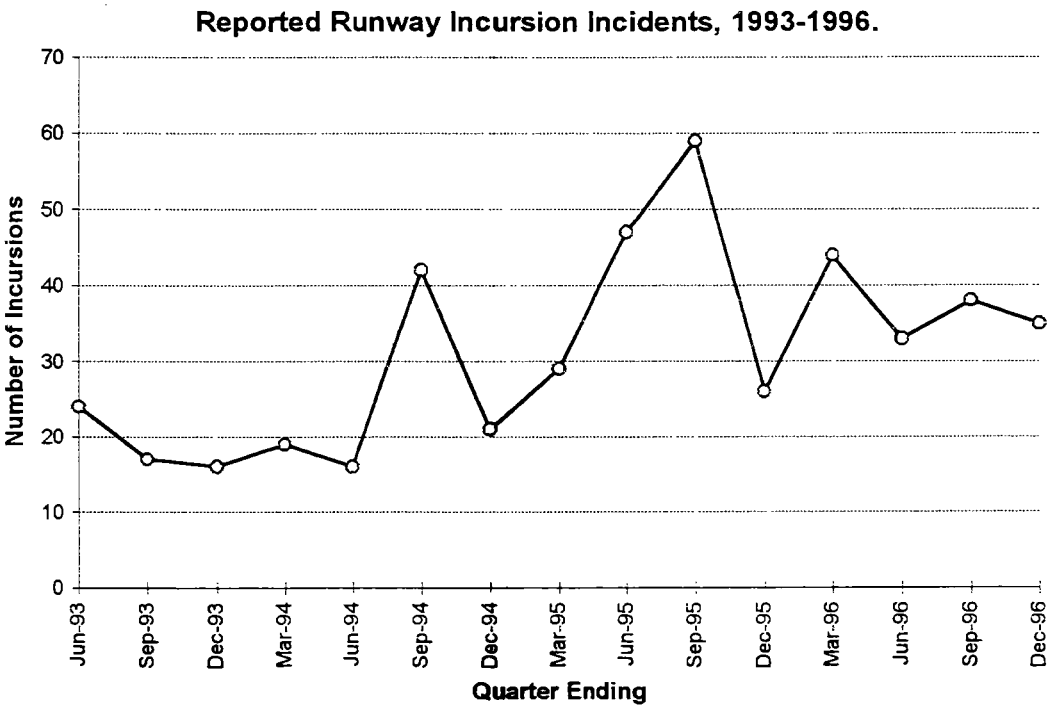

Source: BASI.

When an aircraft enters controlled airspace without an airways clearance it poses a threat to the Air Traffic Control System and the incident is classed as a Violation of Controlled Airspace (VCA)

Prior to December 1991 there were approximately 80 VCAs reported to BASI in each quarter. Following the changes to airspace procedures in December 1991, the numbers of VCAs increased to a maximum of 230 in the second quarter of 1993. Although the number reduced subsequently through greater pilot education, the number remains at a relatively high level - twice that of the rate prior to 1991.

There were no reports of VCA occurrences which resulted in a Loss of Separation.

Figure 21




Source: BASI.

If a vehicle, aircraft or person enters the runway flight strip without permission it is classed as a Runway Incursion incident. These incidents have obvious implications for aircraft landing or taking off. The incursions occur primarily at the capital city aerodromes, and the general aviation aerodromes in capital cities. Reported runway incursions are infrequent at other aerodromes with control towers probably because of the relatively low movement rates.

The number of Runway Incursion incidents shows an increase, particularly during 1995. The following tables show the runway incursion incident rates for the primary and general aviation aerodromes at the capital cities.

**Table 2: Runway Incursions at Major GA Airports, March 1993-May 1996.**

| Airport | Total runway incursions | Total aircraft movements | Incursions per 100,000 aircraft movements |
|---|---|---|---|
| Bankstown | 119 | 1,305,606 | 9.11 |
| Moorabbin | 74 | 1,091,279 | 6.78 |
| Jandakot | 15 | 1,148,570 | 1.31 |
| Archerfield | 1 | 785,481 | 0.13 |
| Parafield | 1 | 959,751 | 0.10 |

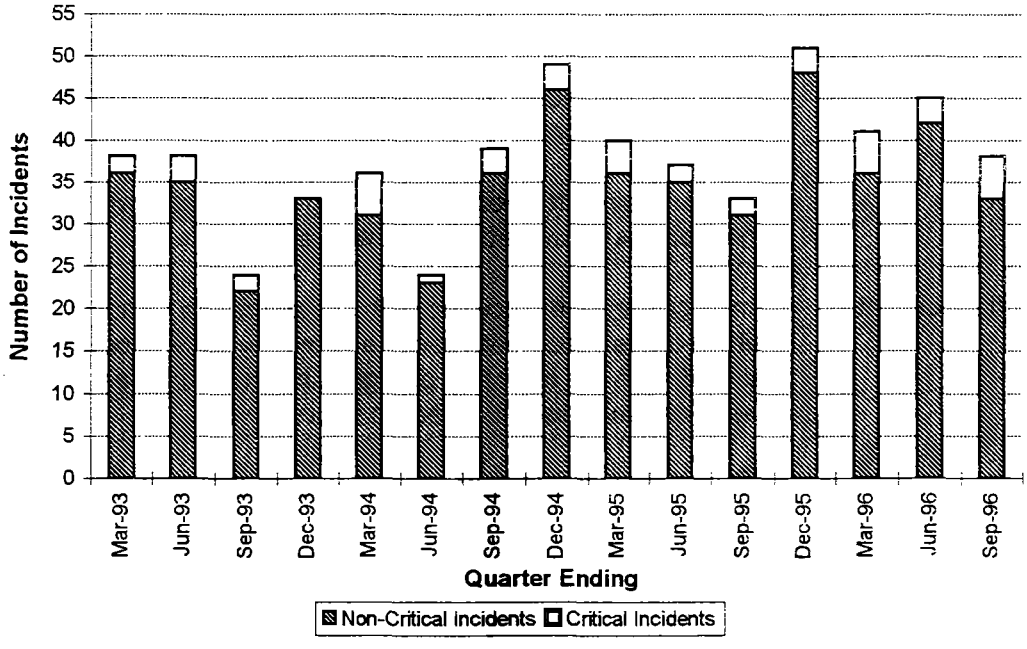
**Table 3: Runway Incursions at Capital City Airports, March 1993- May 1996.**

| Airport | Total runway incursions | Total aircraft movements | Incursions per 100,000 aircraft movements |
|---|---|---|---|
| Canberra | 16 | 515,036 | 3.11 |
| Sydney | 25 | 806,880 | 3.10 |
| Brisbane | 4 | 450,662 | 0.89 |
| Perth | 2 | 301,577 | 0.66 |
| Melbourne | 2 | 451,868 | 0.44 |
| Adelaide | 0 | 344,104 | 0.00 |
| Hobart | 0 | 158,472 | 0.00 |

The highest rates occur at the general aviation aerodromes of Bankstown and Moorabbin. Of the capital city aerodromes, Sydney's rate is significantly greater than that of Brisbane and Melbourne, which may be indicative of the more complex aerodrome layout. The rate at Canberra probably reflects a high level of training operations.

Figure 22

**Reported Loss of Separation Incidents, 1993-1996.**




Source: BASI.

Incidents involving a Loss of Separation standards between aircraft in controlled airspace are indicative of a failure of the ATS system either due to an ATS error or a flight crew error. The Loss of Separation is classified as critical if the aircraft pass within 150 metres horizontally and 100 feet vertically of one another.

Many of the incidents are a non-critical/technical loss of separation. The built-in safety margins of the separation standard allowed the situation to be corrected before becoming critical. They are however indicative of a failure of the system.

The number of critical incidents, often involving avoidance action represent approximately 8% of the total reported Loss of Separation incidents over the 4 year period.

There has been a slight increase in the total number of incidents per year in the last three years, possibly reflecting the increased activity in the ATS system. The number of occurrences, of between 35 and 50 per quarter, is of concern.

## Glossary of Terms

| | |
|---|---|
| **AME** | Aircraft Maintenance Engineer |
| **ATPL** | Air Transport Pilot Licence. |
| **ATS** | Air Traffic Services. Consists of Air Traffic Control service, flight information service and SAR alerting service. |
| **Aircraft** | The term aircraft refers to fixed wing and rotary wing (helicopters) powered aircraft and balloons. |
| **Aircraft Accident** | An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all persons have disembarked, in which:<br><br>(a) a person is fatally or seriously injured as a result of:<br>- being in the aircraft,<br>- or direct contact with any part of the aircraft including parts which have become detached from the aircraft,<br>- or direct exposure to a jet blast.<br><br>except when the injuries are from natural causes, self inflicted or inflicted by other persons , or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew: or<br><br>(b) the aircraft incurs substantial damage or is destroyed; or<br><br>(c) the aircraft is missing or is completely inaccessible.<br><br>NOTE: An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located. |
| **Aerial Work flying** | Includes all aerial survey and photography, spotting, aerial stock mustering, search and rescue, ambulance, towing (including glider, target and banner towing) and other aerial work (including advertising, cloud seeding, fire fighting, parachute dropping, and coastal surveillance). |
| **Aircraft Movement** | A take-off (aircraft departure) or a landing (arrival) is recorded as one aircraft movement. A 'touch and go' operation is counted as two movements. |
| **Agriculture flying** | Operations involving the carriage and/or spreading of chemicals, seed, fertiliser or other substances for agricultural purposes, including operations for the purpose of pest and disease control. |

| | |
|---|---|
| **Breakdown in Separation** | An incident involving the loss of separation standards between aircraft operating in controlled airspace. |
| **Business flying** | Flying by the aircraft owner, his/her employees or the hirer of the aircraft for business or professional reasons, but not directly for hire or reward. |
| **Charter** | Carriage of cargo or passengers on non-scheduled operations by the aircraft operator or his/her employees for hire or reward, but excluding Regular Public Transport operations. |
| **CPL** | Commercial Pilot Licence. |
| **GA** | See **General Aviation.** |
| **General Aviation** | For the purposes of this document, General Aviation has been defined as all non-scheduled flying activity in aircraft allocated a VH- registration by the Civil Aviation Safety Authority, but excluding VH- registered sailplanes (powered and unpowered). Ultralight aircraft, hang gliders and autogyros are also excluded. |
| **HCRPT** | High Capacity Regular Public Transport. A "High Capacity Aircraft" is defined as an aircraft that is certified as having a maximum seating capacity exceeding 38 seats OR a maximum payload exceeding 4200 kilograms. |
| **Hours Flown** | The time interval, in hours and minutes, between when an aircraft leaves the departure terminal or parking place to when it arrives at the destination terminal or parking place. |
| **Incident** | An occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of the operation of the aircraft. |
| **Low Capacity RPT or LCRPT** | Low Capacity Regular Public Transport. A " Low Capacity Aircraft" is defined as being less than or equal to those criteria which HCRPT aircraft exceed, therefore being certified as having a maximum seating capacity less than or equal to 38 seats OR a maximum payload less than or equal to 4200 kilograms |
| **Passenger Load Factor** | **Passenger Kilometres** performed expressed as a percentage of **Available Seat Kilometres**. |
| **Private flying** | Flying for private pleasure, sport or recreation, or personal transport not associated with a business or profession. |
| **PPL** | Private Pilot Licence. |
| **Regional Airline** | See **Low Capacity RPT**. |

| | |
|---|---|
| RPT | See **Regular Public Transport**. |
| **Regular Public Transport** | Flight operations performed for remuneration and conducted to fixed schedules over specific routes, and on which seats and/or cargo space is available to the general public. |
| **Runway Incursion** | An incident that occurs when a vehicle, aircraft or person enters the runway flight strip without permission. |
| **Test and Ferry flying** | Flying associated with the testing of an aircraft or with its delivery or movement to another location for maintenance, hire or other planned use. |
| **Training flying** | Flying under instruction for the issue or renewal of a licence or rating, aircraft type endorsement or conversion training. Includes solo navigation exercises conducted as part of a course of applied flying training. |
| **Transport category** | In general terms, aircraft in the Transport category are of a maximum take off weight above 5700kg and are involved in RPT operations. |