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Aviation in Canada

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Aviation in Canada

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Symbols

The following standard symbols are used in Statistics Canada publications:

.. figures not available.

... figures not appropriate or not applicable.

– nil or zero.

-- amount too small to be expressed.

e estimated figures.

p preliminary figures.

r revised figures.

x confidential to meet secrecy requirements of the Statistics Act.

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Foreword

The appearance of *Aviation in Canada: Historical and Statistical Perspectives on Civil Aviation* marks an important anniversary at Statistics Canada: it has been 50 years since we first began collecting data on aviation.

For the air transport industry in Canada, these 50 years have witnessed an evolution and growth that have been nothing short of phenomenal. Air travel has come to be a cornerstone of Canada's transportation system and the technology of aviation has taken us well beyond the dreams of this country's early air explorers.

The impetus for the growth in information on the industry came from the policy and legislative frameworks the Government of Canada has provided over the years. In this area, the Department of Transport and the Air Transport Committee of the Canadian Transport Commission contributed significantly to the development of detailed statistics for the industry.

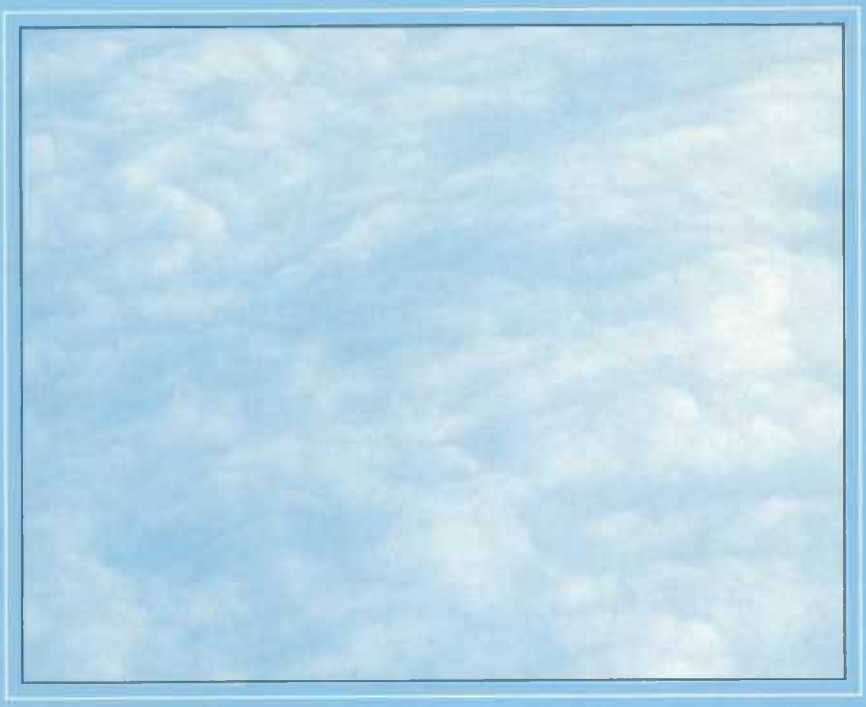
Now, with the prospect of a new legislative and policy framework to govern many aspects of transportation in Canada, it is appropriate to step back, sift through the data of the last few decades, and review the extent of growth and development the air transport industry has undergone.

Aviation in Canada does just this, presenting its readers with facts and analysis, as it traces the evolution of the industry from the earliest powered flights to the present supersonic jet age.

First issued in 1971, this book was presented as a 'statistical handbook of Canadian civil aviation'. The 1986 edition updates and expands its forerunner, placing a specific emphasis on the years since its first appearance. To this end, Statistics Canada has combined statistics with history to present a comprehensive review of aviation in Canada.

I.P. Fellegi
Chief Statistician of Canada

Introduction



In 1937, Statistics Canada (then the Dominion Bureau of Statistics) published its first report on civil aviation. In the introductory comments, the report noted:

> "During 1936, the principal activity of commercial aircraft operators in Canada was the carriage by air of passengers, freight, and mail to mining fields in the more remote parts of the Dominion. Their work also included forest fire patrols, timber cruising, air photography, flying instruction, advertising and short passenger flights in various parts of the country."[1]

While the words give a flavour of the time, the statistics published in this first catalogue give us the story of the time. In 1936, the number of passengers carried, throughout the country, was just over 100 thousand, and most of them were for those 'short passenger flights'.

In 1985, to put that statistic in perspective, an estimated 29 million passengers were logged. Today, Canadians jet from one city to the next in a matter of hours, and business people shuttle between cities on a same-day basis, using air travel with the same casual confidence our ancestors used the horse and buggy.

While Statistics Canada has amassed a credible store of data on aviation over the last 50 years, the technology of our collection techniques has also undergone changes and improvements. Some of our surveys have only begun in recent years; others date to the earliest days.[2] In this 1986 edition of *Aviation in Canada*, the emphasis therefore falls principally on the significant changes of the industry in the last two decades. However, where possible we have gone back further in time to give the analysis both a better context and a sharper perspective.

Since 1971, we can above all note three major developments. These have been the significant growth in charter services, the expansion of regional carriers and increased competition in transcontinental service. Most recently, the initial impact of 'reregulation' in Canada has begun to make itself felt, with increased activity in local carrier services and the widespread use of discount fares.

This new, more competitive environment has been signalled by a change in the business strategies of Canadian carriers. Notably, the major airlines have moved to expand, and to acquire. To give some examples, Canadian Pacific Air Lines has added Nordair and Eastern Provincial Airways to its holdings and Air Canada and Pacific Western Airlines have both made major stock purchases in Air Ontario.

Thus, expansion and competition characterize the 1970s and 1980s. While competition between scheduled and charter carriers had its beginnings in the fare wars of the early 1970s, it was not until 1978 that the domestic advance booking charters competed with the national scheduled carriers in long-haul transcontinental markets.

From 1970 to 1985, the charter share of total traffic went from 4 to over 7%.

There was also increased competition within the scheduled segment of the industry. By 1979, all capacity constraints on the operations of Canadian Pacific Air Lines (CPAL) had been eliminated.[3] During the latter 1970s and early 1980s, the territorial boundaries regulating the operations of the regional carriers were expanded.

Local carriers also began to be more competitive. Traditionally restricted on the type of aircraft that could be operated, some local carriers have nevertheless emerged as strong players on certain short-haul 'commuter' type markets. This has been a result of the availability of new equipment (such as the Dash 7 and Dash 8) which is particularly suited to this market.

There has been a second element in this growth. Through mergers and operational agreements, the local carrier segment has begun to assume a greater role in an area formerly the territory of the larger regional and national carriers. For example, on the Vancouver-Victoria run, there has been an increasing trend in favour of the local carriers, with the latter assuming close to 95% of the market in 1985, up from 50% in 1980.

There have also been counteracting influences on the growth and expansion of the industry. One of these was the substantial increase in fuel costs in the 1970s. Where fuel had represented 11% of total operating costs for Canadian carriers in 1971, it had risen to 22% by 1980 and to 21% for 1985. For some carriers, this situation has led to the premature retirement of fuel-inefficient aircraft and unanticipated capital expenditures for new equipment.

However, the severest blow to the industry came with the recession of the early 1980s. Impacting on both commercial and general aviation,[4] the recession left the industry facing financial losses, as activities declined in almost all sectors.

From 1980 to 1983, the commercial sector experienced a decrease of about 9% in its aircraft movements, dropping from a 1980 high of 890 thousand to 809 thousand in 1983. The decline was also shared by the general aviation sector, as flying school and private aviation activity declined. The decline in this sector was about 30% from 1980 to 1983. But, until the early 1980s, general aviation had shared the same vigorous growth and development as the major commercial ventures. From 1964

to 1979, aircraft movements in the general sector experienced a 264% increase, from just over 1.7 million in 1964 to over 6.1 million in 1979; for the commercial sector, aircraft movements increased by approximately 170%, from just over 325 thousand in 1964, to just under 890 thousand in 1979.

But while the early 1980s marked a time of industry-wide downturn, they also prefaced a new era in Canadian aviation history. As this book was being published, new transportation policies were being shaped, policies which will impact strongly on aviation and many other aspects of Canadian transportation. Not since 1967, when Parliament passed the National Transportation Act, has the direction and control of Canada's skies come under such serious review.

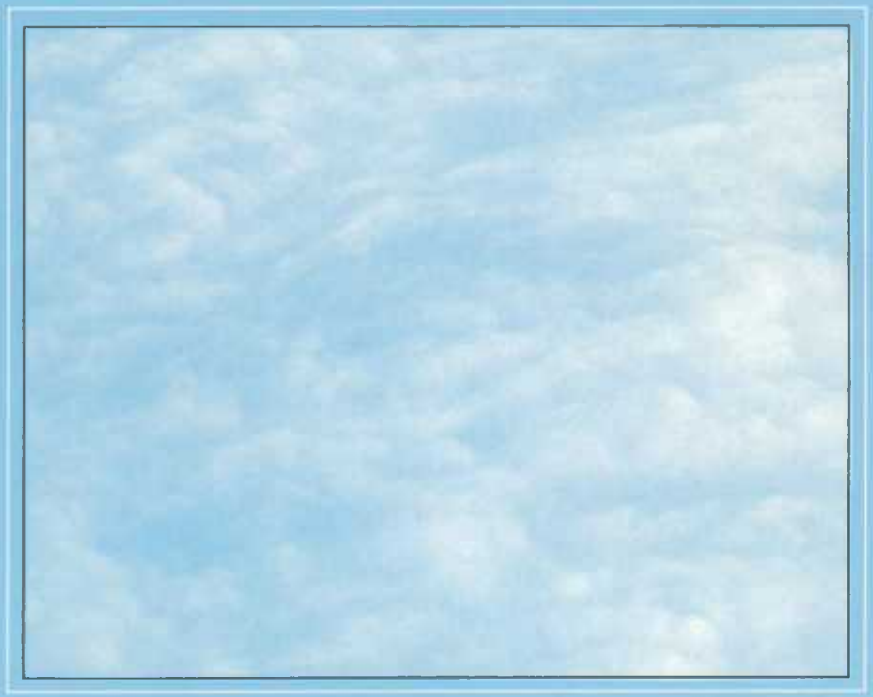
As the mid-1980s usher in this new era, it is important, therefore, to situate the industry and give these changes the perspective of the last few decades. *Aviation in Canada: Historical and Statistical Perspectives on Civil Aviation* has been designed to do just this.

Notes to the Introduction

1. *Civil Aviation in Canada, 1936*, published by authority of the Hon. W.D. Euler, M.P. Minister of Trade and Commerce, Ottawa, 1937. Formerly statistics on civil aviation had been compiled and published by the Civil Aviation Branch of the Department of Marine.
2. For information on survey methodology and limitations, please consult the sources noted below all charts and tables.
3. Canadian Pacific Air Lines (CPAL) had been restricted to 25% of total seat-miles on the transcontinental flights (with Air Canada getting the rest). The percentage of the market open to CPAL was increased to 35% in 1978 and then to 45% in 1979. However, in 1979, the removal of the restriction allowed CPAL to fully compete with Air Canada.
4. In this publication, a distinction is drawn between commercial aviation and general aviation. The former is defined to include the activities of all major airlines and large commercial ventures which specialize in the transport of passengers or goods for profit. These activities are defined as Levels I to III. The latter, general aviation, refers to the activities of smaller commercial ventures (operators with less than $500 thousand in gross transport revenues) and to private flying, flying for fun, specialty flying, and government-owned aircraft. These activities refer to Levels IV to VII. (Refer also to Chapter II and Glossary of Terms).

Chapter I

A Brief History of Canadian Aviation



Early Achievements, 1837-1906

In Canada, as throughout the world, interest in aviation began with air ballooning. In this regard, the earliest recorded experiment took place in 1837, when a Hamilton schoolteacher launched a balloon, "for which lift was provided by the heating oweing to its blackened surface, of the air within by the sun."[1]

In 1856, the first balloon to carry passengers in Canada lifted off from Montreal and landed in the nearby town of Pointe Claire. Appropriately, it was called the 'Canada'.

Indeed, the 19th century has been termed the 'golden age' of air ballooning. In Europe, as in Canada, interest in the possibilities of flight was at a peak. In France, the Montgolfier Brothers won world-wide fame for their air balloon flights, which featured bonfires suspended below the envelope of the balloon.

Experiments with balloon flights were also carried out in the United States and as far afield as South America and New Zealand.

In Canada, in the latter part of the 19th century, there were literally hundreds of balloon flights, in all parts of the country. And, despite their obvious dangers, there was no shortage of candidates willing to make a 'grand balloon ascension'.[2]

Still, ballooning was considered more of a curiosity and a spectator sport than a potential means of practical transport.

A 'Heavier-than-Air' Machine

While Canada's first aeronauts concentrated their energies on 'ascensions' and experiments with light gases to power their flights, other experiments were producing interesting results.

One set of experiments was carried out under the direction of Alexander Graham Bell. After his success with the telephone, Bell had become interested in the possibilities of mechanical flight. In 1907 he gathered a group of young enthusiasts together and formed the "Aerial Experiment Association" (AEA). The AEA was set up as a formal research body with the 'avowed intention of building a motor driven airplane which would carry a man in full flight'.[3] To help him in his research, Bell recruited two University of Toronto graduates, John Douglas McCurdy and F.W. Baldwin, and two Americans, Glenn Curtiss and Tom Selfridge. Within two years, the group had accomplished its purpose.

Courtesy of National Aviation Museum. Painting by Robert Bradford.

The Silver Dart lifts up over Baddeck Bay in Nova Scotia in the first powered flight in Canada of a heavier-than-air machine.

On February 23, 1909, with John Douglas McCurdy at the controls, the first flight in Canada by a powered heavier-than-air machine took place at Baddeck, Nova Scotia. The flight of the 'Silver Dart', as the airplane was called, had come less than six years after the Wright Brothers had accomplished their historical flights at Kitty Hawk, North Carolina.

In the Halifax Herald, the events of the AEA were front page news. Under one headline, which proclaimed the 'record made by the Aerial Experiment Association', it was reported that:

> "Douglas McCurdy (has) eclipsed all records of the association by flying four and a half miles at an elevation of between forty and fifty feet in the air and turning a complete circle."[4]

The machine which had accomplished this feat was, without a doubt, more sophisticated than any aircraft previously flown. The 'Silver Dart' had tapered wings, aileron controls, a 50-horse power engine and a three-wheel undercarriage.

With the success of the project, Bell's group had accomplished its purpose and the AEA now disbanded. To secure new financing, McCurdy and Baldwin endeavoured to interest the Canadian government in their

enterprise and in 1910, got permission to give demonstration flights before military officers in Petawawa, Ontario.

Unfortunately, the primitive airstrip at Petawawa was much rougher than the frozen surface of Bras d'Or Lake, and after a couple of successful flights, the demonstration aircraft crashed on landing. No one was hurt, but it did not do much to further government interest or involvement in aviation.

Nonetheless, McCurdy continued to break records. In 1910, he became the first pilot to successfully use radio communication between an airplane in flight and a ground station. In the following year, he made the longest, over-water flight to date, attempting to go from Key West, Florida to Havana, Cuba. He made it 96 miles of the way, and was in sight of his destination when he experienced minor engine troubles and was forced to land in the sea.

Another founding member of the AEA, Glenn Curtiss, also went on to break paths in the development of aviation, founding a manufacturing company which produced no fewer than 30 different aircraft models. The most famous of these were the so-called 'Jennies', of which 5,000 were produced for use as military planes.[5]

In Canada, prior to the outbreak of World War I, the popularity of aviation soared, sparked partly by these early successes, and partly by the exhibitions of flying that now went on throughout the country. These air shows attracted aviators from around the world, and they helped make the beauty and potential usefulness of flight readily apparent to large numbers of Canadians. By 1914, plans were underway to fly the Atlantic, but were cancelled with the outbreak of war.

World War I: 1914-1918

Two things are noteworthy about the status of Canadian aviation during the period of the first world war. The first is that, at the outbreak of hostilities, there was literally no Canadian military air force. Apart from the exotic rarities on display at air shows, Canada had no aircraft as such, and no facilities for manufacturing them. The second is that this had all changed dramatically by war's end.

The change came in mid-1916, when German aircraft began appearing on the front that were faster and more manoeuvrable than the French or English aircraft.

Allied casualties grew, as the Sopwiths, Bristols and Nieuports, that had been the mainstay of allied strength, began dropping from the skies like flies.

Public Archives Canada/C-59879.

A squadron of Bristol F.28s, of the kind used in World War I, fly in formation over the Italian Alps, 1918.

An artistic rendering of the Sopwith Triplane, which bore the name Black Prince. In this artistic depiction, the encounter depicts the pilot in combat with an Albatross DII in French airways.

Courtesy of National Aviation Museum. Painting by Robert Bradford.

Courtesy of Hiscock Aviation Museum. Painting by Robert Bradford.

An artistic rendering of a Curtiss JN-4 or 'Jenny' parked at the No. 1 Aerial Fighting School at Beamsville, Ontario, 1918. The Jenny performed many notable 'firsts', including the first airmail flight in Canada, the first aerial survey, and the first crossing of the Canadian Rockies.

It was at this time that Britain turned to Canada, as it offered a solution to the crisis. In Canada, pilots could be recruited and trained, and aircraft manufactured without enemy interference. Accordingly, Britain requested and obtained Canada's permission to establish pilot training units in Canada, under British command.

By war's end, more than 2,500 Canadians had been trained in these units, and sent overseas to serve in the British air force. At the same time, Canada began manufacturing the Curtiss JN-4, often called the 'Jenny', the small two-seater aircraft developed by Glenn Curtiss. These Jennies were primarily used as training planes for military flying.

The upshot of this training program was very positive for Canadians; they developed skills and expertise that would help to launch a strong and viable aviation industry in post-war Canada.

Canadian Aviation Takes Off: 1919-1945

The Barnstormers

In post-war Canada, anyone with the urge and the money could buy a plane and fly away with it. The feverish production of the war years had resulted in a glut of aircraft on the market. Prices were low and government restrictions on private flying were virtually non-existent.

Thousands of young pilots flooded back from the war, full of enthusiasm for the possibilities of flying. Many formed small partnerships, bought one or two 'Jennies' and became gypsy flyers or barnstormers. Picking up where the McCurdys had left off, these daring pilots held thousands of Canadians spellbound at country fairs and exhibitions. Their stunts included wing-walking, parachute jumping and even racing against intrepid motorists down below who fancied they could outdistance the flying machines.[6]

An unidentified man climbs onto the wings of this Curtiss JN-4, in a picture taken around 1920. In the post-war years, gypsy flyers like this man held Canadians spellbound at country fairs and exhibitions.

Courtesy of National Aviation Museum.

Courtesy of National Aviation Museum. Painting by Robert Bradford.

The Bellanca Pacemaker, depicted in this artist's rendering in a snowy northern setting, was used to ferry prospectors and trappers to the North. The Bellanca was an especially effective aircraft for 'bush' travel, sometimes referred to as the 'flying canoe' or 'flying bobsled'.

Increasingly though, this post-war burst in aviation activity created a greater need for safety standards and regulation.

In 1919, the Canadian government responded to the need by passing the Air Board Act. The Act provided for the establishment of the Air Board and empowered it to control all flying in Canada, and to implement the International Convention on Air Navigation (ICAN).[7]

The Beginnings of Commercial Aviation

But barnstorming was only a part of post-war aviation. Canada's rich northland proved a powerful incentive for Canada's early aviation entrepreneurs. Rich in minerals and resources, and poor in transportation links, the North represented the last great frontier. Here the new explorers of the air had to deal with intense cold, rough landings, inadequate supplies, equipment which was generally unsuited to the geography and climate, and their own rickety sub-standard planes.

To help defray its expenses, British Columbia Airways issued this special airmail stamp. Issued in 1928, it features a company Ford Tri-Motor airplane flying the Victoria-Vancouver route.

The Fairchild Air Transport Company featured a Vickers Viking in this stamp issued in 1928. The stamp portrays the Rouyn gold mining area, where most of the Fairchild's activities were carried out.

In 1929, Western Canadian Airways asked the postal authorities for permission to issue an airmail stamp which would cover the cost of mail deliveries between Red Lake and the mining areas of Manitoba. The result was this philatelic creation; it sold for 10 cents.

While part of the expansion in air service was directed to exploring and developing Canada's northern areas, work was also underway to develop a transcontinental passenger and airmail route. In 1924, Laurentide Air Services began regular, although not official, airmail services between Ontario and Quebec. In the same year, daily services were begun by Western Canada Airways, between Winnipeg, Regina, Calgary and Edmonton.[8]

The success of these first ventures was the signal for other enterprising airlines to begin transporting both passengers and mail. They also flew to the more sparsely-populated areas of the country. The Post Office was only too happy to co-operate; in many cases, the only surface transportation facilities available consisted of river boats in the summer and dog sleds in the winter.

The Post Office even allowed several airline companies to issue their own stamps as a means of defraying aircraft operating costs.[9] This unique feature of Canadian aviation has consequently provided a most interesting philatelic momento of the early days of Canadian civil flying. However, it did not continue for long. In the 1930s, the practice was discontinued and the Post Office issued the only official stamps, paying the operators from the resulting revenues.

The Depression

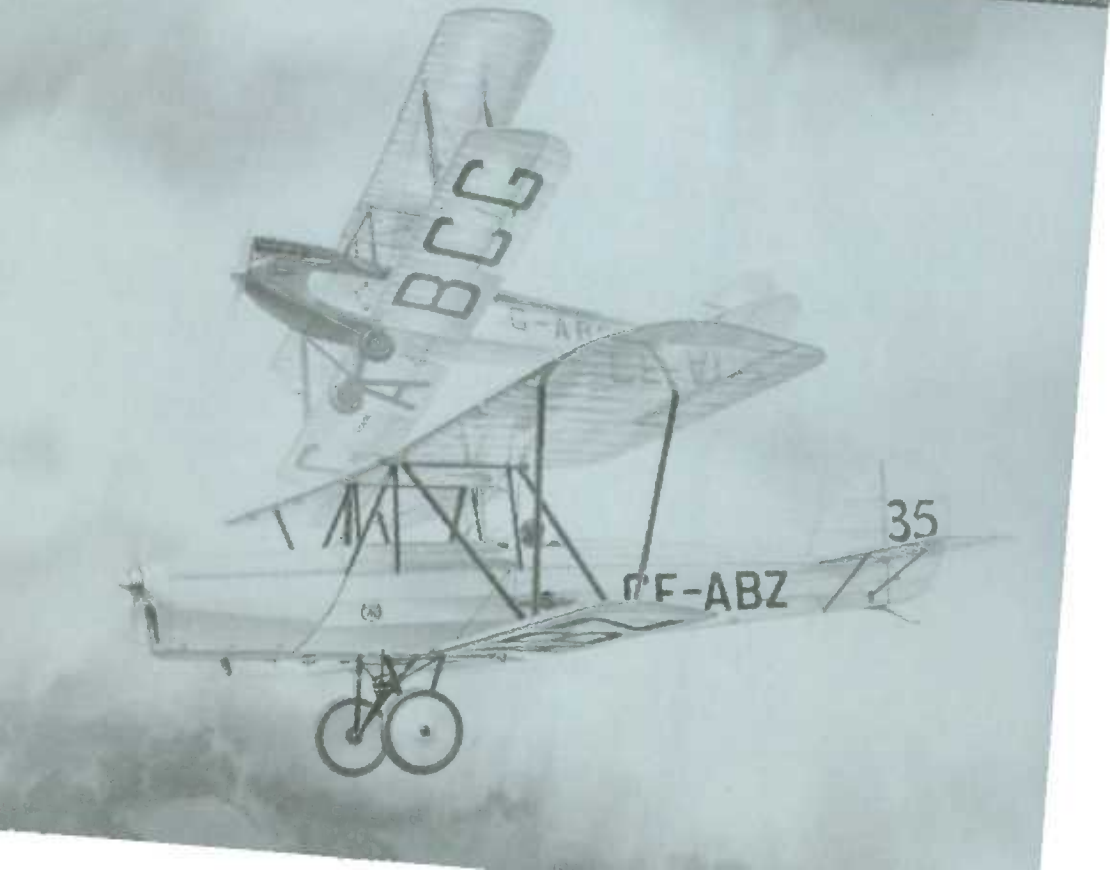
Like many other industries, aviation in Canada suffered during the depression years. The Post Office was forced to cancel several of its airmail contracts, and quite a few small operators consequently went under. But some of the larger carriers, not solely dependent on government contracts, survived and even prospered.

In 1934, Canada's air transport industry got a new stimulus from the revaluation of gold. With a jump from just under US$21.00 an ounce to over US$35.00 in that year, it suddenly became more profitable to mine for gold. Of course, the fastest way to get to the mining areas of the country, scattered throughout the North, was by air.

Air carriers thus did a thriving business carrying the 'sourdoughs'[10] back and forth, and ferrying in supplies and equipment to outlying mining towns. From 1931 to 1935, the amount of freight carried increased twelve-fold, going from just over one million kilograms in 1931 to 12 million in 1935 (refer to Chapter II, Table 2.1).

With the growth of bush flying, aircraft manufacturers began working on aircraft that would be more dependable in harsh flying conditions. The high wing monoplane was developed at this time, and proved extremely versatile with its air-cooled engine and ski or floating landing


G-CAHL


BCG
35
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gear. De Havilland began producing the 'Moth' line of aircraft, and another major manufacturer, Fairchild, began producing the FC-2. These new aircraft played a leading role in the opening up of Canada's northern areas.

The depression also provided the Canadian government with the opportunity to carry out the development of its airway development scheme. This had been planned since the early experimental airmail flights had revealed the blatant inadequacies of existing ground facilities.

Since the depression had thrown so many out of work, the scheme was organized as a job-creation project, providing employment for nearly 170 thousand people.[11] Between 1932 and 1936, 50 airports went up across the country at approximately one-hundred mile intervals, with emergency landing fields at regular intervals along the route. The major airports had paved landing strips, three to four thousand feet long, and these were illuminated with double rows of lights and lined with young spruce trees. The trees helped the pilot pinpoint the runway in the winter.

World War II: 1939-1945

Contrary to the situation at the outset of World War I, military flying now commanded government attention. However, private, charter and small commercial operations slowed down considerably under the restrictions of the War Measures Act.

Probably the prime beneficiary of this Act was the Royal Canadian Air Force (RCAF), which developed from a relatively small, semi-military organization with largely civilian duties to a powerful and highly-respected flying force.

Another stimulus came from the inauguration of the British Commonwealth Air Training Plan (BCATP), a plan which had been devised by Britain, Canada, Australia and New Zealand. Under the BCATP, Canada was selected as the setting for the training of pilots. Through the war years, tens of thousands of airmen were trained under this plan,

Courtesy of National Aviation Museum. Painting by Robert Bradford.

Opposite, above **Another aircraft to play a leading role in the opening up of Canada's northland was the Fairchild FC-2. This aircraft, called the 'Razorback' is shown here, in the wilds of the Quebec bush.**

Opposite, below **Another of the many airplanes developed by Glenn Curtiss, this Curtiss-Reid Rambler served both in civilian and military roles. In this painting, the Rambler is shown in a race, where it nearly collides with a British de Havilland 60 Moth.**

in co-operation with the flying clubs and some commercial carriers. The flying clubs trained over 41 thousand pilots while Canadian Pacific Air Lines, for instance, graduated more than 29 thousand airmen.

The BCATP called for a vast network of airport construction, and so it helped push the airport scheme, begun earlier, to completion. It initiated the construction of 24 additional landing fields, chiefly in the Prairies, Quebec and southern Ontario. Runways and taxi-strips were resurfaced to provide the harder surfaces now needed for increased air traffic and heavier aircraft, such as Halifax and Lancaster bombers and DC3s.

Meanwhile, several joint Canada/U.S. projects provided Canada with a string of northern airports to support, among other ventures, the 'Canol' pipeline undertaking, and the 'Crimson' Route, which was an air route planned to fly wounded soldiers from Europe to the United States. Later, in post-war settlements, Canada would pay the United States over $110 million for these networks, which proved invaluable as access links to meteorological, mining and scientific bases in the Arctic region. By 1945, nearly 300 airports of one kind or another had been added to the Canadian registry.

From Bush Plane to Airline

At the same time as these developments and events were taking place, significant changes were also occurring in the structure of Canadian civil aviation. Despite the progress made before World War II, Canada in the middle of the 1930s still had no national airline of its own. Not surprisingly therefore, the idea of creating one had great currency at this time, and in 1935, it had been chief on the agenda at a meeting of the Commonwealth nations in Ottawa.

Discussion at that time had centred on the establishment of a joint United Kingdom, Irish Free State and Canada operating company to engage in transatlantic operations. Although some experimental flights were made by Imperial Airways in 1937 and 1938, the outbreak of World War II in 1939 put an end to operations and no further action was taken to implement the idea.[12]

A year later, control over civil aviation was transferred from the Department of National Defence to the newly-created Department of Transport.

The new department had jurisdiction over a wide range of aviation-related matters. It assumed the responsibility for the licensing, inspection and registration of aircraft and airports, and all aviation personnel.

It also assumed responsibility for some serious problems. Despite Canada's enviable record in bush flying operations, there were no established airways. It was easier to fly to major cities in the United States than to travel in Canada. To further complicate matters, the Americans were lobbying Parliament for the right to fill this gap by setting up their own transcontinental route in Canada. At the same time, the British Commonwealth was pressing Canada to join it in an all-British round-the-world air transportation system.

Air Canada

The Canadian solution was to create an airline of its own. Under the direction of the Honourable C.D. Howe, who was then Minister of Transport, negotiations for a government-financed airline were begun.

Howe approached the two major railways, along with Canadian Airways, which had already established extensive operations in Canada, with a proposal to create a national non-profit Canadian airline which would be guaranteed by the government against loss.

Public Archives Canada/PA-125393

TCA's new Lockheed 10A aircraft used on the first regular service from Vancouver to Seattle.

Although Canadian Pacific Railways (CPR) eventually decided not to participate, a compromise was reached between the federal government and Canadian National Railways (CNR).

Under this agreement, Trans-Canada Airlines (TCA) came into being in 1937, and was set up as a wholly-owned subsidiary of the Canadian National Railways. The company was organized on a common-stock basis, with 50 thousand shares totalling an authorized capital of $5 million. All shares were purchased by the CNR, and a provision was made that all stock sales had to be approved by the Minister of Transport.

A few months later, TCA flew its first regular service on a route between Vancouver and Seattle. The aircraft used was a Lockheed 10A Electra with a 10-seat capacity. A new era had begun!

In order to help the young airline, the government granted it exclusive use of certain routes and directed the Post Office to enter into airmail contracts, in certain areas, with this official carrier only.

In 1943, TCA launched the first regular transatlantic air service, designed to regularize sporadic mail deliveries between Canadian soldiers overseas and their relatives at home.

In 1964, the airline was renamed Air Canada, in response to the need to have it recognized not just as a domestic airline, but as an airline that offered people international scheduled air service. Its name change marked a period of tremendous growth in passenger and freight services. In 1985, the airline transported approximately 13 million people to 63 cities on three different continents. This compares to the approximately 500 thousand it carried in its 10th year of operations.

The Lancaster X was used by TCA to carry out a transatlantic air service which would regularize sporadic mail deliveries between Canadian soldiers overseas and their relatives at home.

Courtesy of National Aviation Museum.

A Lockheed Tri-Star used by Air Canada in its commercial operations.

Lockeed Company.

Canadian Pacific Air Lines

Despite its rejection of the TCA scheme, the CPR was determined to start a national airline of its own, and in 1941 it acquired 11 aircraft operating companies, establishing its air services under the name United Air Services Ltd. A year later, the name was changed to Canadian Pacific Air Lines (CPAL), known recently as CP Air. (In 1986, with the acquisition of Eastern Provincial, and a controlling interest in Nordair, the company resumed its longer name of Canadian Pacific Air Lines.)

Since CPAL was very strictly limited in its domestic routing, it expanded internationally from its Vancouver base, and in the 1950s, inaugurated a series of international routes which included Europe, Hong Kong and South America. Today CPAL also offers services to the People's Republic of China, Japan, New Zealand and Australia.

With the introduction of jet aircraft in the mid-1960s, both its international and domestic operations expanded greatly. In 1948, CPAL carried just under 140 thousand passengers (including Quebec Airways) on its domestic and international routes. In 1985, it carried approximately 4 million passengers, both domestically and internationally.

This DC8 was used by CP Air on its international routes.

Canadian Pacific Air Lines.

Canada's Regional Carriers

The Canadian public is also served by four major regional carriers. (For a look at the genealogy of Canada's major airlines dating from 1920 to 1985, refer to Figure 1.2.)[13] **Pacific Western Airlines,** which began its existence as Central BC Airways in 1946, is now Canada's third-largest airline, in terms of passenger traffic and total operating revenues, with routes extending to Ottawa, Seattle, Inuvik and Resolute Bay. (It should be noted that prior to December 1979, Transair was among these carriers. It was purchased by Pacific Western Airlines in 1979).

From 1960 to 1984, the number of passengers carried by Pacific Western Airlines increased from just under 150 thousand to 3.2 million, a twenty-fold increase (see Figure 1.1).

The youngest of the regional airlines is **Nordair**, formed in 1957. Nordair's route structure was first based on flights to the Arctic from a Montréal base, but today its services have reached as far west as Winnipeg. In 1985, this regional air carrier was acquired by CPAL.

Quebecair, began its life in 1945, as Le Syndicat d'aviation, servicing routes along the North Shore of the St. Lawrence River. Today, it has an extensive route structure within Quebec, with scheduled traffic between Québec and Toronto.

Eastern Provincial Airways was formed in 1949 to service the eastern part of Canada. It was based in Gander, Newfoundland, and today, as part of the CPAL network, it serves Atlantic Canada, with routes extending to as far west as Toronto. As for Nordair, Eastern Provincial also recently became a part of CPAL.

Pacific Western Airlines.

Pacific Western Airlines.

SSC - Photo Centre/Photo by Larry Weissman.

SSC – Photo Centre/Photo by George Hunter.

Eastern Provincial Airways

These aircraft are used by the country's regional carriers for short-haul travel. Counterclockwise, they are a Boeing 737 of Pacific Western Airlines, a Fokker F28 of Transair, a Boeing 737 of Nordair and Eastern Provincial Airways and a Boeing 707 of Quebecair.

Wardair

Wardair, primarily a charter airline, deserves a special mention in any account of Canada's airlines. It began operations in 1953, serving gold mines in the North from a base in Yellowknife. In 1962, its base was moved to Edmonton. In 1966, Wardair became the first Canadian airline to introduce the Boeing 727 on transatlantic passenger service. From 1960 to 1984, the number of passengers carried by Wardair increased from just under 8 thousand to just under 1.5 million, a 192-fold increase (see also Figure 1.1).

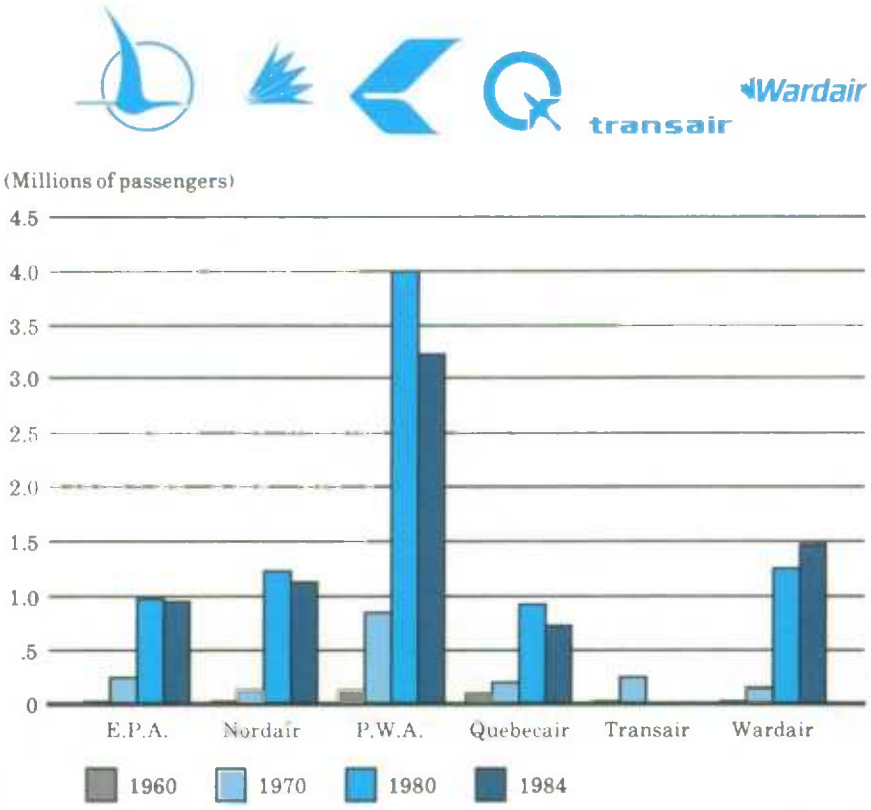
Wardair's success has been due to its highly efficient operations. With only seven aircraft, it nonetheless moves hundreds of thousands of passengers to Europe, and to southern and U.S. sunspots. It does this by keeping its fleet in the air and by ensuring that its flights are filled.

Today, Wardair is one of the world's largest charterers, with revenues that equal any of the regional carriers. In 1985, it began to offer international scheduled services and in 1986, to offer domestic scheduled services.

Wardair has carved itself a special niche in Canadian aviation history. It was founded by Max Ward, one of Canada's aviation pioneers, shown here as a young man, standing on the float of one of its de Havilland Otters.

Public Archives Canada/C-60892.

Figure 1.1 **Passengers Carried by Regional Carriers and Wardair, 1960, 1970, 1980, 1984**



Sources: Statistics Canada: 51-002 and 51-202.

Figure 1.2 **Genealogy of the Major Canadian Air Carriers to 1985**

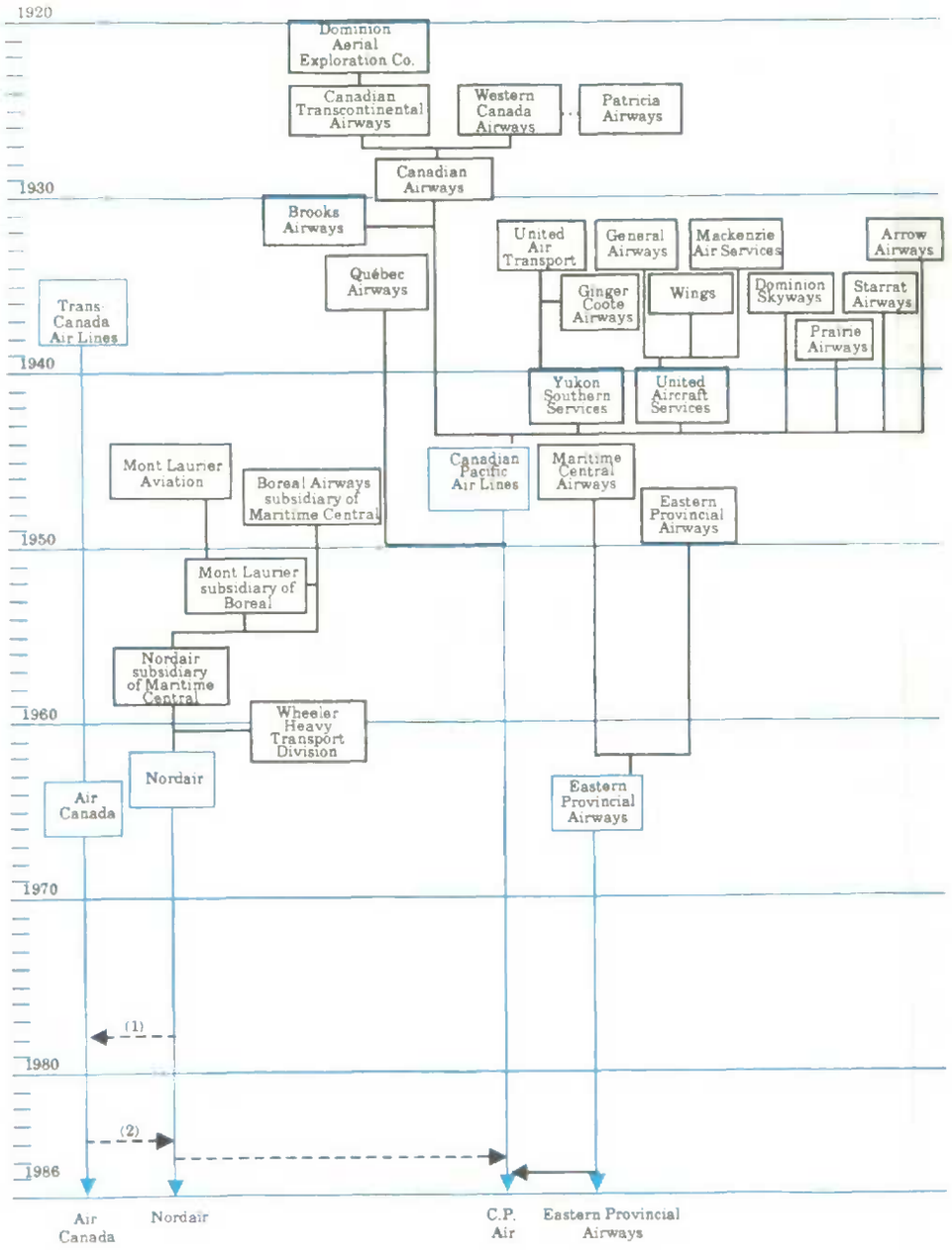
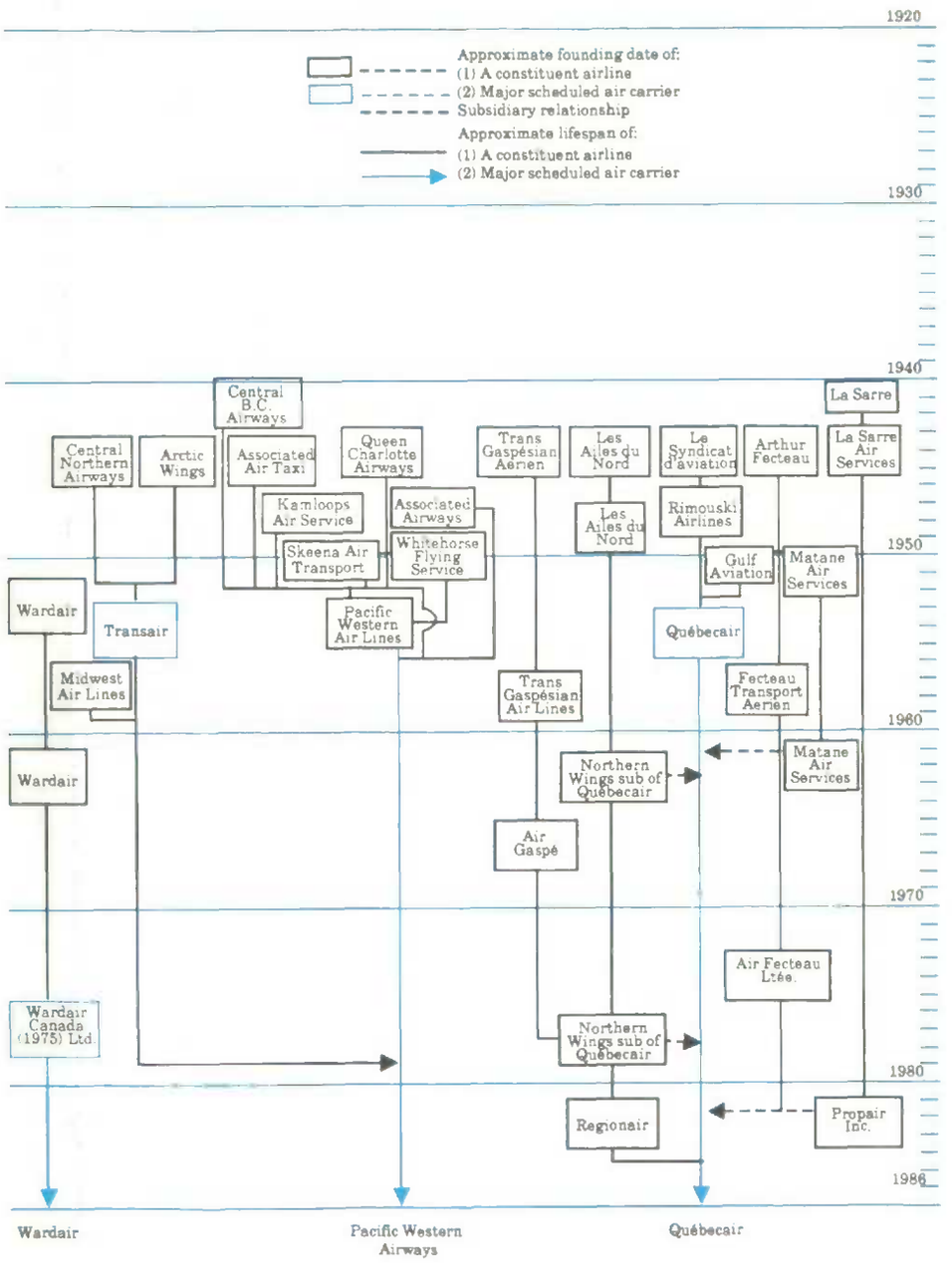


Figure 1.2 **Genealogy of the Major Canadian Air Carriers to 1985** – Concluded



The Overall Picture

In 1985, domestic airlines in Canada carried over 29 million passengers, up from 12 million passengers carried in 1970. More than 4.4 million passengers were carried between Canada and the United States, again more than double the 1970 figure. International charter flights carried 4.5 million passengers, up a strong 207% from 1970. The number of passengers carried on unit toll services by Canadian airlines totalled 24.6 million in 1985, up 133% over 1970.

Although Canada's air transport industry continues to be strong and viable, the industry has not always been profitable. The rapid rise of fuel costs in the 1970s meant a decrease in net income. To give an idea: in 1970, fuel costs were about 11% of the operating expenses of Canadian air carriers; in 1980, they comprised nearly 22% of operating expenses.

Aviation has become a major industry in Canada. In 1985, there were nearly 27 thousand civil aircraft registered, or one for every thousand people. Of these, approximately 70% had a valid Certificate of Airworthiness. Of the 27 thousand aircraft registered, 92% were airplanes, another 5% were helicopters, and 3% were miscellaneous aircraft, such as gliders, balloons and gyroplanes. To operate these machines, there are over 60 thousand licensed pilots in Canada, up 32% over the previous decade (see also Chapter III: General Aviation).

Canada has indeed grown to be a country with a passion for flying. From the beginning, Canadians have participated in the development of aviation, bringing their own expertise and determination to master this new mode of transport. And given the vast lands, and sometimes impenetrable countryside to be found in this country, their efforts have been well-rewarded, as the airplane has offered a dramatic solution to many of the travel needs of Canadians.

Notes to Chapter I

Notes to Text

1. G.A. Fuller, J.A. Griffin and K.M. Molson *"125 Years of Canadian Aeronautics: A. Chronology of 1840-1965"* (Willowdale: The Canadian Aviation Historical Society, 1983), p.3.
2. Larry Milberry, *"Aviation in Canada"* (McGraw-Hill Ryerson, 1979), p. 12.
3. Frank H. Ellis, *"In Canadian Skies"* (Toronto: Ryerson Press, 1959), p. 4.
4. *"Flew Four Miles Fifty Feet High at Baddeck Bay"* The Halifax Herald (Halifax), February 25, 1909, front page.
5. There were two models of the Jenny. The first, the JN2 was a forerunner of the JN4D, which sported a 90-horse power Curtiss OX-5 engine, with a double wing structure and seated two.
6. Milberry, p. 20.
7. This convention, which came out of the Paris Peace Conference, prescribed international standards for the licensing of pilots, aircraft and airports. (See also Chapter VI on international air law).
8. Fuller, Griffin and Molson, p. 121.
9. C.A. Longworth-Dames, *"The Semi-Official Air Stamps of Canada 1924-1932"*.
10. 'Sourdoughs' was the nickname of the day for prospectors; it was a reference to the sourdough they used to bake bread in their makeshift camps.
11. J.R.K. Main, p. 107.
12. J.A. Wilson, *"Development of Aviation in Canada"* Dept. of Transport, Air Services Branch, p. 61.
13. The genealogy of Canada's major carriers shown in Figure 1.2 includes up to 1985. However, with all the changes that occurred in 1986, it is worthwhile to briefly note the major developments. In 1985, Canadian Pacific Air Lines (CPAL) acquired Eastern Provincial Airways. CPAL had acquired voting control of Nordair in December 1985, and in July 1986, the company became the only shareholder of Nordair. Also in 1986, Quebecair was bought by Nordair Metro, a company created during the year and in which CPAL has an interest.

Notes on Figures

1. Relates to the transfer of shares from Nordair to Air Canada.
2. Relates to the transfer of shares from Air Canada to Nordair's employees and Innocan.

Chapter II

Commercial Aviation in Canada

Through Rain or Snow...

Commercial aviation in Canada had its beginnings in the 1920s. In many respects, it was an industry that was initiated by the first world war, but defined by the needs of the country.

The Canada of those days was rough and ready, with vast stretches of land, virtually unexplored, and areas in the North rich with mineral wealth. It was also a country largely lacking in roads, railways, or communications systems. It was, in other words, a country with great scope for an air transport industry.

The Post Office was keen to explore the possibilities of getting the mail out by air, and gave many contracts to early airline companies, providing a major stimulus to the development of an air industry.

The statistics on this early era of aviation show how fast air transport caught on. From 1921 to 1931, mail and cargo shipments alone increased more than 30 times, going from about 36 thousand kilograms in 1921 to 1.3 million kilograms in 1931. In addition, for many Canadians, the airplane was rapidly becoming a viable and dependable means of transport. Passenger travel in this same period soared, going from just under 10 thousand in 1921, to about 100 thousand passengers in 1931 (see Table 2.1).

"Switches Off; Throttle Open; Suck In."

Early aviation lore sheds amusing light on some of the growing pains the new industry experienced. J.R.K. Main, who has chronicled some of these adventures in his book entitled "*Voyageurs of the Air*", notes:

> Winter flying was particularly arduous... Starting the engine (of the old propeller-driven models) was an ever-present nightmare. A ritual was early worked out in which the pilot, sitting in the cockpit and the mechanic, facing the engine each solemnly intoned the patter: "Switches off; throttle open; suck in", after which the mechanic swung the propeller through one or two cycles, and paused with it on compression to call, "throttle closed. Contact!"[1]

Usually, this was enough to set the engine in motion. But the mechanic had to accompany these gymnastics with a quick step backward, to avoid the path of the propeller. Any misstep or back-fire of the engine could cripple the mechanic for life and there were instances when this did happen, as Main points out.

Table 2.1 **Summary of Canadian Commercial Aviation – Operational Statistics[1], 1921-1985**

Year	Passengers[2] ('000)	Passenger-kilometres[3] ('000 000)	Cargo[4] kilograms ('000)	Mail kilograms ('000)	Hours[5] flown ('000)
1921	9	–	36	–	4
1922	4	–	5	–	3
1923	2	–	5	–	3
1924	4	–	35	–	2
1925	4	–	17	–	1
1926	5	–	29	2	2
1927	17	–	172	7	4
1928	55	–	744	144	29
1929	96	–	1 129	262	52
1930	125	–	798	215	93
1931	100	7	1 076	213	74
1932	77	5	1 420	187	144
1933	53	6	1 908	244	53
1934	72	10	6 550	284	76
1935	140	13	11 993	511	89
1936	110	16	10 409	502	76
1937	126	23	11 030	658	98
1938	105	33	8 888	592	83
1939	109	38	8 782	807	86
1940	125	64	6 476	1 163	96
1941	153	85	7 418	1 368	97
1942	183	109	5 517	1 973	96
1943	239	153	5 660	2 868	107
1944	299	167	5 059	2 592	111
1945	364	220	6 011	2 357	143
1946	632	326	10 841	2 230	193
1947	737	392	14 672	2 680	275
1948	919	529	15 693	4 034	292
1949	1,040	645	15 202	5 507	272
1950	1,277	776	19 310	5 948	300
1951	1,547	929	24 332	6 323	346
1952	1,952	1 283	59 990	6 950	481
1953	2,273	1 513	78 430	7 750	514
1954	2,382	1 724	49 261	10 052	483
1955	2,763	1 983	105 163	11 008	623

Table 2.1 **Summary of Canadian Commercial Aviation – Operational Statistics[1], 1921-1985** – Concluded

Year	Passengers[2] ('000)	Passenger-[3] kilometres ('000 000)	Cargo[4] kilograms ('000)	Mail kilograms ('000)	Hours[5] flown ('000)
1956	3,370	2 479	134 999	11 599	757
1957	3,752	2 909	110 870	13 274	767
1958	4,037	3 415	80 810	14 237	728
1959	4,703	3 958	84 414	14 921	796
1960	4,830	4 507	95 401	15 709	879
1961	5,102	5 323	91 955	16 216	865
1962	5,425	5 862	93 895	17 432	843
1963	5,599	6 162	100 325	19 002	867
1964	6,031	7 435	110 386	21 230	948
1965	6,832	8 729	128 618	22 879	1,128
1966	7,727	10 044	170 909	22 235	1,375
1967	9,213	12 267	149 618	25 150	1,569
1968	9,577	13 808	185 407	26 848	1,647
1969	10,593	15 261	232 042	28 625	1,670
1970	12,031	18 605	256 420	30 068	1,669
1971	12,889	18 527	280 887	35 566	1,813
1972	14,422	21 739	307 333	38 093	1,923
1973	17,493	25 897	340 226	43 315	2,145
1974	19,601	29 166	344 429	48 096	2,301
1975	20,493	31 539	362 711	45 032	2,466
1976	20,994	32 797	341 021	55 892	2,467
1977	22,318	35 553	390 502	58 143	2,578
1978	23,649	38 249	410 204	56 756	2,664
1979	27,123	44 901	447 817	57 576	2,928
1980	28,554	46 996	399 418	59 978	3,091
1981	27,189	46 086	374 893	60 525	2,515
1982	24,447	44 179	344 703	65 431	2,454
1983	23,789	43 370	357 152	68 768	2,235
1984	27,701	46 444	464 088	80 604	2,290
1985[e]	29,030	48 812	498 199	82 458	2,434

Sources: Historical Statistics of Canada, MacMillan, 1965.
Statistics Canada: 51-002, 51-202 and 51-206.

In one early flight, from Winnipeg to The Pas, Manitoba, the adventure included everything from a forced landing in muskeg, to a take-off which grazed the tops of a clump of trees. Eventually, the travellers made it, but the plane was shipped back to Winnipeg by rail.[2]

But the hardships Canada's early aviators experienced were no more than what was to be expected. The industry was young, the technology in its earliest stages, and the rules of the game, insofar as government regulations and standards went, still in a nascent stage.

By the 1940s and 1950s, Canada's air transport industry had outgrown many of these earlier problems, and begun to assume a major role in the country's transportation system. It was, by then, an industry with a good financial record and a strong upward growth pattern.

A Bird's Eye...

This chapter presents a composite picture of commercial aviation in Canada. As such, it looks at the industry's income statement, its employees and their average salaries, the technology of the Canadian fleet, and key markets for scheduled traffic. In addition, it explores the growth of the charter market, which paralleled the advent of jet aircraft.

Another recent phenomenon has been the birth of discount fares. These bargain basement fares have meant a change in the way travellers view air travel, as the data strongly indicate.

The statistics used in this chapter relate largely to the availability of the data. In some cases, it has been possible to take the analysis back to the early 1920s. In others, it has only been possible to begin in the 1950s or the 1960s.

In this chapter, commercial aviation is a comprehensive term used to refer to the activities of all major airlines and large commercial ventures which specialize in the transport of passengers or goods for profit.

It is quite distinct from general aviation, treated in Chapter III, which refers to the activities of smaller commercial ventures (operators with less than $500 thousand in gross transport revenues) and to private flying, flying for fun, specialty flying, and flying by government-owned aircraft.

Inevitably, there is an overlap between the two sectors, so some elements of general aviation have been included in this chapter. However, for the most part, a distinct split has been made, to accommodate the divergent and eclectic nature of each sector.

Part I

Measuring the Industry

In Canada, aircraft of every description are involved in selling air-related services. To better track the industry therefore, air carriers have been classified into several different groups, the operative criteria being revenue and traffic.

Carriers that are licensed in Canada and that specialize in commercial transportation of passengers and cargo are grouped into five different levels with Level I comprising the largest carriers and Levels II, III, IV and V comprising carriers of gradually decreasing size.[3]

The seven largest carriers are grouped under Level I. These include Air Canada, Canadian Pacific Air Lines, and Wardair, which provide domestic and international scheduled and charter services. The other four, Pacific Western Airlines, Quebecair, Nordair and Eastern Provincial provide domestic scheduled services and charter transportation, mainly to U.S. and Caribbean vacation spots.

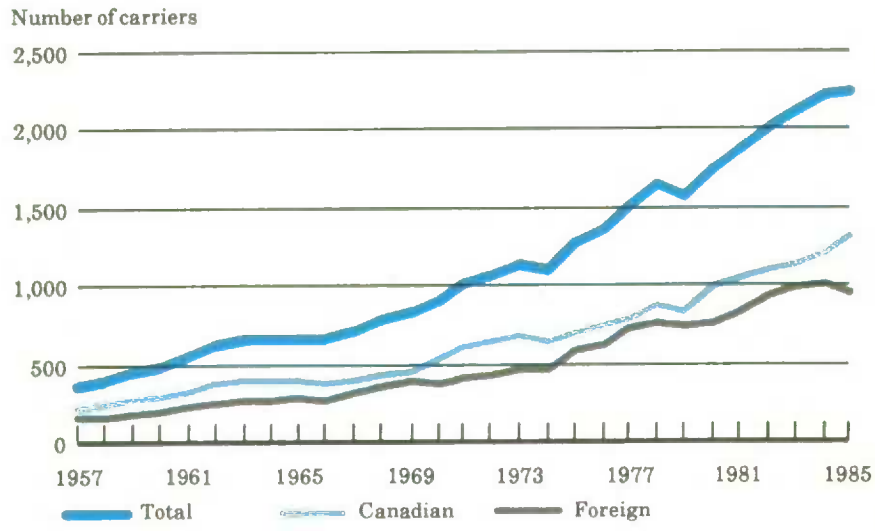
In 1970, Level I air carriers with revenues totalling $628 million accounted for 75% of the industry's total revenues. In 1985, Level I airlines generated $4,549 million, or 82% of the total industry revenues. In the same year, Level II carriers earned $267 million, Level III, $431 million, and Levels IV and V, $204 million and $75 million respectively.

A Licence to Fly

To offer commercial air services in Canada, one must have a licence authorizing the required service. In 1944, the newly-created Air Transport Board licensed the first five carriers, and since then the numbers have increased rapidly.

Today, more than 2,200 operators, both foreign and domestic, are licensed to operate air services in Canada (see Figure 2.1). In 1985, of the 1,314 licensed Canadian operators, 1,062 were actually flying. Approximately 91% were included in Levels I to IV while the others were very small operators (Levels VI and VII), offering services in crop spraying, forest fire surveillance and sight-seeing. A large number offered charter services and ferry parties to remote northern areas for recreational fishing and hunting. These are covered under general aviation (Chapter III).

Figure 2.1 **Canadian and Foreign Air Carriers Licensed to Operate in Canada, 1957-1985**



Sources: Department of Transport and Canadian Transport Commission, Annual Reports.

The number of operators of fixed-wing aircraft in Levels I to V was 854 and of helicopters, 108. (The helicopter industry has been recognized as a separate entity since 1951, the year the Air Transport Board first introduced separate licences for rotating wing aircraft. Since then, the industry has flourished.)

Typically, small commercial firms will have a fleet of less than six aircraft, employ fewer than 10 workers and gross under $400 thousand a year.

The same characteristics hold for foreign-owned air carriers operating in Canada. Of the approximately 800 American air carriers licensed to operate in Canada, many are small operators, who fly hunting and fishing parties in and out of Canada.

In 1985, the number of foreign carriers licensed to operate in Canada dropped significantly, decreasing by more than 6%, compared to 1984. Partly, this was the ripple effect from the many American carriers that went out of business at this time. Partly, it mirrored the Canadian government's move to increase minimal liability insurance requirements; many American carriers consequently cancelled their operating licences in Canada.

Canadians on the Move: Some Key Industry Figures

The eagerness with which Canadians took to the air since the early days of flying has never diminished. More and more, Canadians choose to travel by airplane and the distances they go are also increasing.

Since 1955, the overall trend in the number of passengers has been one of upward growth. In that year, Canadian carriers took on just under 3 million passengers, a figure which had increased to over 29 million by 1985. Notable growth periods span the 1960s, when the number of passengers doubled, going from just under 5 million to just over 10 million, and the 1970s, when the number doubled again, going from approximately 12 million to 27 million from 1970 to 1979. The one exception came in the 1981 to 1983 period (see Table 2.1).

Part of this growth relates to the enormous changes aircraft technology has undergone. In 1956, the first turbo-prop aircraft were introduced to Canada when Air Canada acquired 31 Viscounts and 12 Vanguards to fly domestic and transborder (Canada-United States) routes. In the early 1960s, turbo-jet aircraft, like the early DC8 and the Boeing 707, were introduced. With their larger seating capacity and state-of-the-art equipment, they could carry up to 145 passengers in comfort, and over very long distances.

Another important variable in analyzing industry growth is the average number of kilometres flown per passenger. In 1955, Canadian air carriers recorded 2 billion passenger- kilometres in their unit toll and charter operations. In 1985, this increased to over 48 billion. At the same time, average trip length per passenger also increased going from 718 kilometres in 1955 to over 1 680 in 1985.

Even more indicative of industry growth is the number of tonne-kilometres flown. (This is actually a measure for the carriage of one tonne of both passengers and goods over one kilometre). From 1955 to 1985, tonne-kilometres flown have gone from 220 million to over 5 billion (see Table 2.2).

From 1955 to 1985, the air transport industry also showed a dramatic increase of 291%, with aircraft hours flown reaching over 2,400 thousand in 1985. Of this total the helicopter industry accounted for 12%.

While most people think of more conventional aircraft when they think of travelling, the helicopter also plays a highly visible and important role in air transport.

Indeed, activity in the helicopter sector has more than doubled, going from just about 165 thousand hours in 1970, to just under half a million in 1980. However, by 1985, total activity had dropped off to just under 300 thousand, or approximately the same level achieved in 1977. Although most of this activity was charter, specialty services did account for about 17% of total hours flown in 1970. By 1985, this had dropped to just under 12% (see Table 2.3).

Public Archives Canada/National Film Board of Canada/PA-111209.

The helicopter plays a highly visible and important role in air transport. Here, a Bell 47 helicopter is shown at work in British Columbia.

Canadian commercial helicopter services also operate outside the country, although hours flown are not significant in comparison with hours flown within Canada.

On a provincial basis, British Columbia has ranked first since 1980, with approximately 20 to 25% of the market for helicopter services in Canada. From 1971 to 1980, Quebec was the leading province.

More than any other aspect of the aviation industry, the helicopter sector is heavily dependant on market forces external to it. For example, it is very much influenced by the resource sector, particularly by logging and mining activity. Any change or development in oil and gas exploration or in mega-construction projects (such as the James Bay development in the 1970s) has a very direct impact on the helicopter industry.

Table 2.2 **Tonne-Kilometres Flown for Each Hour of Aircraft Flying Time, 1955-1985**

Year	Aircraft hours flown ('000)	Total tonne-km flown ('000 000)	Average tonne-km per aircraft hour flown	Operating revenue per tonne-km flown $
1955	623	223	358.5	0.68
1956	757	275	362.7	0.66
1957	767	319	416.0	0.60
1958	728	369	507.1	0.55
1959	796	427	536.9	0.52
1960	879	488	555.3	0.50
1961	865	568	656.8	0.46
1962	843	630	747.1	0.46
1963	867	672	775.6	0.47
1964	948	840	886.1	0.41
1965	1,128	983	871.5	0.41
1966	1,375	1 139	828.7	0.42
1967	1,569	1 373	875.3	0.41
1968	1,647	1 597	969.4	0.40
1969	1,670	1 844	1 104.7	0.39
1970	1,669	2 186	1 309.7	0.39
1971	1,813	2 239	1 235.2	0.41
1972	1,923	2 609	1 356.9	0.40
1973	2,145	3 048	1 420.7	0.41
1974	2,301	3 384	1 470.8	0.47
1975	2,466	3 634	1 473.3	0.52
1976	2,467	3 754	1 521.5	0.55
1977	2,578	4 010	1 555.2	0.59
1978	2,664	4 295	1 612.2	0.62
1979	2,928	4 981	1 701.4	0.65
1980	3,091	5 198	1 681.5	0.77
1981	2,515	5 590	2 223.1	0.83
1982	2,454	5 418	2 208.1	0.86
1983	2,235	5 398	2 414.8	0.87
1984	2,290	5 410	2 362.5	0.94
1985[e]	2,434	5 675	2 333.4	0.96

Sources: Statistics Canada: 51-002 and 51-202.

Table 2.3 **Helicopter Revenue Hours Flown by Province – Charter Services, 1970-1985**

Year	Total Canada	Nfld.	N.B., N.S. & P.E.I.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.
1970	165,520	9,503	794	21,950	12,325	8,880	3,429	15,047	41,694	19,447	32,451
1971	204,872	9,578	693	57,880	11,725	11,085	2,663	12,965	39,777	16,063	42,443
1972	222,143	8,144	308	76,513	12,737	10,809	3,865	11,866	34,672	14,304	48,925
1973	229,889	11,227	296	76,145	12,035	12,248	4,493	10,648	35,060	17,889	49,858
1974	245,116	16,414	2,821	72,034	17,111	14,139	5,786	14,723	35,114	22,520	44,454
1975	279,357	23,639	3,119	105,651	14,205	16,909	4,903	14,492	36,093	18,678	41,668
1976	273,288	22,961	3,073	85,513	23,418	19,169	6,868	16,371	39,609	18,426	37,880
1977	291,396	22,580	3,969	83,303	16,877	17,536	12,224	26,538	45,983	19,441	42,945
1978	337,906	22,335	5,247	108,947	14,684	11,457	14,232	38,797	69,203	18,770	34,234
1979	413,161	27,153	5,038	126,041	20,956	18,016	19,909	40,375	91,614	19,104	45,855
1980	472,025	24,049	5,279	107,305	34,344	16,978	28,465	68,892	107,728	24,210	54,775
1981	467,342	25,526	4,514	87,500	30,669	14,661	24,998	73,584	127,814	29,501	48,575
1982	336,296	23,980	6,154	58,249	29,936	8,401	10,134	71,518	83,680	14,895	32,349
1983	291,911	22,328	7,362	56,669	27,926	11,779	7,105	38,005	68,127	23,851	28,759
1984	279,053	24,537	9,277	40,291	24,051	11,994	9,094	45,404	70,248	8,484	35,673
1985[e]	296,205	25,756	7,525	43,536	22,097	10,206	5,029	53,122	87,917	7,525	33,492

Sources: Statistics Canada: 51-002 and 51-004.

Financial Analysis: 1955 to 1985[4]

As stated in the introduction to this chapter, the air transport industry has more or less enjoyed steady growth from 1955 to the early 1970s.

In 1955, total operating revenues generated by the carriers amounted to approximately $153 million. In 1985, this came to about $5.5 billion, a 36-fold increase over the 31 years. Of the $5.5 billion, fixed-wing operators handled approximately 96% of the revenues with the helicopter operators generating approximately 4%. From 1975 to 1985, the operating revenues of helicopter operators increased from $83 million to $233 million.

The total operating expenses from 1955 to 1985 have followed approximately the same growth curve as the operating revenues, although almost consistently they have been lower than the operating revenues (see Figure 2.2.1). The growth in operating expenses for the helicopter industry parallel the growth in the operating revenues with a three-fold increase between 1975 and 1985.

From 1961 to 1985, both the operating revenues and operating expenses, adjusted for changes in air transportation prices showed a three-fold increase. In 1961, operating revenues were at about $260 million, as were operating expenses. In 1985, they had increased respectively to $857 million and $841 million (1961 constant dollars) (see Figure 2.2.2).

However, there have been some exceptions to this pattern of steady upward growth. In 1983, as Canada and the world community experienced an economic slowdown, both operating costs and revenues stagnated from the previous year (see Table 2.4).

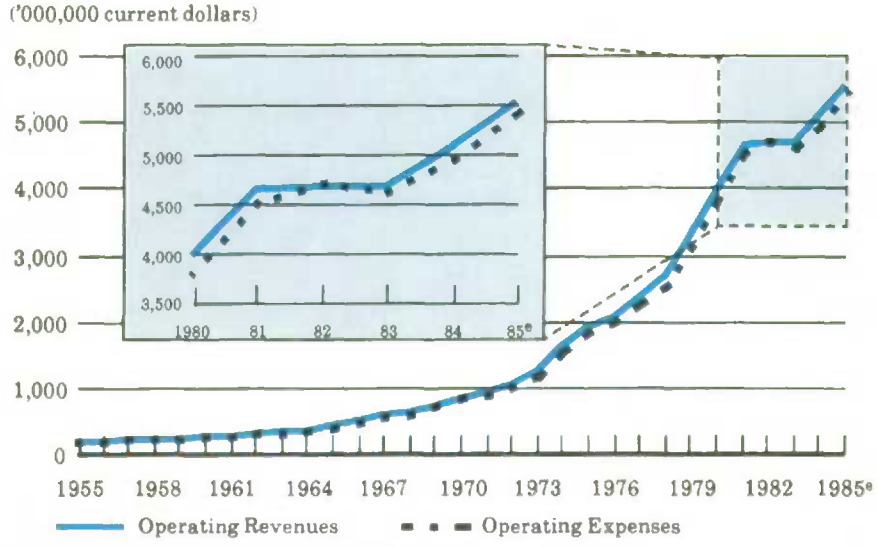
The loss amounted to approximately $14 million. In 1984, the industry again returned to profitability, with a recorded net income of $80 million.

Nor was 1983 the only year when the air transport industry incurred losses. Indeed, from 1955 to 1985 the industry's net annual income showed losses on 11 occasions, and largely they were due to non-operating expenses. There are 'non- operating' expenses and income that can and do greatly affect the air carriers' net income (see also Table 2.4).

For example, non-operating income can be capital gains from the sale of aircraft, interest income and foreign exchange adjustment. Non-operating expenses can be interest expense on bank loans, debt and investments. These are all revenue and expense items which are not integral parts of the air carriers' air services.

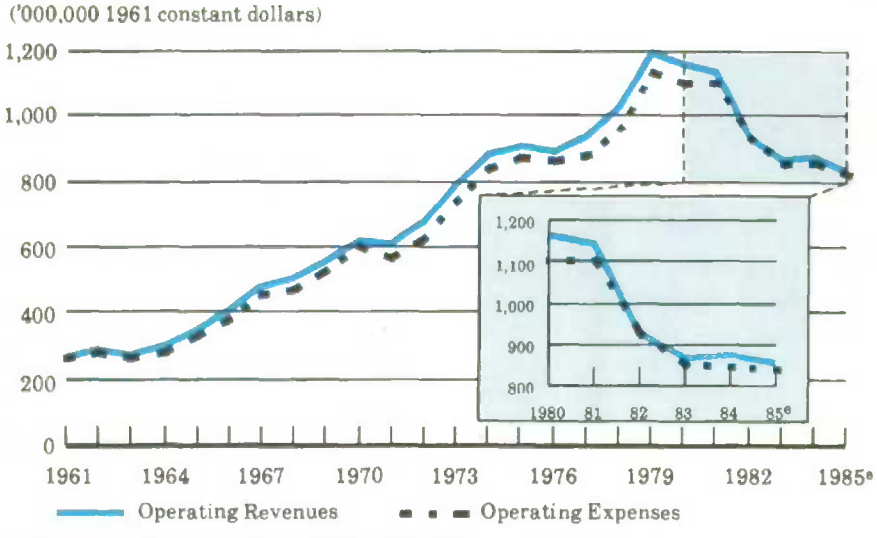
But in general, industry revenues over the past 31 years have grown steadily. Following the 1981-1983 downswing, industry performance again resumed its upward trend and by 1984, operating revenues had increased 8.9% over 1983. This resulted in an operating income of $161 million, or $94 million more than in 1983. In 1985, industry operating revenues peaked at $5.5 billion, representing an increase of 8.5% over the previous year.

Figure 2.2.1 Operating Revenues and Expenses, Current Dollars, 1955-1985



Sources: Statistics Canada: 51-002 and 51-202.

Figure 2.2.2 Operating Revenues and Expenses, in 1961 Constant Dollars[1], 1961-1985



Sources: Statistics Canada: 51-002 and 51-202.
CANSIM Matrix: 1941.

Table 2.4 **Financial Statements – Selected Components, Canadian Air Carriers, Levels I–V, 1955-1985 (in current dollars)**

Year	Operating revenues	Operating expenses	Total net non-operating income	Net income (loss)	Total assets	Interest expenses	Return on investment[6] %**
	millions of dollars (current)						
1955	153	147	(--)	4	123	2	4.6
1956	181	172	(1)	5	143	2	4.8
1957	190	190	(1)	(1)	181	3	1.8
1958	202	200	(3)	(2)	232	4	1.1
1959	220	220	(3)	(3)	262	5	0.8
1960	243	245	(4)	(7)	335	9	0.8
1961	264	266	(11)	(14)	366	12	0.4
1962	293	286	(12)	(5)	364	13	2.3
1963	319	304	(13)	1	364	14	4.3
1964	347	328	(10)	8	371	15	6.4
1965	408	383	(10)	13	397	15	7.1
1966	479	447	(9)	16	449	16	6.5
1967	561	533	(10)	11	571	19	5.1
1968	635	595	(16)	12	742	26	5.1
1969	721	688	(24)	3	968	37	4.1
1970	842	811	(31)	(2)	1,166	48	4.0
1971	918	861	(37)	12	1,250	49	4.8
1972	1,056	978	(35)	23	1,382	47	5.1
1973	1,254	1,173	(40)	24	1,669	61	5.1
1974	1,598	1,525	(68)	6	2,070	91	4.7
1975	1,891	1,823	(90)	(7)	2,261	108	4.5
1976	2,058	2,002	(88)	(16)	2,112	120	4.9
1977	2,358	2,215	(72)	39	2,237	104	6.4
1978	2,680	2,514	(2)	98	2,784	97	7.0
1979	3,256	3,091	(8)	95	3,378	117	6.3
1980	3,985	3,798	(1)	112	3,963	139	6.3
1981	4,649	4,494	(64)	45	4,589	210	4.6
1982	4,679	4,693	(113)	(84)	4,851	226	2.9
1983	4,676	4,609	(90)	(14)	5,307	201	3.5
1984	5,093	4,932	(73)	80	5,654	216	5.2
1985[e]	5,526	5,423	(129)	22	5,989	231	4.2

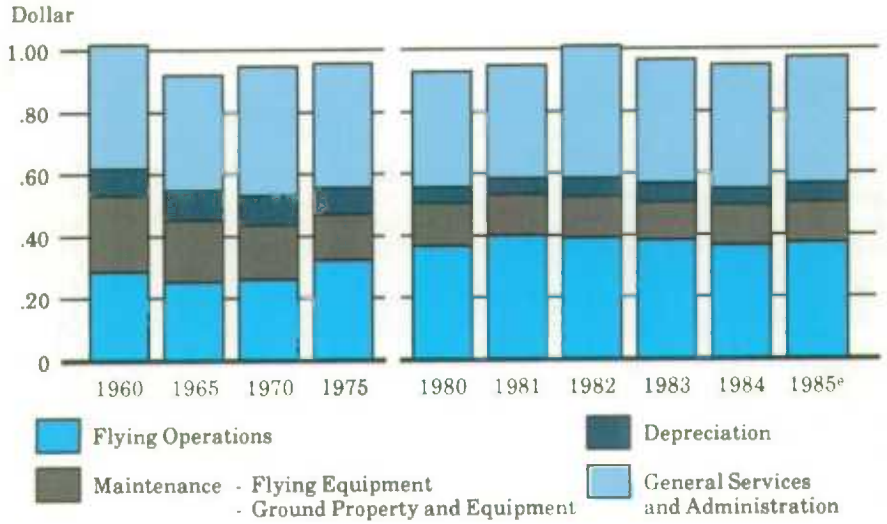
** Percentages are based on more complete figures.
Sources: Statistics Canada: 51-002, 51-202 and 51-206.

A Look at the Operating Revenue Dollar

Another perspective on the industry can be gained by examining how the operating revenue dollar is spent. In 1985, for example, 98.8 cents of each operating revenue dollar was used to cover operating expenses. In 1960, however, the operating expenses were not all covered by the operating revenues; for each operating revenue dollar received, $1.08 was spent on operating expenses.

The two areas of running an airline that have been the most expensive are flying operations and general services and administration. Of these two, general services and administration expenses have absorbed the larger portion of each operating revenue dollar over the years. In 1960, for example, 38.0 cents of each operating revenue dollar was expended on general services and administration and in 1985, 41.3 cents. From 1960 to 1985, expenses related to flying operations increased substantially from 28.9 cents of each operating revenue dollar to 37.9 cents. At the same time, there have been reductions in the relative share of maintenance and depreciation expenses and this has helped to offset the rise in expenses associated with flying operations (see Figure 2.3).

Figure 2.3 **Distribution of the Operating Revenue Dollar Levels I–V Carriers, 1960, 1965, 1970, 1975, 1980-1985**



Sources: Statistics Canada: 51-202 and 51-206.

Year	Operating expenses (cents)				
	Flying operations	Maintenance	Depreciation	General services and administration	Total expenses
1960	28.9	24.7	9.2	38.0	100.8
1965	25.3	20.7	10.3	37.4	93.7
1970	26.7	17.8	9.7	42.1	96.3
1975	32.6	15.0	8.8	40.0	96.4
1980	37.1	14.7	6.0	37.4	95.2
1981	40.2	13.3	5.8	37.3	96.6
1982	39.7	13.6	6.4	40.5	100.2
1983	39.0	12.7	6.1	40.7	98.5
1984	37.0	13.1	6.0	40.7	96.8
1985e	37.9	13.5	6.1	41.3	98.8

Sources: Statistics Canada: 51-202 and 51-206.

Some Key Financial and Profitability Ratios

Financial ratios are a good way to gauge the economic health of any industry, and this is especially true with the airline industry. Between 1965 and 1985, the operating ratio (the proportion of operating revenue absorbed by operating expenses) hovered between 0.94 and 0.98 cents, with the exception of 1982 when it stood at just over 1.0 (see Figure 2.4.1). In 1960, this ratio was 1.01. In both years, the industry suffered substantial losses, underscored by its returns on investment, which stood at 0.8% and 2.9%, respectively.

The liquidity of the industry, as measured by the current ratio, which is the ratio of assets to liabilities, has shown an overall decline over the years. However, the downward trend was reversed when it increased from 0.77 in 1983 to 0.83 in 1984.

The extent to which funds borrowed have been used by the industry is in part measured by the debt-asset ratio (or the ratio of total debts to total assets). This ratio peaked at 0.91 in 1975, and then underwent a general decline, recording a low of 0.73 in 1984. In 1985, it increased slightly to 0.74.

The overall performance of the industry is also reflected in the profitability ratios, such as profit margin, return on investment, and return on assets (see Figure 2.4.2). Over the years, there has been a close correlation between the profit margin and the return on investment. The highest profit margin ratios were recorded in 1965, 1980 (both at 0.03) and in 1984 (0.02). During these years, the industry also enjoyed the highest returns on investment with ratios reaching 0.07, 0.06, and 0.05, respectively. Similarly the return on assets showed the most favourable results in 1965, 1980 and 1984, when ratios of 0.03, 0.03 and 0.01 were achieved.

Fuelling the Industry: A Major Variable

Fuel costs are an important part of the budget for Canadian air carriers. However, while they figured very highly in the late 1970s and in the early 1980s, they were less prominent in earlier years. In 1955, for example, they accounted for 15% of all operating expenses and in 1967 for only about 10%. In 1981, however, fuel took up nearly a quarter of all operating costs, dropping slightly to 21% in 1985 (see Table 2.5).

The 1955 percentage, while fairly high, started to drop in about 1958. This trend can be explained by the evolution from piston to jet engines, which entailed, among other things, a change from gasoline to the much cheaper turbo fuel. From 1961 to 1970, the average price of fuel was less than four cents a litre. However, the oil crisis of the 1970s and the concomitant adjustment of Canadian oil prices soon brought the price up. In 1983, it reached an average of 33 cents a litre.

Figure 2.4 Financial and Profitability Ratios, Levels I–V Air Carriers, 1960, 1965, 1970, 1975, 1980-1985

Figure 2.4.1 Financial Ratios

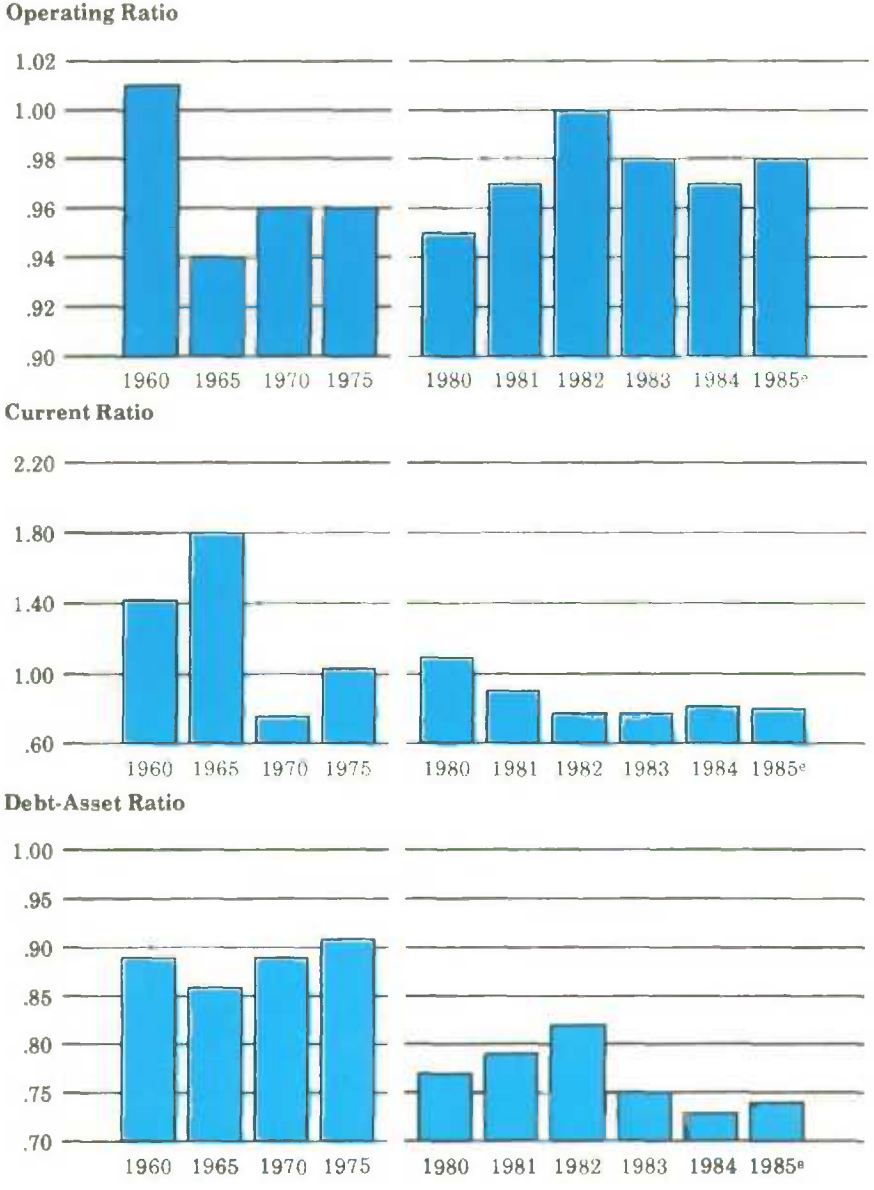
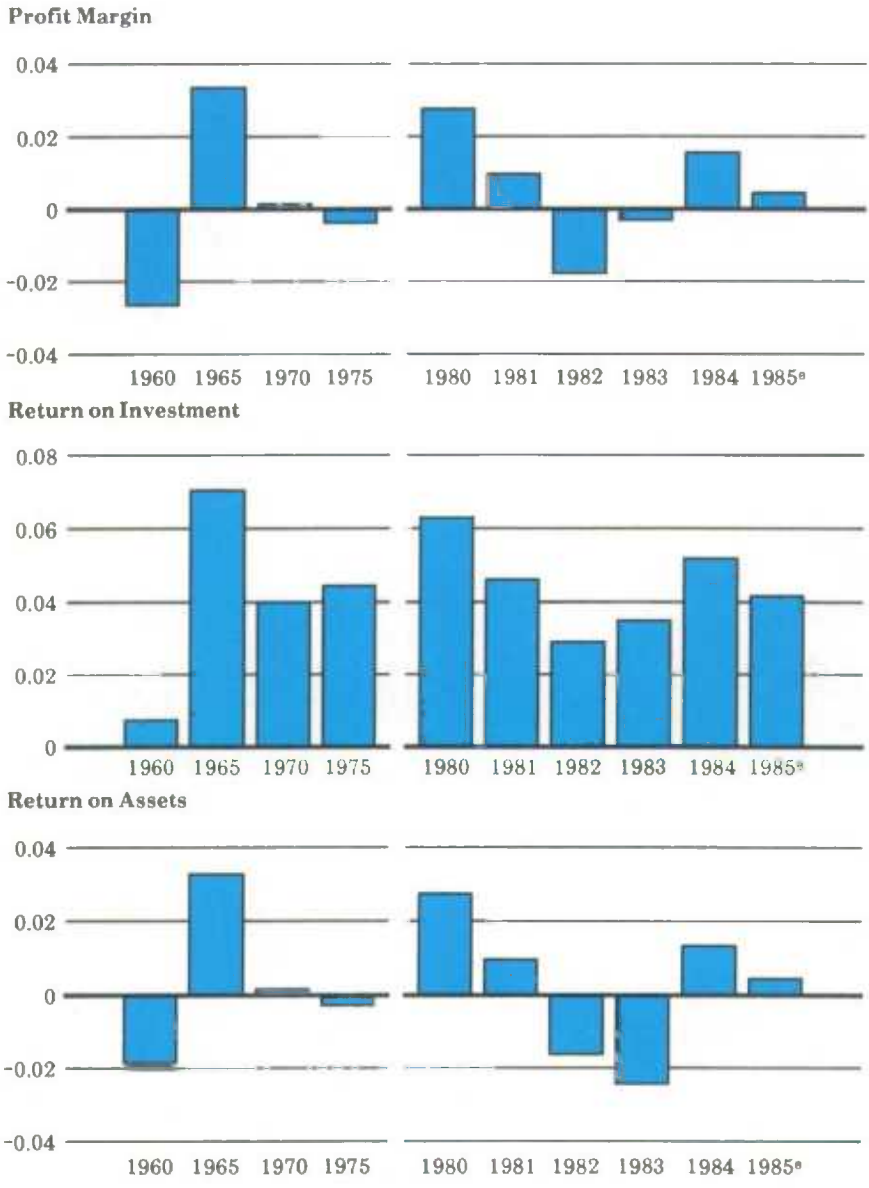


Figure 2.4 **Financial and Profitability Ratios, Levels I–V Air Carriers, 1960, 1965, 1970, 1975, 1980-1985** – Concluded

Figure 2.4.2 **Profitability Ratios**



Sources: Statistics Canada: 51-202 and 51-206.

Table 2.5 **Fuel Consumption, Fuel Costs and Tonne-Kilometres Flown Per Litre of Fuel Consumed, Canadian Air Carriers, 1955-1985**

Year	Fuel consumed Litres ('000 000)	Fuel costs $ ('000,000)	Fuel cost per litre ¢	Fuel cost as % of operating expenses**	Tonne-km flown per litre of fuel consumed
1955	296	22	7.4	15.0	0.74
1956	378	28	7.3	15.8	0.69
1957	430	29	6.8	15.5	0.71
1958	482	28	5.8	13.9	0.73
1959	554	29	5.2	13.2	0.73
1960	634	30	4.7	12.6	0.77
1961	796	31	3.9	12.0	0.68
1962	870	32	3.7	11.5	0.68
1963	943	35	3.7	11.9	0.67
1964	991	36	3.7	11.5	0.71
1965	1 134	41	3.6	11.0	0.87
1966	1 332	47	3.5	10.9	0.76
1967	1 584	54	3.4	10.5	0.78
1968	1 808	65	3.6	11.3	0.78
1969	2 016	78	3.9	11.7	0.77
1970	2 320	88	3.8	10.8	0.94
1971	2 363	94	4.0	10.9	0.95
1972	2 566	108	4.2	11.0	1.02
1973	2 917	140	4.8	12.0	1.05
1974	3 243	251	7.7	16.5	1.04
1975	3 425	331	9.7	18.1	1.06
1976	3 374	362	10.7	18.1	1.11
1977	3 367	412	12.2	18.6	1.19
1978	3 454	471	13.6	18.7	1.24
1979	3 871	611	15.8	19.8	1.29
1980	3 946	843	21.4	22.2	1.32
1981	3 852	1,136	29.5	25.3	1.45
1982	3 271	1,179	36.1	25.1	1.66
1983	3 384	1,113	32.9	24.2	1.60
1984	3 510	1,128	32.2	22.9	1.54
1985[e]	3 724	1,148	32.1	21.0	1.52

** Percentages are based on more complete figures.
Sources: Statistics Canada: 51-002 and 51-202.

In addition, schedules were revised to carry maximum numbers of passengers and tonnes of freight. Aware that empty seats cost nearly as much to fly as a seat with a passenger, the air carriers responded with seat sales and other special rates.

Carriers also took advantage of developments in the manufacture of aircraft engines, installing new models that were quieter and more fuel-efficient. Indeed, from 1955 to 1985, productivity in the industry for one litre of fuel increased on average from 0.7 tonne-kilometres to 1.5 tonne-kilometres.

Employment

Another major component of airline costs is salaries and wages. In 1985, over 27% of the operating expenses of Canadian carriers were payments to their employees in salaries and wages.

However, this percentage was substantially lower than that of 1960, when close to 40% of the budget went to salaries and wages. The 1985 percentage can be partly explained by the reduction in personnel which paralleled the industry downturn. But it can also be explained by rising fuel costs, which reduced the proportion of labour costs to total costs.

Nonetheless, the overall picture has been one of growth in personnel. From 1955 to 1985, the number of employees working for air carriers tripled, while total salaries increased 27 times (see Table 2.6). For example, from 1965 to 1970, there was a strong upsurge in the number of employees, from about 19,000 to almost 31,000, which reflected the rallying of the industry. However, from 1980 to 1983, there has been a drop in the number of employees, reflecting the economic situation of the country and overall industry performance.

During the same period, the operating revenue per employee increased 11 times, going from $12 thousand in 1955 to $129 thousand per employee in 1985.

Another yardstick used to measure productivity within the industry is to calculate tonne-kilometres flown per employee. (In other words, the total tonne-kilometres flown are divided by the number of employees.) According to this measure, production between 1955 and 1985 increased eight times, going from just under 17 thousand tonne-kilometres in 1955 to about 134 thousand in 1985.

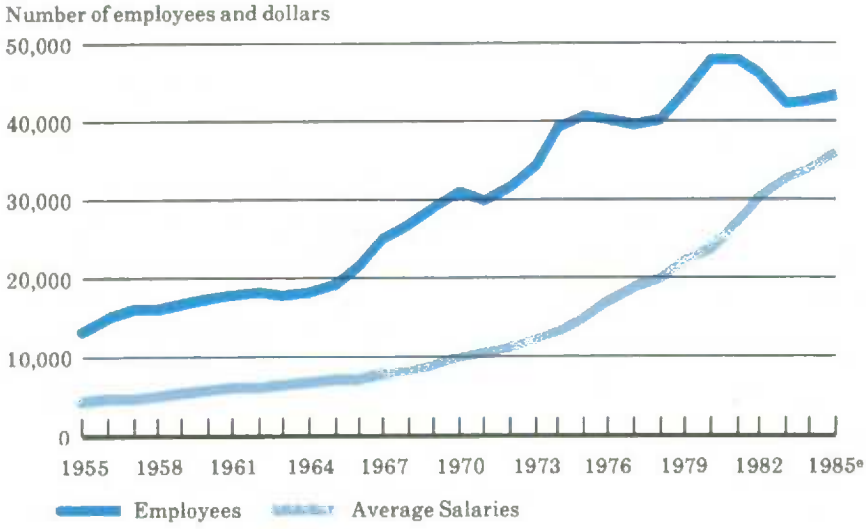
Over the same period, average wages earned have risen from $4,120 per annum in 1955 to $35,459 in 1985 (see Figure 2.5.1). However, in 1985, the average wages adjusted for inflation remained at the same level that they were in 1961 (see Figure 2.5.2). Overall, the total amount paid in salaries and wages went from $55 million to $1.5 billion. During this period, 1983 is the only year when salaries and wages have actually dropped from the previous year.

Table 2.6 **Employees, Salaries, Productivity – Canadian Air Carriers, 1955-1985**

Year	Number of employees[7]	Total wages paid[7] ('000,000) $	Average wages per year $	Operating revenue per employee $	Labour cost as % of operating expenses %**	Tonne-km flown per employee
1955	13,271	55	4,120	11,509	37.3	16 819
1956	14,848	65	4,378	12,269	37.2	18 488
1957	16,014	74	4,618	11,870	39.0	19 925
1958	15,990	80	4,999	12,615	39.9	23 100
1959	16,565	87	5,250	13,307	39.6	25 794
1960	17,106	95	5,550	13,795	39.9	28 521
1961	17,700	102	5,771	14,399	39.7	32 100
1962	17,810	106	5,931	15,981	38.1	35 345
1963	17,577	109	6,175	17,570	36.9	38 241
1964	17,795	116	6,543	18,612	36.9	47 194
1965	19,007	130	6,826	20,709	35.2	51 740
1966	21,440	151	7,049	21,481	35.0	53 132
1967	24,686	187	7,571	22,021	36.2	55 628
1968	26,550	215	8,084	23,216	37.2	60 142
1969	28,625	245	8,574	24,547	36.8	64 431
1970	30,698	301	9,796	27,422	37.1	71 203
1971	29,622	304	10,270	31,020	35.3	75 574
1972	31,480	345	10,967	33,538	35.3	82 888
1973	34,061	413	12,135	36,809	35.2	89 472
1974	38,874	512	13,162	43,674	33.6	87 057
1975	40,321	604	14,972	46,906	33.1	90 114
1976	39,950	670	16,770	51,506	33.5	93 964
1977	39,466	794	18,746	59,755	33.4	101 596
1978	40,167	792	19,721	66,709	31.5	106 936
1979	43,336	951	21,954	75,123	30.8	114 944
1980	47,676	1,125	23,591	83,579	29.6	109 027
1981	47,534	1,279	26,898	97,801	28.5	117 599
1982	45,707	1,373	30,037	102,379	29.3	118 544
1983	42,093	1,371	32,568	111,080	29.8	128 229
1984	42,282	1,432	33,867	120,443	29.0	127 956
1985[e]	42,451	1,499	35,459	128,773	27.4	133 693

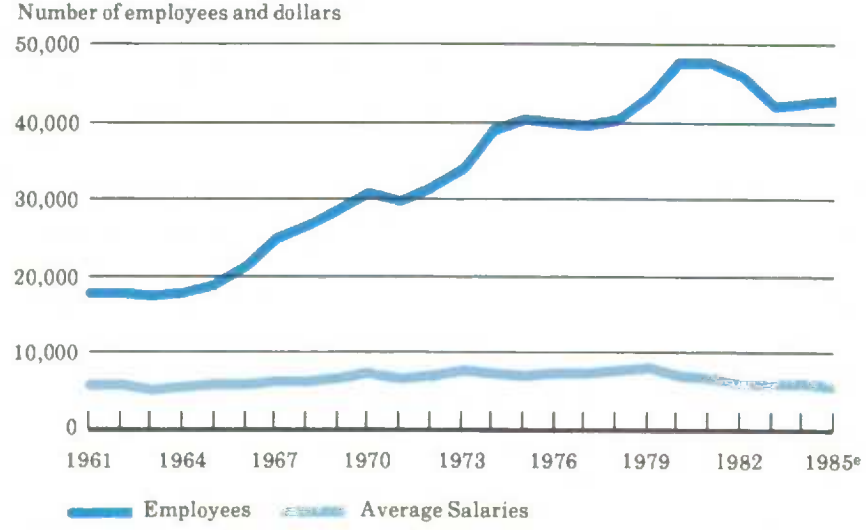
** Percentages are based on more complete figures.
Sources: Statistics Canada: 51-002 and 51-202.

Figure 2.5.1 Number of Employees and Average Salaries (Current Dollars), 1955-1985



Sources: Statistics Canada: 51-002 and 51-202.

Figure 2.5.2 Number of Employees and Average Salaries (1961 Constant Dollars), 1961-1985



Sources: Statistics Canada: 51-002 and 51-202.

Aircraft in the Canadian Commercial Fleet

The Canadian fleet has undergone great changes in the past few decades. In some cases, what was popular as recently as 1970 has now completely disappeared. Then, a part of the fleet consisted of Vanguards, Viscounts, DC84s and DC85s. By 1985, all these models had completely disappeared giving way to Boeing 727s, 747s and 767s, DC10s, Hawker-Siddeley 748s and others that were not around in 1970 (see Table 2.8).

Many of the old familiar piston aircraft have been replaced by turbo-jet and prop aircraft. From 1970 to 1985, the turbo aircraft fleet jumped from 195 aircraft to 540, an increase of 177%. At the same time, piston aircraft continue to be strongly in evidence, their numbers having risen by about 40%, from 2,395 in 1970 to 3,357 in 1985. During this period, the market share of turbo aircraft, as it relates to the whole commercial fixed-wing fleet, increased from 7% to just over 13% (see Table 2.7).

From 1970 to 1983, in terms of numbers, turbo-jet aircraft dominated turbo-prop aircraft. Mainly used by major airlines on high-density long distance markets, jet aircraft have experienced declines since 1983, contrary to the turbo-prop aircraft which have continued an upward growth trend. Indeed, the turbo-prop industry has probably benefitted the most from the new Canadian air policies.

With increased deregulation, the airlines have sought to increase the use of medium-size aircraft to offer a higher frequency and more competitive service to their customers. The governmental initiative to promote the use of new de Havilland Dash 7 and Dash 8 aircraft has also been a positive factor in the increase of the turbo-prop aircraft fleet. On April 15, 1986, there were nine Dash 7 and six Dash 8 in the Canadian commercial fleet.[5]

In the smaller ranges, the Cessna Skyhawk with 372 aircraft now supersedes the Cessna 150. For rotary-wing aircraft, the Bell Jet Ranger ranked first in 1985 with 342 aircraft. In 1970, on the other hand, it was the Bell Trooper Ranger that dominated the scene (see Table 2.8).

Today, the Level I fleet is dominated by the Boeing 737s, (there are 73) which have been acquired by most major airlines, for use on middle range flights. A surprising exception to this is Air Canada, whose fleet has no 737s, consisting rather of 727s and DC93s. (Wardair also has no 737s.)

For short routes, the Hawker-Siddeley 748 has proved to be a popular aircraft and so has the Boeing 727, of which 36 are used by Air Canada for its domestic routes.

Looking back to 1970, the most popular aircraft used by major airlines were the DC9 and the Viscount. Through the years, the DC9 has shown itself as a durable performer. (In 1970, there were 36, in 1985, 35.) In 1985, for the Level I fleet, the DC9s were only outrun by the B737s and B727s, of which there were, respectively, 73 and 36. By 1985, the DC3, of which 16 were still on fleet with the major carriers in 1970, had completely disappeared from the active fleet of Canadian commercial air carriers.

Table 2.7 **Canadian Commercial Air Carrier Fleet by Type of Power Plant, 1970-1985***

Year	Fixed-wing aircraft				Helicopters			Total aircraft in fleet
	Turbo-jet	Turbo-prop	Piston engine	Total	Turbine	Piston engine	Total	
1970	98	97	2,395	2,590	84	305	389	2,979
1971	130	115	2,354	2,599	101	315	416	3,015
1972	139	124	2,462	2,725	200	284	484	3,209
1973	151	126	2,593	2,870	285	274	559	3,429
1974	182	144	2,765	3,091	355	226	581	3,672
1975	209	134	2,945	3,288	405	190	595	3,883
1976	223	145	3,217	3,585	476	164	640	4,225
1977	213	192	3,421	3,826	..	..	687	4,513
1978	201	188	3,632	4,021	..	..	717	4,738
1979	221	211	3,652	4,084	..	..	818	4,902
1980	249	218	3,806	4,273	..	..	873	5,146
1981	266	238	3,907	4,411	..	..	900	5,311
1982	273	249	3,646	4,169	..	..	868	5,037
1983	273	255	3,448	3,976	..	..	877	4,853
1984	260	268	3,485	4,013	..	..	831	4,844
1985	249	291	3,357	3,897	..	..	761	4,658

* Figures are as of July 15 of each year.
Source: Statistics Canada/Canadian Transport Commission - Fleet Report.

Table 2.8 **Principal Aircraft Types[8] by Weight Group, Used by Levels I–V Air Carriers, 1970, 1985***

Weight group[9] (kg)	Description	Designator	1970	1985
1) Fixed-wing aircraft				
A	Cessna Commuter	C150	287	340
	Cessna Skyhawk	C172	162	372
	Cessna Skywagon	C185	108	228
	Cessna 180	C180	255	82
	Piper Cherokee	PA28	153	119
B	De Havilland Beaver	DHC2	159	219
	Piper Aztec/Apache	PAZP/PA23	125	135
	Piper Navajo	PA31	13	151
C	De Havilland Otter	DHC3	63	99
	De Havilland Twin Otter	DH6	20	79
D	McDonnell Douglas Dakota	DC3	62	57
	McDonnell Douglas Invader	A26	2	25
E	British Aircraft Viscount	V170	32	0
	Convair 580	CV58	0	20
	Hawker Siddeley 748	A748	0	26
	McDonnell Douglas Skymaster	DC4	13	16
F	Boeing 737	B737	19	73
	British Aircraft Vanguard	V195	12	0
	McDonnell Douglas DC9 Series30	DC93	36	35
G	Boeing 727	B727	4	37
	Boeing 767	B767	0	14
	McDonnell Douglas DC8 Series40	DC84	16	0
	McDonnell Douglas DC8 Series50	DC85	11	0
	McDonnell Douglas Super DC8	DC86	22	16
H	Boeing 747	B747	0	12
	Lockheed Tristar/Tristar 500	L101/L105	0	18
	McDonnell Douglas DC10	DC10	0	11
2) Rotary-wing aircraft				
A	Bell Jet Ranger	HB4	45	342
	Bell Long Ranger	HB06	0	58
	Bell Trooper Ranger	HB47	230	43
	Hughes 369-500 Series	HU5	9	85
B	Aerospatiale Alouette 3	HR60	1	6
C	Bell Iroquois	HB04	13	67
D	Sikorsky	HS61	2	10

* Figures are as of January 15, 1971 and 1986.
Source: Statistics Canada/Canadian Transport Commission – Fleet Report.

The aircraft here portray the evolution of the Canadian fleet over the last few decades. The aircraft shown, with the year of their appearance, are: *(below)* the DC3, 1936, the Viscount, 1952, the Cessna Skyhawk, 1956; *(following pages)* the Hawker-Siddeley 748, 1961, the Vanguard, 1962, the DC8 (stretch version), 1967, the Dash 7, 1977, the Lockheed Tri-Star 500, 1981 and the Boeing 767, 1982.

National Aviation Museum

Air Canada

Cessna Aircraft Company

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Air Canada

Canadian Pacific Air Lines

De Havilland Aircraft/Tony Hazewood

Lockheed Company

Boeing Commercial Airplane Company

Part II

An Introductory Note on Air Services Categories

For years, the same three categories of air services have been offered by air carriers in Canada. These categories are unit toll[6] (composed of mainline unit toll and 'other unit' toll), charter and specialty. Each category may be domestic or international in designation and technically, at least, can be provided by either fixed-wing aircraft or helicopters.

But while the categories have remained, for the most part, immutable, the entry barriers for these services have gradually evolved and changed. For example, prior to 1967, a carrier who wanted to obtain a Class 1 unit toll licence (see glossary for definitions) had to show evidence of "Public Convenience or Necessity" (PCN) for the proposed service. And if a carrier wanted to obtain a licence for any one of the other classes (Class 2,3,4,5,6,7,8,9-2,9-3,9-4, or 9-5) evidence of "Public Interest", a lesser criterion, was required.

In 1967, with the passage of the National Transportation Act, the "PCN" criterion was necessary for all types of licences and until recently, it was also the main requirement for approval of a new service. With the introduction of the "New Canadian Air Policy" in May 1984, and the "Freedom to Move" document (published by the Minister of Transport) in July 1985, a new criterion termed "Fit, Willing and Able" (FWA) was proposed.

The result of these changes have literally changed the face of Canadian commercial aviation. For example, major transcontinental routes previously the exclusive province of Air Canada and Canadian Pacific Air Lines are now served by an additional four or five carriers, depending on the route. For the passenger, this has meant extended options. For example, a traveller wanting to get to Winnipeg from Toronto can now fly Air Canada, Canadian Pacific, Pacific Western, Air Ontario or Nordair.

The resulting competition has inevitably led to increased competition in fares. In 1985, 53% of all domestic scheduled passengers travelled on discount fares, compared to 45% in 1983.

Another major player in this new, more competitive environment are the carriers specializing in charter services. For example, in 1980 Wardair started offering charter services between major Canadian cities, thus placing itself in direct competition with other major carriers. By the end of 1985, Wardair was licensed to operate international scheduled services, and in May 1986, was licensed to operate domestic scheduled services.

The long-standing Canadian aviation structure, based on two trans-continental carriers and four regional carriers, has thus been dismantled. The new structure, while more complex, is nonetheless a dynamic and changing one. Operating in a less regulated environment, carriers now introduce (and withdraw) their services more freely, while offering competitive fares.

Passenger Traffic

Domestic Scheduled Services

Toronto dominates the scheduled, domestic sector, serving as a focal point for much of the traffic flow throughout the country. However, since trips are measured in terms of origin and destination, or city-pair, it is more meaningful to look at individual sectors in this context.

In 1985, of the top 10 domestic scheduled city-pairs, seven involved Toronto. Since 1970, the Toronto-Montréal city-pair has ranked as number one (see Table 2.9).

From 1970 to 1985, the two central Canadian city-pairs, namely Montréal-Toronto and Ottawa-Toronto, grew by 77% and 107% respectively. This represented an increase of 728 thousand passengers for both city-pairs.

One can also see growth in the west. From 1970 to 1985, the two largest city-pairs were Toronto-Vancouver and Calgary-Vancouver, which grew 181% and 159% respectively. This represented an actual increase of 559 thousand passengers (see Figure 2.6).

From 1970 to 1980, the number of passengers travelling on domestic scheduled services increased from just over 6 million to nearly 14 million, a phenomenal surge of about 127%. However, between 1981 and 1983, there was a drop in passengers, and this in turn impacted on various city-pairs, with 23 of the leading 25 experiencing dramatic declines in passenger travel. Nor has the end of the recession always meant the recouping of lost passengers. In 1985, for no less than half the major 25 city-pairs, the traffic lost during the recession had still not been recaptured.

Between 1980 and 1985, the city-pairs that were the hardest hit were Calgary-Edmonton and Prince George-Vancouver, with respective declines of 52% and 35%.

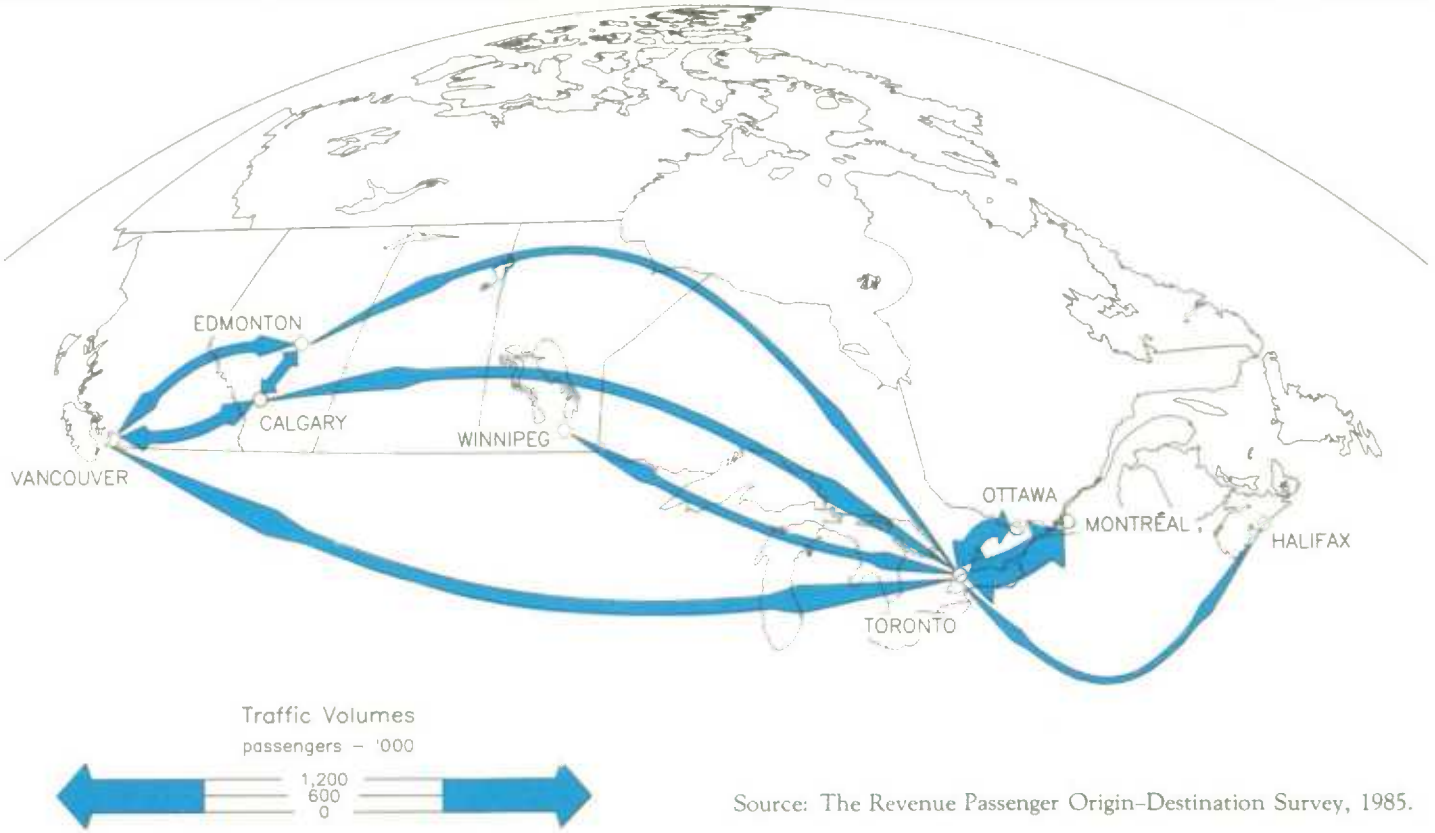
However, some city-pairs have rebounded, to recoup the losses they suffered in the early 1980s. Two showcase examples are Kelowna-Vancouver and Toronto-Windsor. In 1985, Kelowna-Vancouver increased its scheduled passenger traffic by 19% over 1984. This recovery was largely the result of increased competition between domestic scheduled and domestic charter services. Toronto-Windsor, on the other hand, increased its 1985 passenger traffic by 32% over the previous year, mostly the result of a new service by Nordair, introduced in November of 1984.

Table 2.9 **Scheduled Domestic Air Passenger Origin and Destination Summary of Top 25 City-Pairs Ranked in Order of Traffic Volumes, 1970, 1975, 1980-1985**

1985 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985
		Passengers (in thousands)							
1	Montréal - Toronto	675	963	1,127	1,115	988	972	1,085	1,198
2	Ottawa - Toronto	306	496	575	559	571	557	624	633
3	Toronto - Vancouver	163	302	532	547	459	469	495	458
4	Calgary - Vancouver	166	291	455	472	470	440	437	430
5	Calgary - Toronto	83	174	397	433	420	388	396	400
6	Calgary - Edmonton	235	413	723	690	487	389	362	351
7	Edmonton - Vancouver	139	254	377	378	373	352	353	349
8	Toronto - Winnipeg	171	238	316	301	305	299	305	322
9	Edmonton - Toronto	70	139	298	307	301	265	274	270
10	Halifax - Toronto	99	168	220	228	237	204	245	260
11	Thunder Bay - Toronto	85	144	192	181	173	166	172	196
12	Vancouver - Winnipeg	90	133	192	176	164	180	179	173
13	Kelowna - Vancouver	48	120	149	154	143	125	128	152
14	Montréal - Vancouver	78	118	169	151	142	143	149	147
15	Calgary - Winnipeg	61	94	136	134	135	125	128	120
16	Halifax - Montréal	90	112	116	122	115	106	118	118
17	Sault Ste. Marie - Toronto	61	95	115	114	95	89	97	116
18	Prince George - Vancouver	58	99	177	153	134	115	112	115
19	Ottawa - Vancouver	32	70	94	97	100	100	110	108
20	Toronto - Windsor	93	92	108	93	80	66	79	104
21	Calgary - Montréal	32	60	114	125	122	108	105	103
22	St. John's - Toronto	35	69	96	90	89	84	96	100
23	Halifax - Ottawa	33	66	76	83	82	81	91	99
24	Halifax - St. John's	32	56	72	84	75	83	92	97
25	Québec - Toronto	37	78	88	86	84	82	97	97
	Others	3,149	5,518	7,065	6,655	5,799	5,255	5,555	5,406
	Total**	6,120	10,360	13,920	13,525	12,141	11,242	11,884	11,919

** Some totals may not add due to rounding.
Source: Statistics Canada: 51-204.

Figure 2.6 **Scheduled Air Passenger Origin and Destination, Top Ten Domestic City-Pairs, 1985**



Source: The Revenue Passenger Origin–Destination Survey, 1985.

Transborder and Other International Scheduled Services

From 1975 to 1984, the international scheduled markets (composed of transborder and other international) outgrew the domestic scheduled market. Indeed, the number of scheduled international air passengers increased by over 27%, going from 8.3 million in 1975 to 10.6 million in 1984, while the number of scheduled domestic air passengers went up by nearly 15%.

In 1984, 40% of the total international scheduled passengers were carried by Canadian airlines, while in 1975, these carriers transported 46% of all international scheduled passengers, a loss of 6% over this 10-year period. In 1984, Canadian carriers flew approximately 34% of passengers in the transborder market (Canada-United States) and 55% of the Canada-other international markets. From 1975 to 1984, Canadian carriers lost approximately 7% of the transborder market and 3% of the other international markets to foreign carriers (see Figure 2.7).

From 1975 to 1984, Canada's prime international market has been the continental United States. Although there have been minor fluctuations, approximately two-thirds of all international 'scheduled' passengers headed for the United States.

In the transborder market, Toronto once again occupies the key position, as the two top city-pairs have been and continue to be Toronto-New York and Montréal-New York. In every year from 1970 to 1985, these two city-pairs have ranked first and second, respectively (see Table 2.10 and Figure 2.8). The third place city-pair has been Toronto-Chicago.

However, while Montréal-New York has maintained its position as the second largest scheduled service city-pair, it has had declines both in the absolute numbers of passengers and with respect to the first place and third place city-pairs.

In 1985, with the introduction of a new service by People Express between Montréal and New York, and with the economic upturn, there was a reversal of this trend. In 1985, Montréal-New York experienced a 24% increase in passenger traffic over 1984.

Europe is the second largest international market, with 20% of international traffic, while the southern market (composed of Bermuda, the Bahamas, the Caribbean Islands, Mexico, Central America and South America)[7] accounts for about 8% of all international services. The remaining sector market shares are small. The Asian market, accounting for about 5% in 1984, has grown from about 3% in 1975. Africa hovers around the 1% mark, while the Pacific region accounts for 1% (see Figure 2.9).

Figure 2.7 **Canadian and Foreign Carriers Market Shares[2], International Scheduled Services, 1975, 1984**

Figure 2.7.1 **Canada–United States, 1975, 1984**

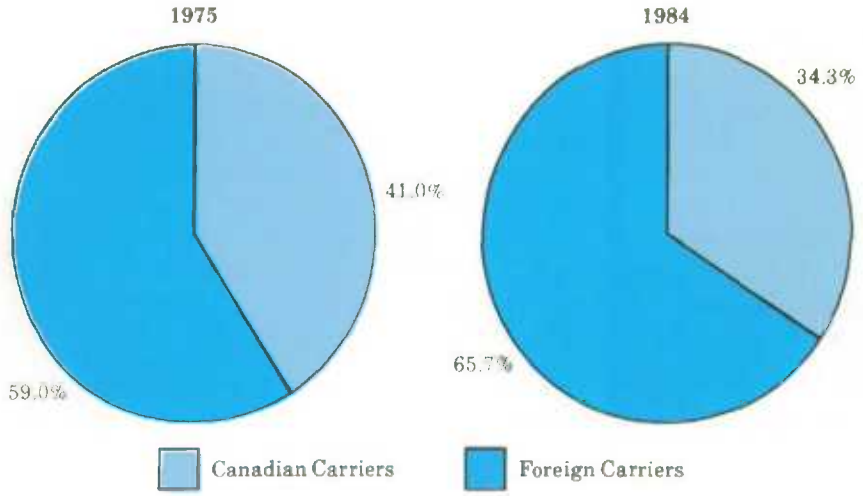
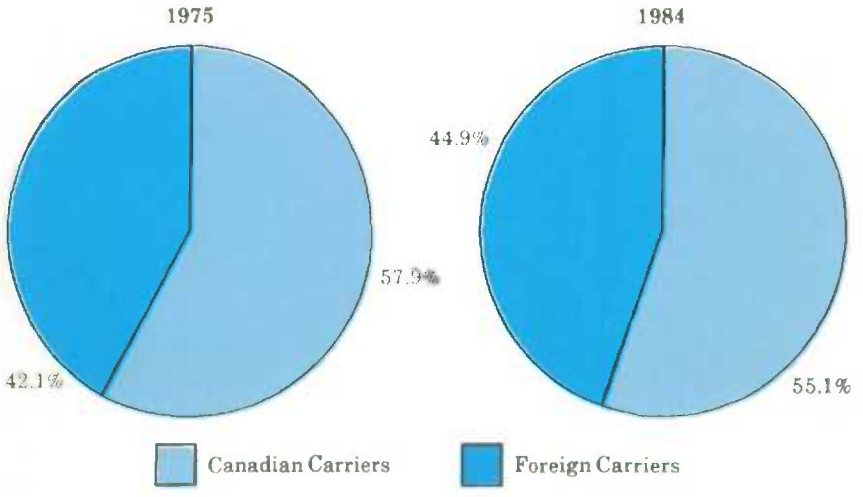


Figure 2.7.2 **Canada–Other International, 1975, 1984**



Source: Airport Activity In-House Reports.

Table 2.10 **Scheduled Transborder Air Passenger Origin and Destination – Summary of Top 15 City-Pairs Ranked in Order of Traffic Volumes, 1970, 1975, 1980-1985**

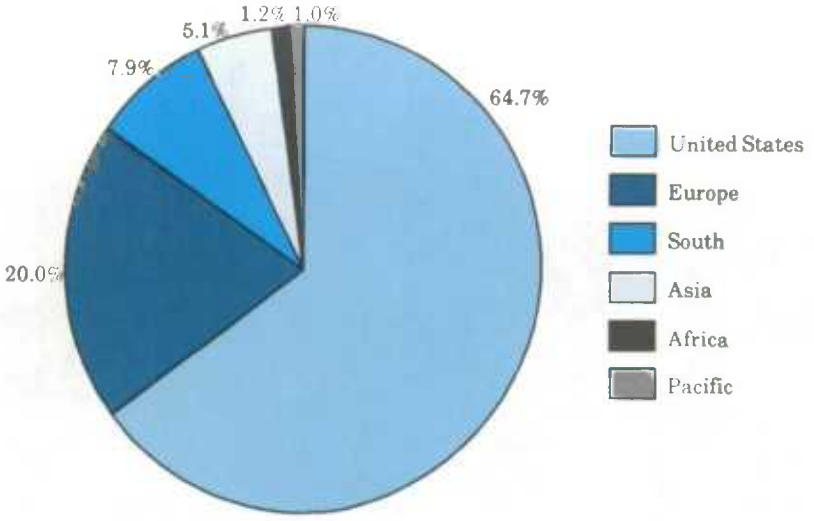
1985 Ranking	City–Pair	1970	1975	1980	1981	1982	1983	1984	1985
		Passengers (in thousands)							
1	Toronto – New York	450	488	683	623	559	560	624	637
2	Montréal – New York	382	331	354	320	305	284	330	410
3	Toronto – Chicago	140	172	210	202	190	197	222	228
4	Vancouver – Los Angeles	61	123	197	187	156	175	176	184
5	Toronto – Boston	63	87	137	136	140	160	173	171
6	Montréal – Miami	80	172	240	230	199	157	161	166
7	Toronto – Los Angeles	70	105	188	178	143	161	148	162
8	Toronto – Miami	80	115	157	158	159	130	137	134
9	Vancouver – San Francisco	81	120	145	139	119	126	129	133
10	Montréal – Boston	89	110	134	131	124	124	133	129
11	Toronto – San Francisco/ Oakland	32	66	137	131	102	111	109	129
12	Toronto – Tampa/ St. Petersburg	47	89	172	147	153	121	125	108
13	Calgary – Los Angeles	14	34	103	108	91	87	87	92
14	Toronto – Washington/ Baltimore	36	58	80	80	78	79	90	92
15	Toronto – Detroit	47	54	64	57	52	58	78	89
	Others	1,867	3,201	4,649	4,585	4,040	3,808	4,141	3,975
	Total**	3,538	5,324	7,650	7,411	6,609	6,339	6,865	6,839

** Some totals may not add due to rounding.
Source: Statistics Canada: 51-205.

Figure 2.8 **Scheduled Air Passenger Origin and Destination, Top 15 City-Pairs Canada–United States, 1985**

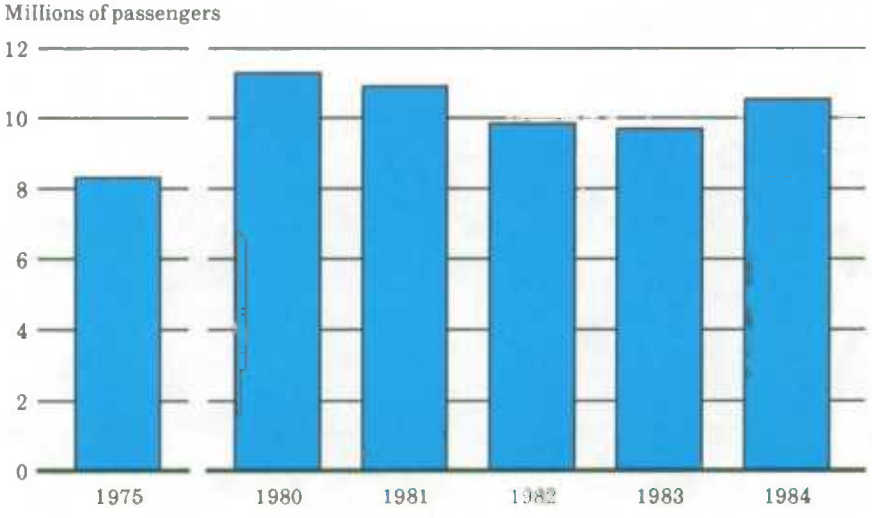
Source: The Revenue Passenger Origin-Destination Survey, 1985.

Figure 2.9 International Scheduled Passenger Origin and Destination by World Area, 1984



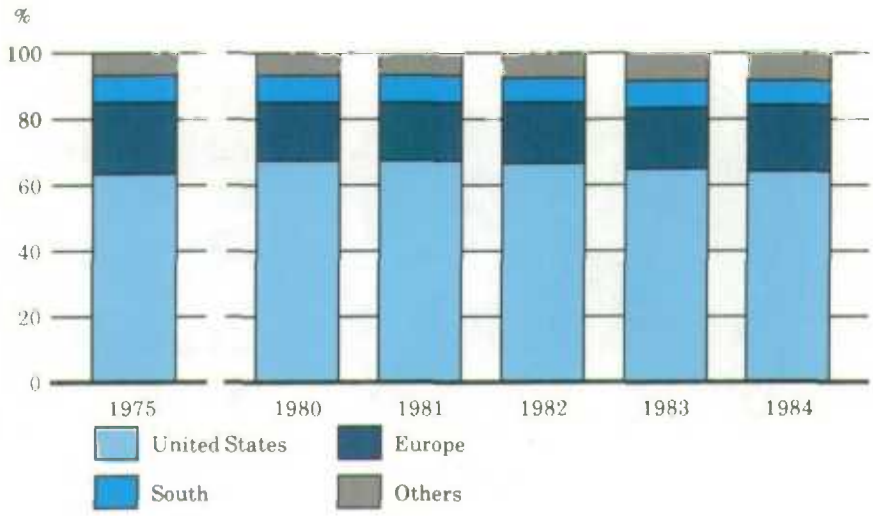
Sources: Statistics Canada: 51-205 and Internal Reports.

Figure 2.10 International Scheduled Passenger Origin and Destination, Estimates, 1975, 1980-1984



Sources: Statistics Canada: 51-205 and Internal Reports.

Figure 2.11 **International Scheduled Passenger Origin and Destination, Sector Market Share, 1975, 1980-1984**



Sources: Statistics Canada: 51-205 and Internal Reports.

There have been some volume changes in overall international travel over the last decade. A peak occurred in 1980, when volume reached 11.3 million passengers. This declined in 1981, 1982 and 1983, but increased again in 1984. In 1984, total volume went up by about 9.3% over the previous year (see Figure 2.10). However, while there have been overall fluctuations, the sector market shares have been quite stable (see Figure 2.11).

The international scheduled market continues to be much larger than the international charter market. In 1984, the number of scheduled international air passengers was over three times larger than the 3.3 million international charter passengers.

The Local Carrier Segment of the Air Industry

In addition to carriers which provide scheduled services on transcontinental and regional routes, there are over a hundred carriers in Canada which offer services of a more local nature. The local carrier segment of the air transport industry has, for decades, played an important role in the economic life of a large number of communities.

Local carriers may service remote areas, in support of seasonal operations or large resource-based developments, like mining, oil drilling, and hydro projects. Still others may be involved in high-frequency commuter service. The diversity of operations is reflected in the wide scope of carriers. At one end of the range are the carriers with one or two propeller-type aircraft transporting a few hundred passengers per month; at the other end are the fleets of turbo-props providing domestic or transborder commuter services and carrying tens of thousands of passengers every month.

From 1970 to 1985, passenger traffic on local carriers increased by a dramatic 628%, the number of domestic and international passengers going from 710 thousand to over 5.1 million. During this period, the local carriers' share of total unit toll services went from 3% in 1970 to 10% in 1985 (see Figure 2.12).

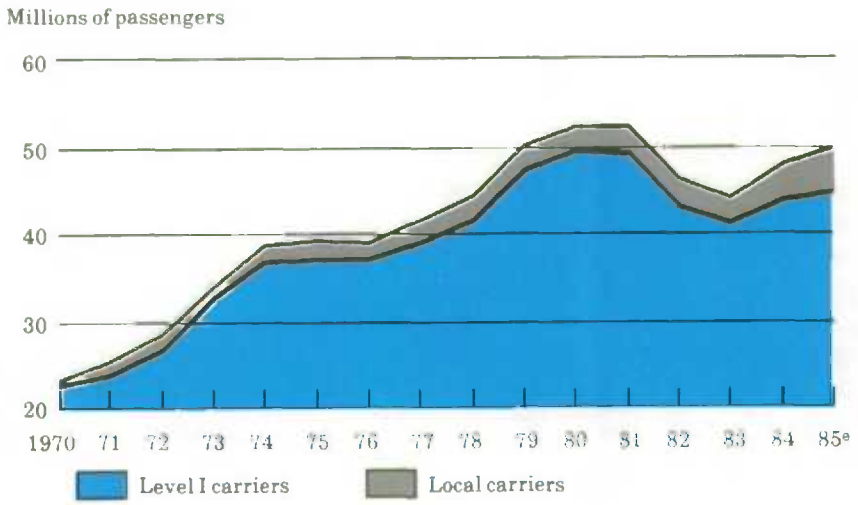
The relatively high traffic growth in non-scheduled unit toll services is the result of the transfer of services from Level I carriers to local carriers. In other words, services previously handled by the larger air carriers have now been shifted to smaller carriers. The peaks recorded in 1985 reflect the policy revisions that Canadian air regulations underwent in 1984, which provided for the removal of certain licence restrictions and entry barriers.

The results of the shift are best seen in the distribution between Level I and local carriers on the Vancouver-Victoria city-pair. In 1980, the proportion was almost equal for operations by local carriers versus operations by larger carriers. From 1980 to 1985, there was an increasing trend in favour of the local carriers. The latter assumed close to 95% of the market by 1985 (see Figure 2.13).

Most of the traffic is intraprovincial in character. As Table 2.11 shows, 84% of the passenger traffic on local carrier systems originated and terminated in the same province. Another 9% originated in one province and terminated in another. Until very recently, operations between Canada and the United States represented only a small proportion of local carrier operations (see Table 2.11).

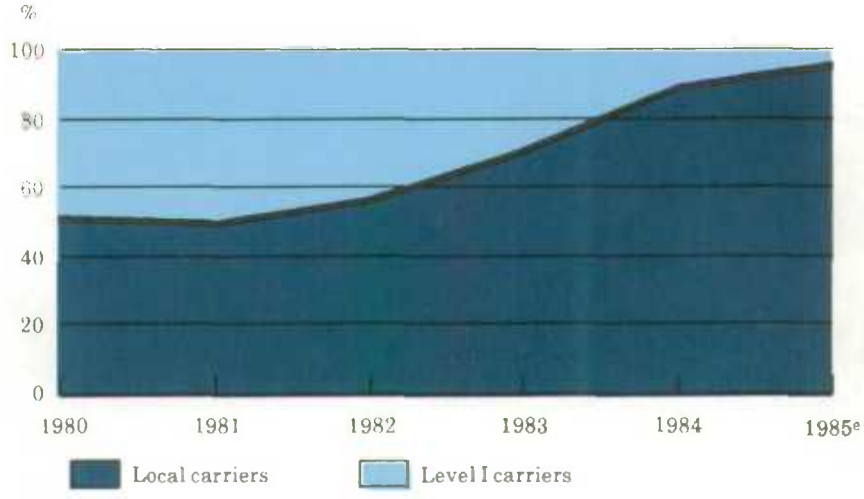
For example, in 1983, international services accounted for less than 4% of total traffic. By 1985, this had increased to more than 6%. This growth reflects new agreements between Canada and the United States for regional, local and commuter services (see Table 2.12).

Figure 2.12 Distribution of Passenger Traffic, for Mainline Unit Toll (Level I Carriers)[3] and Other Unit Toll (Local Carriers)[4], 1970-1985



Sources: Statistics Canada: 51-203 and Internal Reports.

Figure 2.13 Percentage Distribution of Passenger Traffic on Vancouver-Victoria City-Pair, 1980-1985



Source: Statistics Canada: Internal Reports.

Table 2.11 **Local Carriers – Passenger Traffic by Sector of Operation, 1983-1985**

Sector of operation	Total outbound and inbound passengers ('000)				Share of total %		
	1983	1984	1985	% Change 1985/1983	1983	1984	1985
Intraprovincial	2,648	3,415	4,363	64.8	86.9	87.9	84.3
Interprovincial	293	334	464	58.4	9.6	8.6	9.0
International[10]	107	137	348	225.2	3.5	3.5	6.7
Total	3,048	3,886	5,175	69.8	100.0	100.0	100.0

Source: Statistics Canada: 51-004.

Table 2.12 **Local Carriers – Passenger Traffic by Province/Territory, 1983-1985**

Province/Territory of Origin/Destination	Total outbound and inbound passengers			% Change 1985/1983
	1983	1984	1985	
Newfoundland	48,897	52,712	73,478	50.3
Nova Scotia	11,685	11,652	12,643	8.2
New Brunswick	3,690	3,678	682	–81.5
Quebec	343,294	319,350	392,452	14.3
Ontario	924,289	1,163,510	1,845,805	99.7
Manitoba	226,912	243,480	243,972	7.5
Saskatchewan	85,271	96,997	114,673	34.5
Alberta	436,393	520,016	657,193	50.6
British Columbia	742,389	1,224,808	1,570,400	111.5
Yukon Territory	25,070	24,941	19,360	–22.8
Northwest Territories	199,954	224,520	244,654	22.4
Total Canada	3,047,844	3,885,664	5,175,312	69.8

Source: Statistics Canada: 51-004.

Domestic Charter Services

In Canada, charter services have witnessed impressive growth in the last few years. From 1980 to 1985, the number of passengers travelling on advance booking charters went from 120 thousand to 360 thousand (see Table 2.13).

Primarily, domestic charter services are long-haul in nature. In 1985, the top five city-pairs for domestic advanced booking charters accounted for over 80% of the passengers carried. All five city-pairs involved Toronto, and four of the five involved cities 1 500 kilometres or more apart. Toronto-Halifax was the exception at 1 287 kilometres.

Toronto-Vancouver was by far the largest city-pair, and the top three city-pairs all involved both Toronto and a western Canadian city.

Table 2.13 **Domestic Charter Passenger Traffic – Top Five Advanced Booking City-Pairs, 1980-1985**

1985 Ranking	City-Pair	1980	1981	1982	1983	1984	1985
		Passengers (in thousands)					
1	Toronto – Vancouver	50	61	110	152	121	163
2	Calgary – Toronto	14	57	70	73	61	58
3	Edmonton – Toronto	6	15	24	48	40	55
4	Halifax – Toronto	–	–	–	19	11	10
5	Toronto – Winnipeg	3	2	2	7	18	7
	Others	48	57	35	40	59	68
	Total**	120	193	242	338	310	360

** Some totals may not add due to rounding.
Sources: Statistics Canada: 51-207 and Internal Reports.

International Charter Services

International charter services have shown great growth in the past 15 years, greatly impacting on the industry.

During the 1960s and 1970s, international charter activity was primarily between Canada and Europe. In 1970, about 77% of passengers on international charters went from Canada to destinations in Europe. This period was also one of stringent regulations governing the purchase of tickets on charter flights. Those on a charter had to be members of a club or a group for a period of at least six months prior to flight departure. There was also a stipulation that those on the flight travelled from the same point to the same destination and returned as a group as well.

In late 1972, the regulations were changed with the introduction of advanced booking charters, which used a minimum pre-booking deadline and a minimum stay provision instead of the 'affinity' concept, to prevent diversion of traffic from scheduled to charter services.

With this affinity concept, passengers could belong to an organization with activities other than simply the arrangement of international transportation.

The impact of this change was significant. By 1975, the number of passengers travelling on international charters annually had surpassed 2 million. While Canada-Europe traffic grew to 961 thousand passengers, the most impressive growth was in the traffic to the United States and southern destinations such as the Caribbean sunspots (see Figure 2.14).

Between 1970 and 1975, charter service between Canada and the United States increased almost 400%, to about half a million passengers. Since 1982, this traffic has grown to an annual high of about 1.6 million passengers. Traffic between Canada and southern points has also shown significant increases, from about 74 thousand passengers in 1970 to 917 thousand in 1985.

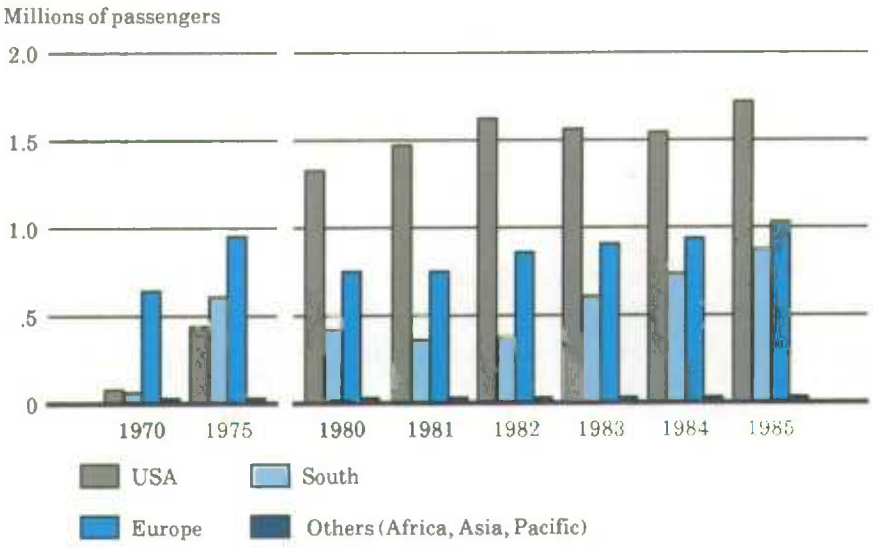
Most Canadians flying in the Canada-United States charter market are looking for a place in the sun (see Table 2.14). In 1985, of the 10 principal city-pairs, eight involved either Florida or Hawaii. The respective destinations of eastern and western Canadians are also evident. In the east, Canadians tend to head for Florida; in the west, they tend to go to Hawaii.

If on the other hand, Canadians are off to Europe, the first and foremost market is the United Kingdom (see Table 2.15). Of the top five city-pairs in 1985, four involved the United Kingdom. In 1970, these four city-pairs had accounted for almost half of the Canada-Europe charter traffic.

The Canada-Southern market has been even more vigorous lately. From 1983 to 1985, there was tremendous growth in Canada-Mexico travel, largely because of the devalued peso. Between 1982 and 1985, the Canada-Southern charter market grew by about 525 thousand passengers. As Table 2.16 indicates, almost 20% of this growth occurred in the top three Canada-Mexico city-pairs.

Contrary to the international scheduled services, Canadian carriers increased their market share, in terms of passengers, in the international charter services. In 1984, they transported 95% of all the international charter passengers in the transborder market and 83% in the Canada-other international markets. Comparable figures for 1975 were respectively, 84% and 69% (see Figure 2.15).

Figure 2.14 **International Charter Passengers, by World Area[5], 1970, 1975, 1980-1985**



Source: Statistics Canada: 51-207.

Table 2.14 **International Charter Passenger Traffic – Top Ten City-Pairs – Canada-United States, 1970, 1975, 1980-1985**

1985 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985
		Passengers (in thousands)							
1	Montréal - Fort Lauderdale	--	15	37	133	183	147	150	137
2	Toronto - Fort Lauderdale	--	26	49	56	87	101	123	135
3	Toronto - Tampa	--	8	110	132	115	124	112	135
4	Toronto - Las Vegas	5	22	15	35	45	42	52	117
5	Vancouver - Honolulu	7	39	126	111	165	128	98	110
6	Toronto - Orlando	1	1	82	102	94	108	98	108
7	Toronto - Clearwater/ St. Petersburg	-	49	70	80	81	96	96	103
8	Vancouver - Reno	-	15	86	101	105	102	103	92
9	Edmonton - Honolulu	4	42	67	50	56	53	60	56
10	Calgary - Honolulu	1	16	68	49	61	53	54	54
	Others	76	223	626	627	641	620	617	699
	Total**	95	458	1,334	1,478	1,634	1,574	1,562	1,746

** Some totals may not add due to rounding.
Source: Statistics Canada: 51-207.

Table 2.15 **International Charter Passenger Traffic – Top Five City-Pairs – Canada-Europe, 1970, 1975, 1980-1985**

1985 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985
		Passengers (in thousands)							
1	Toronto - London (England)	175	243	131	112	131	156	148	182
2	Montréal - Paris (France)	19	37	21	20	40	38	60	108
3	Toronto - Manchester (England)	22	57	73	76	77	83	79	77
4	Toronto - Glasgow (Scotland)	56	64	79	75	88	75	77	75
5	Vancouver - London (England)	60	88	55	55	52	85	62	65
	Others	320	471	404	427	489	480	521	556
	Total**	653	961	763	765	877	916	947	1,062

** Some totals may not add due to rounding.
Source: Statistics Canada: 51-207.

Table 2.16 **International Charter Passenger Traffic – Top Five City-Pairs – Canada-South, 1970, 1975, 1980-1985**

1985 Ranking	City-Pair	1970	1975	1980	1981	1982	1983	1984	1985
		Passengers (in thousands)							
1	Toronto - Acapulco (Mexico)	1	38	32	32	40	93	90	73
2	Toronto - Bridgetown (Barbados)	11	58	46	39	47	47	61	61
3	Montréal - Acapulco (Mexico)	1	22	50	34	26	61	82	61
4	Toronto - Montego Bay (Jamaica)	4	19	22	19	54	43	41	50
5	Toronto - Puerto Vallarta (Mexico)	1	2	12	11	15	36	43	39
	Others	56	482	268	226	210	330	429	633
	Total**	74	621	430	361	393	610	746	917

** Some totals may not add due to rounding.
Source: Statistics Canada: 51-207.

Figure 2.15 **Canadian and Foreign Carriers Market Shares, International Charter Services, 1975, 1984**

Figure 2.15.1 **Canada–United States, 1975, 1984**

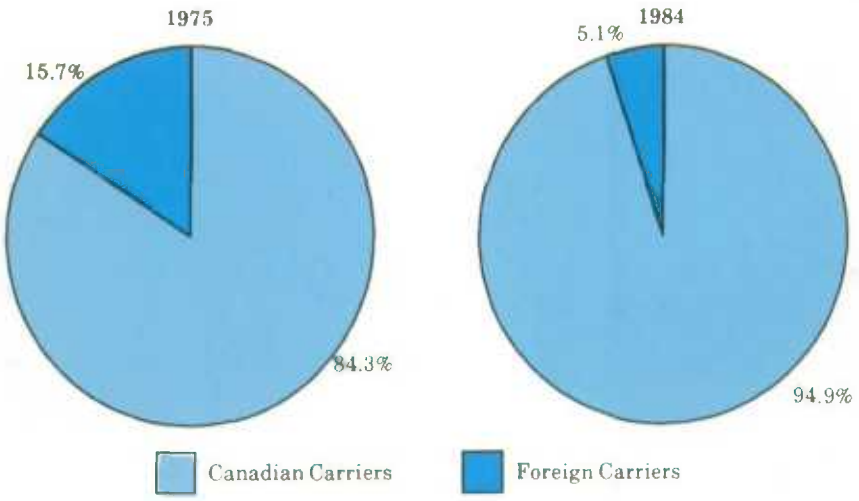
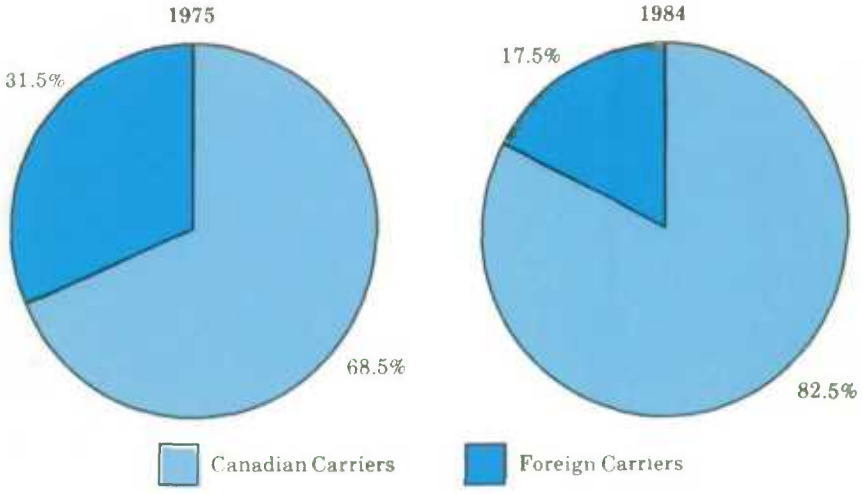


Figure 2.15.2 **Canada–Other International, 1975, 1984**



Source: Statistics Canada: 51-207.

Cargo Traffic

While passenger traffic is a major industry component, cargo traffic is also extremely important. Earlier in this chapter, discussion centred on the tremendous impetus the freight industry gave aviation in the early years. In this section, more recent data are presented.

From 1970 to 1985, the amount of goods transported within Canada went from 226 million kilograms to 429 million, more than an 89% increase. International cargo traffic enjoyed greater growth, going from 61 million kilograms in 1970 to 151 million in 1985 (see Table 2.17).

Just as with passenger services, goods can be carried on unit toll services or on charter flights. In both cases, the goods can supplement the passenger load, in the form of bellyhold cargo, or the whole aircraft can be dedicated to the carriage of goods.

Increasingly, a third combination is being used. Aircraft are being remade into combi-aircraft. As the name implies, these use movable bulkheads and sections of seats that enable the number of available passenger seats and the amount of cargo space to be quickly and easily changed, depending on demand.

There are many interesting patterns in the cargo business in Canada. As Table 2.17 shows, domestic carriage within Canada is by far the largest market for both unit toll and charter services. Between 1970 and 1985, 65 to 70% of goods carried on unit toll services were in the domestic sector, while for charter services, domestic carriage of goods accounted for more than 90%.

However the stronger growth has been in the unit toll services. In fact, during the 16-year period, cargo traffic for unit toll services increased by nearly 150%, while for the charter market, it grew by only 27%. In 1985, however, the charter market declined by 17% from its 1980 level.

The greater flexibility of charter services is largely due to the nature of the business. Charter carriers offer service to wherever the cargo is destined and they fly accordingly; the cargo determines the flight itinerary. With unit toll services, the routes or flight patterns are more rigid.

To a much greater degree, carriers will attempt to find cargo that is destined to already determined points on the flight path. For the unit toll services, growth has been strong in all areas, except for the southern market, which was relatively constant from 1970 to 1985.

Table 2.17 **Goods Carried by Area of Service[1], Canadian Air Carriers, 1970, 1975, 1980-1985**

	1970	1975	1980	1981	1982	1983	1984	1985[e]
Unit toll services								
Goods carried ('000 kg)								
Transborder	23 278	30 513	36 169	35 237	35 817	36 263	44 819	45 921
Transatlantic and Polar	22 375	32 858	44 745	45 186	44 876	50 981	64 321	67 428
Southern	6 649	8 574	7 423	7 123	6 717	5 720	6 521	6 616
Pacific and Orient	6 008	5 985	9 249	10 777	11 574	12 285	12 443	12 724
Other Foreign	..	..	..	..	..	..	8 031	8 822
Domestic	114 064	167 010	188 090	191 950	195 402	198 733	290 698	292 842
Goods tonne-kilometres ('000)								
Transborder	33 062	53 354	77 708	84 756	87 489	97 633	109 156	110 087
Transatlantic and Polar	142 488	196 421	289 488	309 220	314 629	361 362	445 487	451 233
Southern	26 829	34 054	26 432	27 155	27 711	26 082	33 621	35 727
Pacific and Orient	19 338	48 088	71 123	82 735	93 200	97 810	96 124	97 021
Other Foreign	–	–	–	–	–	–	6 440	7 010
Domestic	212 189	303 355	380 375	361 395	395 832	392 975	429 959	431 971
Charter services								
Goods carried ('000 kg)								
Transborder	778	2 583	680	2 467	3 140	4 937	6 442	6 624
Transatlantic and Polar	1 335	9 647	1 821	1 223	754	1 488	3 264	2 511
Southern	871	65	4 296	7 497	4 701	3 023	620	641
Pacific and Orient	17	117	–	–	–	–	–	–
Other Foreign	–	–	–	99	–	–	–	–
Domestic	112 424	152 230	168 543	150 191	124 656	132 568	134 415	136 528

Source: Statistics Canada: 51-002.

Discount Fares in Canada[8]

In the late 1970s, when domestic charters were granted the right to compete with scheduled services, discount excursion fares became a fact of industry life. The development of the surplus seat concept also played a strong role in the discounting of fares.[9]

Before this time, the range of air fares was rather limited. Apart from scheduled first class fares, and economy class, there were a small number of excursion fares, but these were available only during off-peak seasons.

The change in Canadian fare structures was also prompted by the passage of key American legislation in 1978, which introduced a whole new range of price levels and fare types to the U.S. market. The proximity of American airports to Canada's largest population centres pushed the Canadian industry to follow suit, or risk the loss of its traffic to the cheaper carriers south of the border.

The data collected from 1978 to 1982[10] show the strong growth of discount fares. For example, in 1978, over 14% of the output of two principal carriers, as measured by passenger-kilometres, was accounted for by the carriage of passengers on deep discount fares. By 1982, this proportion had increased to 37%.

In 1983, the new fare basis survey, whose data are presented here, was introduced. It showed that by 1985, 53% of all domestic passengers travelled on discount fares. This compares with 50% in 1984 and 45% in 1983. In terms of passenger-kilometres, discount carriage accounted for 60% of total volume in 1985, up from 58% in 1984. The comparable figure for 1983 was 55% (see Figure 2.16.1).

The survey shows interesting trends in discount carriage from a geographical perspective, namely the southern and northern sectors (see also Figure 2.17). The southern sector comprises cities within the 'deregulated' zone, as defined in the 1984 Canadian Air Policy. The northern sector refers to traffic within the region designated as the 'regulated' zone (i.e. the Northwest Territories, Yukon and the northern areas of some provinces) and between points in the regulated and 'deregulated' zones. In 1985, due to an amendment to the definition, traffic to and from The Pas and Flin Flon in Manitoba was included in the northern sector (see Figures 2.16.2 and 2.16.3).

In the southern sector, in 1985, 54% of passenger traffic (representing 61% of passenger-kilometres) was on discount fares. Comparable figures for 1983 and 1984 were 50% and 56% respectively. In contrast, for northern services, discount passengers amounted to 40% of the traffic in 1985, up from 35% in 1984. In terms of passenger-kilometres, discount carriage

for northern services increased from 37% in 1984 to 42% in 1985. In 1983, the corresponding figures were 31% for passengers and 34% for passenger-kilometres.

It should be noted that, from 1983 to 1985, 97% of all passengers who used discount fares were travelling to places in the southern sector. This percentage also applies to passenger-kilometres.

Distance is an important factor to consider in discount fare utilization. In 1985, discount carriage on long-haul (distances of 800 kilometres or more) services represented 64% of passenger volume and 65% of passenger-kilometres; this compares with 46% and 48% respectively, for short-haul (distances less than 800 kilometres). A similar pattern can be noted in 1983 (see Figures 2.16.4 and 2.16.5).

Figure 2.16 **Discount Fare Traffic in Canada, 1983-1985**

Figure 2.16.1 **Total Domestic**

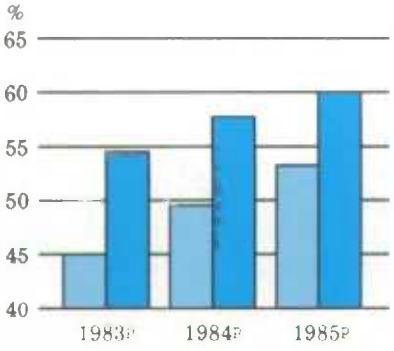


Figure 2.16.2 **Total Southern Services**

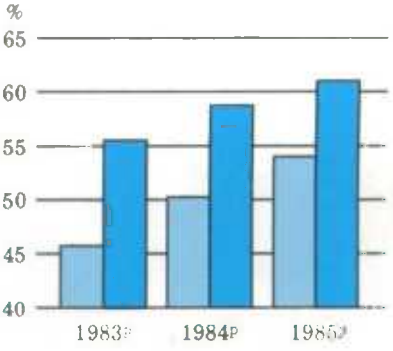


Figure 2.16.3 **Northern Services**

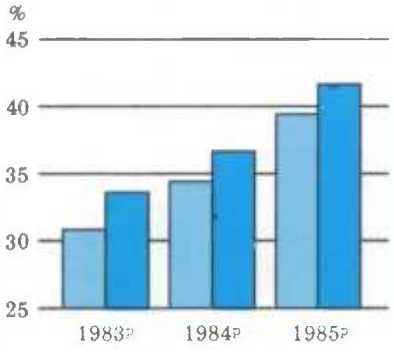


Figure 2.16.4 **Southern Short-Haul**

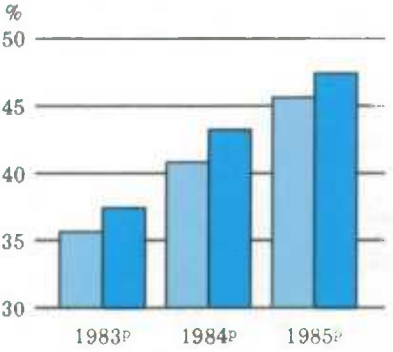
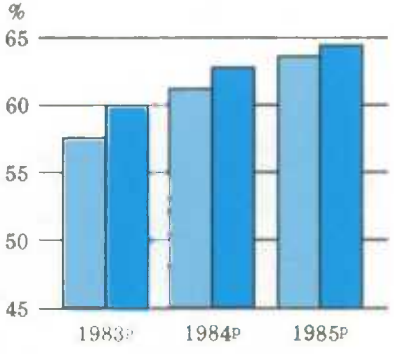
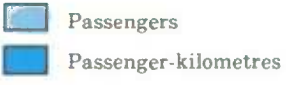


Figure 2.16.5 **Southern Long-Haul**





Source: Statistics Canada: 51-004.

Figure 2.17 **"Area of Operations" Map: Southern and Northern Sectors**[6]

Notes to Chapter II

Notes to Text

1. J.R.K. Main, "*Voyageurs of the Air*".
2. Frank Ellis, "*Canada's Flying Heritage*", pp. 199-202.
3. See also *Glossary of Terms* for a more detailed explanation.
4. Throughout this publication, all the financial figures are presented in current dollars. The exceptions to this are Figures 2.2.1 and 2.5.1, which have also been produced in constant (1961 basis) dollars.
5. The number of Dash 8 aircraft in the Canadian aircraft fleet will increase substantially in the near future as five Canadian carriers bought a large number of Dash 8s.
6. Mainline unit toll or scheduled services fall under Class 1 and 8 for domestic and international services, respectively. For other unit toll, domestic services fall under Class 2 and 3; the international equivalents are designated Class 9-2 and 9-3. These designations are used by the Canadian Transport Commission in its licensing procedures. Further details are provided in the *Glossary of Terms*.
7. It should be noted that, since 1984, Puerto Rico traffic has been included in the United States in these data.
8. John A. Greig and Emile Di Sanza, "*The Fare Basis Survey and Discount Air Fare Utilization in the Domestic Market*". This paper was presented at the Canadian Transportation Research Forum, Toronto, May 1985.
9. This technique involves the prediction of the number of seats on an aircraft which can be made available at a reduced price after a non-discretionary demand has been met.
10. Research Branch of the Canadian Transport Commission.

Notes on Tables

1. Excludes flying schools, provincial or state operations. Prior to 1938, data also include operations performed by foreign carriers in Canada.
2. 1931-1935, includes passengers and crew. For 1969 and for the period from 1981 to 1985, only revenue passengers were included.
3. From 1981 to 1985, estimates of passenger-kilometres for charter for Levels I-III are included.
4. From 1981 to 1985, estimates of cargo for charter operations are included.
5. Hours flown data include unit toll and charter services, specialty and flying training.
6. The method used to calculate Return on Investment is:
   Net Income (Loss) + Interest Expenses/Total Assets.
7. Prior to 1981, includes data reported by Level I-IV air carriers. After 1980, includes data reported by Level I-III air carriers.
8. The selection of aircraft types included in this table was based on 1970 and 1985 data. For weight groups that encompass several different aircraft types, only those with a relatively large number were chosen.
9. For a description of the weight group, refer to *Glossary of Terms*.
10. The international sector of operation includes only the outbound and inbound transborder or international traffic at Canadian airports.
11. For a definition of the areas of service, refer to *Glossary of Terms*.

Notes to Chapter II – Concluded

Notes on Figures

1. Consumer Price Indexes are based on Air Transportation. The Operating revenues and operating expenses are not expressed in constant dollars for the period 1955-1960 because the Consumer Price Index for the air transportation did not exist prior to 1961.
2. The calculation of the market shares was based on the traffic flow statistics. For Canadian carriers, the enplaned and deplaned passengers at Canadian airports were considered; for foreign carriers, arriving and departing passenger counts were used.
3. The data for mainline unit toll services (Level I carriers) represent airport activity (enplaned/deplaned passengers including connecting passengers).
4. The data for other unit toll services (local carriers) are for system originating and destined passengers and do not take into account activity resulting from intraline connections.
5. For a definition of the World Areas, refer to *Glossary of Terms*.
6. In November 1984, the definition of the North was amended by the inclusion of Flin Flon and The Pas, Manitoba. The changes are represented by the dotted line.

Chapter III

General Aviation

Introduction

General aviation in Canada includes all those aircraft which are not used in major commercial ventures. Accordingly, for the purpose of this chapter, general aviation is defined to include private aircraft, government-owned civil aircraft, flying clubs, and small commercially-used aircraft.

It is thus both flying for the fun of it, and flying for profit. Over the years it has evolved, on both counts, to become a major force within civil aviation. Thousands of Canadians view flying as a recreation, and daily they take to the skies in their gliders, air balloons, ultralights and small planes.

At the same time, this sector has its workhorses, involved in every activity from fighting fires to construction and logging. Indeed, general aviation has a strong commercial dimension, employing thousands of people and generating millions of dollars in annual revenues. As a general rule, though, firms in this sector are small, with gross revenues normally below $500 thousand annually.

To accommodate the divergent activities in general aviation: its fun aspect, and its commercial element, this chapter has been divided into three separate parts. In Part I, an overview of general aviation is presented, providing a handy synopsis of major trends for the years 1964 to 1985, and setting the context for Parts II and III. Part II then deals with commercial activities, and Part III with private activities, for the same time period. Part III also includes sections on government-owned aircraft and flying clubs in Canada.

Part I

An Overview

General aviation plays a major role in Canadian aviation. With approximately 16,500 aircraft registrations with a valid certificate of airworthiness in 1985, it far outnumbers the approximately 1,700 aircraft owned and operated by major airlines and large commercial ventures. While growth in this sector has been one of fairly steady upward movement over the years, there have been some exceptions.

In the recession of the early eighties, general aviation shared a similar fate with the large commercial ventures, experiencing a sudden drop in its aircraft movements and hours flown.

Trends in Aircraft Movements

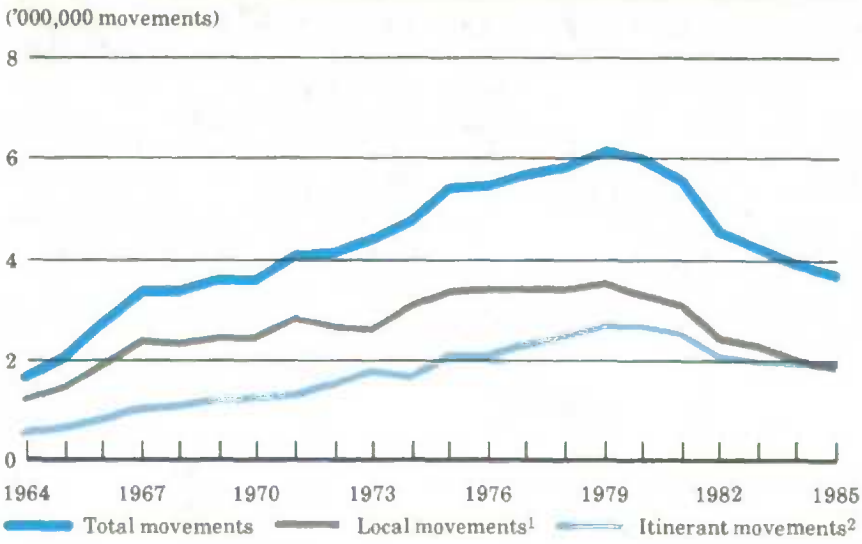
From 1964 to 1979[1], the number of aircraft movements at major Canadian airports which accommodate general aviation traffic grew steadily, with the exception of 1968 (see Figure 3.1). In 1964, landings and take-offs totalled just under 1.7 million. In 1979, they were over 6.1 million. Although these movements were augmented by a growth in airports surveyed[2], (from 33 in 1964 to 61 in 1979), they nonetheless represent a very sizeable increase over the 16-year period.

Immediately following this unprecedented growth, aircraft movements for private aviation and commercial general aviation experienced an equally dramatic slowdown. Indeed, from 1979 to 1985, aircraft movements decreased by about 39% to 3.7 million movements which is comparable to that of 1970 (see also Figure 3.1).

Also interesting are the differences in itinerant movements, where an aircraft leaves one point and proceeds to another, and local movements, when the aircraft returns to its point of departure, while remaining in the vicinity of the airport. Between 1964 and 1985, these two areas showed different patterns of growth. While itinerant movements at major Canadian airports grew steadily, except for 1974 and the early 1980s, local movements showed significant fluctuations. For example, there were about 530 thousand itinerant movements in 1964, and 1.9 million in 1985, a dramatic increase of 262%. With local movements, however, the 1985 level was about the same as that of 1966.

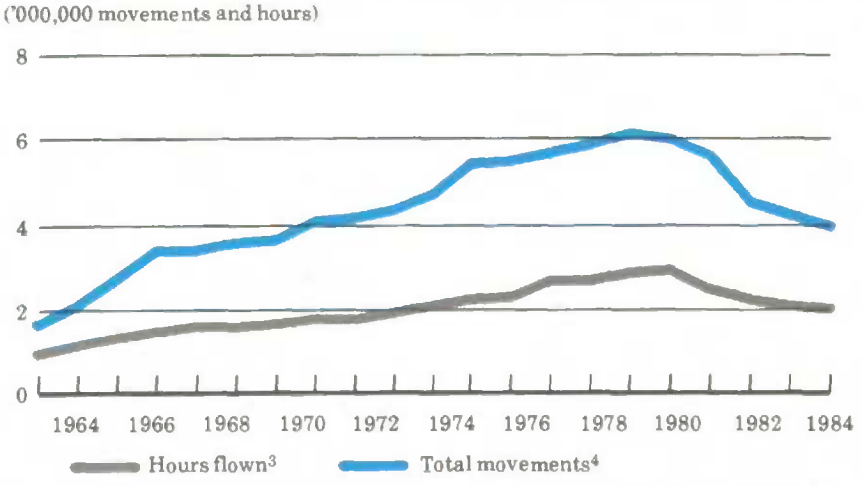
Another perspective on this: in the mid-1960s, the proportion of local movements to itinerant movements was about 2.3 to 1; by the early 1980s, this proportion had declined to 1.2 to 1.

Figure 3.1 General Aviation Aircraft Movements at Airports with Air Traffic Control Towers, by Class of Operation, 1964-1985



Source: Statistics Canada / Transport Canada: Annual Report TP 577.

Figure 3.2 General Aviation – Total Hours Flown and Aircraft Movements at Airports with Air Traffic Control Towers, 1964-1984



Sources: Statistics Canada/Transport Canada: Annual Reports TP 577 and TP 2468.
Files of the Royal Canadian Flying Clubs Association.
Statistics Canada: 51-002, 51-202, 51-206 and Internal Reports.

Trends in Hours Flown

The trends in hours flown follow approximately the same growth curve as for aircraft movements at tower-controlled airports (see Figure 3.2). From 1964 to 1979, there was an almost consistent upward growth, but with the advent of the 1980s, there was a decline. Indeed, with economic recession, sharp increases in fuel costs, and higher prices for aircraft and aircraft parts, flying activity dropped appreciably. Between 1980 and 1984, the number of hours flown dropped by 27% to approximately 2.1 million hours, while general aviation aircraft movements declined by nearly 35%.

Part II

Commercial General Aviation

Commercial general aviation can be broken down into three distinct kinds of activities. These are: charter, specialty, and flying training (also a specialty service).

Overall, the commercial component has experienced steady growth from 1960 to 1980. In 1960, the sector logged just over 265 thousand hours (see Table 3.1 and Figure 3.3). In 1970, it had more than doubled this with approximately 700 thousand hours and by 1980 it had logged over 1.3 million hours.

In the early 1980s, however, for reasons cited earlier in this chapter, there was an incredible drop in activity. In this time of recession, and a generally-slowed Canadian economy, activity hovered around the levels it had experienced in the early 1970s.

Table 3.1 **Commercial General Aviation[1] – Aircraft Hours Flown by Type of Operation, 1960-1984**

Year	Total hours flown	Charter	Specialty
1960	267,319	151,669	115,650
1961	268,392	158,376	110,016
1962	284,514	164,796	119,718
1963	309,201	183,116	126,085
1964	390,597	228,855	161,742
1965	482,514	274,147	208,367
1966	581,863	273,281	308,582
1967	591,929	269,714	322,215
1968	678,911	308,204	370,707
1969	685,485	301,676	383,809
1970	705,795	299,960	405,835
1971	833,404	379,120	454,289
1972	791,265	365,161	426,104
1973	872,597	380,220	492,377
1974	946,841	311,253	635,588
1975	966,413	332,452	633,962
1976	1,009,974	381,501	628,473
1977	1,085,103	436,085	649,018
1978	1,087,931	482,568	605,363
1979	1,266,676	589,051	677,625
1980	1,313,005	609,792	703,213
1981	904,840	406,440	498,400
1982	793,956	369,543	424,413
1983	716,988	374,148	342,840
1984	769,698	408,671	361,027

Sources: Statistics Canada: 51-002, 51-202 and 51-206.

Figure 3.3 Commercial General Aviation – Aircraft Hours Flown by Type of Operation, 1960-1984

Figure 3.3.1 Aircraft Hours Flown for Charter and Specialty Services, 1960-1984

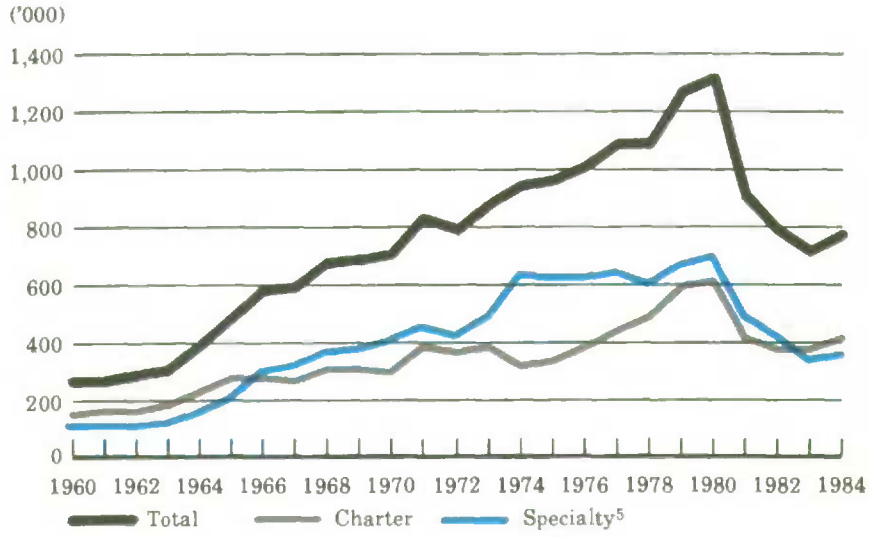
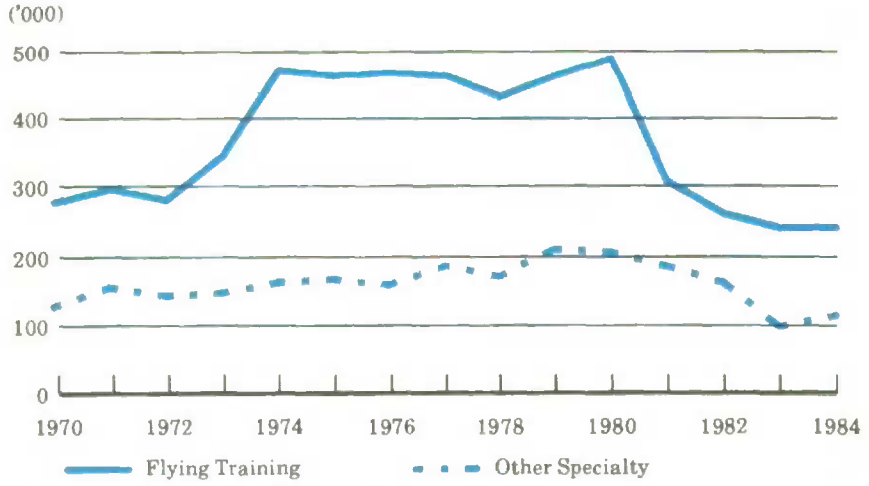


Figure 3.3.2 Aircraft Hours Flown for Flying Training and Other Specialty, 1970-1984



Sources: Statistics Canada: 51-002, 51-202 and 51-206.

Charter Operations[3]

In 1984, charter operations generated about $121.2 million, accounting for nearly 55% of all operating revenues generated by small commercial operations.

From 1960 to 1980, these services witnessed impressive growth, with the number of hours flown rising from about 150 thousand in 1960 to 600 thousand in 1980, an increase of over 300%. In 1974, largely due to sharp increases in fuel, flying activity dropped dramatically from a 1973 level of 380 thousand to the 1974 level of 311 thousand, a decrease of 18%. However, activity in 1984 declined by 33% from the 1980 level (see also Table 3.1 and Figure 3.3).

Flying Training and Other Specialty

Activity in the specialty services component also witnessed significant growth. From 1960 to 1980, the number of hours flown rose by more than 500%, going from about 115 thousand in 1960 to 700 thousand in 1980. However, between 1980 and 1984, the activity in these services declined by nearly 50%, again for the reasons cited above.

Since 65 to 70% of specialty flying is pilot training, it is useful to look at this activity separately.

In Canada, two groups are involved in flying training. These are specialty operators holding Class 7 flying training licences[4], and the flying clubs, holding Class 6 licences. Accordingly, most flying training is performed by Levels IV, V and VI carriers. These two groups operate commercial air services, although the flying clubs also provide services as non-profit organizations.[5]

While flying training experienced fairly steady growth from 1970 to 1980, the recession of the 1980s caused significant declines. Indeed, since 1980, this activity has recorded a drop of about 51% in the number of hours flown (see Figure 3.3).

Specialty services also include other activities as numerous as they are diversified. In agriculture, specialty services can include agricultural spraying, pest control and seeding.

In this category, planes are also used for construction work, water-bombing of forest fires, suppressing hail, inducing rain and assisting in fog dispersal. They can also be used to carry out aerial patrol and inspection, advertising, photography, geographical survey work and aerial prospecting.

Specialty services also include flying for the fun of it, (such as sightseeing), but for a fee; in this case an operator conducts a flight which

Public Archives Canada/PA-090161.

Specialty services include a variety of activities, from agricultural spraying to seeding and other forms of cultivation. In this photo, a de Havilland Twin Otter carries out waterbombing operations for the Ontario Department of Lands and Forests.

originates and terminates in the same place, for the sole purpose of the recreation of the passengers. While the other specialty activity has generally grown, with an increase of about 60% from 1970 to 1980, it too has experienced several ups and downs. These have come about primarily as a result of changes in market demand.

Financial Characteristics of Small Commercial Carriers[6]

In 1983, Level IV carriers throughout Canada averaged revenues of about $251 for every hour they flew, while carrying out charter services. It is informative to look at revenue/hour flown ratios across the country. The upper range occurs in Newfoundland, where carriers averaged $355 an hour; the lowest in Prince Edward Island and New Brunswick, where they averaged, together, $93.

By contrast, specialty services operated by these Level IV carriers experienced a somewhat different scale, ranging from $66 an hour in Manitoba to $256 in Quebec. The comparable figures for Level V carriers

Table 3.2 **Small Fixed-Wing Air Carriers, Levels IV and V Operating Statistics, 1983**

	Canada	Nfld.	P.E.I. & N.B.	N.S.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T. & N.W.T.
Level IV											
Number of carriers	370	11	14	8	61	112	36	30	27	47	24
Charter Services Revenue/ hour flown ($)	251	355	93	239	237	245	208	218	187	332	283
Specialty Services Revenue/ hour flown ($)	118	69	81	150	256	80	66	74	94	69	237
% Flying Training Hours / Total Specialty Hours	77	100	78	47	82	80	88	68	69	67	89
Level V											
Number of carriers	210	-	5	-	22	48	38	30	41	24	2
Specialty Services Revenue/ hour flown ($)	333	-	788	-	250	354	169	286	289	668	x
% Flying Training Hours / Total Specialty Hours	51	-	-	-	56	52	47	33	65	63	x

Source: Statistics Canada – Provincial and Regional Statistics for Small Fixed-Wing Air Carriers 1983.

are higher than those for Level IV carriers in all provinces, with the exception of Quebec (see Table 3.2).

For Level IV and V carriers, a large part of the action is in flying training. Indeed, for all provinces and territories, (except Nova Scotia for Level IV and Manitoba and Saskatchewan for Level V) more than 50% of the specialty hours flown were in flying training. The range varies rather widely from one province to another, with Nova Scotia at 47% and Newfoundland at 100% for the Level IV carriers. For Level V carriers, the range is from 33% in Saskatchewan to 65% in Alberta.

As for flying revenues earned per carrier, the 1983 average for Level IV was at $277 thousand. In Newfoundland, typical carriers registered the national highs, at an average $492 thousand, while carriers in Prince Edward Island and New Brunswick together registered the national lows, at an average $180 thousand.

For Level V carriers, the national average flying revenue per carrier was at $267 thousand, with a large range across the country. For example, British Columbia registered a high of $619 thousand, while Saskatchewan registered a low of $43 thousand. For Level IV carriers, unit toll services, (not a general aviation activity according to our definition) accounted for only 5% of flying revenues.

Charter services and specialty services which were defined as general aviation activities, accounted for respectively 74% and 21% of revenues. Again, the business is to be found in charter operations, as these accounted for most of the flying revenues generated by the Level IV carriers. In this regard, percentages ranged from 29% for Prince Edward Island and New Brunswick to 94% for Newfoundland (see Figure 3.4).

Figure 3.4 **Small Fixed-Wing Air Carriers – Levels IV and V, Average Flying Revenue[6] and Proportion of Revenue by Category of Services, 1983**

Figure 3.4.1 **Average Flying Revenue**

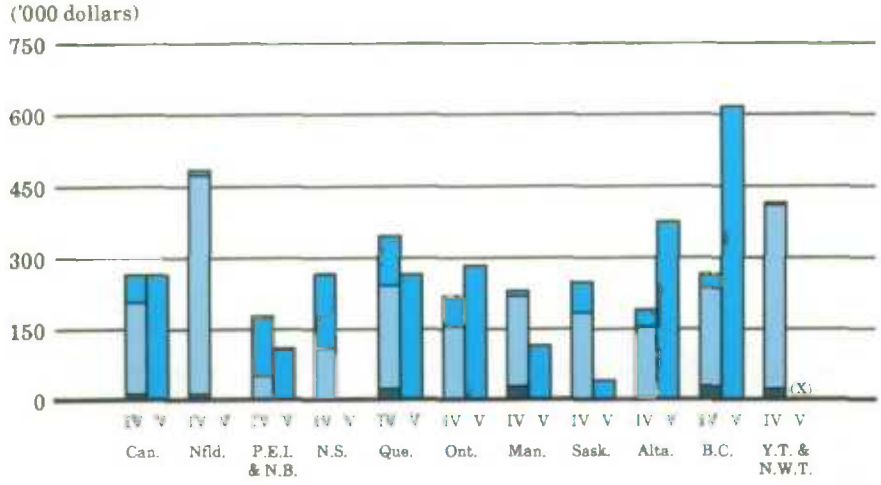
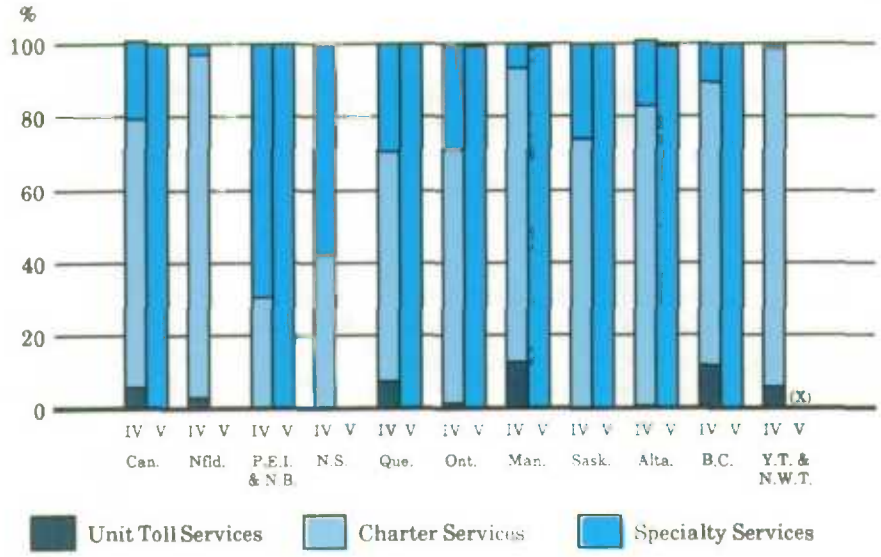


Figure 3.4.2 **Proportion of Revenue**



Source: Statistics Canada – Provincial and Regional Statistics for Small Fixed-Wing Air Carriers 1983.

In 1983, the national average aircraft operating expenses for small fixed-wing air carriers totalled $310 for every hour they flew. At the provincial and territorial level, the upper range occurs in Newfoundland where carriers' expenses averaged $534 an hour; the lowest in Saskatchewan, where they averaged $200 (see Figure 3.5). Of the $310 per hour spent by Levels IV and V carriers for their operations, 46% or $142 was allocated to aircraft operations and 26% or $82 to general services and administration.

At a disaggregated level, for both Level IV and V carriers, the most important component of the operating expenses is aircraft operations. Across Canada, percentages vary from 38% in Nova Scotia to 56% in the Yukon and Northwest Territories for Level IV carriers, and from 42% in both Quebec and Manitoba to 62% in Prince Edward Island and New Brunswick combined for Level V carriers. Expenses for general services and administration and flight equipment maintenance are also relatively high (see Figure 3.5).

Figure 3.5 Small Fixed-Wing Air Carriers – Levels IV and V, Average Operating Expenses and Proportion of Operating Expenses by Type of Expenses, 1983

Figure 3.5.1 Average Operating Expenses for Levels IV and V Aggregated

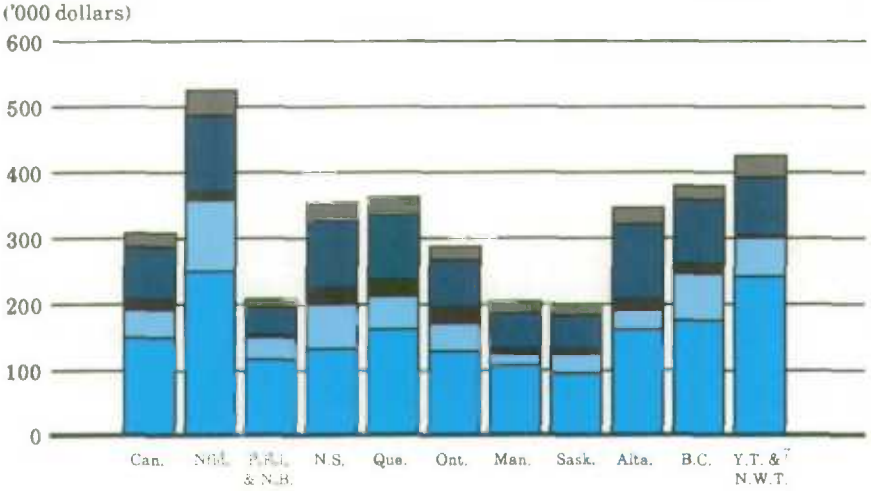


Figure 3.5.2 Proportion of Operating Expenses for Levels IV and V Aggregated

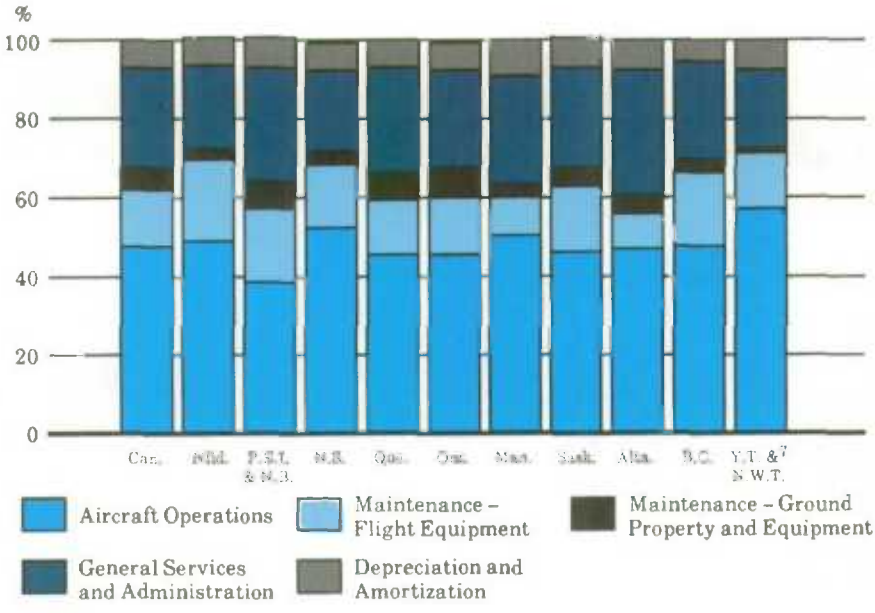


Figure 3.5 **Small Fixed-Wing Air Carriers – Levels IV and V, Average Operating Expenses and Proportion of Operating Expenses by Type of Expenses, 1983** – Concluded

Figure 3.5.3 **Average Operating Expenses for Levels IV and V**

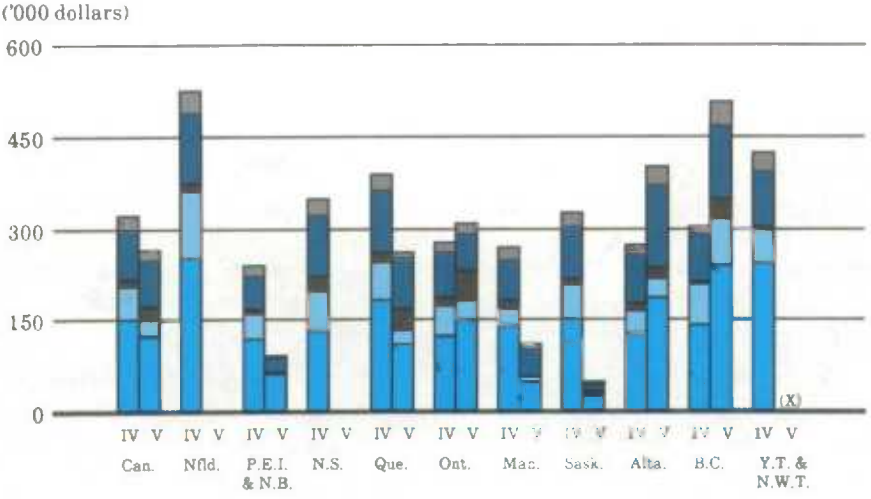
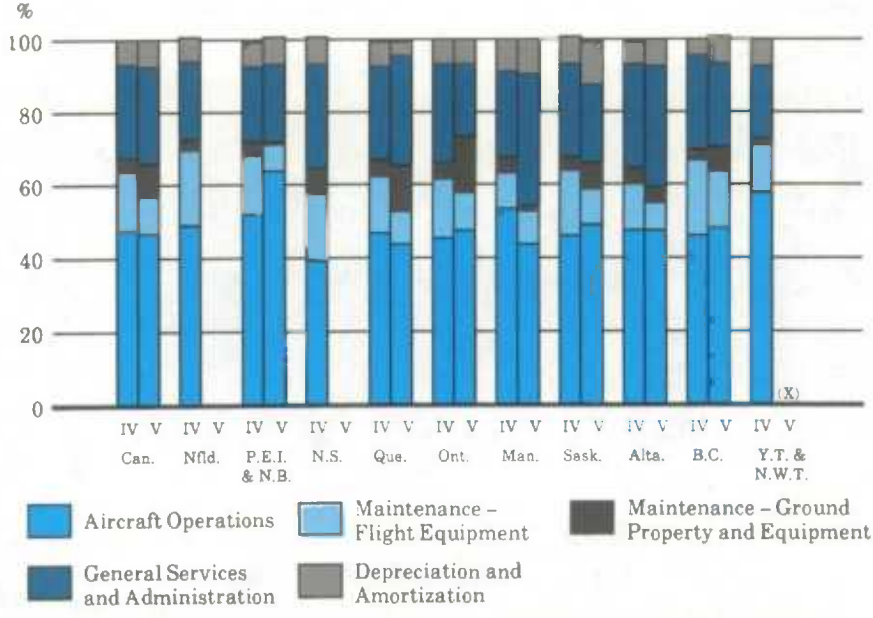


Figure 3.5.4 **Proportion of Operating Expenses for Levels IV and V**



Source: Statistics Canada – Provincial and Regional Statistics for Small Fixed-Wing Air Carriers 1983.

Part III

Private Aviation: From Leisure to Corporate Flying

Canadian skies have been host to a variety of strange flying machines over the last century and a half. In 1858, the first balloon in Canada to carry people was launched over the 'newly-created Capital City of Ottawa'.[7] Stimulated by this venture, Canadians began serious experiments with balloon flight, and 20 years later a Montrealer, Charles Pagé, launched a balloon that floated 75 kilometres.

Since then Canadians have been flying for pleasure in a variety of aircraft: ultralights, gliders, powered hang gliders, small aircraft and the ever-present hot air balloon. All these aircraft grouped together come under the rubric of 'private' aviation, for which the notion of payment is absent.

Thus, private aviation occupies a central role in the area of general aviation and while it includes pleasure craft like gliders and hot air balloons, for many it has come to be a pragmatic mainstay of business travel. Indeed, it represents the fastest growing category in all general aviation (see section on 'Private Flying'). (In this publication, private aviation is defined to also include flying clubs, airplanes that are owned by corporations, for their own travel needs, and government-owned aircraft.)

Ballooning on the Up...

Since the days of Charles Pagé, ballooning has found a secure niche in Canadian aviation. In 1985, the Canadian Civil Aircraft Register listed 219 balloons, both hot air and light-gas driven. The number has been steadily increasing since 1967, when there were only two balloons officially registered in Canada. (Refer to Chapter V: Table 5.3.)

Gliding is Soaring...

Gliding is also a popular sport in Canada, although a more recent phenomenon, dating only to the 1900s. In the last two decades, it has experienced steady, vigorous growth.

In 1967, there were 202 gliders on the register. Of these, 124 had a valid certificate of airworthiness, averaging annually about 72 hours of flying time. In 1983, there were 560 gliders on the register. Of these, 504 had a valid certificate of airworthiness, averaging annually about 82 hours.

Courtesy of Jan Bekooy

Hot air balloons, with their colourful designs, have become an increasingly common sight on the Canadian aviation scene.

Over the period 1967 to 1983, gliding registries increased by an impressive 177%, and flying activity by 363%.

It is important to note that, while the machines used in this sport are generally called gliders, the activity itself is referred to as soaring. Gliding is actually the art of maintaining horizontal flight in an aircraft, without the application of internally-produced thrust. Soaring, on the other hand, involves upward movement in rising air columns.

The first gliders in Canada were built at the turn of the century. These early prototypes looked more like kites than gliders.

In the 1930s, however, gliding came of age in Canada, with clubs springing up across the country, and especially in the Prairies, where the terrain was ideal for this sport. Using bamboo and muslin biplane rigs, these early aircraft were propelled by towing and controlled at first, by shifts in the pilot's centre of gravity.

In 1939, the first 'planned distance' flight was carried out by Evelyn Fletcher, of Lethbridge, Alberta. After climbing to a height of 1 220 metres, her glider travelled a distance of 16.7 kilometres.[8]

Despite the advent of World War II, the activities of these gliders did not wane. The vehicles used were inexpensive, and did not require valuable war materials for their construction. Indeed, many of the pilots ultimately sent overseas got their initial training on gliders.

In 1945, the Soaring Association of Canada was formed, as a non-profit organization 'to foster motorless flight in Canada'. Canadians have won international recognition for soaring, recording distances of over 1 000 kilometres, flying as high as 12 000 metres and as fast as 170 kilometres per hour.

Private Flying

Private flying is the use of an aircraft for non-commercial purposes. While it is largely recreational, it also includes flying activity on the part of corporations that use aircraft for business only. In other words, the owners use the aircraft in their own operations, without charge, for passengers or freight they might be carrying.

Of all general aviation activities, private flying is the fastest growing category, with growth especially remarkable since 1960. From 1960 to 1984, hours flown by private aircraft rose from 259 thousand to just over 1 million, a four-fold increase (see Table 3.3 and Figure 3.6).

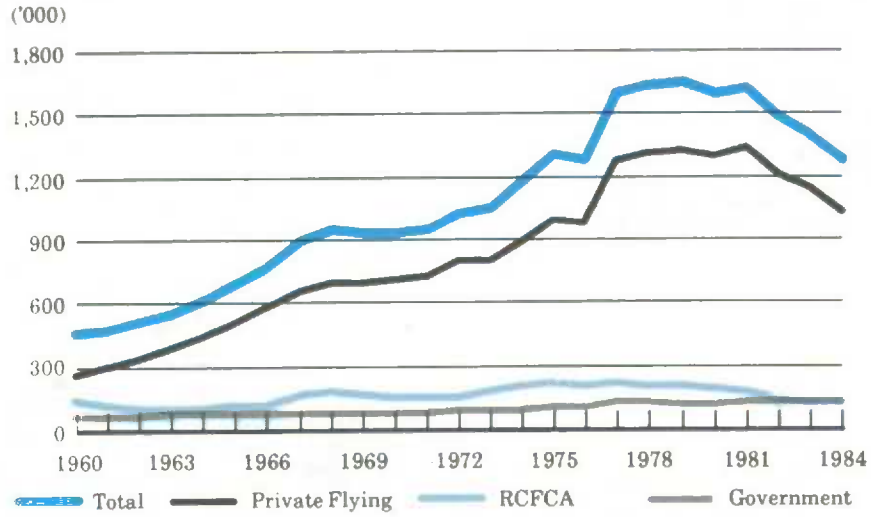
However, while there was growth in overall activity, such was not the case for flying activity for each individual aircraft. After the mid-1970s, there was a marked slowdown in the average hours flown per aircraft, a reflection of rising fuel costs, aircraft prices, and then in the 1980s, the world-wide downturn in economic activity. From 1979 to 1983, the private

Table 3.3 **Private Aviation – Aircraft Hours Flown by Type of Operation, 1960-1984**

Year	Total hours flown	Private flying	RCFCA[2]	Government flying
1960	445,257	258,650	123,407	63,200
1961	462,678	295,120	99,558	68,000
1962	496,745	336,899	89,446	70,400
1963	541,190	384,591	84,199	72,400
1964	600,841	441,518	87,723	71,600
1965	684,118	502,992	106,726	74,400
1966	757,411	584,886	98,925	73,600
1967	890,084	656,054	158,030	76,000
1968	938,293	698,201	166,772	73,320
1969	929,384	700,000	154,384	75,000
1970	928,939	710,000	142,939	76,000
1971	942,665	725,000	137,665	80,000
1972	1,015,241	791,218	136,682	87,341
1973	1,047,329	796,444	161,289	89,596
1974	1,170,918	889,334	190,956	90,628
1975	1,301,069	991,152	209,652	100,265
1976	1,278,369	976,671	196,434	105,264
1977	1,595,782	1,272,043	200,105	123,634
1978	1,628,086	1,309,860	193,059	125,167
1979	1,641,981	1,328,183	192,477	121,321
1980	1,600,942	1,300,427	181,616	118,899
1981	1,621,052	1,331,677	163,464	125,911
1982	1,474,628	1,212,206	129,309	133,113
1983	1,394,749	1,149,965	120,750	124,034
1984	1,273,918	1,027,218	116,465	130,235

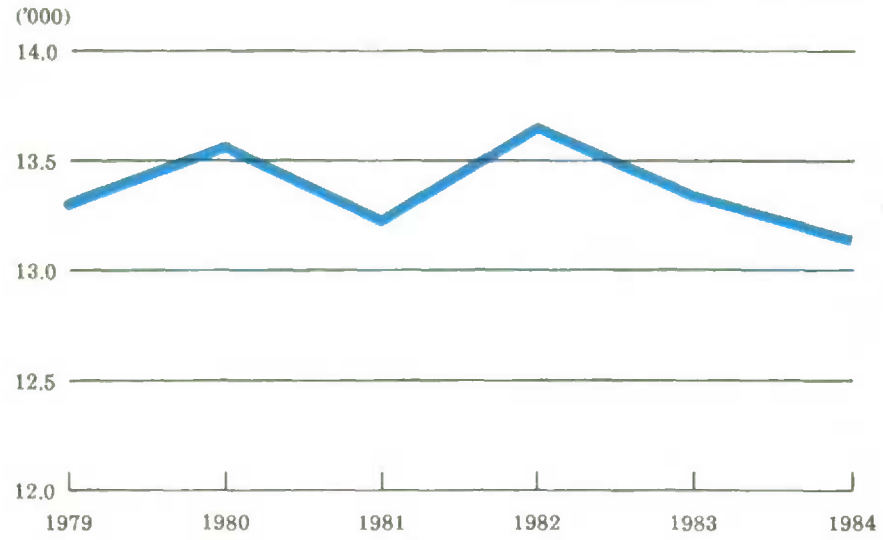
Sources: Statistics Canada/Transport Canada: Annual Report TP 2468, Statistics Canada Files and Files of the Royal Canadian Flying Clubs Association.

Figure 3.6 **Private Aviation – Aircraft Hours Flown by Type of Operation, 1960-1984**



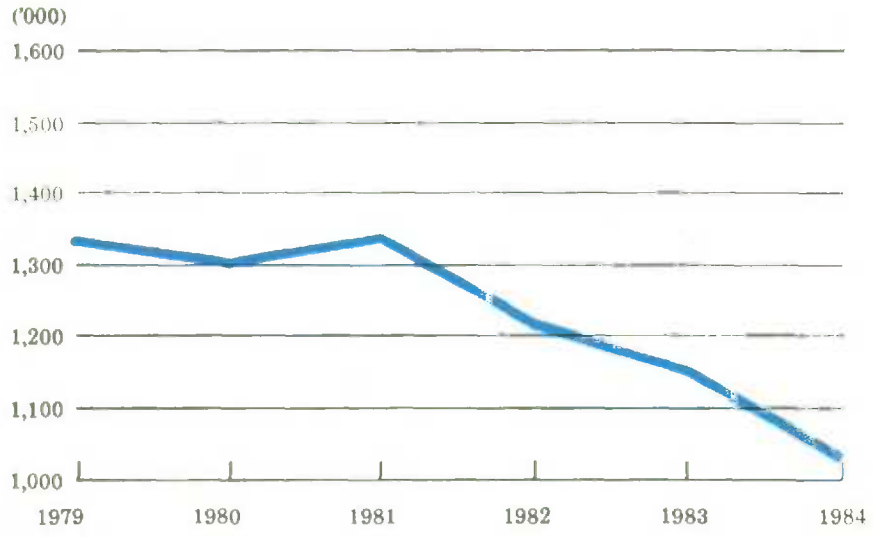
Sources: Statistics Canada / Transport Canada: Annual Report TP 2468, Statistics Canada Files and Files of the Royal Canadian Flying Clubs Association.

Figure 3.7 Private Flying – Number of Private Aircraft Registered in Canada, 1979-1984



Source: Statistics Canada / Transport Canada: Annual Report TP 2468.

Figure 3.8 Private Flying – Number of Hours Flown by Canadian Registered Private Aircraft, 1979-1984



Source: Statistics Canada / Transport Canada: Annual Report TP 2468.

Table 3.4 **Number and Hours Flown by Selected Canadian Registered Private Aircraft[3], 1980-1984**

Description	Desig-nator	1980		1981		1982		1983		1984	
		Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)
1) **Fixed-wing aircraft**											
Beech Musketeer	BE23	132	15	137	17	132	12	135	14	136	15
Cessna Centurion	C210	110	13	119	16	123	15	135	15	125	13
Cessna Commuter	C150	1,054	98	1,027	87	1,099	78	1,055	82	1,040	67
Cessna Skyhawk	C172	1,807	169	1,771	162	1,880	155	1,886	147	1,861	138
Cessna Skylane Super	C182	500	47	490	48	524	48	486	46	486	41
Cessna Skywagon	C185	510	68	518	70	528	63	523	62	526	59
Cessna Super Skywagon	C206	181	29	198	34	208	33	197	28	204	25
Cessna 170	C170	301	15	277	17	281	14	269	13	254	15
Cessna 180	C180	657	56	622	86	634	86	606	77	605	49
Champion Citabria Traveller	CH7	683	36	648	41	653	32	635	32	609	30
De Havilland Twin Otter	DH6	26	20	21	18	21	20	19	16	17	12
Gliders	GLDR	450	32	464	38	489	38	503	41	501	39
Homebuilt	HMBD	478	13	491	15	532	16	580	18	591	20
Mooney Mark 20	M020	203	19	198	20	207	14	211	19	208	17
Piper Cherokee	PA28	884	85	853	89	916	76	933	74	917	57
Piper Super Cub	PA18	375	26	344	31	362	33	362	28	342	20
Others		5,025	504	4,068	480	4,875	425	4,634	385	4,577	373
Sub-Total**		13,376	1,246	13,038	1,269	13,464	1,155	13,169	1,096	12,979	990
2) **Rotary-wing aircraft**											
Bell Jet Ranger	HB4	59	26	64	33	64	30	60	31	55	18
Others		121	29	114	29	114	26	91	23	95	20
Sub-Total**		180	55	178	62	178	57	151	54	150	38
Total**		13,556	1,300	13,216	1,332	13,642	1,212	13,320	1,150	13,129	1,027

** Some totals may not add due to rounding.
Source: Statistics Canada/Transport Canada: Annual Report TP 2468.

flying activity recorded a decrease of 13% in terms of annual flying activity. In 1979, aircraft averaged about 100 hours flown; in 1983, they averaged approximately 86 hours (see Figures 3.7 and 3.8).

In 1984, the most popular private aircraft, in terms of hours flown, were respectively the Cessna Skyhawk 172, the Cessna Series 150 and 152, and the Cessna Skywagon (see Table 3.4). These aircraft seat 4, 2, and 6 passengers, respectively.

Government-owned Civil Aircraft

Government aircraft are flown by either federal government agencies such as Transport Canada and the Royal Canadian Mounted Police (RCMP) or provincial government agencies. (Aircraft owned and operated by the Department of National Defence are not included.)

Generally, these aircraft are used for the transport of elected officials and dignitaries and for other government business. Some governments will also help victims of accidents or catastrophes, arranging special flights to ferry them to where help can be obtained. Others may carry out specialty flying services such as forest fire patrol, game management surveys, fisheries inspection and the like.

The number of aircraft in this category is small: 204 in 1960 and 294 in 1985. (Refer to Chapter V: Table 5.4.) In addition, and contrary to other categories in general aviation, the activities of state-owned aircraft have been quite stable over the years.

The Flying Club Movement

In Canada, the flying club movement was born of the urgent need to train Canadians as aircraft pilots and air engineers. Indeed, if Canada was to keep pace with post-war aviation, it had to have trained pilots, air engineers and good aviation facilities. In 1927, therefore, the federal government pushed forward a plan to establish a group of flying clubs across the country.

As incentives, free light aircraft and small cash grants were issued to any flying club that would pledge itself to provide an airfield, a flight instructor and an engineer. In 1929, the many clubs which sprang up as a result of this program, banded together to form the Canadian Flying Clubs Association (CFCA). Association records show that, in this inaugural year, its 23 member clubs flew 16,612 hours, had 900 students under instruction and graduated 138 pilots.[9]

During World War II, as part of the British Commonwealth Air Training Plan, 25 flying clubs undertook the management of a group of training schools, managing them so successfully, that at war's end, they volunteered a cash return to the Crown of $6 million. These flying clubs were a good source of pilots for the auxiliary squadrons formed during the war.

In 1944, the CFCA became the RCFCA, the "Royal Canadian Flying Clubs Association". (The prefix 'Royal' was granted in recognition of its good work in training pilots during the war.)

During the depression years, all member clubs together flew an average of 11,877 hours per year. After the war, annual hours averaged about 26 thousand, increasing to about 76 thousand hours annually in the 1950s.

From 1960 to 1969, the RCFCA steadily increased its activity, flying an annual average of about 117 thousand hours. This grew to an annual average of about 176 thousand in the 1970s. In the early 1980s, the flying

Transport Canada.

In spite of the hard times flying clubs endured in the early 1980s, they remain a major force in Canadian civil aviation.

clubs experienced hard times, as did the rest of both commercial and general aviation. From 1980 to 1985, the average annual hours flown by the Association dropped to about 139 thousand hours.

Today, the RCFCA is still an integral part of Canadian aviation. It is the representative, in Canada, for the Federation Aeronautique International, and is affiliated among others, with the Canadian Ballooning Association and the Soaring Association of Canada (see Table 3.5).

But, while the RCFCA continues to play an important role in private aviation and in flying training, it has now been joined by other organizations. Notably, commercial flying schools are now represented by the Flying Training Committee of the Air Transport Association of Canada, and these schools also graduate a large number of private pilots. In addition, many owners and pilots of private aircraft are now represented by the Canadian Owners and Pilots Association.

Table 3.5 **Royal Canadian Flying Clubs Association Operational Statistics, 1928-1985**[4]

Year	Number of clubs	Revenue hours flown	Private pilots graduated	Commercial pilots graduated
1928	17	8,124	..	..
1929	19	16,612	..	..
1930	18	14,686	..	..
1931	19	11,507	..	..
1932	21	10,701	..	..
1933	22	9,971	..	..
1934	22	10,581	..	..
1935	22	13,819	..	..
1948	43	19,422	..	..
1949	38	33,037	..	..
1950	34	38,785	601	..
1951	36	51,101	708	116
1952	36	50,017	794	156
1953	37	63,309	926	153
1954	36	62,827	1,002	97
1955	41	72,518	1,120	83
1956	43	90,344	1,336	133
1957	43	112,322	1,556	186
1958	47	109,686	1,597	148
1959	45	109,502	1,711	124
1960	44	123,407	1,792	116
1961	40	99,558	1,473	90
1962	39	89,446	1,141	58
1963	36	84,199	1,133	76
1964	38	87,723	1,117	83
1965	34	106,726	1,282	135
1966	37	98,925	990	181
1967	40	158,030	1,693	369
1968	41	166,772	1,738	339
1969	40	154,384	1,507	218
1970	39	142,939	1,186	204
1971	40	137,665	1,065	141
1972	39	136,682	1,225	185
1973	42	161,289	1,295	221
1974	39	190,956	1,496	266
1975	38	209,652	1,579	275
1976	37	196,434	1,182	193
1977	36	200,105	1,279	205
1978	33	193,059	1,209	244
1979	32	192,477	1,036	182
1980	30	181,616	1,000	257
1981	31	163,464	777	201
1982	33	129,309	680	147
1983	31	120,750	668	113
1984	32	116,465	578	85
1985	33	119,807	501	102

Source: RCFCA Archives, Monthly Statistical Reports.

Notes to Chapter III

Notes to Text

1. Although statistics for aircraft movements are available as far back as 1960, the initial year used in this publication is 1964, because the reporting was being standardized from 1960 to 1963.
2. The number of airports refers to airports equipped with Transport Canada air traffic control towers.
3. In Chapter II, definitions were presented for the various categories within which Canadian aircraft can fall. This section on charter services is concerned with Level IV carriers only. Like their larger commercial conterparts, charter services at this level involve the chartering of an aircraft and its crew to fly people or goods between two points.
4. Specialty services are performed under a Class 7 licence. This would include flying training services. (See also *Glossary of Terms* for a list of licence types available.)
5. It should be kept in mind that flying clubs are not necessarily affiliated with the Royal Canadian Flying Clubs Association (RCFCA). (For more information, see Part III of this chapter on the RCFCA.)
6. To establish provincial data bases, each carrier was allocated to a province or region, based on the location of its head office.
7. G.A. Fuller, J.A. Griffin, K.M. Molson "*125 Years of Canadian Aeronautics*": *A Chronology of 1840-1965*". (Willowdale: The Canadian Aviation Historical Society, 1983), p. 3.
8. Soaring Association of Canada.
9. RCFCA brochure, 1985.

Notes on Tables

1. Commercial General Aviation relates to Levels IV, V and VII operations, but excludes Royal Canadian Flying Clubs Association's activities.
2. The activities of flying clubs not affiliated to the Royal Canadian Flying Clubs Association (RCFCA) are included under commercial general aviation.
3. Includes private aircraft which flew 15,000 or more hours in 1983 and/or 1984 and possessed a valid certificate of airworthiness.
4. No data available for years 1936-1947.

Notes on Figures

1. Local movements include commercial local movements as well as general aviation, but the great majority of local movements are general aviation.
2. Itinerant movements do not include Unit Toll and Charter Operations of major airlines and of larger commercial ventures, Government - Military.
3. Includes commercial general aviation and private aviation.
4. Includes local and itinerant movements.
5. Prior to 1970, Level IV air carriers did not report flying training and other specialty separately.
6. Incidental air transport related revenue are not considered.
7. Due to confidentiality of statistics, the data for Yukon and Northwest Territories include only Level IV air carriers.

Chapter IV

Airports

A Historical Note on Canada's Airport Development

In the 10 years following McCurdy's first flight at Baddeck, Nova Scotia, aviators landed on everything from cow pastures and race tracks to exhibition grounds and golf courses.

For Canada's early air travellers, the experience of these landings and take-offs possibly afforded greater thrills than the experience of being air-borne.

As recently as the 1930s, the average airport runway was made of sod, clay or loam, and the terminal that went with it was usually not much more than a lean-to attached to a hangar.

Today, Canadian airports afford air travellers every possible amenity, and provide the airlines that operate from them an infrastructure for their overhaul shops, hangars and executive offices. With some international airports accommodating hundreds of take-offs and landings in a single day, the old loam landing strips have had to give way to mega-surfaces of smoothly paved runways.

It has been suggested that the airplane has defined the airport. As airplane technology has advanced, airports have had to adapt, trying to catch up to rapid developments in airplane technology. Nor has Canada been alone in this; it has been the international experience:

> "In surveying the history of the airport, there seems to be three constants: (first) the airport is a mutable form constantly under construction, no airport has ever called itself complete; (second) The "new" airport, even if hailed as ahead of its time, is soon congested or even out of date; (third) faced with new developments in aviation technology, the airport adapts accordingly to accommodate these developments: in short the airplane predicates the airport, and not the other way around."[1]

In the early 1900s however, there was little government interest in either airports or, for that matter, air travel. The federal government was promoting a national rail system, and viewed air transport as a possible competitor for the mail and passenger traffic needed to sustain the railway and other already existent transportation systems.

The first Canadian air policy, proclaimed with the passage of the Air Board Act in 1919, stated, quite unequivocally, that:

> "...the government should not provide the money, equipment and facilities necessary (to) provide aerodromes on the same basis as wharfs and harbour facilities."[2]

and further that:

> "Terminal landing grounds for every urban area must necessarily be provided by the inhabitants of that area."[3]

If the government did look favourably on the possibilities of air transport, it still thought of it as a very costly endeavour and one not likely to bring in good financial returns for a long time. The attitude in Canada, in the early 1900s, was: "Let's wait and see". In his "*History of Canadian Airports*", T.M. McGrath has pointed out that this policy had one positive result. It allowed the development of a strong commercial air service in Canada's north; one that, having developed independently of government assistance, was strong and self-sustaining.[4]

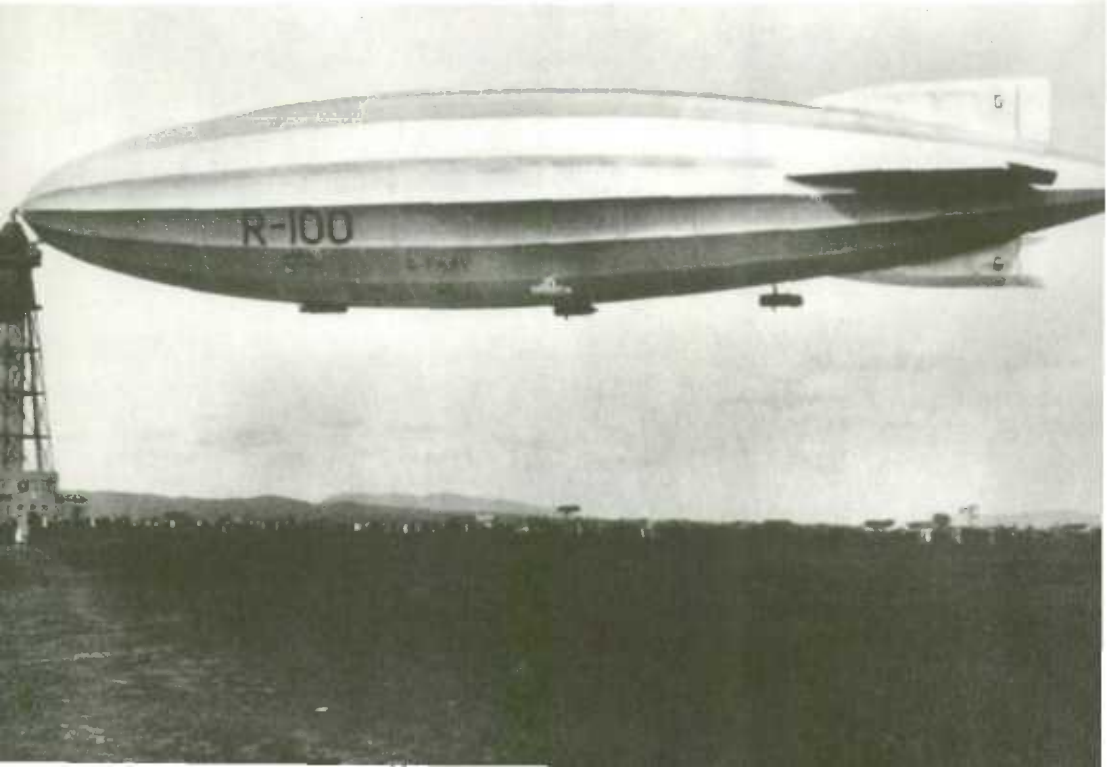
Eventually however, the government came to review its policy. The immediate signal for the change came in 1927 at the Imperial Conference in London. At this time, Canada's Prime Minister, William Lyon MacKenzie King, pledged Canada's involvement in a plan to improve communications between countries of the British Commonwealth.

As part of this plan, Canada promised to build an airport which could handle dirigible operations, and in the summer of 1927, St. Hubert in Quebec was selected as the site for this new airport.

The decision to fund a civil airport signalled a radical change in government policy towards air transport. In the same year, the government announced a scheme to encourage the establishment of flying clubs. Under this plan, if a group provided, among other things, a suitable piece of

In 1927, St. Hubert was selected as the site for a new airport which would handle dirigible operations. In this 1930 photo, an H.M. Airship R-100 is moored.

Public Archives Canada/PA-25020.



land and an instructor, the government would issue free light airplanes and cash grants. (See Chapter III: The Flying Club Movement.)

Then, in 1932, as part of an unemployment project, a string of airports went up across the country. Over the next four years, 50 airports were constructed at 100-mile intervals, with emergency landing fields at 30-mile intervals.

Any hesitation the government may have had with regard to funding airport construction disappeared with the advent of World War II. As a result of the British Commonwealth Air Training Plan (BCATP), 149 new airports came into existence and another 73 existing ones were expanded and improved.[5] (See also Chapter 1: World War II: 1939-1945.)

Following the war, the government worked to improve airports to accommodate the new, four-engine airplanes now coming into use. Capital grants and operating subsidies were provided to many communities to maintain their airports. By 1985, there were 1,255 licensed airports in Canada, of which 122 were operated by Transport Canada, 282 by municipalities, 639 by the private sector, 201 by provinces and 11 by other federal government departments and agencies (see Figure 4.1). Of the 1,255 licensed airports, 49% had a public licence and 51% a private licence. Tens of millions of dollars are provided each year by Transport Canada to support the operation of municipal and other airports, and to assist in establishing or improving municipal, local-commercial and other airports.

In 1985, the number of international, national and regional airports in Canada, as defined by Transport Canada, was respectively 8, 12 and 48. In 1985, the most important international airports, in terms of passengers handled, were Lester B. Pearson, Vancouver and Calgary, with respectively 15.8, 7.0 and 3.9 million passengers. The three busiest national airports were Montréal (Dorval), Ottawa and Regina respectively, with 5.5, 2.1 million and 639 thousand passengers. The leading regional airports were Edmonton Municipal, Thunder Bay and Kelowna with 903, 492, and 466 thousand passengers handled.

As a result of government involvement there has been a constant updating of facilities, as Canada's airports struggle to keep up with growth in passenger traffic, cargo movements and the changing technology of aircraft.

Since detailed airport data are only available from the beginning of the 1960s, analysis takes place within this time framework. As such, data are presented on both aircraft movements and passenger flows, since both are good indicators of airport activity. In addition, sections are presented

Figure 4.1 Licensed Airports in Canada, 1985[1]

Figure 4.1.1 Operators of Licensed Airports

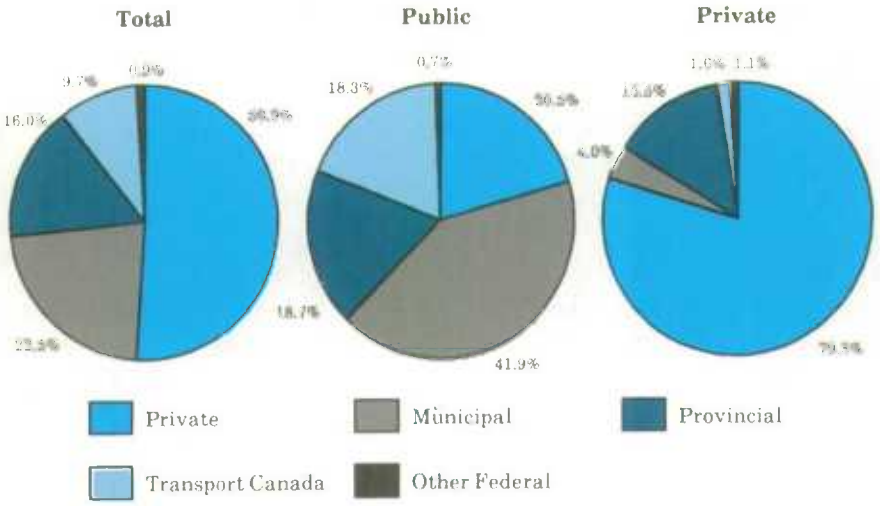
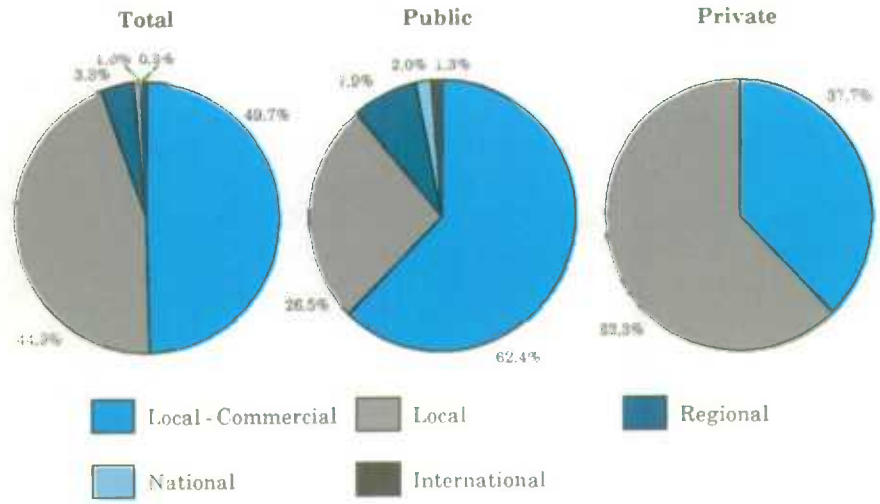


Figure 4.1.2 Classification of Licensed Airports



Source: Transport Canada.

on the 'Top 10' and 'Top 50' airports with analysis on market shares and transborder and international traffic.

The data show Canada's airports have experienced great traffic growth over the last 20 years, with two major exceptions. The first came with the fuel crisis in the 1970s, the second in the early 1980s, during the economic recession. In both periods, the entire industry experienced serious declines in aircraft movements. In the early 1980s, passenger volume also declined dramatically.

In 1984, some of the lost activity was recovered, as the economy began to rebound in the first quarter of 1983.

Nonetheless, the composite picture which emerges from the last 20 years shows Canada's airports to have evolved into busy, bustling places, crossroads for millions of passengers and increasingly, a vital cargo transport network. Canada's airports have come a long way from the loam runways of the early days.

In the early years, the country's airports were often not much more than farmland which doubled as an airfield. In this photo, taken in 1930, the Regina Flying Field is depicted.

RCAF/DND/Public Archives Canada/PA-139000.

The Toronto Harbour Commission.

A view of the terminal building erected at Toronto Island Airport at the end of the 1930s. After the war years, the Island Airport became a very popular civilian airport.

Montréal International Airport, Dorval. Old terminal building, 1941.

Public Archives Canada/NFB/SS1573.

Transport Canada

A nocturnal view of the new air terminal at Montréal International Airport. The terminal, which opened for operations in 1960, is today one of the busiest in Canada.

A view of the control tower at Whitehorse Airport, Yukon with two airplanes on the tarmac.

SSC - Photo Centre/Photo by Larry Weissman.

Aircraft Movements at Canada's Major Airports

From 1964 to 1980, itinerant aircraft movements increased steadily, at major airports with air traffic control towers, from just under 1 million to 3.7 million. (See Table 4.1.) The average annual increase over these years was 8.8%.

On the other hand, growth in local movements, has suffered a number of set-backs. In the 1960s, the federal government eliminated the subsidy it had paid for students at flying clubs, and in the early 1970s, with fuel scarcities and consequent hikes in fuel prices, there were further declines in activity. The economic recession of the early 1980s served as a further set-back.

Table 4.1 **Aircraft Movements at Airports with Air Traffic Control Towers, 1964-1985**

Year	Number of airports	Number of movements by type of operation			
		Total movements	Itinerant	Local	Simulated approaches[1]
		Number of movements (in thousands)			
1964	33	2,289	989	1,211	89
1965	33	2,689	1,114	1,483	92
1966	33	3,317	1,320	1,893	104
1967	39	4,038	1,611	2,313	114
1968	42	4,049	1,668	2,266	115
1969	46	4,326	1,821	2,381	124
1970	47	4,376	1,890	2,374	112
1971	53	4,895	2,000	2,736	159
1972	55	4,945	2,235	2,710	–
1973	56	5,254	2,587	2,667	–
1974	57	5,693	2,540	3,153	–
1975	60	6,398	2,994	3,404	–
1976	60	6,487	3,038	3,449	–
1977	59	6,689	3,228	3,461	–
1978	60	6,862	3,408	3,454	–
1979	61	7,201	3,645	3,556	–
1980	61	7,065	3,697	3,368	–
1981	60	6,701	3,569	3,132	–
1982	60	5,590	3,067	2,523	–
1983	61	5,272	2,912	2,360	–
1984	61	5,067	2,966	2,101	–
1985	61	4,938	3,031	1,907	–

Source: Statistics Canada/Transport Canada: Annual Report TP 577.[2]

The result has been without precedent in the history of civil aviation in Canada. Whereas in 1964, there were approximately 1.3 million local movements, and in 1979, 3.6 million, by 1985, there were 1.9 million.

All airports were affected, the hardest hit being those with a large volume of general aviation activity.[6] For instance, at St. Hubert near Montréal, for many years one of the busiest airports in Canada, local aircraft movements decreased from approximately 180 thousand in 1980 to 105 thousand in 1985. At Toronto Island Airport, local movements plummeted from 144 thousand in 1980 to 86 thousand in 1985. In the Prairies, declines were even more severe. At St. Andrews Airport, near Winnipeg, local movements fell from 171 thousand in 1980 to 72 thousand in 1985. On the west coast, Pitt Meadows had lost 78% of its 1980 traffic by 1985 (see Table 4.2).

Similarly, the number of itinerant movements at all airports were affected,[7] although not as severely. Collectively their recorded landings and take-offs dropped from 3.7 million in 1980 to 3 million in 1985. From 1980 to 1985, 22 of the 61 airports surveyed recorded decreases in excess of 30%. The most affected were Fort St. John, British Columbia, Grande Prairie, Alberta, Pitt Meadows, British Columbia and St. Andrews, Manitoba all of which saw their movements drop by about 50% (see Table 4.3).

Of the five busiest airports, in terms of itinerant movements, Lester B. Pearson International, formerly Toronto International, reported increased activity (13.2%) in 1985 compared to 1980. The international airports of Vancouver and Montréal (Dorval), ranked second and fourth, both experiencing a decrease of about 12%. Calgary International the third-busiest airport in 1985 (fourth in 1980) recorded a decline of 15%, while movements at Edmonton Municipal declined by 33%.

In 1984, itinerant movements began to rise (nearly 2% over 1983), and this growth continued in 1985. Partly, this was due to a greater availability of attractive fares, and partly to increased frequency of service.[8]

Table 4.2 Local Aircraft Movements at Airports with Air Traffic Control Towers, 1965, 1970, 1975, 1980-1985

Airports	1965	1970	1975	1980	1981	1982	1983	1984	1985
	Number of movements (in thousands)								
Abbotsford, B.C.	55	70	104	96	105	65	53	49	54
Baie Comeau, Que.	6	10	12	10	6	11	13	12	6
Boundary Bay, B.C.	..	..	..	..	..	..	25	59	62
Brandon, Man.	..	35	90	43	40	37	25	24	18
Buttonville, Ont.	..	156	149	147	136	139	135	108	80
Calgary International, Alta.	96	125	59	51	45	41	40	44	35
Castlegar, B.C.	..	..	..	26	26	20	15	11	13
Charlottetown, P.E.I.	..	..	19	14	7	15	15	12	6
Edmonton International, Alta.	11	32	48	11	10	14	13	12	15
Edmonton Municipal, Alta.	107	103	136	7	10	5	4	4	6
Fort McMurray, Alta.	..	..	..	11	20	23	18	19	20
Fort St. John, B.C.	26	5	10	19	23	11	15	13	10
Fredericton, N.B.	28	19	39	56	46	28	29	26	24
Gander International, Nfld.	18	42	9	7	6	13	5	6	9
Goose Bay, Nfld.	34	17	2	6	7	7	8	9	11
Grande Prairie, Alta.	..	..	14	24	28	13	15	15	12
Halifax International, N.S.	18	34	37	28	31	25	14	13	10
Hamilton City, Ont.	..	132	140	141	123	110	85	77	69
Kamloops, B.C.	..	21	22	44	39	28	29	23	17
Kelowna, B.C.	..	..	30	31	35	17	16	12	13
Langley, B.C.	..	..	136	140	114	80	74	62	69
Lester B. Pearson Int., Ont.	39	44	10	5	2	4	3	4	1
Lethbridge, Alta.	16	28	37	24	29	21	24	25	17
London, Ont.	42	66	70	82	66	68	83	69	41
Mirabel International, Que.	..	..	..	12	14	14	12	15	12
Moncton, N.B.	39	62	83	87	70	47	51	44	39
Montréal International, Que.	104	99	5	2	1	1	1	1	1
North Bay, Ont.	11	38	55	59	51	60	69	63	47
Oshawa, Ont.	..	67	67	93	75	66	64	64	47
Ottawa International, Ont.	105	112	131	91	86	65	53	52	50
Penticton, B.C.	..	20	37	37	24	17	13	9	11
Pitt Meadows, B.C.	..	107	198	209	182	104	78	62	45
Prince George, B.C.	10	19	40	41	28	22	17	19	22
Québec, Que.	59	55	80	50	56	43	36	33	38
Regina, Sask.	37	54	83	53	55	38	41	40	26
Saint John, N.B.	14	8	28	26	22	15	14	11	13
Saskatoon, Sask.	48	38	85	71	64	47	44	43	43
Sault Ste. Marie, Ont.	..	11	42	31	28	31	28	27	25
Sept-Îles, Que.	11	9	12	22	22	15	7	3	4
Springbank, Alta.	..	56	154	171	171	122	97	86	90
St. Andrews, Man.	..	97	158	171	155	105	93	74	72
St. Catharines, Ont.	..	..	38	72	61	51	53	40	40
St. Honoré, Que.	..	..	56	80	81	63	64	63	65
St. Hubert, Que.	..	228	197	183	176	165	153	112	105
St. Jean, Que.	..	20	62	44	42	34	30	28	30
St. John's, Nfld.	7	18	12	36	39	28	24	16	16
Sudbury, Ont.	..	..	39	39	33	36	65	48	27
Sydney, N.S.	3	4	9	8	6	1	2	2	1
Thompson, Man.	..	..	16	11	13	9	10	12	14
Thunder Bay, Ont.	47	27	56	60	64	69	66	50	52
Toronto Island, Ont.	168	136	118	144	154	142	132	90	86
Val D'Or, Que.	5	10	8	11	13	8	7	3	1
Vancouver Harbour, B.C.	..	..	..	1	1	--	--	--	2
Vancouver International, B.C.	15	17	5	--	--	--	--	–	–
Victoria International, B.C.	45	57	95	80	84	63	62	61	53
Villeneuve, Alta.	..	..	..	122	100	85	71	65	66
Waterloo-Wellington, Ont.	..	53	69	87	69	56	49	52	47
Whitehorse, Y.T.	5	48	32	45	37	18	14	17	19
Windsor, Ont.	32	52	51	41	39	37	30	24	20
Winnipeg International, Man.	124	40	34	33	36	31	34	39	45
Yellowknife, N.W.T.	..	..	21	23	24	18	20	21	15

Table 4.3 Itinerant Aircraft Movements at Airports with Air Traffic Control Towers, 1965, 1970, 1975, 1980-1985

Airports	1965	1970	1975	1980	1981	1982	1983	1984	1985
	Number of movements (in thousands)								
Abbotsford, B.C.	25	41	57	67	72	50	44	40	45
Baie Comeau, Que.	10	17	22	23	22	18	18	19	16
Boundary Bay, B.C.	..	..	..	..	..	..	13	37	42
Brandon, Man.	6	15	34	21	20	18	16	16	16
Buttonville, Ont.	..	36	73	69	64	60	61	61	60
Calgary International, Alta.	67	73	118	185	188	158	148	151	157
Castlegar, B.C.	..	..	8	15	14	13	11	13	13
Charlottetown, P.E.I.	..	..	19	17	14	15	15	16	15
Edmonton International, Alta.	16	27	59	89	85	67	62	64	65
Edmonton Municipal, Alta.	59	81	130	188	176	140	128	126	126
Fort McMurray, Alta.	..	..	..	36	42	38	33	39	39
Fort St. John, B.C.	16	14	21	56	48	34	25	25	25
Fredericton, N.B.	18	25	31	33	32	27	25	28	24
Gander International, Nfld.	19	21	26	25	25	24	22	24	26
Goose Bay, Nfld.	..	..	..	24	26	27	28	29	32
Grande Prairie, Alta.	..	..	19	53	44	33	26	26	25
Halifax International, N.S.	29	38	41	56	57	55	47	55	56
Hamilton City, Ont.	1	39	63	66	54	49	41	40	39
Kamloops, B.C.	6	28	36	42	42	33	31	28	27
Kelowna, B.C.	..	..	31	40	40	32	29	28	31
Langley, B.C.	..	..	56	64	60	42	41	36	32
Lester B. Pearson Int., Ont.	100	177	229	250	246	235	235	253	283
Lethbridge, Alta.	8	15	24	26	28	25	21	22	21
London, Ont.	25	38	52	62	55	48	48	52	50
Mirabel International, Que.	..	..	4	38	31	29	34	36	41
Moncton, N.B.	23	28	33	46	45	36	35	33	33
Montréal International, Que.	107	152	188	173	168	156	149	156	152
North Bay, Ont.	12	28	31	41	37	38	32	33	32
Oshawa, Ont.	..	25	40	43	39	33	34	36	36
Ottawa International, Ont.	63	89	77	118	114	108	109	112	115
Penticton, B.C.	6	17	24	29	27	21	19	19	18
Pitt Meadows, B.C.	7	48	77	71	69	51	45	40	34
Prince George, B.C.	13	19	24	49	49	37	33	31	31
Québec, Que.	40	55	78	90	90	83	74	80	78
Regina, Sask.	29	33	54	62	65	57	55	54	51
Saint John, N.B.	16	16	26	22	20	19	17	17	19
Saskatoon, Sask.	20	31	57	67	69	56	54	57	57
Sault Ste. Marie, Ont.	..	8	22	28	27	23	23	23	24
Sept-Îles, Que.	14	23	34	44	46	39	35	36	27
Springbank, Alta.	..	12	50	57	61	48	41	35	36
St. Andrews, Man.	--	22	42	53	48	35	29	26	26
St. Catharines, Ont.	..	..	23	31	29	24	23	20	19
St. Honoré, Que.	..	..	26	24	24	18	19	21	23
St. Hubert, Que.	..	87	96	107	88	80	82	67	64
St. Jean, Que.	..	10	31	32	33	19	16	16	19
St. John's, Nfld.	8	12	17	30	33	29	28	28	31
Sudbury, Ont.	..	..	28	31	31	27	26	27	28
Sydney, N.S.	8	9	14	12	11	9	8	8	9
Thompson, Man.	..	..	35	26	28	26	25	28	31
Thunder Bay, Ont.	20	20	35	47	47	44	43	46	50
Toronto Island, Ont.	42	54	48	51	61	66	63	61	65
Val D'Or, Que.	..	..	16	25	25	20	17	14	14
Vancouver Harbour, B.C.	..	..	..	51	42	28	30	31	30
Vancouver International, B.C.	85	133	198	268	263	227	223	219	236
Victoria International, B.C.	32	51	91	100	103	95	94	103	106
Villeneuve, Alta.	..	..	..	33	31	27	24	22	21
Waterloo-Wellington, Ont.	..	28	36	46	35	30	28	28	26
Whitehorse, Y.T.	9	23	24	38	38	28	24	26	24
Windsor, Ont.	18	26	31	31	27	23	22	22	27
Winnipeg International, Man.	75	118	114	115	118	104	96	98	103
Yellowknife, N.W.T.	..	..	31	37	42	34	32	32	32

Itinerant Movements...

By Sector

While itinerant movements nearly doubled between 1970 and 1980 (see Table 4.1), much of the increase involved domestic movements, which account for roughly 90% of all itinerant movements. During the 1970s, domestic movements rose from just under 1.7 million to about 3.4 million, an increase of 102%. Over this same period, transborder (Canada-United States) and other international movements increased by 53% and 18% respectively (see Figure 4.2).

In the early 1980s, domestic movements were hit the hardest by the recession, decreasing from 3.4 million in 1980 to 2.6 million in 1983. In 1985, the domestic sector showed a small recovery over 1984. Collectively, transborder and other international movements actually increased by 9.4% from 1980 to 1985, after experiencing an initial drop, in response to the recession.

By Type of Operation

In 1980, itinerant movements consisted of 46% of all commercial 'general' aviation movements, (small charters and specialty), but only about 25% of unit toll and charter movements. In 1985, commercial 'general' aviation movements accounted for only 37% of total movements (see also Figure 4.2). This decline mostly affected the domestic sector.

The recession had a sustained impact on commercial general aviation movements. In the 1970s, for example, there had been a steady growth in the activities of all commercial operators, and especially the smaller carriers. For example, from 1970 to 1980, there was a rise of 137% in itinerant movements logged by these smaller carriers, from 718 thousand to just over 1.7 million. In 1985, the activities hovered around the 1975 level, with 1.1 million movements. From the recession onward, movements by larger carriers dropped slightly. By 1985, they had recovered and had even surpassed their peak year of 1980.

Private itinerant movements, which had increased by just under 97% from 1970 to 1980, also experienced a continuous decrease coincident with the economic slowdown. By 1984, the number of private movements had fallen to just over 735 thousand, for a nearly 20% decrease from the 1980 level; by 1985, there were 718 thousand.

For government aircraft, itinerant movements have increased at a slow but steady pace throughout the period from 1965 to 1985.

Figure 4.2 **Itinerant Movements by Sector, Type of Operation and Power Plant, 1965, 1970, 1975, 1980-1985**

Figure 4.2.1 **Itinerant Movements by Sector, 1970, 1980, 1985**

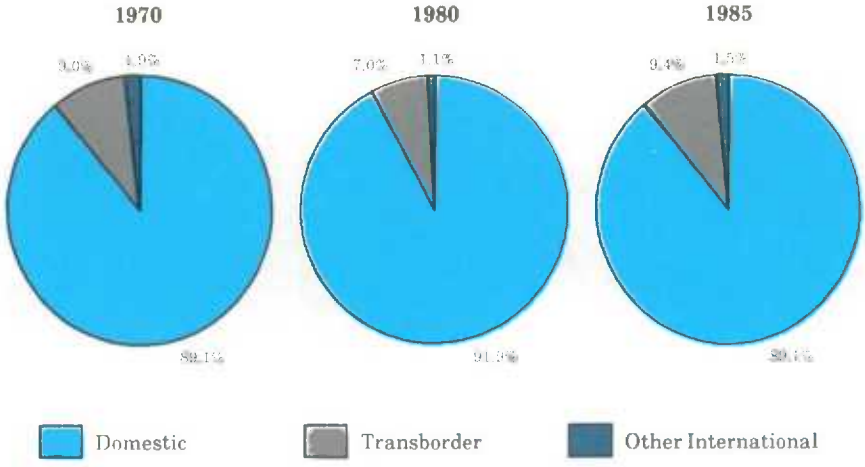


Figure 4.2.2 **Itinerant Movements by Type of Operation, 1965, 1970, 1975, 1980-1985**

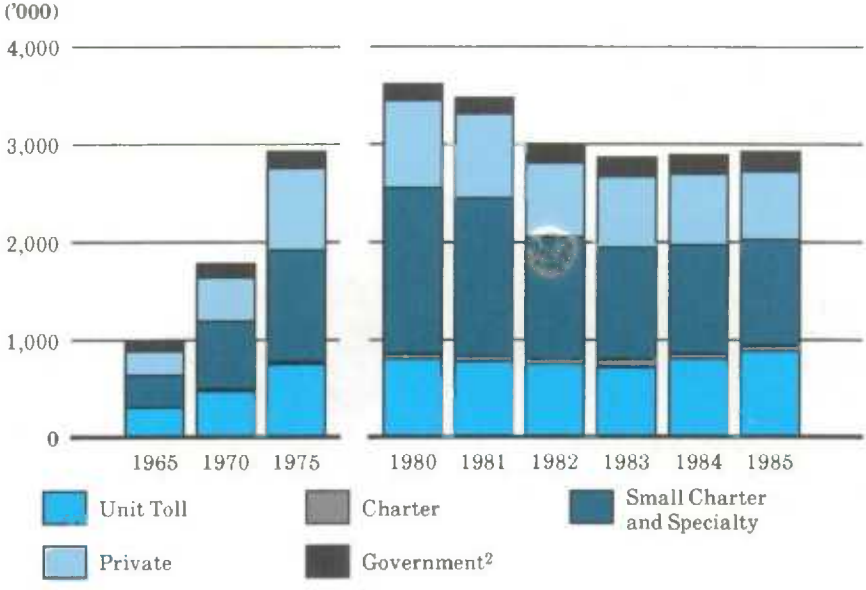
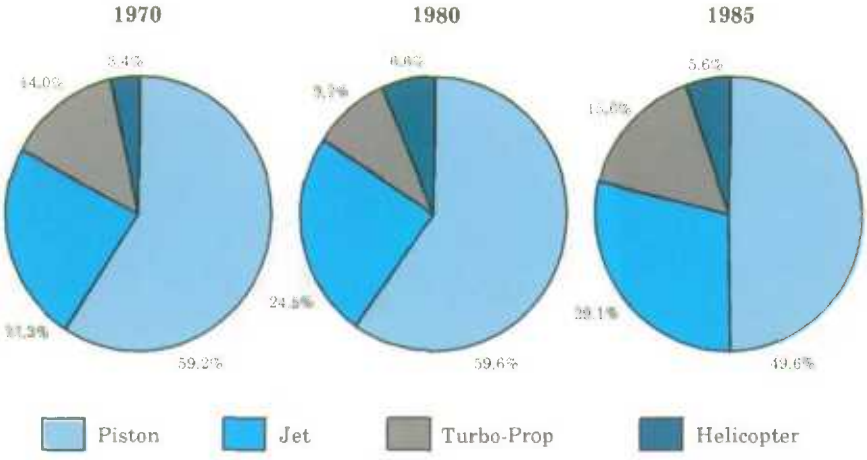


Figure 4.2 **Itinerant Movements by Sector, Type of Operation and Power Plant, 1965, 1970, 1975, 1980-1985** - Concluded

Figure 4.2.3 **Itinerant Movements by Power Plant[3], 1970, 1980, 1985**



Source: Statistics Canada / Transport Canada: Annual Report TP 577.

By Power Plant

Power plants refer, literally, to the type of propulsive power an aircraft uses. As Figure 4.2 indicates, there are piston, jet, turbo-prop, helicopter and gliders.

In the 1970s, use of the helicopter increased rapidly, stimulated by developments in offshore oil projects and the James Bay Hydro Electric Project. At the same time, jet aircraft assumed a major role, taking over much of the medium and long range flights, previously handled by turbo-prop aircraft. The itinerant movements of these two types of power plant thus increased by approximately 106% and 29% respectively, during the 1970s.

In the early 1980s, however, the recession impacted strongly on the number of itinerant movements for all power plants and particularly piston engines, (the primary power plant for all aviation) which experienced a 32% decrease in itinerant movements.

Turbo-props fared somewhat better. After a decline in 1982, the number of their itinerant movements increased by 24% over a pre-recession 1980 level. The rather quick revival in turbo-prop craft, after 1982, and although the recession was still present, shows the preference by many carriers toward the use of a smaller, more efficient aircraft on many of the shorter routes.

Air Traffic at Canadian Airports

Passenger Traffic

In 1984, the commercial aviation sector recaptured much of the ground lost in the recession of the early 1980s. With increased consumer confidence, more and more people booked air travel. In 1984, both unit toll and charter services by major and local carriers carried 53.7 million passengers, up 9.5% and 8.7% from 1982 and 1983.[9]

By Province and Territory

In 1984, an increase in air travel was recorded in each province and territory compared to 1983 (see Table 4.4).

In 1984, Ontario airports accommodated more than 19 million passengers, representing 36% of passengers enplaned and deplaned at all Canadian airports, and carried on unit toll and charter services. Airports in British Columbia served just over 10.2 million travellers, while Quebec had just over 8.8 million. These two provinces ranked second and third respectively, with about 19% and 16% of passenger traffic in 1984 (see Figure 4.3).

Altogether, the three top provinces accounted for more than 70% of 1984 passenger traffic.

During the 1970s, the provinces experienced some large increases in passenger volumes. Between 1970 and 1980, these ranged from 70% in New Brunswick to a resounding 245% in Alberta.

From 1980 to 1983, passenger traffic decreased in each province and territory; in 1984, traffic lost during this period had still not been completely recaptured.

By Airport

From 1970 to 1980, most of the 'Top 50' airports experienced growth rates exceeding 50%. The exceptions were Baie Comeau, Montréal International (Dorval), Saint John and Windsor. Particularly noticeable has been the surge of traffic through the country's western airports. (See Table 4.4.)

By far the busiest airport in Canada is Lester B. Pearson International, with about 27% of national traffic, and accounting for about 76% of all passengers enplaned and deplaned at airports in Ontario. Other leading airports were Vancouver International, Montréal International, Calgary International and Winnipeg International.

Table 4.4 Revenue Enplaned Plus Deplaned Passengers at Canadian Airports[3] by Province and Territory – Mainline Unit Toll, Other Unit Toll, Charter Services, 1970, 1975, 1980-1984

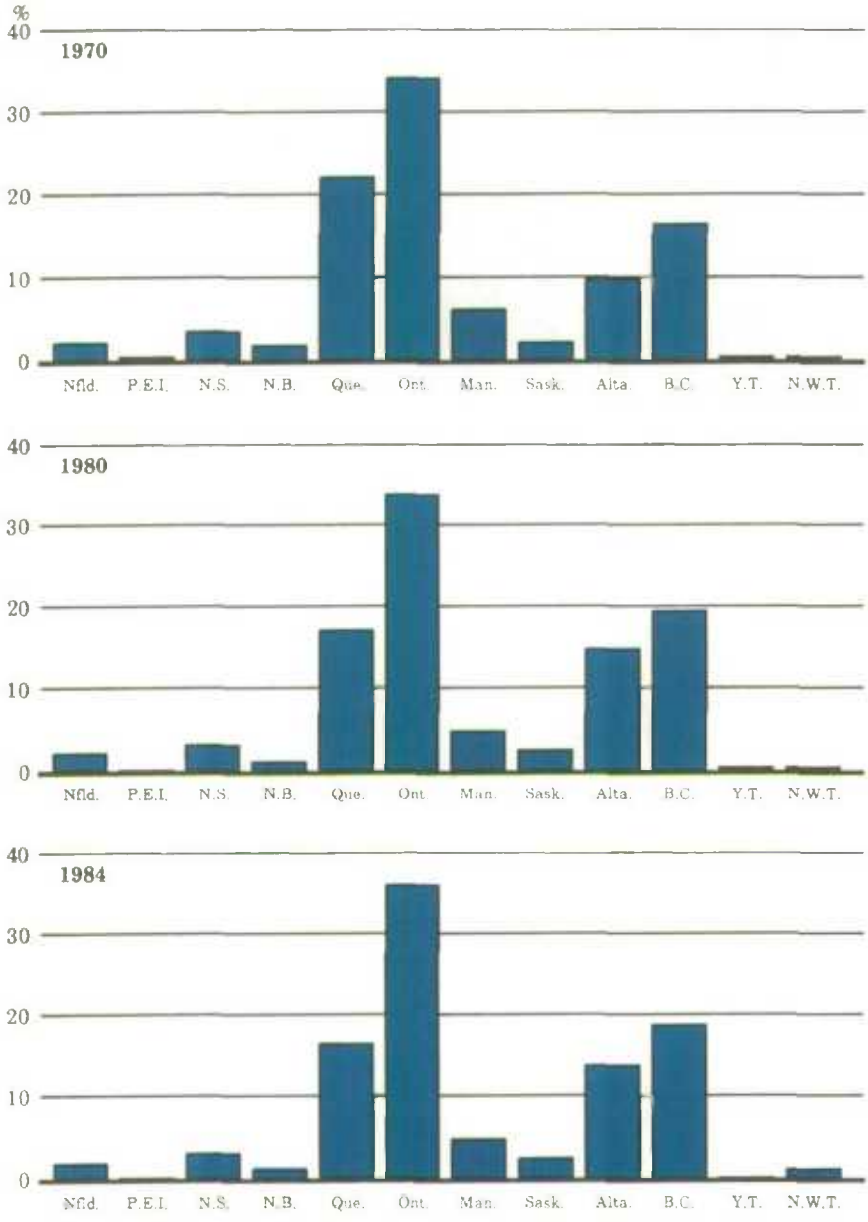
Province and territory	Airport	1970	1975	1980	1981	1982	1983	1984
		Passengers (in thousands)						
Newfoundland	Deer Lake	32	88	111	102	91	91	93
	Gander	85	154	179	166	135	115	129
	St. John's	226	387	535	528	493	454	491
	Stephenville	41	66	74	79	67	46	59
	Wabush	44	129	97	93	90	74	74
	Sub-Total**	428	825	996	968	875	781	844
	Others	138	62	87	84	76	87	96
	Total**	565	888	1,082	1,052	951	868	941
Prince Edward Island	Charlottetown	83	169	187	185	159	136	162
	Sub-Total**	83	169	187	185	159	136	162
	Others	6	4	–	–	–	–	–
	Total**	89	173	187	185	159	136	162
Nova Scotia	Halifax International	686	1,213	1,510	1,570	1,497	1,388	1,575
	Sydney	121	202	194	190	157	139	145
	Sub-Total**	807	1,415	1,704	1,760	1,654	1,527	1,719
	Others	–	32	30	26	26	40	38
	Total**	807	1,447	1,734	1,786	1,680	1,566	1,758
New Brunswick	Fredericton	114	172	191	197	187	162	200
	Moncton	138	220	239	234	213	200	218
	Saint John	142	212	203	191	171	164	168
	Sub-Total**	394	604	633	622	570	526	585
	Others	13	35	60	64	61	47	42
	Total**	407	639	693	686	632	573	627
Quebec	Bagotville	73	110	119	112	87	79	91
	Baie Comeau	60	107	87	78	80	78	64
	Mirabel International	–	94	1,409	1,245	1,214	1,278	1,459
	Mont-Joli	46	112	115	87	79	84	115
	Montréal International (Dorval)	4,606	6,709	6,287	6,201	5,441	5,143	5,592
	Quebec	278	538	623	629	557	535	620
	Rouyn	25	59	88	79	72	71	79
	Sept-Iles	110	234	230	220	168	150	157
	Val D'Or	28	79	117	164	129	134	155
	Sub-Total**	5,226	8,042	9,075	8,814	7,826	7,551	8,333
	Others	123	283	313	290	251	450	473
	Total**	5,349	8,325	9,388	9,104	8,077	8,001	8,806
Ontario	Lester B. Pearson Int'l	6,447	10,613	14,528	14,537	13,517	13,571	14,717
	North Bay	47	74	101	94	85	71	78
	Ottawa International	887	1,513	1,950	1,916	1,886	1,877	2,106
	Sault Ste. Marie	97	169	217	211	171	166	186
	Sudbury	107	200	252	234	185	166	179
	Thunder Bay	191	336	473	454	404	385	439
	Timmins	64	110	165	163	142	131	148
	Windsor	235	335	330	297	236	184	200
	Sub-Total**	8,075	13,350	18,016	17,907	16,625	16,550	18,054
	Others	157	327	763	796	584	1,035	1,289
	Total**	8,232	13,677	18,780	18,703	17,209	17,585	19,342

Table 4.4 Revenue Enplaned Plus Deplaned Passengers at Canadian Airports[3] by Province and Territory – Mainline Unit Toll, Other Unit Toll, Charter Services, 1970, 1975, 1980-1984 – Concluded

Province and territory	Airport	1970	1975	1980	1981	1982	1983	1984
		Passengers (in thousands)						
Manitoba	Thompson	64	102	98	97	85	89	72
	Winnipeg	1,273	1,990	2,414	2,375	2,085	2,005	2,116
	Sub-Total**	1,337	2,092	2,511	2,472	2,170	2,094	2,188
	Others	141	258	185	231	225	319	337
	Total**	1,477	2,351	2,696	2,703	2,395	2,413	2,525
Saskatchewan	Regina	274	529	650	649	606	592	641
	Saskatoon	231	460	641	644	594	572	636
	Sub-Total**	504	989	1,291	1,293	1,200	1,165	1,277
	Others	50	94	63	55	41	93	114
	Total**	554	1,083	1,354	1,348	1,241	1,257	1,391
Alberta	Calgary International	1,265	2,385	4,237	4,509	4,039	3,767	3,856
	Edmonton International	633	1,452	2,441	2,399	2,139	1,953	1,991
	Edmonton Municipal	375	658	950	1,018	856	800	835
	Fort McMurray	13	102	127	142	110	101	116
	Sub-Total**	2,285	4,597	7,754	8,068	7,144	6,621	6,798
	Others	79	157	402	301	347	511	577
	Total**	2,364	4,754	8,156	8,370	7,491	7,132	7,374
British Columbia	Castlegar	44	72	98	88	70	62	63
	Cranbrook	52	81	121	134	114	98	94
	Dawson Creek	9	24	73	62	53	73	48
	Fort St. John	107	149	260	256	186	141	139
	Kamloops	68	165	245	245	171	152	153
	Kelowna	84	251	402	422	385	338	375
	Pentictun	44	95	117	116	92	83	91
	Prince George	113	227	342	337	260	222	221
	Prince Rupert	88	130	206	191	158	147	116
	Terrace	48	73	113	112	87	81	74
	Vancouver International	2,690	4,724	7,079	7,131	6,360	6,371	6,766
	Victoria International	268	440	608	607	555	522	586
	Sub-Total**	3,614	6,431	9,665	9,700	8,491	8,290	8,726
	Others	340	832	1,084	953	687	979	1,425
	Total**	3,954	7,262	10,748	10,653	9,178	9,269	10,150
Yukon Territory	Whitehorse	78	107	164	182	122	101	103
	Sub-Total**	78	107	164	182	122	101	103
	Others	19	33	49	53	30	37	37
	Total**	97	140	213	235	153	138	140
Northwest Territories	Yellowknife	47	95	120	129	125	123	136
	Sub-Total**	47	95	120	129	125	123	136
	Others	105	201	231	302	307	264	379
	Total**	152	296	350	431	432	487	515
Canada	Sub-Total**	22,878	38,716	52,115	52,101	46,962	45,464	48,924
	Others	1,170	2,317	3,266	3,164	2,110	3,962	4,807
	Total**	24,047	41,033	55,381	55,265	49,071	49,426	53,732

** Some totals may not add due to rounding.
Sources: Statistics Canada: 51-005, 51-203, 51-207 and Internal Reports.

Figure 4.3 **Passenger Traffic, Market Shares by Province and Territory 1970, 1980, 1984**



Sources: Statistics Canada: 51-005, 51-203, 51-207 and Internal Reports.

Passenger Traffic at the 'Top 10' Canadian Airports

Since about 80% of all airport activity takes place in the 'Top 10' airports, they are worth considering separately. From 1970 to 1980, passenger traffic at these airports increased dramatically, from just under 19 million to about 43 million. (See Table 4.5.)

Between 1980 and 1983, however, traffic declined by about 11%. The hardest hit, of the 'Top 10' airports was Edmonton International which experienced a 20% reduction in traffic volume. Ottawa International, with a 3.7% decline, fared better than the other top airports. In 1984, however, passenger traffic exceeded 1983 levels at all airports, with gains ranging from approximately 2% at Edmonton International to 14% at Mirabel International.

Market Shares: Traffic by Category of Service

In 1970, about 95% of all passengers travelling on commercial air services flew on mainline unit toll services. However, in the 1980s, and especially beginning in 1983, there was an increasing trend in favour of other unit toll and charter services. In 1970, the market shares for these services represented, respectively, 0.6% and 4.2% of passenger volume. In 1984, for the 'Top 10' airports, mainline unit toll accounted for 88%, other unit toll 3% and charter 9% (see Figure 4.4).

This shift is the result of several factors. As discussed in Chapter II, local carriers have increased their market share, now offering many of the services previously performed by Level I carriers. Local carriers have also gained an advantage by the removal of certain licence restrictions and entry barriers, all part of the 1984 Canadian Air Policy proposal.[10]

Charter carriers benefitted from the new air policies as well, especially from the increased liberalization of entry requirements.

All airports have witnessed an impressive growth in each category of service market since 1970. Between 1970 and 1984, the number of passengers travelling on scheduled services doubled, from 18 million in 1970 to 36 million in 1984. In the same period, the charter market quadrupled, from 800 thousand passengers to 3.7 million; the number of passengers travelling on other unit toll services went from 118 thousand to 1.3 million.

The airports that experienced most of the increase in mainline unit toll services were Edmonton International with 206% and Calgary International with 187%. For other unit toll services, the airports that

Table 4.5 Passenger Traffic (Enplaned & Deplaned Revenue Passengers) at the 'Top 10' Canadian Airports for Mainline Unit Toll, Other Unit Toll and Charter Services – by Category and Sector, 1970, 1975, 1980-1984

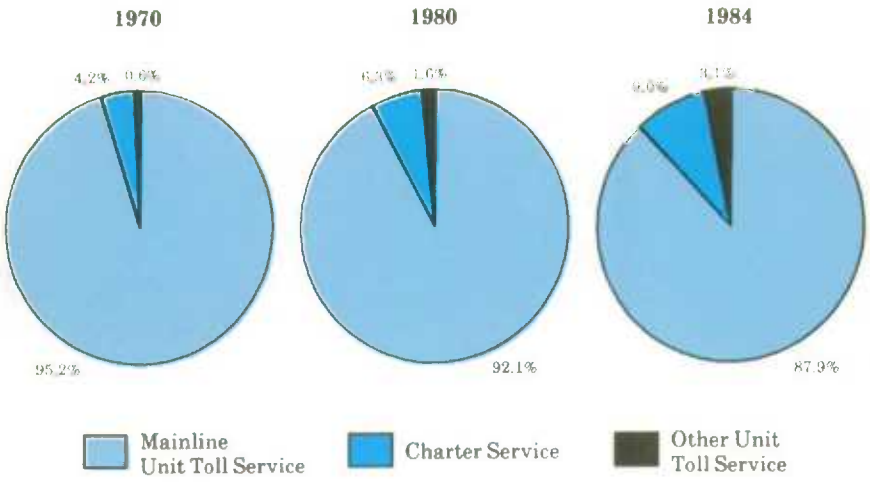
Airport	Category and sector	1970	1975	1980	1981	1982	1983	1984
				Passengers (in thousands)				
Calgary International	Mainline Unit Toll Services	1,203	2,218	3,908	4,119	3,640	3,366	3,459
	Other Unit Toll Services	22	102	140	161	139	108	121
	Charter Services	40	65	189	230	260	294	276
	Domestic	1,096	2,003	3,343	3,580	3,179	2,924	3,028
	Transborder	127	315	771	794	716	684	670
	Other International	41	67	123	136	144	160	158
	GRAND TOTAL**	1,265	2,385	4,237	4,509	4,039	3,767	3,856
Edmonton International	Mainline Unit Toll Services	585	1,367	2,279	2,243	1,965	1,756	1,790
	Other Unit Toll Services	–	–	–	–	7	–	–
	Charter Services	48	85	162	156	167	197	201
	Domestic	573	1,283	2,044	1,953	1,767	1,638	1,679
	Transborder	9	93	277	331	264	220	216
	Other International	51	76	120	115	108	95	96
	GRAND TOTAL**	633	1,452	2,441	2,399	2,139	1,953	1,991
Edmonton Municipal	Mainline Unit Toll Services	367	607	888	917	756	695	704
	Other Unit Toll Services	8	51	61	100	98	104	130
	Charter Services	–	1	1	1	2	1	1
	Domestic	375	658	949	1,018	855	800	834
	Transborder	–	--	1	1	--	1	1
	Other International	–	1	–	–	1	–	–
	GRAND TOTAL**	375	658	950	1,018	856	800	835
Halifax International	Mainline Unit Toll Services	682	1,189	1,473	1,537	1,459	1,331	1,534
	Other Unit Toll Services	–	–	4	5	12	10	10
	Charter Services	4	24	33	28	27	47	31
	Domestic	599	1,067	1,380	1,455	1,398	1,291	1,464
	Transborder	62	85	71	51	39	42	52
	Other International	26	61	60	65	61	56	59
	GRAND TOTAL**	686	1,213	1,510	1,570	1,497	1,388	1,575
Lester B. Pearson International	Mainline Unit Toll Services	5,965	9,393	12,958	12,862	11,689	11,477	12,535
	Other Unit Toll Services	32	100	267	277	250	215	255
	Charter Services	450	1,121	1,304	1,398	1,578	1,877	1,926
	Domestic	3,630	6,083	8,096	8,291	7,567	7,510	8,103
	Transborder	1,926	2,821	4,572	4,545	4,229	4,164	4,477
	Other International	891	1,709	1,860	1,702	1,720	1,896	2,138
	GRAND TOTAL**	6,447	10,613	14,528	14,537	13,517	13,571	14,717
Mirabel International	Mainline Unit Toll Services	–	71	1,105	1,045	1,013	1,052	1,118
	Other Unit Toll Services	–	–	18	27	29	35	40
	Charter Services	–	23	286	173	172	191	301
	Domestic	–	10	124	98	90	98	110
	Transborder	–	4	110	69	38	34	35
	Other International	–	80	1,174	1,078	1,086	1,147	1,314
	GRAND TOTAL**	–	94	1,409	1,245	1,214	1,278	1,459

Table 4.5 **Passenger Traffic (Enplaned & Deplaned Revenue Passengers) at the 'Top 10' Canadian Airports for Mainline Unit Toll, Other Unit Toll and Charter Services – by Category and Sector, 1970, 1975, 1980-1984** – Concluded

Airport	Category and sector	1970	1975	1980	1981	1982	1983	1984
				Passengers (in thousands)				
Montréal International (Dorval)	Mainline Unit Toll Services	4,516	6,377	6,164	5,963	5,136	4,847	5,291
	Other Unit Toll Services	–	4	11	16	33	49	56
	Charter Services	90	328	111	223	273	247	245
	Domestic	2,627	3,958	4,204	4,075	3,416	3,269	3,590
	Transborder	1,176	1,576	2,080	2,124	2,025	1,873	2,000
	Other International	803	1,176	3	3	--	--	1
	GRAND TOTAL**	4,606	6,709	6,287	6,201	5,441	5,143	5,592
Ottawa International	Mainline Unit Toll Services	878	1,493	1,874	1,835	1760	1,753	1,939
	Other Unit Toll Services	–	3	41	50	88	83	138
	Charter Services	10	17	35	32	39	41	29
	Domestic	857	1,465	1,856	1,809	1,727	1,709	1,919
	Transborder	24	33	72	87	136	145	171
	Other International	7	16	22	20	23	24	16
	GRAND TOTAL**	887	1,513	1,950	1,916	1,886	1,877	2,106
Vancouver International	Mainline Unit Toll Services	2,520	4,465	6,492	6,509	5,548	5,498	5,739
	Other Unit Toll Services	38	47	96	85	150	225	449
	Charter Services	126	213	491	537	661	648	579
	Domestic	1,912	3,416	5,048	5,068	4,438	4,353	4,605
	Transborder	599	994	1,576	1,600	1,463	1,474	1,570
	Other International	174	314	455	463	459	544	592
	GRAND TOTAL**	2,685	4,724	7,079	7,131	6,360	6,371	6,766
Winnipeg International	Mainline Unit Toll Services	1,233	1,931	2,297	2,242	1,927	1,872	1,955
	Other Unit Toll Services	18	13	45	59	68	65	71
	Charter Services	22	46	72	74	91	68	91
	Domestic	1,137	1,702	2,048	2,019	1,762	1,687	1,772
	Transborder	108	227	311	303	273	274	298
	Other International	28	60	55	52	50	44	47
	GRAND TOTAL**	1,273	1,990	2,414	2,375	2,085	2,005	2,116
Total 'Top 10' Airports	Mainline Unit Toll Services	17,949	29,109	39,438	39,270	34,893	33,647	36,064
	Other Unit Toll Services	118	319	682	780	872	894	1,270
	Charter Services	790	1,923	2,684	2,853	3,269	3,611	3,680
	Domestic	12,805	21,644	29,090	29,364	26,199	25,278	27,103
	Transborder	4,030	6,147	9,840	9,904	9,183	8,910	9,489
	Other International	2,021	3,561	3,872	3,635	3,652	3,964	4,421
	GRAND TOTAL**	18,856	31,351	42,803	42,903	39,034	38,152	41,013

** Some totals may not add due to rounding.
Sources: Statistics Canada: 51-005, 51-203, 51-207 and Internal Reports.

Figure 4.4 Passenger Traffic at the 'Top 10' Canadian Airports, Market Shares by Category of Service, 1970, 1980, 1984



Sources: Statistics Canada: 51-005, 51-203, 51-207 and Internal Reports.

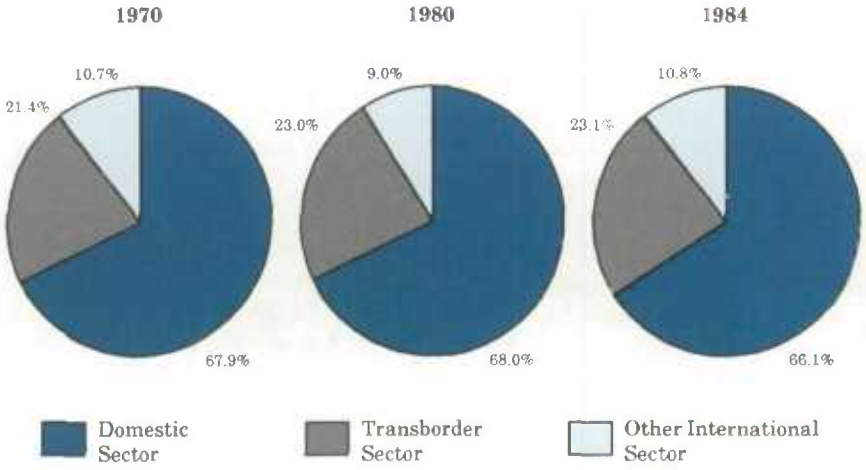
contributed most were Edmonton Municipal with 1,500% and Vancouver International with 1074%. For charter services, Halifax International and Calgary International led the way with 665% and 593% increases, respectively.

Market Shares: Traffic by Sector

The Domestic Sector

Through the years, the domestic sector represented about 65% of total demand, compared to 25% and 10%, respectively, for transborder (Canada-United States) and other international sectors (see Figure 4.5). Traffic in this sector more than doubled between 1970 and 1984, increasing from 12.8 million to 27 million. All airports are predominantly domestic, except for three specializing in overseas and other long-haul traffic. These are Mirabel International, Vancouver International and Lester B. Pearson International where domestic traffic accounts for approximately 10%, 65% and 55% of total traffic, respectively.

Figure 4.5 Passenger Traffic at the 'Top 10' Canadian Airports, Market Shares by Sector, 1970, 1980, 1984



Sources: Statistics Canada: 51-005, 51-203, 51-207 and Internal Reports.

Transborder and Other International Sectors

From 1970 to 1984, traffic flows between the 10 major Canadian airports and destinations in Europe, the Caribbean, the Orient, Mexico, and Central and South America went from approximately 2 million to 4.4 million, representing an increase of about 119%. Traffic across the Canada – United States border enjoyed an even greater growth, going from 4 million passengers in 1970 to 9.5 million in 1984. (See Table 4.5.)

In 1984, the focal points for international travel were Lester B. Pearson International, Mirabel International and Vancouver International, connecting passengers and entry/departure centres for about 90% of international travellers. For the transborder sector, terminals at Montréal International, Lester B. Pearson International and Vancouver International together accounted for more than 80% of Canadian traffic volume.

The transborder sector experienced a significant drop during the early 1980s, partly as a result of the general economic downturn, and partly as a result of traffic diversion to U.S. airports near the border. This traffic diversion came about as a result of the lower fares the U.S. carriers offered Canadians to southern destinations like Florida.[11]

Cargo Traffic at the 'Top 10' Canadian Airports

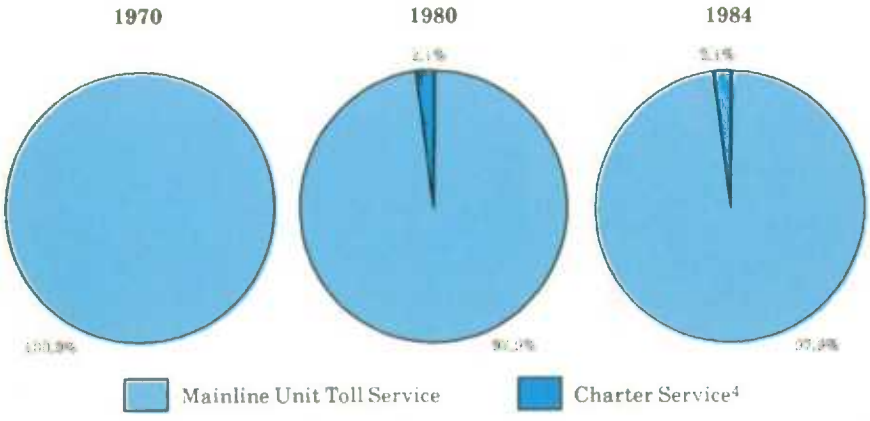
Although air cargo contributes less than 1% of all cargo tonnage transported in Canada, there has been significant growth in this area. Air cargo tends to be used for high value, low weight products. From 1970 to 1984, cargo traffic at the 'Top 10' airports increased from 258 thousand to 538 thousand metric tonnes, a 109% increase. Carriers have begun actively developing markets for air cargo, and have been supported in their efforts by demand from the new 'high technology' industries, from industries that produce perishable products such as poultry, flowers, fruits, and from other emerging markets such as electric goods that rely on fast transport methods.

Except for the early 1980s, when most transportation activities declined, cargo volumes carried have grown steadily, expanding at all leading airports. (The exception is Montréal International (Dorval) which lost its international services to Mirabel in 1975.) Between 1970 and 1984, these gains ranged from 34% at Winnipeg International to 342% at Calgary International (see Table 4.6).

Market Shares: Traffic by Category of Service

Air cargo traffic has, for the most part, been carried on mainline unit toll services as opposed to the international charter services. For example, in 1984, 98% of cargo traffic at the 'Top 10' airports was carried on mainline unit toll services. The two exceptions in this regard were Ottawa and Mirabel with 18.2% and 5.9%, respectively of the cargo traffic being handled by international charter services (see Figure 4.6 and Table 4.6).

Figure 4.6 **Cargo Traffic at the 'Top 10' Canadian Airports, Market Shares by Category of Service, 1970, 1980, 1984**



Sources: Statistics Canada: 51-005, 51-203 and 51-207.

Table 4.6 **Cargo Traffic (Enplaned & Deplaned) at the 'Top 10' Canadian Airports for Mainline Unit Toll and International Charter Services – by Category and Sector, 1970, 1975, 1980-1984**

Airport	Category and sector[4,5]	1970	1975	1980	1981	1982	1983	1984
		Cargo (in metric tonnes)						
Calgary International	Mainline Unit Toll Services	7 935	14 039	23 126	26 007	27 591	29 839	35 037
	Charter Services	..	462	219	250	158	190	66
	Domestic	6 645	11 919	19 011	21 144	22 799	24 337	29 201
	Transborder	1 275	2 035	3 734	4 038	3 545	3 423	3 211
	Other International	15	547	600	1 075	1 405	2 269	2 691
	GRAND TOTAL**	7 935	14 501	23 345	26 257	27 749	30 029	35 103
Edmonton International	Mainline Unit Toll Services	6 859	17 248	28 005	24 923	24 953	27 394	28 595
	Charter Services	..	300	180	2 093	1 978	761	166
	Domestic	6 804	16 515	25 529	21 954	22 535	25 625	26 332
	Transborder	-	594	2 085	2 271	1 616	646	699
	Other International	55	439	571	2 791	2 780	1 884	1 730
	GRAND TOTAL**	6 859	17 548	28 185	27 016	26 931	28 155	28 761
Halifax International	Mainline Unit Toll Services	6 822	11 255	12 408	16 125	14 472	14 625	18 261
	Charter Services	..	164	92	19	90	-	175
	Domestic	6 256	10 658	11 768	15 345	13 857	13 854	17 011
	Transborder	402	394	142	106	21	34	59
	Other International	164	367	590	693	684	737	1 366
	GRAND TOTAL**	6 822	11 419	12 500	16 144	14 562	14 625	18 436
Lester B. Pearson International	Mainline Unit Toll Services	84 759	129 100	172 952	170 565	167 618	184 669	216 592
	Charter Services	..	2 444	5 632	5 235	10 275	4 813	3 624
	Domestic	54 808	72 547	100 483	101 838	105 734	116 290	125 851
	Transborder	21 823	35 509	42 612	41 509	37 019	37 457	41 313
	Other International	8 128	23 488	35 489	32 453	35 140	35 735	53 052
	GRAND TOTAL**	84 759	131 544	178 584	175 800	177 893	189 482	220 216
Mirabel International	Mainline Unit Toll Services	..	4 359	69 051	65 066	62 348	70 738	78 038
	Charter Services	..	438	358	780	620	683	4 899
	Domestic	..	1 134	23 413	19 955	17 692	20 667	22 659
	Transborder	..	366	5 448	3 957	3 454	3 323	2 403
	Other International	..	3 297	40 548	41 934	41 822	47 431	57 875
	GRAND TOTAL**	..	4 797	69 409	65 846	62 968	71 421	82 937
Montréal International (Dorval)	Mainline Unit Toll Services	94 578	105 300	38 910	35 860	28 076	30 961	33 390
	Charter Services	..	4 115	593	70	214	469	1 219
	Domestic	45 058	51 033	30 169	26 729	20 518	24 116	26 027
	Transborder	10 698	14 012	8 694	9 082	7 553	6 830	7 352
	Other International	38 822	44 370	640	119	219	484	1 230
	GRAND TOTAL**	94 578	109 415	39 503	35 930	28 290	31 430	34 609

Table 4.6 **Cargo Traffic (Enplaned & Deplaned) at the 'Top 10' Canadian Airports for Mainline Unit Toll and International Charter Services – by Category and Sector, 1970, 1975, 1980-1984** – Concluded

Airport	Category and sector[4,5]	1970	1975	1980	1981	1982	1983	1984
		Cargo (in metric tonnes)						
Ottawa International	Mainline Unit Toll Services	3 543	5 899	5 491	5 325	4 850	4 704	4 957
	Charter Services	..	–	24	2	–	416	1 109
	Domestic	3 337	5 721	5 324	5 131	4 635	4 456	4 661
	Transborder	206	178	167	194	215	248	296
	Other International	–	–	24	2	–	416	1 109
	GRAND TOTAL**	3 543	5 899	5 515	5 327	4 850	5 120	6 066
St. John's	Mainline Unit Toll Services	3 453	7 124	6 439	7 200	7 034	7 645	7 803
	Charter Services	..	6	–	–	–	3	23
	Domestic	3 453	7 124	6 438	7 200	7 034	7 636	7 764
	Transborder	–	–	–	–	–	–	–
	Other International	–	6	1	–	–	12	62
	GRAND TOTAL**	3 453	7 130	6 439	7 200	7 034	7 648	7 826
Vancouver International	Mainline Unit Toll Services	32 964	56 310	67 562	67 487	66 850	74 972	81 155
	Charter Services	..	780	1 551	844	302	205	257
	Domestic	26 432	43 915	50 552	51 001	51 078	55 418	59 089
	Transborder	5 107	7 223	9 260	9 191	7 427	9 253	10 118
	Other International	1 425	5 952	9 301	8 139	8 647	10 506	12 205
	GRAND TOTAL**	32 964	57 090	69 113	68 331	67 152	75 177	81 412
Winnipeg International	Mainline Unit Toll Services	17 125	21 453	24 678	27 588	22 998	22 755	22 998
	Charter Services	..	193	916	4 047	54	22	–
	Domestic	16 059	18 069	21 913	25 670	21 141	20 489	20 954
	Transborder	986	3 198	2 671	1 760	1 595	1 872	1 524
	Other International	80	379	1 010	4 205	316	416	520
	GRAND TOTAL**	17 125	21 646	25 594	31 635	23 052	22 777	22 998
Total 'Top 10' Airports	Mainline Unit Toll Services	258 038	372 087	448 622	446 146	426 790	468 302	526 826
	Charter Services	..	8 902	9 565	13 340	13 691	7 562	11 538
	Domestic	168 852	238 635	294 600	295 967	287 023	312 888	339 549
	Transborder	40 497	63 509	74 813	72 108	62 445	63 086	66 975
	Other International	48 689	78 845	88 774	91 411	91 013	99 890	131 840
	GRAND TOTAL**	258 038	380 989	458 187	459 486	440 481	475 864	538 364

** Some totals may not add due to rounding.
Sources: Statistics Canada: 51-005, 51-203, 51-207.

Market Shares: Traffic by Sector

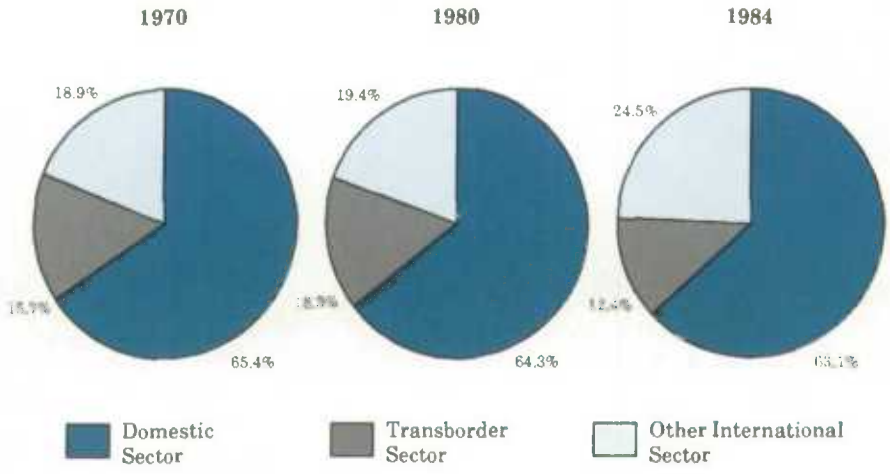
The Domestic Sector

Through the years, the domestic sector has represented approximately 65% of total cargo carried. The leading airport, with respect to domestic cargo traffic, is Lester B. Pearson International, handling over 100 thousand metric tonnes a year since 1980, or about 30 to 40% of the volume for all the 'Top 10' airports (see Figure 4.7).

Transborder and Other International Sectors

Transborder and other international sectors accounted respectively for about 12% and 24% of total cargo carried in 1984; comparable figures for 1970 were 16% and 19% . From 1970 to 1984, the volume of cargo in the other international sector increased from 48 thousand to just over 130 thousand metric tonnes. During this period, the transborder sector experienced a gain of 65% from approximately 40 thousand to 67 thousand metric tonnes. From 1970 to 1984, over 50% of the cargo traffic

Figure 4.7 **Cargo Traffic at the 'Top 10' Canadian Airports, Market Shares by Sector, 1970, 1980, 1984**



Sources: Statistics Canada: 51-005, 51-203 and 51-207.

to and from the United States was handled at Lester B. Pearson International. Internationally, Mirabel International ranked first with approximately 45% of the volume (see also Table 4.6).

Mirabel's success in cargo traffic has been stimulated by a number of recent incentives, including reduced landing fees for freighters, the removal of the fuel tax and the overall implications of the 'open sky' concept. Special authorization was granted in the 1980s to foreign carriers to carry international cargo to and from Mirabel airport, coming from and destined for points outside of Canada.

Cargo Traffic in Remote Areas

Activity in the cargo area is especially healthy in the remote areas of the Canadian north, which is so dependent on air transportation for its supplies. The airports of relatively small cities such as Norman Wells and Yellowknife in the Northwest Territories, have seen their cargo flows surge in the last two decades. For example, in 1970, they handled approximately 300, and 800 metric tonnes of cargo, respectively. In 1984, they handled about 1 900 and 1 660 metric tonnes representing overall increases of about 224%.

The long-term outlook for cargo is good for a number of reasons. First, international traffic is expected to continue to show strong growth, particularly to/from Pacific Rim countries. Second, interest rates which have tended to be high, have encouraged businesses to keep inventories down. This, in turn, has meant firms have built up a reliance on aviation to bring in new merchandise quickly. Regulatory reform should also impact favourably, given that the activity in the cargo area will have fewer restraints to its growth and development.

Notes to Chapter IV

Notes to Text

1. Martin Grief, *The Airport Book: From Landing Field to Modern Terminal.* (Don Mills, Ontario: Beaverbooks, 1979), p. 141.
2. T.M. McGrath, "*History of Canadian Airports*" Prepared for Transport Canada, Airports and Construction. (Ottawa: Supply and Services, 1984), p. 69.
3. *Ibid*, p. 69.
4. *Ibid*, p. 72.
5. V. Setty Pendakur, "*Canadian General Aviation*". (Vancouver: Versatile Publishing, 1974), p. 22.
6. These are airports specializing in general aviation activities, as opposed to regular commercial air services.
7. These are airports specializing in regular commercial services.
8. As a result of the 1984 Canadian Air Policy, airlines can now acquire any size of aircraft and offer a more frequent and competitive service.
9. This figure covers passengers travelling on unit toll and charter services, who enplaned and deplaned at all Canadian airports.
10. Hon. Lloyd Axworthy, Minister of Transport, New Canadian Air Policy, May 1984.
11. J. Moloney, Transborder Diversion Journey, Air Transport Monitor, Canadian Transport Commission, Vol. 1 No. 3, July 1985, p. 88.

Notes on Tables

1. After 1971, simulated approaches were counted as locals.
2. For Tables 4.2 and 4.3 the source is identical to Table 4.1
3. Only airports that were ranked in the 'top 50' airports, based on mainline unit toll services in 1984, are shown individually. The other airports are grouped under others.
4. Domestic sector includes only mainline unit toll services.
5. Because no breakdown is available between transborder and other international for charter services, all international traffic was included under other international.

Notes on Figures

1. Percentages are based on data available as of April 1985.
2. Includes both civil and military movements.
3. Due to the small number of gliders, this type of power plant is not represented in the figure.
4. Includes only international charter services.

Chapter V

Civil Aviation: Safety and Air Activity

Introduction

In the last few decades, there have been two outstanding themes in the evolution of Canadian aviation. The first has been the steady upward growth in flying activity until 1980-81; the second, the great development in air technology. Together, these two themes have meant a steady improvement in Canada's safety record.

In this chapter, the safety record is presented for all of civil aviation in Canada, from 1960 to 1984. Since safety is such an integral function of how much time aircraft spend in the air, sections are presented on hours logged by category of services, aircraft registered and pilots licensed. An ancillary note is presented on aircraft 'skin markings', – the identification letters found on the tail sections of all airplanes.

The picture which emerges from these data is an intriguing one. Without question, the years under observation have witnessed an enormous growth in flying activity. There are more and more planes registered, and both commercial and private sectors are logging more hours in the air. However, while overall activity has increased, the average number of hours each aircraft spends in the air has actually decreased.

What seems to be the case, at least for private flying, is that people are able to buy airplanes, but the operating costs (fuel, landing fees, maintenance, insurance) discourage them from flying as much as they might wish. Even more surprising, and contrary to expectations, is that the commercial sector experienced a similar trend. At a time when commercial carriers want to optimize the use of their revenue-generating aircraft, the statistics indicate that the carriers had limited success in achieving this objective.

Safety in Canadian Skies

Commercial Aviation

While aviation safety is a function of the time aircraft spend in the air, it is also very directly related to improvements in technology. With the introduction of jet aircraft in the late 1950s, aviation in Canada literally 'took off', with passenger loads doubling and even tripling. Airlines could now carry more people and in less time, making air travel an attractive alternative to other travel modes.

Air traffic control also improved, with vastly matured radar systems, both on the ground and in the air. Weather forecasting came of age, with satellite photography and state-of-the-art meteorological devices.

The improvement in air technology meant more flying activity, under improved circumstances, and consequently has led to a better safety record.

From 1960 to 1984, Canada's commercial carriers increased flying hours by 173%, logging just under 840 thousand hours in 1960, just over 3 million in 1980, and close to 2.3 million hours in 1984. This latter figure actually reflects a decline in the growth rate caused by the economic slowdown in 1981-1983 (see Table 5.1).

From 1960 to 1984, the number of accidents per 100 thousand hours flown, for all of commercial aviation, declined by nearly 52%.

Individual categories of air services within commercial aviation (unit toll, charter, and specialty) and private aviation, have, to varying degrees, experienced similar trends.

Unit Toll and Charter

From 1960 to 1984, unit toll and charter air services more than doubled hours logged, going from about 665 thousand in 1960 to 1,753 thousand in 1984 (see also Table 5.1).

During this period, the accident rate for these operations taken together declined, from a 1960 high of 9.3 accidents per 100 thousand hours flown to a 1984 level of 4.4 accidents.

In the 1960s and the 1970s, accident rates per 100 thousand hours flown for the two categories averaged, respectively, 10.8 and 10.5; the comparable figure for the first half of the 1980s was 6.7.

Table 5.1 **Canadian Commercial Aviation and Accidents, 1960-1984**

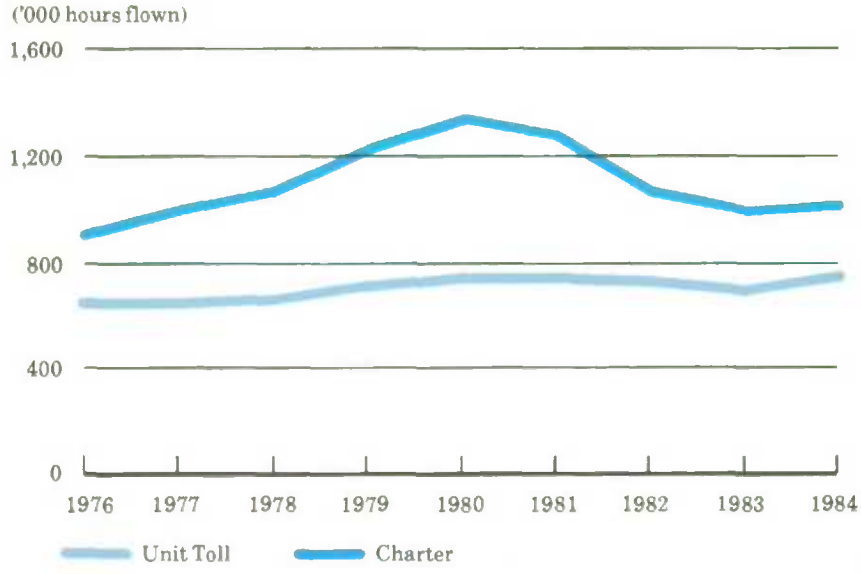
Year	Total			Commercial unit toll and charter operations			Specialty and flying training		
	Hours flown ('000)	Number of accidents	Accidents per 100,000 hours flown	Hours flown ('000)	Number of accidents	Accidents per 100,000 hours flown	Hours flown ('000)	Number of accidents	Accidents per 100,000 hours flown
1960	839	116	13.8	665	62	9.3	174	54	31.1
1961	821	117	14.2	637	65	10.2	185	52	28.2
1962	803	107	13.3	617	74	12.0	186	33	17.7
1963	827	104	12.6	626	70	11.2	202	34	16.8
1964	912	115	12.6	677	59	8.7	235	46	19.6
1965	1,084	143	13.2	767	72	9.4	318	71	22.4
1966	1,315	179	13.6	859	104	12.1	457	75	16.4
1967	1,508	193	12.8	958	108	11.3	550	85	15.4
1968	1,588	175	11.0	1,014	106	10.4	574	69	12.0
1969	1,613	223	13.8	1,087	131	12.0	526	92	17.5
1970	1,605	219	13.6	1,181	140	11.9	424	79	18.6
1971	1,753	243	13.9	1,237	140	11.3	515	103	20.0
1972	1,855	262	14.1	1,307	165	12.6	549	97	17.7
1973	2,067	312	15.1	1,419	184	13.0	648	128	19.7
1974	2,221	318	14.3	1,495	174	11.6	726	144	19.8
1975	2,387	275	11.5	1,550	152	9.8	837	123	14.7
1976	2,392	283	11.8	1,541	166	10.8	851	117	13.7
1977	2,500	232	9.3	1,629	123	7.5	871	109	12.5
1978	2,578	263	10.2	1,720	139	8.1	859	124	14.4
1979	2,836	314	11.1	1,921	187	9.7	915	127	13.9
1980	3,002	299	10.0	2,064	172	8.3	938	127	13.5
1981	2,794	327	11.7	2,004	172	8.6	791	155	19.8
1982	2,465	197	8.0	1,788	104	5.8	677	93	13.7
1983	2,235	156	7.0	1,682	96	5.7	553	60	10.9
1984	2,290	151	6.6	1,753	77	4.4	537	74	13.8

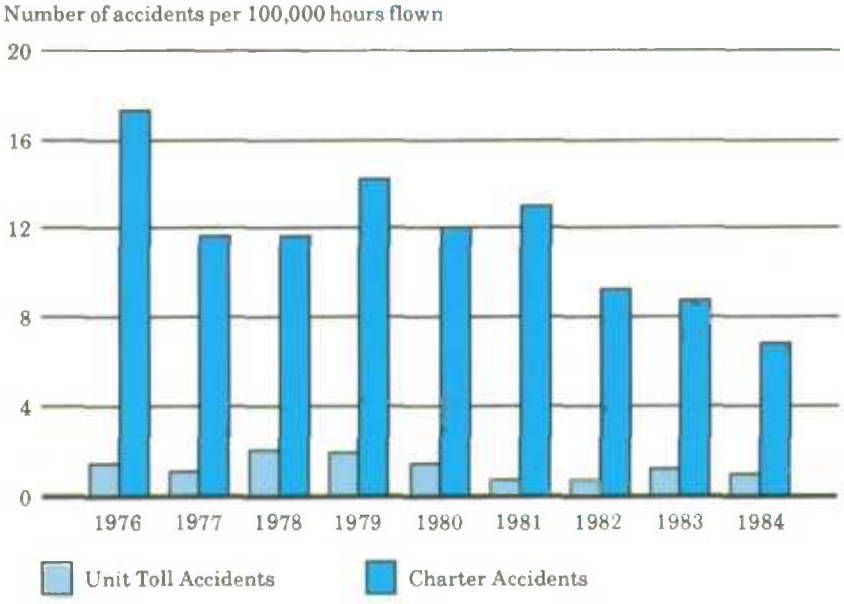
Sources: Canadian Aviation Safety Board – Annual Reports and Files.
Statistics Canada: 51-206.

From 1976 to 1984, the accident rate in the charter category was higher than for unit toll. While the charter category actually logged more hours than did unit toll (with a ratio of 1.4 to 1), its accident rate was 11.2 times higher (per 100 thousand hours flown) than unit toll. In 1984, while the ratio of hours flown between the two categories remained unchanged, the proportion of the number of accidents per 100 thousand hours flown decreased to 6.3 (see Figure 5.1).

The high accident rates for charter air services are attributable partly to the very small size of the aircraft (5 675 kilograms or less) used for most charter services and partly to the terrain and facilities in the remote areas of Canada, where charters are mostly flown.

Figure 5.1 Commercial Unit Toll and Charter Operations – Hours Flown and Number of Accidents per 100,000 Hours Flown, 1976-1984





Sources: Canadian Aviation Safety Board – Annual Reports and Files.
Statistics Canada: 51-206.

Flying Training and Other Specialty

Between 1960 and 1984, the number of hours logged for specialty services increased three-fold, while at the same time the accident rate dropped by close to 55%.

The accident rate has been traditionally very high, largely due to the nature of the services being offered. For example, activities in this area can range from the flying training to the waterbombing of forest fires to agricultural spraying at low altitudes.

Nonetheless, accident rates have decreased. In 1960, there were 31.1 for every 100 thousand hours logged; by 1984, there were 13.8. This dramatic drop has been due partly to the increasing rigours of pilot training, to the improved weather forecasting, to the extension of better radio and radar on air routes and partly to improved technology, as safer and more advanced aircraft have come on the market.

Private Aviation

Accident rates for private flying activity have also dropped significantly. In the 1960s, the accident rate stood at 36.4, (see Table 5.2) dropping to 33.8 in the 1970s, and to 25.6 in the first half of the 1980s. In the 1960s, the total number of hours flown annually for all private aircraft averaged 486 thousand hours. This rose to 979 thousand hours in the 1970s and to 1,204 thousand hours in the first half of the 1980s.

As with commercial aviation, tougher licensing standards, better navigation systems and safer aircraft have all helped to make the airways a safer place for private flying. Nevertheless, in 1984, the accident rate in this category was still almost four times the rate of all commercial flying.

Table 5.2 **Private Aircraft*, Hours Flown and Accidents, 1960-1984**

Year	Number of private aircraft	Hours flown ('000)	Average hours flown	Number of accidents	Accidents per 100,000 hours flown
1960	2,647	259	97.7	159	61.5
1961	2,999	295	98.4	156	52.9
1962	3,315	337	101.6	150	44.5
1963	3,512	385	109.5	122	31.7
1964	3,745	442	117.9	123	27.9
1965	4,134	503	121.7	159	31.6
1966	4,517	585	129.5	209	35.7
1967	4,940	656	132.8	231	35.2
1968	5,444	698	128.3	214	30.7
1969	5,912	700	118.4	247	35.3
1970	6,251	710	113.6	276	38.9
1971	6,908	725	105.0	246	33.9
1972	7,558	791	104.7	311	39.3
1973	8,356	796	95.3	347	43.6
1974	9,481	889	93.8	316	35.5
1975	10,395	991	95.4	351	35.4
1976	11,461	977	85.2	356	36.5
1977	12,255	1,272	103.8	395	31.1
1978	12,666	1,310	103.4	369	28.2
1979	13,245	1,328	100.3	343	25.8
1980	13,698	1,300	94.9	329	25.3
1981	14,080	1,332	94.6	326	24.5
1982	14,235	1,212	85.2	301	24.8
1983	14,219	1,150	80.9	314	27.3
1984	13,129	1,027	78.2	274	26.7

* Private aircraft with a valid certificate of airworthiness on December 31 of each year.

Sources: Transport Canada: Annual Report TP 220.
Statistics Canada/Transport Canada: Annual Report TP 2468.
Files of the Canadian Aviation Safety Board.
Statistics Canada: 51-501.

Canada's Aircraft Registry

Aircraft Registered

Aircraft based in Canada and flown by Canadians must be registered with Transport Canada, through its Aeronautical Licensing and Inspection Branch. This unit lists all aircraft in the Canadian Civil Aircraft Register, whether or not they have a valid certificate of airworthiness.[1]

As a result, the register is a good composite picture of Canada's civil fleet, both private and commercial.

Since 1960, its entries for all civil aircraft have risen by more than 400%. In 1960, there were 5,318 aircraft registered; in 1985, 26,801.

Of those craft listed in 1985, there were 24,607 airplanes, 1,276 helicopters, 582 gliders, 219 balloons and 117 gyroplanes (see Table 5.3).

Table 5.3 **Summary of Canadian Civil Aircraft Register by Type of Aircraft*, 1960-1985**

Year	Total aircraft	Airplanes	Helicopters	Gliders	Balloons	Gyroplanes
1960	5,318	4,998	219	101	–	–
1961	5,885	5,520	260	105	–	–
1962	6,249	5,834	287	128	–	–
1963	6,501	6,057	294	143	–	7
1964	6,933	6,454	316	151	–	12
1965	7,542	6,996	354	170	–	22
1966	8,310	7,699	390	189	–	32
1967	9,162	8,469	435	202	2	54
1968	9,973	9,223	453	216	4	77
1969	10,772	9,955	502	229	8	78
1970	11,315	10,424	552	245	10	84
1971	12,076	11,098	625	255	9	89
1972	13,157	12,067	712	275	7	96
1973	14,475	13,266	800	302	12	95
1974	16,149	14,853	849	339	17	91
1975	17,990	16,570	922	374	22	102
1976	19,737	18,202	989	415	27	104
1977	20,976	19,332	1,051	448	36	109
1978	21,577	19,875	1,085	461	49	107
1979	22,594	20,697	1,241	482	68	106
1980	23,624	21,533	1,381	511	91	108
1981	24,437	22,199	1,476	528	124	110
1982	24,682	22,412	1,462	548	148	112
1983	25,899	23,636	1,410	560	177	116
1984	26,514	24,301	1,326	572	197	118[1]
1985	26,801	24,607	1,276	582	219	117[1]

* Entries dated 31 December of each year.
Source: Transport Canada: Annual Report TP 220.

Of all aircraft, 22,457 were single engine aircraft, 3,358 were twin engine and 182 had more than two engines (see Table 5.4).

In 1985, 85% of the aircraft registered had a gross weight equal to or smaller than 1 750 kilograms. Less than 1% had a gross weight equal to or greater than 45 501 kilograms. The proportion of the smallest aircraft increased slightly through the years; there were 80% in 1960, 83% in 1970 and 84% in 1980. The proportion of the largest aircraft remained relatively constant between 1960 and 1985.

The Private Fleet

In 1985, most of the registrations were for aircraft in Canada's private fleet, which accounted for 78% of total registrations. This compares to 61% in 1960. From 1960 to 1985, Canada's private fleet grew by about 545% to 20,959 aircraft (see Table 5.4).

The Commercial Fleet

In 1960, the commercial fleet numbered 1,863 and accounted for about 35% of all registrations. In 1985, it numbered 5,517 and accounted for 20.6% of all registrations. Growth over this period was nearly 200%.

Government Aircraft

The number of aircraft registered for government use has also grown, from 204 in 1960 to 294 in 1985, an increase of just over 44%.

Table 5.4 Summary of Canadian Civil Aircraft Registry* by Category of Ownership, by Number of Engines and by Gross Weight, 1960-1985

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Aircraft Purpose													
Private (Normal)	3,186	3,612	3,976	4,172	4,544	4,990	5,499	6,047	6,392	6,919	7,292	7,783	8,552
Private (Restricted)	8	15	11	11	14	13	19	25	32	37	28	33	39
Private (Amateur Built)	53	74	93	123	152	181	240	292	399	440	496	555	631
Private (Ultralight)[2]	..	..	..	..	..	..	..	..	..	..	..	..	..
Total private	3,247	3,701	4,080	4,306	4,710	5,184	5,758	6,364	6,823	7,396	7,816	8,371	9,222
Commercial (Normal)	1,818	1,910	1,908	1,929	1,949	2,073	2,253	2,486	2,840	3,069	3,161	3,359	3,556
Commercial (Restricted)	45	60	71	64	62	64	76	75	90	90	100	102	126
Total commercial	1,863	1,970	1,979	1,993	2,011	2,137	2,329	2,561	2,930	3,159	3,261	3,461	3,682
State (Normal)	204	207	182	191	200	200	203	214	200	200	201	225	234
State (Restricted)[3]	..	..	..	..	..	..	..	..	..	..	..	..	..
State (Experimental)[4]	..	..	..	..	..	..	..	..	..	..	..	9	11
Total state	204	207	182	191	200	200	203	214	200	200	201	234	245
Experimental	4	7	8	11	12	21	20	23	20	17	37	10	8
Total experimental	4	7	8	11	12	21	20	23	20	17	37	10	8
Number of Engines													
One	4,608	4,827	5,433	5,639	6,002	6,498	7,140	7,850	8,518	9,205	9,647	10,323	11,283
Two	484	479	564	588	647	738	839	960	1,082	1,179	1,255	1,330	1,442
More than two	125	130	124	131	133	136	142	146	153	151	156	159	146
Weight (Gross)													
0 - 1 750 kg	4,280	4,765	5,104	5,344	5,721	6,214	6,851	7,561	8,256	8,973	9,443	10,121	11,086
1 751 - 5 700 kg	685	733	776	789	847	958	1,069	1,171	1,254	1,318	1,350	1,420	1,502
5 701 - 13 500 kg	160	169	165	159	157	164	172	191	182	189	205	206	225
13 501 - 45 500 kg	161	159	152	151	139	136	147	167	182	182	178	182	191
45 501 - or more kg	32	59	52	58	69	70	71	72	99	110	139	147	153
Total registrations	5,318	5,885	6,249	6,501	6,933	7,542	8,310	9,162	9,973	10,772	11,315	12,076	13,157

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Aircraft Purpose													
Private (Normal)	9,446	10,661	11,907	13,134	14,032	14,446	15,060	15,728	16,371	16,771	16,951	16,998	16,941
Private (Restricted)	81	112	149	183	212	221	217	236	223	236	231	239	216
Private (Amateur Built)	691	749	819	873	954	994	1,057	1,109	1,164	1,234	1,291	1,370	1,426
Private (Ultralight)[2]	..	..	..	..	..	..	..	..	..	..	1,282	1,971	2,376
Total private	10,218	11,522	12,875	14,190	15,198	15,661	16,334	17,073	17,758	18,241	19,755	20,578	20,959
Commercial (Normal)	3,838	4,175	4,606	5,007	5,211	5,323	5,653	5,923	6,027	5,777	5,453	5,231	5,116
Commercial (Restricted)	145	153	204	227	245	263	275	299	326	333	360	374	401
Total commercial	3,983	4,328	4,810	5,234	5,456	5,586	5,928	6,222	6,353	6,110	5,813	5,605	5,517
State (Normal)	246	263	263	265	274	280	278	276	277	280	281	277	269
State (Restricted)[3]	6	7	12	16	16	16	16	16	13	12	11	13	14
State (Experimental)[4]	10	12	12	12	10	11	10	10	10	12	10	11	11
Total state	262	282	287	293	300	307	304	302	300	304	302	301	294
Experimental	12	17	18	20	22	23	28	27	26	27	29	30	31
Total experimental	12	17	18	20	22	23	28	27	26	27	29	30	31
Number of Engines													
One	12,395	13,834	15,419	16,930	18,043	18,563	19,381	20,172	20,780	20,978	21,857	22,314	22,457
Two	1,612	1,788	1,986	2,195	2,296	2,346	2,500	2,682	2,826	2,818	3,115	3,251	3,358
More than two	151	168	186	167	150	153	160	165	176	187	187	177	182
Weight (Gross)													
0 - 1 750 kg	12,228	13,696	15,286	16,773	17,895	18,420	19,073	19,811	20,394	20,625	21,900	22,551	22,837
1 751 - 5 700 kg	1,631	1,789	1,980	2,222	2,370	2,454	2,790	3,045	3,243	3,247	3,207	3,177	3,140
5 701 - 13 500 kg	252	269	299	329	318	311	316	324	334	325	316	304	305
13 501 - 45 500 kg	195	199	210	207	203	198	204	223	232	246	242	252	265
45 501 - or more kg	169	196	215	206	190	194	211	221	234	239	234	230	254
Total registrations	14,475	16,149	17,990	19,737	20,976	21,577	22,594	23,624	24,437	24,682	25,899	26,514	26,801

* Registrations are as of December 31 of each year.
Source: Transport Canada: Annual Report TP 220.

Aircraft Activity by Individual Type

In 1970, there were 9,388 Canadian registered aircraft with a valid certificate of airworthiness. By 1984, there were 17,636, an increase of 88%.

In the same period, as already noted, the hours logged have shown increases of up to 43%, from about 2.3 million in 1970 to over 3.3 million in 1983.

However, as also noted in the introduction, despite this unparalleled growth in flying activity, the average hours flown per aircraft have declined over the same period, and the decline has been particularly strong since 1981 (see Table 5.5 and Figure 5.2).

The downward trend in average use is evident for both the industry's 'workhorses' (those aircraft types with 20,000 or more hours flown in 1983 and/or 1984) and for machines with fewer hours flown (see Figure 5.2).

For fixed-wing aircraft flying 20,000 or more hours a year, the decline in use began as early as 1970. In that year, average annual hours logged were 323 for the 4,553 aircraft registered. By 1984, average annual hours logged had dropped to 219 for the 9,586 aircraft registered.

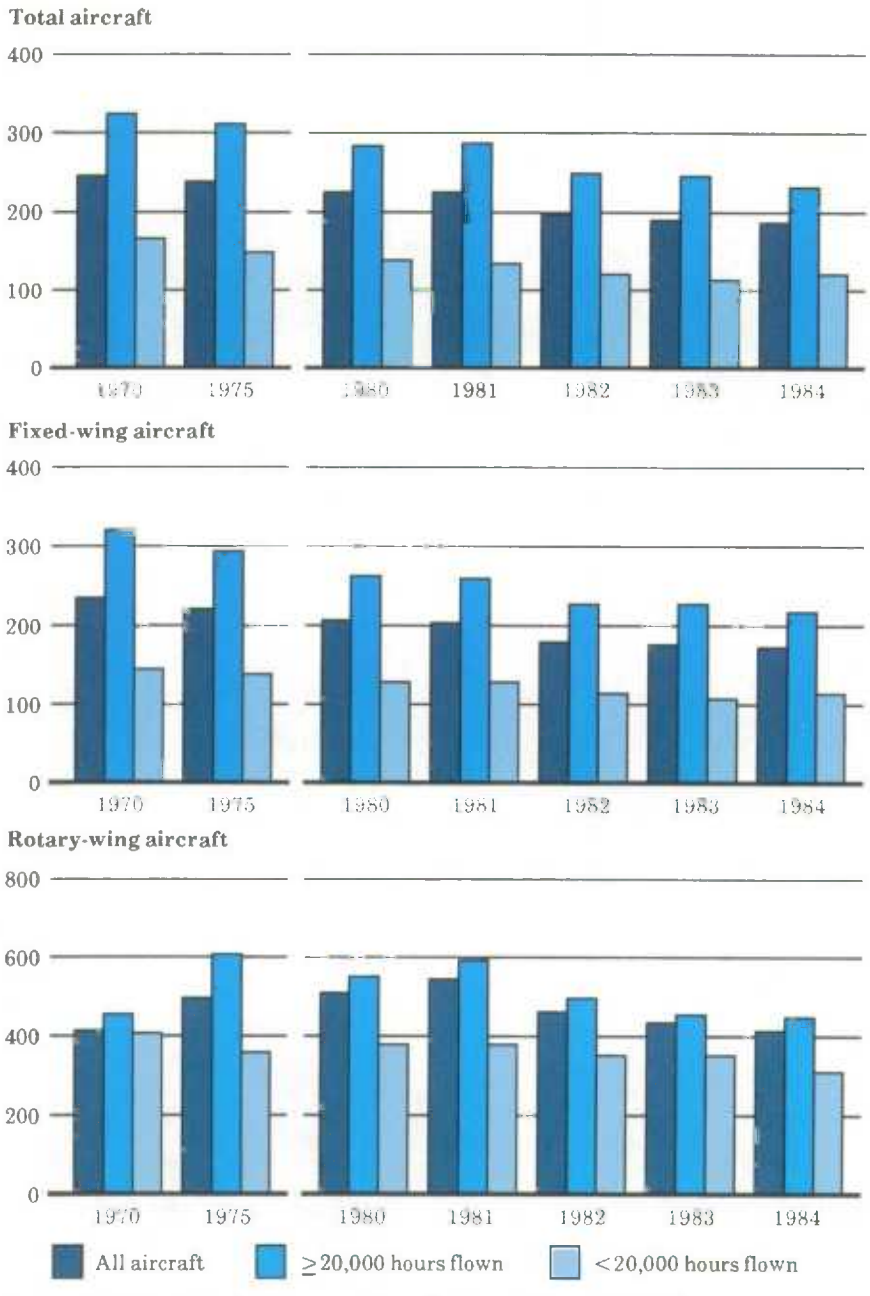
There are two primary reasons for this somewhat intriguing state of affairs. The first has to do with the increased cost of fuel in the 1970s; the second with the recession of the early 1980s. Both impacted strongly on all sectors of Canadian civil aviation. For example, from 1970 to 1983, the number of Cessna-Series 150 and 152 (aircraft used mostly for private purposes) more than doubled, but average annual hours flown per aircraft were reduced by half.

Even more surprising though, is that large commercial carriers experienced a similar trend. With a policy of optimizing the use of revenue-generating aircraft, and cutting down on large fleets, the statistics indicate that the carriers had limited success in achieving this objective.

Possibly the decline in utilization can be partly explained by the increased use of simulators for training and better flight operations planning to reduce fleet positioning.

While Boeing 737s recorded over 100 thousand more hours flown in 1983 than in 1970, they showed declines in average annual hours flown per machine. In 1970, that average was 2,579; in 1983 it was 2,458, a drop of 5%. However, in 1984, the average hours flown per aircraft reached 2,789, which was higher than the average experienced in the pre-recession year.

Figure 5.2 **Average Hours Flown by Canadian Registered Aircraft, 1970, 1975, 1980-1984**



Source: Statistics Canada / Transport Canada: Annual Report TP 2468.

Table 5.5 Number and Hours Flown by Selected Canadian Registered Aircraft[5], 1970, 1975, 1980-1984

Description	Designator	1970		1975		1980		1981	
		Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)
1) Fixed-wing aircraft									
Beech King Air	BE90	19	9	32	17	50	30	55	31
Beech Travelair	BE95	51	15	69	20	93	23	88	24
Boeing 727	B727	3	9	23	56	36	125	44	128
Boeing 737	B737	19	49	34	93	53	138	62	158
Boeing 747	B747	-	-	12	38	16	59	15	47
Boeing 767	B767	-	-	-	-	-	-	-	-
Cessna Commuter	C150	559	207	1,217	371	1,566	347	1,468	315
Cessna Skyhawk	C172	691	120	1,562	292	2,359	405	2,252	360
Cessna Skylane Super	C182	142	17	356	50	553	62	539	60
Cessna Skywagon	C185	226	59	491	119	843	201	832	171
Cessna Super Skywagon	C206	72	18	150	28	296	71	310	73
Cessna Twin Cessna	C310	59	13	95	16	159	35	151	42
Cessna 180	C180	654	149	747	126	798	91	759	121
Champion Citabria Traveller	CH7	526	48	699	54	702	38	663	44
Convair 580	CV58	-	-	-	-	12	2	13	18
De Havilland Beaver	DHC2	264	128	297	134	368	175	364	151
De Havilland Otter	DHC3	84	51	113	64	129	54	129	57
De Havilland Twin Otter	DH6	42	30	115	114	134	131	122	120
Hawker Siddeley 748	A748	5	5	5	5	18	19	18	18
Lockheed Tristar/Tristar 500	L101/ L105	-	-	12	29	7	34	13	30
McDonnell Douglas Dakota	DC3	90	48	124	77	88	68	76	51
McDonnell Douglas DC10	DC10	-	-	-	-	6	18	9	23
McDonnell Douglas DC9 Series30	DC93	35	101	45	134	37	121	41	112
McDonnell Douglas Super DC8	DC86	51	169	25	85	24	66	24	56
Piper Aztec[6]	PAZP	229	58	120	40	171	51	159	41
Piper Cherokee	PA28	384	118	795	215	1,098	201	1,021	174
Piper Navajo	PA31	26	9	61	24	168	87	148	77
Piper Seneca	PASE	-	-	-	-	89	22	84	22
Piper Super Cub	PA18	322	42	360	35	415	34	384	37
Others		4,354	645	6,368	896	7,457	968	7,313	944
Sub-Total**		8,907	2,116	13,927	3,133	17,745	3,674	17,156	3,504
2) Rotary-wing aircraft									
Aerospatiale Astar	HR35	-	-	-	-	36	14	54	29
Bell Iroquois	HB04	17	11	39	21	61	40	68	44
Bell Jet Ranger	HB4	54	29	319	206	530	298	504	305
Bell Long Ranger	HB06	-	-	1	-	80	51	86	52
Hughes 369-500 Series	HU5	42	12	71	34	159	80	160	89
Others		368	150	326	118	280	107	260	100
Sub-Total**		481	202	756	380	1,146	591	1,132	619
Total**		9,388	2,317	14,683	3,512	18,891	4,265	18,288	4,123

Table 5.5 Number and Hours Flown by Selected Canadian Registered Aircraft[5], 1970, 1975, 1980-1984 – Concluded

Description	Desig-nator	1982		1983		1984	
		Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)	Number of aircraft	Hours ('000)
1) Fixed-wing aircraft							
Beech King Air	BE90	52	27	43	24	47	24
Beech Travelair	BE95	82	19	77	20	79	16
Boeing 727	B727	41	131	42	121	38	117
Boeing 737	B737	66	158	61	150	57	159
Boeing 747	B747	16	46	15	41	13	40
Boeing 767	B767	2	-	9	15	14	39
Cessna Commuter	C150	1,508	267	1,457	269	1,409	222
Cessna Skyhawk	C172	2,357	343	2,315	309	2,252	288
Cessna Skylane Super	C182	562	58	525	55	509	46
Cessna Skywagon	C185	829	153	795	144	798	132
Cessna Super Skywagon	C206	321	68	314	69	323	64
Cessna Twin Cessna	C310	146	38	136	34	134	28
Cessna 180	C180	749	110	712	100	697	67
Champion Citabria Traveller	CH7	674	35	644	32	627	32
Convair 580	CV58	12	14	11	12	20	23
De Havilland Beaver	DHC2	347	119	346	118	335	104
De Havilland Otter	DHC3	128	47	120	45	123	47
De Havilland Twin Otter	DH6	120	114	111	100	109	100
Hawker Siddeley 748	A748	25	26	18	18	25	27
Lockheed Tristar/Tristar 500	L101/ L105	14	37	17	58	16	55
McDonnell Douglas Dakota	DC3	75	39	70	36	62	36
McDonnell Douglas DC10	DC10	11	32	11	43	11	43
McDonnell Douglas DC9 Series30	DC93	40	101	35	99	35	99
McDonnell Douglas Super DC8	DC86	23	42	22	27	13	18
Piper Aztec[6]	PAZP	157	33	147	33	165	38
Piper Cherokee	PA28	1,058	135	1,070	130	1,048	112
Piper Navajo	PA31	152	72	162	80	158	77
Piper Seneca	PASE	89	21	88	19	97	23
Piper Super Cub	PA18	398	39	394	32	372	24
Others		7,418	862	7,112	783	7,113	834
Sub-Total**		17,472	3,187	16,879	3,015	16,699	2,930
2) Rotary-wing aircraft							
Aerospatiale Astar	HR35	60	30	53	20	50	21
Bell Iroquois	HB04	72	46	79	42	72	32
Bell Jet Ranger	HB4	461	232	444	207	422	190
Bell Long Ranger	HB06	85	45	82	40	79	40
Hughes 369-500 Series	HU5	137	58	115	49	101	43
Others		257	91	210	75	213	67
Sub-Total**		1,072	501	983	432	937	392
Total**		18,544	3,689	17,862	3,447	17,636	3,322

** Some totals may not add due to rounding.
Source: Statistics Canada/Transport Canada: Annual Report TP 2468.

The situation for the Boeing 747s was similar. Between 1975 and 1983, the average annual hours flown per aircraft decreased from 3,167 to 2,733, and although 1984 represented an improved year, with a 13% increase over 1983, average hours flown were still less than in 1975.

Between 1970 and 1983, amongst the fixed-wing aircraft, (see Table 5.5), only a few models indicate increases in the average number of hours flown annually; these were the Beech King Air (474 hours in 1970 versus 558 hours in 1983), the Cessna Twin Cessna (220 versus 250), the de Havilland Twin Otter (714 versus 901) and the Piper Navajo (346 versus 494).

For rotary-wing aircraft (helicopters), flying 20,000 or more hours a year, use declined between 1981 and 1983, with the 1983 rate being very close to that experienced by these machines in 1970 (463 versus 460). In 1984, the downward trend persisted, the average number of hours flown per aircraft reaching only 450.

The Story of Canada's Aircraft Skin Markings

When an aircraft is registered with Transport Canada, it is assigned an aircraft registration or 'skin marking', which is painted or otherwise affixed on the outside of the plane, either on the underside of the wing or bottom surface of the fuselage or cabin. This 'skin marking' provides an identification for the airplane, showing its nationality and registration.

In Canada, the 'skin marking' consists of five letters, of which the first is always a C and the second an F or a G. The other three letters can be any three letters in the alphabet.

This system of skin coding dates to the Paris Air Convention of 1919. At that time, it was decided that countries should be assigned one letter, which would indicate their nationality, to be followed by four more letters. The British Empire was assigned the letter G, and as part of the empire, Canada was assigned a marking of "GC".

Until 1929, all Canadian aircraft sported this prefix. At this time, however, the system was altered somewhat, through international negotiations, and Canada adopted a prefix of "CF", to be followed by any three letters.

Since there are only 17,576 possible combinations of three letter groupings, and since there would be more aircraft registered than that, Transport Canada was compelled to start a new series in 1973. The new series begins: "CG". Its appearance is just one more indication of growth in Canadian aviation.

Pilot Licences in Canada

Since 1955, the number of Canadian pilots licensed to fly has increased by 612%, from 8,543 in 1955 to 60,838 in 1985. This growth, though phenomenal, reached its peak in 1982 when 63,450 pilots were registered (see Table 5.6).

Notable growth periods span the 1960s, when the number of pilots increased by more than 80% and the 1970s when the number increased by approximately 65%. Between 1982 and 1985, Canada's economic slowdown caused a decline in the number of pilots of about 4%. Most of the decline involved private licences, whose number dropped 6.7%. However similar patterns can also be noted for commercial and senior commercial pilots.

During the same period, pilot licences for airline transport, gliders and free balloons have shown a continuous growth, with no exceptions.

Table 5.6 **Pilot Licences in Force in Canada, 1955-1985***

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985
Pilots: helicopter and airplane											
Private	5,559	14,701	16,831	25,203	33,015	40,582	41,592	41,351	40,483	39,982	38,561
Commercial	1,754	2,319	2,835	4,945	6,705	7,905	9,772	10,346	10,383	10,339	9,824
Senior commercial	312	439	359	734	826	1,122	1,345	1,324	1,299	1,258	1,194
Airline transport	717	1,250	1,533	2,779	3,593	4,969	5,765	6,051	6,209	6,241	6,345
Sub-Total	8,342	18,707	21,558	33,661	44,139	54,578	58,474	59,072	58,374	57,820	55,924
Glider	201	444	823	1,521	2,054	3,604	3,894	4,250	4,526	4,670	4,701
Gyroplane	–	–	–	5	6	7	15	16	17	15	14
Free balloon	–	–	–	–	–	84	85	112	132	172	199
Ultralight – private	–	–	–	–	–	–	–	–	–	–	–
– commercial	–	–	–	–	–	–	–	–	–	–	–
Total pilots	8,543	19,153	22,381	35,187	46,199	58,273	62,468	63,450	63,049	62,677	60,838

* Figures are as of December 31 of each year.
Source: Transport Canada Files.

Notes to Chapter V

Notes to Text

1. To conduct flying operations of any kind within Canada, an aircraft (ultralights excepted) must possess a valid certificate of airworthiness. However, before the certificate is given, the aircraft must be registered. At any given time, because some of the registered aircraft are not in flying condition, the number of aircraft flying will be less than the total number listed on the registry.

Notes on Tables

1. In 1984, airships were introduced as a separate category. The 1984 and 1985 data for gyroplanes include respectively 1 and 3 airships.
2. Aircraft Purpose "Private (Ultralight)" not reported prior to 1983.
3. Aircraft Purpose "State (Restricted)" not reported prior to 1973.
4. Aircraft Purpose "State (Experimental)" not reported prior to 1971.
5. Includes aircraft which flew 20,000 or more hours in 1983 and/or 1984 and possessed a valid certificate of airworthiness.
6. For 1970 data, Apache models are included.

Chapter VI

Government and Civil Aviation

'Freedom to Move': Canadian Regulation in the 1980s

Until the mid-1980s, the planning and implementation of civil aviation had been entirely a matter of government control. The federal government controlled route allocations, and bases of operations of transcontinental carriers, regional carriers and smaller operators.

Then in 1984, the move to liberalization of airline regulation and to acceptance of the concept of more 'open skies' began. Until this time, few industries in Canada had been as regulated as aviation, or as dependent on government assistance. The high cost of airports, the protection of sovereignty, and the need to control potentially destructive levels of competition all required a level of support and control that only the federal government was in a position to provide.

In July of 1985, an in-depth review of the regulation and control of Canadian civil aviation was begun.

At that time, the Minister of Transport, the Honourable Don Mazankowski, published proposals for economic regulatory reform in a paper entitled 'Freedom to Move'. He stated, among other things, that:

> "Unfortunately, our regimes of economic regulation in transportation have kept pace with neither changing circumstances in our economy nor the transportation system itself. The last major change in regulation took place nearly 20 years ago with the passage of the National Transportation Act. In the environment of the 1980s, the existing regulatory regime represents an obstacle to economic growth, innovation and competitiveness."[1]

Following the new proposals, a series of public hearings were set, and the legislation to incorporate the new proposals was introduced to Parliament in June 1986.

The 1985 policy directions are important to consider, not only in terms of the future of Canadian aviation, but also in terms of its past.

Indeed, the controls imposed by government are central to a network of organizations all involved in the monitoring and regulation of aviation. The government has worked through several domestic and international agencies, through airport authorities, through the airlines, and even through aircraft manufacturers to ensure the safety and efficiency of air travel in Canada.

The research and the organization of a chapter on regulation have consequently posed some inevitable problems. While it must be clearly

recognized that the industry now faces new legislation, and a new policy framework, at the time of writing, few changes have been implemented.

Therefore, the controls and support of Canadian aviation are presented as they are, and should be viewed in the context of a time of change.

While this chapter focuses on aviation regulation in Canada, a brief overview is also presented on the international scene, with some explanations of international air law, its origins, and the current conventions and bilateral agreements that govern movement in international airways.

Aviation Regulation in Canada

The laws that govern Canada's skies have been largely a response to the technology and the demands of the moment; they are not, in other words, steeped in custom and tradition as are so many of the laws which govern movement on the ground.

In 1867, the British North America Act gave federal and provincial governments separate legislative jurisdictions. But no one was thinking of the skies at that time. The roar of even the earliest of air machines was yet to be heard, so there was no legislative action in this regard.

Once the flying machines arrived, however, the law had to catch up with events. In the 1930s, there was thus considerable debate between federal and provincial governments over just who should exercise the regulation and control of civil aviation.

The Aerial League of Canada

Spearheading the drive to establish flying as a useful and profitable activity was the Aerial League of Canada, formed in 1919.

The League, which was made up of private citizens, promoted aviation and developed standards to be applied to the testing and certification of student pilots. Eventually, it was overtaken by the Flying Club movement. (See also Chapter III: "The Flying Club Movement".)

Canadian Air Law Foundations

In 1919, Parliament passed a far-sighted piece of aviation legislation, far-sighted because it was to become the basis of Canadian air law for more than half a century. The Air Board Act governed the naming of air routes, the licensing of aircraft and personnel, and the investigation of air accidents.

Initially, the executive arm of this Act, the Air Board, reported directly to Parliament. In 1923 however, the Department of National Defence took over responsibility for aviation and the Air Board, as such, ceased to exist.

One of the responsibilities of the Air Board had been the air defence of Canadian skies and the organization and administration of an air force. In 1920, the Canadian Air Force (later the Royal Canadian Air Force) was created and assumed, among other things, the responsibility for patrolling Canadian waters, as well as for flying on forestry and water-power development missions.

During the 1920s, the flying clubs and the municipal governments worked together to finance airport construction, while consulting the federal government on planning and operations. By the 1930s, however, the financial burden had become too heavy for the municipalities to bear, and the federal government assumed a greater share of the costs.

More than 50 years later, the federal government, through its Department of Transport, continues this support, contributing tens of millions of dollars each year for the operation of municipal and other airports.

In addition, many more millions go towards the construction of airports and runways, the procurement of water bombers, and professional and special services. For the fiscal year 1985-1986, Transport Canada's actual expenditures totalled $777 million. In 1969-1970, the equivalent expenditure came to nearly $115 million (see Figure 6.1).

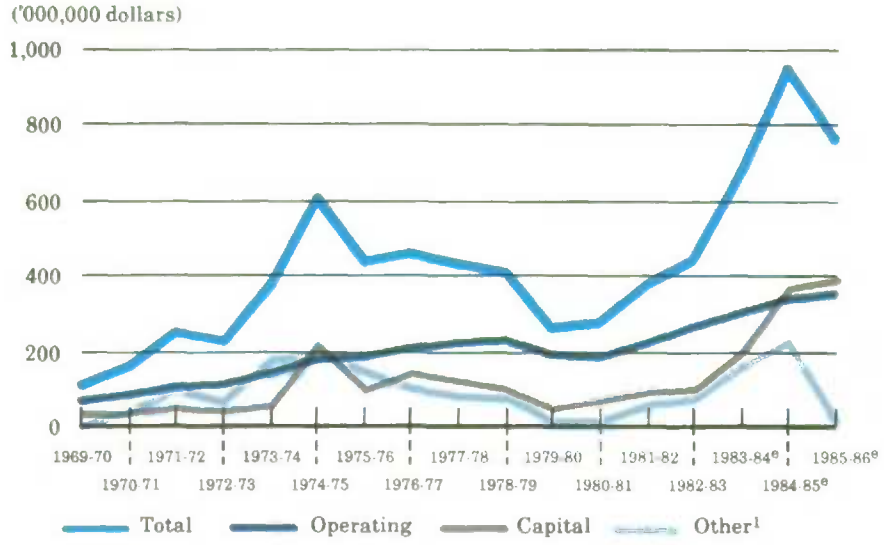
It is interesting to look at the breakdown over the two periods. In 1985-1986, 46% of the expenditures were for operations and 51% were for capital. In 1969-1970, these percentages were respectively 66% and 29% (see Figure 6.2).

The significant increase in capital expenditures since 1983-1984 is largely due to the Radar Modernization Project (RAMP). Under the RAMP Project, new radar systems are being installed at 41 locations and display systems at 29 locations across the country.[2]

But Who Rules the Skies?

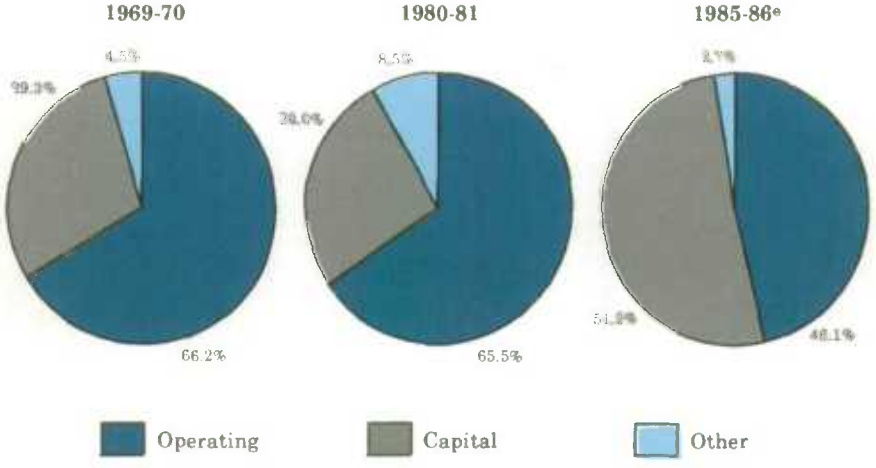
Yet, in the 1920s and 1930s, the debate between the provinces and Ottawa, about just who should control the airspace overhead, continued to be an issue. In 1932, it resulted in a famous court case, (re Legislative Powers as to the Regulation and Control of Aeronautics in Canada), in which the provinces challenged Ottawa's right to legislate aviation. The case went to the Privy Council in London, where it was finally resolved in favour of Ottawa. From then on, federal authority over all aviation matters prevailed.

Figure 6.1 **Actual Expenditures by Transport Canada on Air Transportation Program, 1969-70 to 1985-86**



Source: Public Accounts

Figure 6.2 **Proportion of Transport Canada Air Expenditures by Type of Expenditure, 1969-70, 1980-81, 1985-86**



Source: Public Accounts.

1936: A Watershed Year for Civil Aviation

If there was ever a year which could be called the watershed year of civil aviation in Canada, 1936 was it. At that time, a massive government reorganization took place with the creation of the Department of Transport (DOT). Aviation matters got a permanent home under the aegis of this new department as did many other aspects of the regulation of the Canadian transportation industry.

Thus, under its Civil Aviation Branch, the Department of Transport (today Transport Canada) took on all responsibility for Canada's non-military flying, implementing the air regulations specified by the Aeronautics Act (which replaced the Air Board Act in 1927).

The Air Transport Board

In 1944, in the year that precedes the beginning of a period of great enthusiasm and commercial progress for aviation, the federal government set up an independent regulatory body, the Air Transport Board, which was empowered to regulate the economic aspects of commercial aviation.

The Air Transport Board had been preceded by a government policy position very clearly in favour of the control of commercial aviation. In an effort to protect the airlines against cut-throat competition, the government had introduced legislation to allocate routes to companies already in the field and to prevent competition from newly-formed companies.

To determine who could fly what routes, the Board stood by two key rules: public convenience and necessity. The Board was to determine if the proposed service was in the public interest, if operators had a reasonable chance of financial success, and if they were willing and able to provide the service.

For the first time, air carriers needed a licence to operate a route or to operate from a base. The Board also had the authority to investigate complaints on rates and tariffs charged by carriers.

A National Transportation Policy

In 1967, Canada got its first comprehensive transportation policy, which was set out in the National Transportation Act. The new Act was premised on the idea that Canada should have a multi-modal transport policy. Instead of separate policies for individual sectors, transportation should be looked at from a more global perspective.

The arm of this Act was the Canadian Transport Commission (CTC). As the organization chart presented in Figure 6.3 shows, the CTC brought together all the boards previously responsible for individual transportation sectors. It, thus, inherited the powers and duties of the Air Transport Board, the Board of Transport (or Railway) Commissioners for Canada, and the Canadian Maritime Commission.

The functions previously carried out by the Air Transport Board now fell under the Air Transport Committee (ATC) of the Commission. Under the National Transportation Act, the ATC was established to administer Part II of the Aeronautics Act in the course of which it became the economic regulator of the Canadian air transport industry. The ATC also played an integral role with Transport Canada and External Affairs in negotiating international air transport agreements.

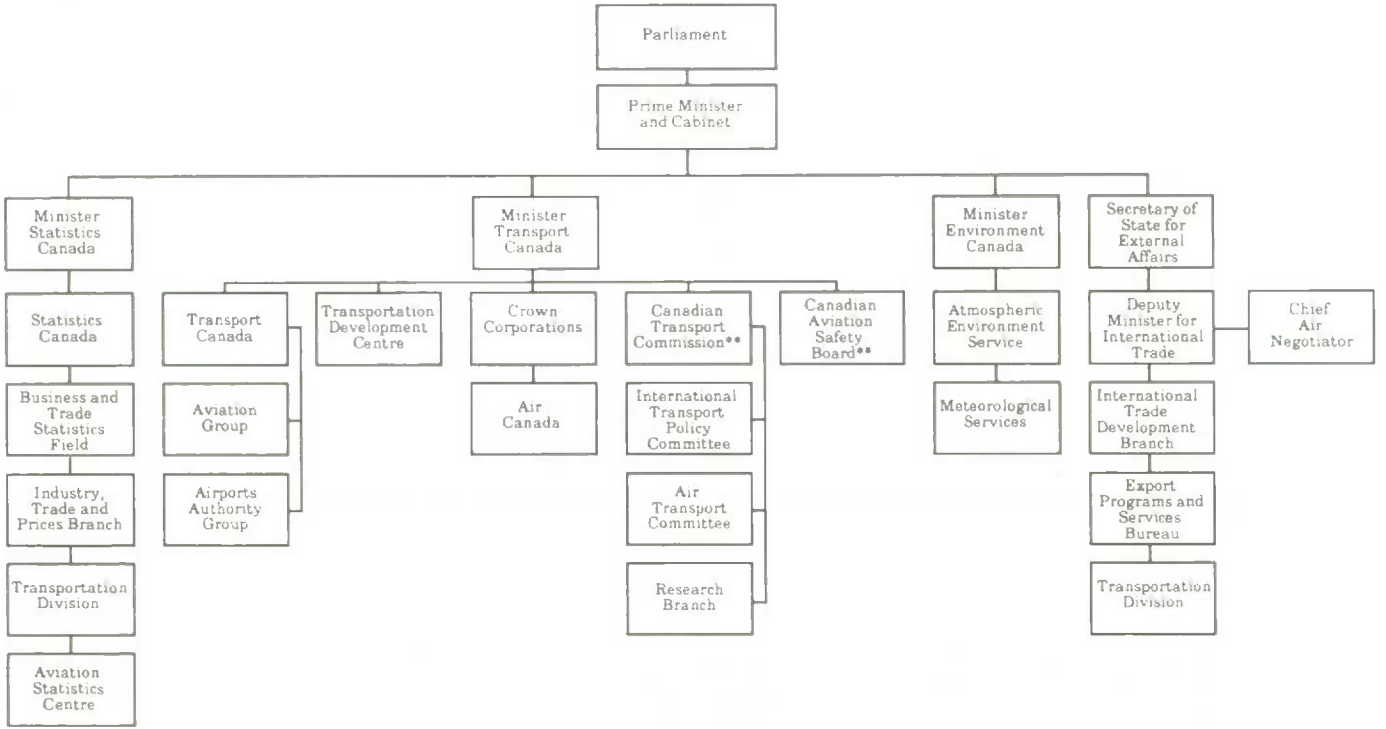
For Canadian aviation, the decade that followed the new National Transportation Act was one of enormous changes. Short and medium range jet aircraft came on the market. Turbo-props replaced the old DC4s and DC6s and proved more economical to operate. The economy expanded enormously with Gross Domestic Product (in constant 1971 prices) rising from $68 billion in 1967 to $108 billion in 1977, an increase of 59%. The services of air carriers expanded as never before.

In 1967, air carriers transported a total of approximately 9 million passengers. By 1977, the number had risen to over 22 million. Freight transport increased dramatically from 150 million kilograms in 1967 to more than 390 million kilograms by 1977.

Out of this tremendous growth came a new challenge to the policy of regulated competition. Even before the policy reviews of the mid-1980s, the structures in place were constantly being revised. For example, in 1967, Canadian Pacific Air Lines was allowed to operate flights between Montréal and Vancouver. In 1970, it was allowed to carry up to 25% of Canada's transcontinental air traffic, in direct competition with Air Canada. Since 1979, with the removal of the restriction, CPAL is fully competing with Air Canada.

Nonetheless, the CTC continued to control route allocations and competition between domestic carriers, until this role was called into question by the recent policy reviews.

Figure 6.3 **The Administration of Canadian Civil Aviation***



* As of August 1986.
** Autonomous agencies reporting to Parliament through the Minister of Transport.

Ancillary Organizations

The administration of Canadian civil aviation includes several ancillary bodies, which carry out research, policy development and other related services. In this section, explanations on their services and backgrounds are presented. For a bird's eye view of the entire organizational structure, refer again to Figure 6.3.

Aviation Statistics Centre

The Aviation Statistics Centre (ASC), a satellite which is part of the Transportation Division of Statistics Canada, has been in operation since 1966. However, the collection of aviation statistics in Canada predates the ASC by several decades.

Prior to 1936, statistics were collected and published by the Civil Aviation Branch of the Department of Marine. But with massive government reorganization in 1936, aviation matters were transferred to the newly-created Department of Transport, and the collection and dissemination of aviation statistics became the responsibility of the Dominion Bureau of Statistics (DBS), now Statistics Canada. The statistics were collected by the DBS under the Statistics Act of 1919 and the Air Regulations of 1920.

In 1944, the Air Transport Board in collaboration with the Dominion Bureau of Statistics undertook the collection of financial and operational statistics. The new source of information was used for publication by the DBS until 1966.

In 1966, the ASC was created to centralize the flow and analysis of aviation statistics. This decision was based on the need to respond to the information needs of Transport Canada and the Canadian Transport Commission, both of which provide it with some funds to operate. The creation of the ASC has enabled a reduction in response burden on the airline industry. This new structure provided a single focal point for statistical filing to the industry. ASC was mandated with the collection, processing and dissemination of air statistics to various user groups within the federal government (Transport Canada, Canadian Transport Commission, Statistics Canada), to foreign aeronautical authorities, to international aviation groups and the industry itself.

Today the ASC provides information on almost every aspect of Canadian civil aviation with emphasis on aircraft movements, airline productivity and financial health, passenger origin and destination statistics, charter statistics, and most recently, trends in industry fares. The data are used by both government and private sector organizations for route

planning and development, general economic analysis and airport planning, and a host of other aviation-related matters.

Through this data base, it has been possible to construct the composite picture of Canadian aviation presented in this publication.

But more than that, increasingly, extra-governmental groups have discovered the value and utility of the data. Especially predominant have been the country's commercial carriers, which, in need of data to face the marketing challenges of the 1980s, have found an increasing need for statistics to form their marketing strategies and make their business decisions.

The Aviation Group

The Aviation Group came into being at the beginning of 1986, with a reorganization at Transport Canada. As part of this change, that branch of Transport Canada which had been concerned with aviation matters, the Canadian Air Transportation Administration (CATA), was split into two groups. At the time of writing, these groups had been designated as the Aviation Group and the Airports Authority Group.

Until the 1986 organization, CATA had the responsibility for the regulation and administration of domestic airway facilities and a national airport system.

Today, the Aviation Group has assumed a part of this responsibility, specifically working to maintain all air traffic control services and aviation regulation. The latter covers licensing and certification, legislation and enforcement, medicine (matters related to the health and security of air travellers) as well as international technical liaison. The Aviation Group also provides flight services for Transport Canada's aircraft fleet and the aviation activity statistics and forecasts needed for the planning and management of the air transportation program.

The Airports Authority Group

The other half of CATA's duties has been assumed by the Airports Authority Group (AAG), which now works to manage Canada's airport system, by maintaining Transport Canada's owned and/or operated airports.

In 1985, of the 1,255 licensed airports in Canada, Transport Canada operated 122. Today, the AAG is specifically responsible for the maintenance of these airports. In this regard, it supervises a broad spectrum of activity, ranging from the supervision of airport concessions and security to airport construction, engineering, building and runway maintenance and overall marketing activities.

The Air Transport Committee

As already briefly mentioned, the Air Transport Committee (ATC) became the economic regulator of the Canadian air transport industry, following the passage of the National Transportation Act in 1967.

Thus, as one of the member committees of the Canadian Transport Commission (CTC), the ATC is specifically mandated to regulate the entry and exit of commercial air carriers, and to enforce economic regulations specified under Part II of the Aeronautics Act.

In addition, it is also responsible for advising the Minister of Transport on civil aviation matters, and for working to develop and promulgate additions and amendments to the Air Carrier Regulations to ensure the effective economic regulation of air transportation. Above all, the ATC is concerned with promoting an effective Canadian air tranport system, which meets the needs of air travellers in Canada through reasonable rates and fares.

With the proposed new National Transportation Act, the Canadian Transport Commission is likely to be replaced by a National Transportation Agency.

The Research Branch

The Research Branch (previously the Research Division) came into being in 1968. That Branch of the CTC is mandated to provide research support to the Commission and its committees, to respond to requests from Transport Canada and to carry out other relevant studies, as specified in the National Transportation Act.

The Research Branch provides the economic analyses required by the interdepartmental group responsible for bilateral air negotiations. The Branch also publishes and distributes research reports that provide analyses on different aspects of the domestic airline industry : operating performance of carriers, pricing, cost structure and productivity.

The Canadian Aviation Safety Board[3]

A key body in the administration of civil aviation is the Canadian Aviation Safety Board (CASB). Established in 1984 with the passage of the Act of the same name, its purpose is, quite simply, to improve aviation safety in Canada.

The creation of the CASB marked a significant step in the evolution of Canada's approach to aviation safety. In 1981, the Commission of

Inquiry on Aviation Safety (Dubin Commission) had, as one of its key recommendations, the establishment of an independent safety board. As the report stated:

> "The analysis of the aviation safety system must be that of an independent tribunal. The function of the tribunal should be much more than the investigation and reporting of accidents and incidents, as important as that function is. The tribunal's sole concern must be that of aviation safety."[4]

Thus, the CASB has been set up to operate independently of any government department and reports directly to Parliament. (Refer to Figure on the Administration of Canadian Civil Aviation.)

The CASB has exclusive jurisdiction in the investigation of all air accidents in Canada. It can hold public inquiries and must, in turn, make its reports public. It has investigation teams on a 24-hour alert, and after an accident anywhere in Canada, a team will be dispatched to gather information on its cause.

The CASB monitors accident rates in the various aircraft categories, and asks that all pilots report any flying mishaps. Their replies are protected under its Confidential Aviation Safety Reporting Program.

Once the CASB has investigated an accident, it releases a report with recommendations for improved aviation safety. To ensure that these recommendations are acted on, the CASB Act stipulates that the appropriate Minister consider the recommendations and reply within 90 days.

In Canada, over the past decade, the number of aircraft accidents has averaged about 700 a year. In recent years, this has declined to about 500, partly due to improved safety, partly to a drop in flying activity.

In Figure 6.4, accident rates per 100,000 flying hours are shown by type of operation.

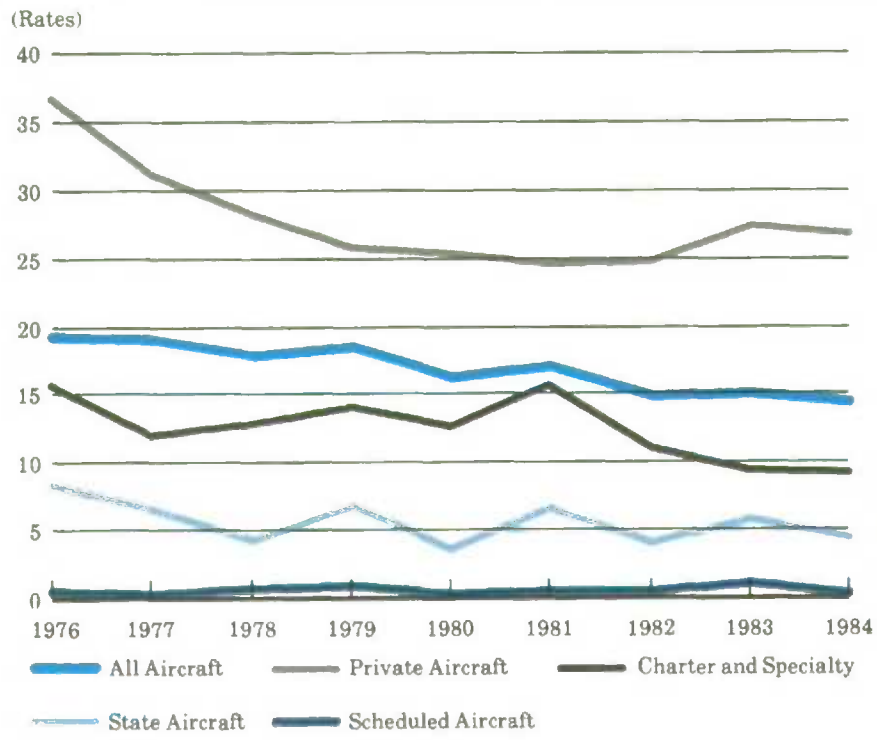
The Transportation Development Centre

While the CASB is concerned with pinpointing safety hazards in Canadian aviation, the Transportation Development Centre (TDC) is also concerned with solving them.

The TDC actually began life as the Transportation Development Agency (TDA) in 1970. It was set up in Montréal, to be near this transportation-intense centre, and consequently more responsive to the needs of the industry.

The TDA began as a Transport Canada research agency, which was

Figure 6.4 **Accident Rates per 100,000 Flying Hours by Type of Operation, 1976-1984**



Sources: Canadian Aviation Safety Board – Annual Reports and Files.
Statistics Canada: 51-206.

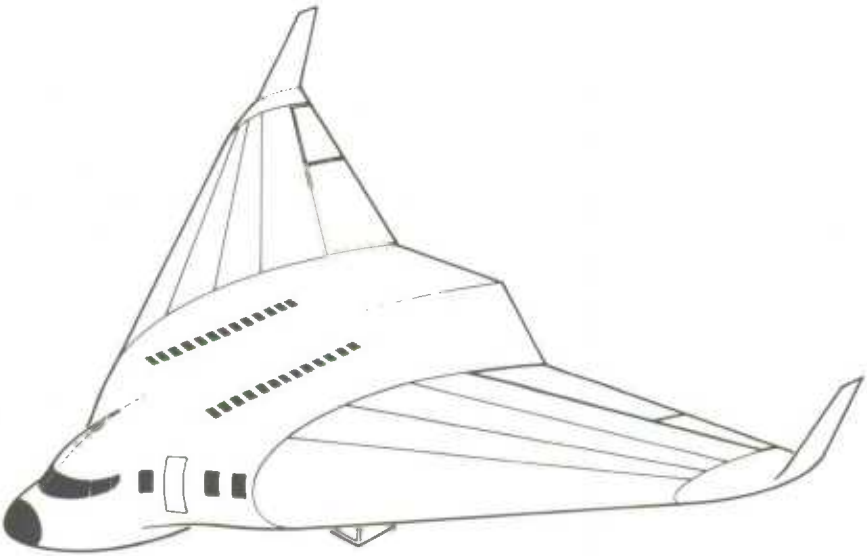
set up to look at national transportation research and development needs. In 1976, it was renamed the Transportation Development Centre and its work has been more and more tied in with overall departmental priorities. It is consequently involved in activities such as energy conservation and accident investigation.

Essentially, the role of the TDC is to fund and manage research. Its programs cover all modes of transportation: marine, air, rail and road.

In the aviation area, the TDC supervises research on safety and regulation, navigation aids, airport efficiency and aircraft design.

As an example of its work in this last area, the TDC has contracted with Canadair to produce experimental designs on wing aerodynamics (see Figure 6.5). The TDC is also involved in studying fuel efficiency and has continued research into improving the operating cost of short take-off and landing aircraft (STOL).

Figure 6.5 **The "Flying Wing"**



Transportation Development Centre
The "flying wing" design of a 100-passenger aircraft

This innovative aircraft configuration comes from work carried out by Canadair, for the Transportation Development Centre. The results of Canadair's research conclude that the conventional wing-body-tail is a better design. The "flying wing" was an improvement given shorter stage lengths and high enough thrust-to-weight ratios and climb speed.

The Atmospheric Environment Service[5]

Of all industries, aviation is perhaps one of the most affected by weather and consequently, the most dependent on meteorological services.

In Canada, the first scientifically-recorded weather observations date from 1839, when a magnetic observatory was set up in Toronto. Although this early observatory could not 'forecast' the weather, it could measure pressure, temperature, humidity and wind. Later, in 1910, kites were sent up to monitor the upper reaches of the environment.

But it wasn't until the 1930s that true weather forecasting became possible with the development of radiosonde equipment. In 1936, the Meteorological Service was set up, under the Department of Transport, to help concentrate efforts on developing meteorological technology to

meet aviation's expanding weather needs. In 1972, the Service was moved to Environment Canada and renamed the "Atmospheric Environment Service" (AES) in keeping with its expanding role in public, economic and environmental weather services.

Today, the AES receives input from over 3,000 weather observation stations across the country. Of these, 300 take observations at one-hour, three-hour and six-hour intervals. Another 33 stations monitor the upper environment, going as high as 34 000 metres. The great mass of data which results from this constant "surveillance" is transmitted across the country by ground and satellite networks. Then, together with similar international data, it is processed by computer to produce weather maps and forecasts which are available to aviators at Canadian weather offices.

When pilots plan their travel itineraries, they are briefed on the atmospheric conditions of the area through which they will pass, as well as on the weather at destination. Information is available on cloud layers, visibility, upper and surface winds and weather movements.

While the Atmospheric Environment Service predicts and observes weather conditions only over Canada's land mass and surrounding waters (particularly within the 200-mile zone), its weather services are used by pilots around the world who are interested in travel in Canadian airspace.

The International Weather Watch

After World War II, the need to co-ordinate international weather observing and forecasting resulted in the creation of the World Meteorological Organization.

One result of the efforts of this organization has been the development of an international weather language or weather code. Thus, pilots travelling in foreign countries have no problem understanding weather maps, even if they do not understand the language of the country. Aviation weather information is always presented in code, and the code applies internationally. In Figure 6.6, some standard weather symbols are presented, of the type a pilot can expect to find on any weather map in the world.

The Air Transport Association of Canada

The Air Transport Association of Canada (ATAC), founded in 1934, works as the national service organization for the air transport industry. Headquartered in Ottawa, it represents some 80 domestic air carriers that account for more than 95% of all air transport revenues. ATAC is the chief consultative body and communication channel between the federal authorities and the industry.

Figure 6.6

STANDARD WEATHER SYMBOLS

Meaning	*Symbol*	*Meaning*	*Symbol*
Moderate turbulence		Snow shower	
Severe turbulence		Thunderstorm	
Moderate icing		Freezing rain	
Severe icing		Tropical storm	
Intermittent rain		Hurricane (typhoon)	
Intermittent snow		Continuous rain	
Intermittent drizzle		Continuous snow	
Rain shower		Continuous drizzle	

Standard Weather symbols a pilot could be expected to find no matter where he or she travels in the world. These symbols have been standardized by the World Meteorological Organization.

Canada in the International Context

The development of international air law has been sporadic and for the better half of this century, almost non-existent.

But efforts to codify air law and reach international agreements go back to the very early days of aviation. Once the Wright Brothers had completed their first-ever engine-powered flight, international discussion on aviation regulation became highly stimulated. In 1910, when German balloons began edging into French airspace, France decided an agreement governing the safety of these balloons was in order and, as a result, convened a conference on aviation.

Although the 1910 Paris Conference achieved few tangible results, it did provide an international forum on aviation matters.

Before that, and as early as 1784, the French police had issued a directive aimed at the Montgolfier Brothers; they were told their balloon flights could not take place without previous authorization. The police were not so much concerned with regulating traffic in the air as they were about the safety of the French citizens below.[6]

It was not until 1919, however, that a convention came into being, under which aircraft could navigate internationally. The International Convention for Air Navigation (ICAN), drawn up in Paris during the Peace Conference, embodied a very important principle in aviation law: the principle of complete and exclusive sovereignty of states over their own airspace.

The Chicago Convention of 1944

Before World War II, international aviation was in the very early stages of development. It was a difficult period, with much confusion, even about the most basic of principles.

Some countries refused to permit others the right to cross over their territorial airspace. Others refused foreign carriers landing privileges. As a result, there was a great need for bilateral bargaining. Air carriers were often regarded as a source of national prestige.

In all this, Canada favoured a position of international co-operation and peace, and towards the end of World War II, began actively to lobby for a more harmonious international aviation environment.

In 1944, 55 neutral and allied nations were invited to a conference on international aviation in Chicago. The debate there lasted five long

weeks, but in the end the Chicago Convention was adopted and an international understanding and accord on aviation principles was finally achieved.

The Chicago Convention, as finally approved, provided for: the recognition of five 'freedoms of the air' and the establishment of the International Civil Aviation Organization (ICAO).

The Five Freedoms of the Air and the International Civil Aviation Organization (ICAO)

To set the stage for a peaceful global co-existence, the Chicago Convention provided for the recognition of five 'freedoms of the air' (see Figure 6.7).

The first two freedoms allowed signatories the right to fly over the territory of a foreign nation without landing, and the right to land on the territory of a foreign nation for non-traffic purposes. The third and fourth freedoms enabled a state to drop off and pick up passengers in a foreign state.

The fifth freedom involved the right of a state to carry passengers and cargo between two foreign states. However, not all countries were willing to endorse all the freedoms and the result has been a series of bilateral agreements.

At the same time, the Chicago Convention provided for the creation of the International Civil Aviation Organization, to serve as a medium for co-operation of states in civil aviation and the settlement of disputes in this area.

In 1947, the ICAO became a specialized agency of the United Nations, with headquarters in Montréal, and with a membership of 47 nations.

Today, ICAO's objective is primarily to promote safe, regular, efficient and economical air transport. It also works in close co-operation with the World Meteorological Organization and other members of the United Nations family, to create a more workable international forum for air travel.

By 1985, ICAO had grown to number 156 member states.

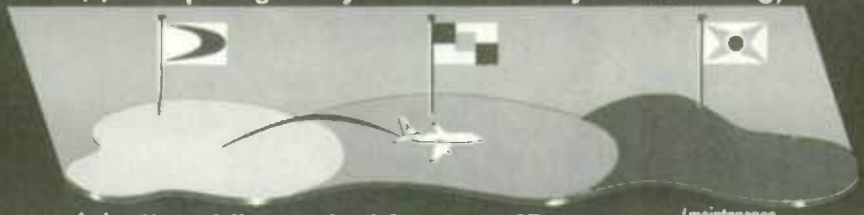
The International Air Transport Association

One of the most far-reaching developments in the period after 1944 was the support given by states to airline co-operative efforts within the International Air Transport Association (IATA).

THE 5 FREEDOMS OF THE AIR

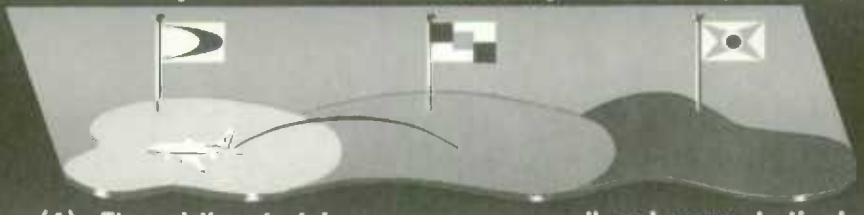
EACH CONTRACTING STATE GRANTS TO THE OTHER CONTRACTING STATES THE FOLLOWING FREEDOMS OF THE AIR IN RESPECT OF SCHEDULED INTERNATIONAL AIR SERVICES:

(1) The privilege to fly across its territory without landing;



(2) The privilege to land for non-traffic purposes; (maintenance, refuelling...)

(3) The privilege to put down passengers, mail and cargo taken on in the territory of the State whose nationality the aircraft possesses;



(4) The privilege to take on passengers, mail and cargo destined for the territory of the State whose nationality the aircraft possesses;

(5) The privilege to take on passengers, mail and cargo destined for the territory of any other contracting State and the privilege to put down passengers, mail and cargo coming from any such territory.

Figure 6.7

IATA is not an official government body, but a private organization of airlines. Its history dates back to 1919, when it was originally set up by six airline companies at The Hague, Netherlands.

Today, IATA deals with, among other things, tariff matters in international transport. Nearly all major scheduled service airline companies operating international air transport services participate in IATA. In addition, its technical duties are designed to achieve safe, regular and economically viable air traffic.

Bilateral Air Agreements

Viewed against this backdrop and specifically guided by the spirit of the Chicago Convention, bilateral air agreements have become the more immediate instrument of control of air services between any two concerned states. The bilateral air agreement has come to constitute a tool of mutual accord which can promote and stimulate air service between two countries for the economic benefit of both.

An important milestone in bilateral agreements was the Bermuda I Agreement, reached between the United States and the United Kingdom in 1946.

As Professor Diederiks-Verschoor puts it, in her study on air law:

> "The spectacular success of the first Bermuda agreement is probably due to its conciliatory nature and rules. (It) was concluded between two leading powers in aviation at a time when there were conflicting aims and policies between them: Great Britain favoured a restrictive policy; whereas the United States was a champion of more freedom."[7]

Basically, the Bermuda Agreement was the result of a compromise between these two attitudes. It was premised on the principle the states should have a fair and equal opportunity to operate international airlines to and from their own country, and to operate at a capacity they considered justified, providing they stayed within the guidelines of the Agreement.

Since the Bermuda Agreement was ratified, many countries have used it as a model for their own bilateral treaties and Canada has been no exception.

Indeed, in many of Canada's bilateral agreements, it is stated that "there shall be fair and equal opportunity for the airlines of both parties..."[8].

Another important factor in Canada's international air relations is the growing trend towards a less restricted and controlled, more market-oriented environment. This is particularly the case with air relations with the United States.

In Canada, there are 45 bilateral agreements in effect with other countries (see Table 6.1). Some of these agreements are very simple, allowing for rights from only one point to another. Others cover a multiplicity of origins and destinations and many carriers. An example is the latest United States - Canada accord, which encompasses service between 120 points and involves 60 carriers.

The 1970s have marked serious changes in the spirit of international negotiations. In 1978, the United States announced its new policy of free skies, and deregulation in a move which has prefaced a new era of legal development in the international context.

Regulatory forces will increasingly have to contend with the impact of this policy, and while the Chicago freedoms and safety provisions have served the last decades well, the new trends have opened the way for another round of world discussion and accord.

The Warsaw Convention

The Warsaw Convention dates from 1929, and has, as one of its major tenets, the principle of the air carrier's liability for damage caused to passengers, baggage and goods.

If a passenger suffers from a mishap while in air transit, damages are claimable under the Warsaw Convention.

Every ticket issued by an airline whose country subscribes to the Convention must give notice that carriage is subject to the provisions of the Warsaw Convention. The ticket generally informs the traveller that he or she is protected subject to the provisions of the Convention, and that additional protection can be picked up from insurance sources.

In essence, the Warsaw Convention is an agreement dealing with matters of private international law. The Convention has been amended many times, to keep up with the growth of aviation, and is therefore now referred to as the Warsaw System. In 1955, the Hague Protocol adapted it to the demands of the current conditions. In 1961, the Guadalajara Convention took account of an entirely new force in international aviation, namely chartering. Since then, several other protocols and amendments have been negotiated, but have not yet come into force.

Table 6.1 Information Pertaining to Points of Origin and Destination for Scheduled Air Services as Contained in Air Transport Agreements*

Foreign State	For Foreign State		For Canada	
	Points of Origin	Points of Destination	Points of Origin	Points of Destination
Argentina	Argentina	Montréal	Canada	Buenos Aires
Australia	Australia	Vancouver	Canada	Sydney
Barbados	Bridgetown	Montréal and/or Toronto and/or Calgary	Canada	Bridgetown
Belgium	One point in Belgium	Montréal and/or Toronto	One point in Canada	Brussels and/or one other point in Belgium
Brazil	Brazil	Montréal and/or Toronto	Canada	Rio de Janiero and/or Sao Paulo
Chile	Chile	Montréal	Canada	Santiago
China	China	Vancouver and Ottawa and one other point to be agreed	Canada	Shanghai and Peking and one other point to be agreed
Cuba	Cuba	Montréal and/or Ottawa	Canada	Havana and/or Varadero
Czechoslovakia	Czechoslovakia	Montréal	Canada	Prague
Denmark	Denmark	Montréal	Canada	Copenhagen
Dominican Republic	Dominican Republic	Montréal and/or Toronto	Canada	Santo Domingo and/or Puerto Plata
Fiji	Fiji	Vancouver	Canada	Nandi
Finland	Finland	Montréal	Canada	Helsinki
France	1. France	Montréal and/or Toronto	1. Canada	Paris and/or two other points
	2. Pointe à Pitre and/or Fort de France	Montréal	2. Canada	Pointe à Pitre and/or Fort de France
	3. Papeete	Vancouver	3. Vancouver	Papeete
Germany (FRG)	Germany	Toronto and/or Montréal and/or two points in Alberta and/or Vancouver	Canada	Frankfurt and/or two other points
Greece	Greece	Montréal and/or Toronto	Canada	Athens
Haiti	Haiti	Montréal	Canada	Port au Prince
India	1. India	Montréal and/or Toronto	1. Canada	Bombay and/or Delhi
	2. India	Vancouver	2. Canada	Delhi or Calcutta
Ireland	1. Shannon	Gander	Montréal	Shannon
	2. Shannon	Montréal		
Israel	Israel	Montréal and/or Toronto	Canada	Tel Aviv
Italy	Italy	Montréal and/or Toronto	Canada	Rome and/or Milan
Jamaica	Jamaica	Toronto and/or Montréal and/or one point west of Ontario	Canada	Kingston and/or Montego Bay
Japan	Tokyo or any other point or points	Vancouver	Vancouver or any other point or points	Tokyo

Table 6.1 **Information Pertaining to Points of Origin and Destination for Scheduled Air Services as Contained in Air Transport Agreements*** – Continued

Foreign State	For Foreign State		For Canada	
	Points of Origin	Points of Destination	Points of Origin	Points of Destination
Mexico	1. Mexico City and/or Acapulco and/or Guadalajara	Calgary and/or Vancouver and/or Windsor and/or Toronto and/or Montréal	1. Vancouver and/or Edmonton and/or Calgary and/or Winnipeg	Guadalajara and/or Mexico City and/or Acapulco
	2. Cozumel and/or Cancun and/or Merida	Toronto and/or Montréal	2. Montréal and/or Toronto and/or Windsor 3. Vancouver and/or Calgary	Guadalajara and/or Puerto Vallarta and/or Mexico City and/or Acapulco La Paz and/or San Jose Del Cabo and/or Mazatlan and/or Puerto Vallarta
Morocco	Morocco	Montréal	Canada	Casablanca or one other point
Netherlands	A. Netherlands	1. Montréal 2. Montréal and/or Toronto 3. Calgary and/or Vancouver	A. Canada	Amsterdam and two other points in the Netherlands
	B. Netherlands Antilles	A point in Canada	B. Canada	A point in the Netherlands Antilles
New Zealand	New Zealand	Vancouver or Toronto	Canada	Auckland and/or Christchurch
Norway	Norway	Montréal	Canada	Oslo
Pakistan	Pakistan	Montréal	Canada	Karachi
Panama	Panama	Montréal or Vancouver	Canada	Panama City
Peru	1. Lima 2. Lima and/or other points	Vancouver Montréal	Vancouver Montréal and/or other points in Eastern Canada	Lima and/or Talara
Poland	Poland	Montréal	Canada	Warsaw
Portugal	The Azores and/or Lisbon	Montréal	Montréal	The Azores and/or Lisbon
Romania	Romania	Montréal	Canada	Bucharest
Singapore	1. Singapore 2. Singapore	Montréal and Toronto Vancouver	Canada	Singapore
Sweden	Stockholm	Montréal	Canada	Stockholm
St. Kitts	St. Kitts	Montréal and/or Toronto	Canada	St. Kitts
St. Lucia	St. Lucia	Toronto and/or Montréal	Canada	St. Lucia
Switzerland	Switzerland	Montréal and/or Toronto	Canada	Zurich and/or Geneva
Trinidad and Tobago	Trinidad and Tobago	Toronto	Canada	Port of Spain
Turkey	Turkey	Montréal and/or Gander	Canada	Istanbul and/or Ankara

Table 6.1 **Information Pertaining to Points of Origin and Destination for Scheduled Air Services as Contained in Air Transport Agreements*** – Concluded

Foreign State	For Foreign State		For Canada	
	Points of Origin	Points of Destination	Points of Origin	Points of Destination
United Kingdom	1. London and/or Manchester and/or Prestwick and/or one other point	Gander and/or Halifax and/or Montréal and/or Toronto and/or Winnipeg and/or Edmonton and/or Calgary and/or Vancouver and/or Ottawa	1. Canada 2. Toronto and/or Montréal 3. Halifax 4. Vancouver and/or two other points	Prestwick and/or London and/or Manchester Bermuda and/or other points in U.K. Territories in the Caribbean Bermuda Hong Kong
	2. Bermuda and/or other points in U.K. Territories in the Caribbean	Montréal		
	3. Hong Kong	Vancouver and/or one point not east of Winnipeg		
U.S.S.R.	U.S.S.R.	Montréal	Canada	Moscow
Yugoslavia	Yugoslavia	Montréal and Toronto	Canada	Belgrade and Zagreb

* In force as of August 1986. Excludes Canada-United States accord.
Source: Canadian Transport Commission.

Notes to Chapter VI

Notes to Text

1. Hon. D. Mazankowski, Minister of Transport, **"Freedom to Move", a framework for transportation reform**, Minister of Supply and Services Canada, 1985. 2nd page.
2. Transport Canada, Annual Report, 1983-84.
3. Canadian Aviation Safety Board, Annual Reports, 1984, 1985.
4. Charles L. Dubin, **"Report of the Commission of Inquiry on Aviation Safety"**, Vol. 1, Ottawa, Ontario, 1981.
5. Internal Study on the Atmospheric Environment Service.
6. Professor dr. I.H. Ph. Diederiks-Verschoor, **"An Introduction to Air Law"**, (Netherlands: Kluwe Law and Taxation Publishers), p. 2.
7. Diederiks-Verschoor, p. 41.
8. Canadian Transport Commission.

Notes on Figures

1. Includes grants and contributions, capital and airport revolving fund and employee benefit accounts.

A Concluding Note

In the nearly 80 years since Douglas McCurdy made the first 'powered flight' in Canadian air, aviation in this country has evolved to a sophisticated industry which would quite likely rival the dreams of Canada's first air explorers.

With increasingly powerful aircraft capable of great speed and long-haul distances, the problems of the vast spaces which confounded communications and transportation in the early decades of Canada's development, have now been diminished. But their presence has also contributed to the development of a strong air transport industry and a vigorous private flying sector.

In 1985, Canada's airports accommodated more than 48 million people and handled more than 585 thousand tonnes of cargo. At the same time, more than 13 thousand private aircraft, of varying descriptions, had valid certificates of airworthiness. Even in the last decade, these statistics show tremendous volume changes and, compared to air travel in the 1950s and 1960s, forcibly contribute to the expectation that air transport in Canada behaves well.

While the impact of economic downturn in the early 1980s has left its mark on all sectors of civil aviation, the statistics now clearly show that both the industry and most areas of the private sector have rallied.

If anything, the commercial sector has emerged from the early 1980s to be stronger and leaner, with a fleet profile almost entirely different from that of the 1960s and 1970s. Thus, many of the big 'fuel-hungry' workhorses have been gradually replaced with sleeker, more efficient models like the Boeing 757 and the Boeing 767, and with new turbo-prop aircraft such as Dash 7 and Dash 8, models more tailored to the operational realities of the 1980s and 1990s.

In addition, the industry is now embarked on an era of 'reregulation', and of more 'open skies', both of which will have an immense impact on the air traveller and the industry. It will be an era of change.

The complete ramifications and effects of reregulation have not yet been entirely realized; changes in government infrastructure, the carriers and industry strategy continue to be implemented. As the air transport industry moves into the 1990s, the expectations are that these challenges will neither deter its evolution, nor undermine its viability.

Glossary of Terms[1]

Advanced Booking Charter
A return passenger charter where one or more charterers contract for the entire passenger seating capacity of an aircraft for resale to the general public at a price per seat. The potential passengers observe a minimum prebooking deadline set with reference to the planned date of the outbound charter flight.

Aircraft belly hold
Refers to the underfloor cargo area of a passenger aircraft usually used for storage of passenger baggage and air cargo.

Aircraft movement
A takeoff, a landing, or a simulated approach by an aircraft.

Airport
An area of land or water that is used or intended to be used for the landing or takeoff of aircraft, including terminal buildings and facilities, if any.
The airport classification in Canada is as follows:

"International Airport"
Airport designated by Canada as an airport of entry and departure for international traffic, where Customs, Immigration, Public Health, Animal and Plant Quarantine and similar procedures are conducted. It must also meet the following conditions: – the airport is included in an **ICAO Regional Air Navigation Plan** as an airport for regular use by international scheduled air transport; the airport is designated by Revenue Canada, Customs and Excise as a Class 4 (International Airport) airport of entry; the airport supports a CTC Class 8 direct unit toll service to a foreign airport beyond the continental United States.

"National Airport"
The major airport at each provincial or territorial capital, if the major airport is not in the International airport class; or an airport supporting CTC Class 1 single plane service to at least four International airports such that the International airports are not served sequentially.

"Regional Airport"
Airport that supports CTC Class 1 single plane service to a National or International airport; and CTC Class 1, 2, 3, 8, 9-2, or 9-3 direct non-stop service to at least three other airports.

"Local Commercial Airport"
Airport that serves as a base or point of call named in a CTC licence for a commercial air service, but does not meet the criteria established for the International, National or Regional class definitions.

"Local Airport"
Airport that is not named as a base or point of call in a CTC licence for any commercial air service.

Area of service
The areas of services as presented in Table 2.17 (Chapter II) are defined below:

Transborder services. Services between points in Canada and Alaska, Canada and Hawaii, and Canada and continental United States. Prior to 1970, statistics for flights to Hawaii were included under the heading "Pacific and Orient".

Transatlantic and Polar services. Services between Canada and Europe or between Canada and the Soviet Union. This also includes flights between Canada and St. Pierre and Miquelon.

Southern services. Services between Canada and Bermuda, the Caribbean, Mexico, Central America and South America. Prior to 1970, statistics for flights to Florida were included under the heading "Southern".

Pacific and Orient services. Services to Australia, Oceania, and Asia (excluding the Soviet Union). Prior to 1970, statistics for flights to Hawaii were included under the heading "Pacific and Orient" but are now included under "Transborder".

Other foreign services. Services between points outside Canada.

Arriving
Traffic (passengers, mail and cargo) which lands at an airport in Canada. It includes traffic remaining on board aircraft as well as traffic deplaned.

ASC – Aviation Statistics Centre
A statistical satellite unit part of the Transportation Division of Statistics Canada.

ATB – Air Transport Board
This Board was superseded in 1967 by the Air Transport Committee of the Canadian Transport Commission.

ATC – Air Transport Committee
Member committee of the Canadian Transport Commission and is responsible for regulating air transportation in Canada.

Average tonne-kilometre per aircraft hour flown
This ratio is calculated by dividing the total tonne-kilometres flown by the aircraft hours flown.

Balloon
A lighter-than-air aircraft.

BCATP – British Commonwealth Air Training Plan
A World War II plan for Allied pilot training in Canada.

Bilateral air agreement
An agreement or treaty between two nations contracting for reciprocal international air service between the two nations, such service to be operated by designated carriers of each nation. The agreement may include provisions for the type of aircraft used, intermediate stops en route, aircraft safety, taxation-free fuel, and arbitration procedures.

Cargo
Total freight and express carried. Cargo does not include mail or excess baggage.

CASB – Canadian Aviation Safety Board
A body in the administration of civil aviation which was created by the 1984 Canadian Aviation Safety Act and is responsible to improve aviation safety in Canada.

Certificate of airworthiness
In Canada, there are two different certificates of airworthiness issued by Transport Canada: one, at the manufacturer's expense, approving the type design of an aircraft; the other must be applied for annually by the owner of each aircraft, and involves a mechanical inspection of the aircraft by a certified mechanic, and a test flight by a specially certified pilot.

Charter Service
A service offered for transport of passengers or cargo, in which one or more charterers obtain the exclusive use of an aircraft for one or more trips. The charter services are referred to Classes 4, and 9-4 licences.

City-Pair
A method of presenting statistical data which is used to show the volumes of traffic flown between two specific cities. The two cities are those between which travel is authorized by a ticket or part of a ticket. They represent the directional origin and destination.

Civil aircraft
General term covering all non-military aircraft.

Class of service
Refers to the licence authority under which a carrier is authorized by the Canadian Transport Commission to provide a service. These classes are defined as follows:

Class 1
Scheduled commercial air service, being a service that is operated between points in Canada and that is required to provide public transportation of persons, goods or mail by aircraft, serving points in accordance with a service schedule at a toll per unit of traffic;

Class 2
Regular Specific Point commercial air service, being a service that is operated between points in Canada and that is required to provide, to the extent that facilities are available, public transportation of persons, goods or mail by aircraft, serving points in accordance with a service pattern at a toll per unit of traffic;

Class 3
Specific Point commercial air service, being a service that is operated between points in Canada and that offers public transportation of persons, goods or mail by aircraft, serving points consistent with traffic requirements and operating conditions at a toll per unit of traffic;

Class 4
Charter commercial air service, being a service that offers public transportation of persons or goods on reasonable demand from the base specified or the protected base denoted in the licence issued for that commercial air service, or from or to any other point in Canada in accordance with these Regulations and the **Class 4 Positioning Charges Regulations**, at a toll per mile or per hour for the charter of an entire aircraft with crew, or at such tolls as may be allowed by the Committee, and includes the additional authority to perform the following Class 7 Specialty commercial air services with aircraft that the carrier may use pursuant to the terms and conditions of its Class 4 licence;

Class 5
Contract commercial air service, being a service that is operated wholly within Canada from the base specified in the licence issued for that commercial air service, that offers transportation of persons or goods solely under contracts of carriage with users with whom the air carrier has a substantial relationship through corporate structure or financial control and that does not hold out to the general public, or a class of segment thereof, the offer of transportation by air;

Class 6
Flying Club commercial air service, being a service that is operated from the base in Canada specified in the licence issued for that commercial air service and that provides flying training and recreational flying to members of a flying club incorporated as a non-profit organization;

Class 7
Specialty commercial air service, being a service that is operated from the base specified in the licence issued for that commercial air service or from or to any other point in Canada where the licensee performs; – aerial application and distribution, – aerial construction, aerial control, – aerial inspection, reconnaissance and advertising, – aerial photography and survey, – aerial photography restricted to scenics, – flying training, – recreational flying, – any other type of aerial work assigned by the Committee to Class 7;

Class 8
International Scheduled commercial air service – same definition as Class 1, except that the service is operated between points in Canada and points in any other country;

Class 9-2
International Regular Specific Point commercial air service – same definition as Class 2, except that the service is operated between points in Canada and points in any other country;

Class 9-3
International Specific Point commercial air service – same definition as Class 3, except that the service is operated between points in Canada and points in any other country;

Class 9-4
International Charter commercial air service – same definition as Class 4, except that the service is operated between Canada and any area outside Canada;

Class 9-5
International Contract commercial air service – same definition as Class 5, except that the service is operated between Canada and any other country.

Combi-aircraft
Refers to any commercial aircraft that is simultaneously carrying a combination of aircraft unit load devices (U.L.D.'s) and passengers on the main deck.

Commercial aviation
Commercial aviation, in this publication, describes the activities of all major airlines and large commercial ventures, which specialize in the transport of passengers or goods for profit. These activities are defined as Levels I to III air carriers.

CTC – Canadian Transport Commission
The Federal Government body which was created by the 1967 National Transportation Act and is responsible for the regulation of air, rail, road, water and pipeline transportation.

Current ratio
A measure of liquidity obtained by dividing current assets by current liabilities. This ratio is used to show the ability to pay current debts from current assets.

Debt-asset ratio
The percentage of capital provided by shareholders. This ratio is used as a measure of solvency and is obtained by dividing total debts by total assets.

Deep discount fare
Deep discount fares are those discounted by 25% or more off the full economy fares.

Departing
Traffic (passengers, mail and cargo) which takes off from an airport in Canada. It includes traffic remaining on board aircraft as well as traffic enplaned.

Deplaned
Traffic (passengers, mail and cargo) which lands and disembarks at an airport in Canada. It includes interline and intraline transfers, and traffic stopping over, as well as traffic terminating at an airport.

Depreciation
An amount of money charged to expense which is incurred in normal wear and tear on property and equipment (not been replaced by current repair), as well as losses in serviceability occasioned by obsolescence, innovation, and changes in popular demand, or by action of public authority.

Destination
The last point in the itinerary and the last point at which the passenger is to deplane at the completion of the journey.

Discount fare
A reduced fare usually subject to one or more travel restrictions, the price of which is usually calculated as a percentage reduction from the normal full fare. Discounted fare includes various discount fares such as Charter Class, Seat Sales, Advance Purchase Excursion, Group.

Domestic
Refers to traffic beginning and terminating in the provinces and territories of Canada, and to traffic flown between city-pairs in Canada.

Economy fare
A basic fare level which is less expensive than first class but does not include the amenities (e.g., larger seats, complimentary bar) of the first class fare.

Enplaned
Traffic (passengers, mail and cargo) which embarks and takes off from an airport in Canada. It includes interline and intraline transfers, and traffic stopping over, as well as traffic originating at an airport.

Excess baggage
Baggage, which in terms of weight, number of pieces, or size exceeds the free baggage allowance stated in the air carrier's tariffs and for which a charge is levied.

Excursion fare
A fare for round-trip travel which is usually offered by a carrier to create a price incentive for travel on certain routes and/or at a certain time of the day, week or year. Requirements may include advance purchase, minimum/maximum length of stay, and stopover limitations; the fare may be restricted to a certain flight or to a limited number of seats on a particular flight.

Express
Property shipments within North America which are given priority over air freight. The rate charged includes door-to-door service on the ground as well.

First class fare
The transportation of a passenger or passengers for whom premium-quality services (e.g., larger seats, complimentary bar) are provided.

Five freedoms
Traffic rights relating to international air transportation that one country receives from the other when a bilateral air agreement is made. All five freedoms are not necessarily granted in every agreement.

Fixed-wing aircraft
Aircraft having wings fixed to the airplane fuselage and outspread in flight – that is, non-rotating wings.

Flying club
A non-profit organization constituted of members that perform flying training and recreational flying.

Flying operation expenses
Expenses incurred directly in the in-flight operation of aircraft or in the holding of aircraft and aircraft personnel in readiness for assignment to an in-flight status. Landing fees are also included in this account.

Foreign air carriers
Airlines with headquarters outside Canada.

General administration expenses
This term includes expenses of a general corporate nature as well as those incurred in performing activities which contribute to more than a single operating function, such as general financial accounting activities, purchasing activities, representation at law, and other operational administrations not directly applicable to a particular function.

General aviation
General aviation, in this publication, describes all other civil aviation activities, like private flying, flying for fun, specialty flying, and flying by government-owned aircraft. It too has a commercial aspect, but activities are limited to Levels IV to VII air carriers.

Glider
Any airplane without an engine.

Goods
This term includes all types of non-passenger traffic (that is, freight, express, mail, and excess baggage).

Goods tonne-kilometre
A goods tonne-kilometre represents the carriage of one tonne of goods over one kilometre. Tonne-kilometre figures are obtained by totalling the number of kilometres flown with each tonne of goods.

Government – civil
Aircraft owned by federal, provincial and municipal bodies as well as foreign states, but excluding those owned by crown corporations, boards and commissions.

Guadalajara Convention
The Guadalajara Convention adopted in 1961 in Guadalajara, Mexico, contained rules relating to international carriage by air performed by a person who is not a party to the Warsaw Convention for carriage.

Hague Protocol
The Hague Protocol modified the Warsaw Convention by increasing the liability limits. This Protocol was adopted in the Hague on September 28, 1955 and entered into force on August 1, 1963.

Helicopter
A heavier-than-air aircraft that derives lift from one or more revolving "wings", or "blades", engine-driven about an approximately vertical axis. A helicopter does not have conventional fixed wings, nor in any but some earlier models is it provided with a conventional propeller for forward thrust.

IATA – International Air Transport Association
The trade association of airlines engaged in international air transportation. Historically, its main function was the economic regulation of international air transportation; in particular, international scheduled rates and fares. Its decisions are subject to approval by the governments of the countries that would be affected by IATA air fares.

ICAN – International Convention for Air Navigation
The international organization of 1919 which was the forerunner of ICAO.

ICAO – International Civil Aviation Organization
A specialized agency of the United Nations responsible for developing a standardized system for matters such as air navigation, licencing, safety, and landing procedures. Its headquarters are in Montréal, Quebec.

Interest expenses
Interest on all classes of debt including premiums, discounts and expenses on short-term obligations; amortization of premium discounts; and expenses on short-term and long-term obligations.

Interline transfer
Traffic interchanged at an airport between one airline and another.

International
Refers to traffic originating or terminating in Canada destined to or originated from foreign countries. International traffic is subdivided into **'transborder'** (to or from a point in the United States), and **'other international'** (to or from points in other countries).

Intraline transfer
Traffic interchanged at an airport between one flight of an airline with another flight of the same airline.

Itinerant movement
At airports with control towers refers to a movement in which an aircraft proceeds to or arrives from another location; or where aircraft leaves the circuit but returns without landing at another airport.

Itinerary
All the points in the passenger's journey in the sequence shown on the ticket, beginning with the origin, followed by the routing and ending with the destination.

Jet engine
A turbine utilizing the energy from its internal gas stream to provide direct propulsion. A 'fan-jet' engine or turbofan is a modified turbojet engine capable of producing much more thrust by expelling a greater volume or weight of cooler gas. This more efficient jet is the result of cold air being added by a turbine-driven, ducted fan, to the jet of hot gas produced by the engine.

Large commercial venture
In this publication, refers to a Level II or III air carrier.

Level definitions for statistical reporting
For purposes of statistical reporting, Canadian air carriers are classified into seven reporting levels. These levels are defined in the Air Carrier Regulations as follows:

Level I
Level I, comprising any air carrier that, in each of the two years immediately preceding the reporting year, – earned annual gross revenues of $500 thousand or more from the operation of all its licensed commercial air services, – carried 500 thousand or more enplaned passengers, 100 thousand or more tonnes of enplaned goods or both the passengers and goods and, – was licensed to operate Classes 1, 2, 3, 4, 8, 9-2, 9-3 or 9-4 fixed wing commercial air services.

Level II
Level II comprising any air carrier not assigned to reporting Level I that, in each of the two years immediately preceding the reporting year – earned annual gross revenues of $500 thousand or more from the operation of all its licensed commercial air services, – carried more than 50 thousand enplaned passengers, more than 10 thousand of enplaned goods or both the passengers and goods and – was licensed to operate Classes 1, 2, 3, 4, 8, 9-2, 9-3 or 9-4 fixed wing commercial air services.

Level III
Level III comprising any carrier not assigned to reporting Levels I, II, V, VI or VII that, in each of the two years preceding the reporting year earned annual gross revenues of $500 thousand or more from the operation of all its licensed commercial air services or during any part of the reporting year, was licensed to operate Classes 1, 2, 8 or 9-2 fixed wing commercial air services.

Level IV
Level IV comprising any air carrier that, in either of the two years immediately preceding the reporting year earned annual gross revenues of less than $500 thousand from the operation of all its licensed commercial air services.

Level V
Level V comprising any air carrier that, throughout the reporting year, was licensed to operate only Class 7 fixed wing commercial air services or only Class 7 fixed wing commercial air services and Class 6 commercial air services.

Level VI
Level VI comprising any air carrier that, throughout the reporting year, was licensed to operate only Class 6 commercial air services.

Level VII
Level VII comprising any air carrier that, throughout the reporting year, was licensed to operate only Classes 4, 5, 9-4 or 9-5 commercial air services restricted to serving the transportation requirements of a lodge operation.

Licensed private airport
An airport licensed by Transport Canada at which a pilot should obtain the operator's permission before using it.

Licensed public airport
An airport licensed by Transport Canada that is open for use by any pilot.

Local carrier
Any Canadian airline of Levels II, III and IV that operates Classes 2, 3, 9-2 or 9-3 licences.

Local movement
At airports with control towers, refers to a movement in which the aircraft remains in the circuit.

Mainline unit toll service/scheduled service
A unit toll operation usually having a considerable degree of regularity, and where in most cases only large aircraft are used, and one where the service is generally listed in a published timetable and performed according to a filed service pattern. In determining whether a service falls within the mainline concept, consideration is also given to the overall frequency of flights at the airports concerned and the type and degree of surface transportation serving particular points. The mainline unit toll services are referred to Classes 1 or 8 licences.

Maintenance expenses
Expenses, both direct and indirect, incurred in the repair and upkeep of property and equipment required to meet operating and safety standards.

Major airline
In this publication, refers to a Level 1 air carrier.

Non-operating income and expense
Income and loss from commercial ventures not part of the air transport services of the accounting entity; other revenues and expenses attributable to financing or other activities that are extraneous to and not an integral part of air transportation or its incidental services; and special recurrent items of a non-periodic nature.

Open Sky concept
The concept of deregulation of commetcial air services allowing all carriers access to all city-pairs.

Operating expenses
Expenses incurred in the performance of air transportation. It includes direct aircraft operating expenses as well as ground and indirect operating expenses.

Operating ratio
The operating ratio is the proportion of total operating revenues absorbed by total operating expenses.

Operating revenues
Revenues from the performance of air transportation and related non-flying services. It includes: (1) transport revenue from all classes of traffic, and (2) non-transport revenue consisting of payments under the National Transportation Act where applicable, and the net amount of revenue less related expenses from services incidental to air transportation.

Operating revenue per tonne-kilometre
This ratio is calculated by dividing the operating revenues by the total tonne-kilometres flown.

Origin
The first air departure point in a passenger's itinerary. (The point where a passenger first boards a carrier at the beginning of the journey.)

Other unit toll/non-scheduled service
A unit toll operation performed between specific points and where the service is performed in accordance with a service pattern or in accordance with traffic requirements and operating conditions. The other unit toll services are referred to Classes 2, 3, 9-2 or 9-3 licences.

Passenger
A person who pays a fare and receives air transportation is counted as one revenue passenger. Persons paying 25% or less of the normal applicable fares are not included.

Passenger-kilometre
A passenger-kilometre represents the carriage of one passenger for one kilometre. Passenger-kilometre figures are obtained by totalling the number of kilometres flown by each passenger.

Piston engined aircraft
An aircraft operated by engines in which pistons moving back and forth work upon a crank shaft or other device to create rotational movement.

Power Plant
The source of propulsion. For example, piston engines, turbo-propellers, jet engines, and helicopters (including both piston and turboshaft-driven engines).

Private aircraft
Aircraft used solely for private purposes, not for-hire and compensation. Owners include individuals, groups and business firms.

Profit margin
Indicates the profit margin earned by revenue dollar. It is obtained by dividing net income by operating revenue.

RCFCA – Royal Canadian Flying Clubs Association
The Association was called Canadian Flying Clubs Association (CFCA) until the end of World War II.

Regional carrier
Any Canadian airline designated by Transport Canada as a "regional carrier" (Level I carriers excluding Air Canada, Canadian Pacific Air Lines and Wardair). The regional carriers were Pacific Western Airlines, Nordair, Québecair, and Eastern Provincial Airways, as of August 1986.

Reregulation
Economic regulatory reform resulting in less regulation and a greater reliance on competition and market forces.

Return on assets
Measure of profitability calculated by dividing net income by total assets. It shows the efficiency with which total assets are used in business operation.

Return on investment
Measure of profitability calculated by dividing net income and interest expenses by total assets.

Rotary-wing aircraft
Helicopters and autogyros.

SAC – Soaring Association of Canada

Small commercially-used aircraft
In this publication, refers to aircraft used for small commercial operations. It includes the charter and specialty activities of Levels IV-VII carriers.

Small commercial venture
In this publication, refers to a Level IV, V, VI or VII air carrier.

Southern and northern sectors
The dividing line separating the southern and northern domestic sectors is defined by the 50th parallel from the Atlantic Ocean to the Ontario/Manitoba boundary, the diagonal joining the 50th parallel at the Ontario/Manitoba boundary to the 53rd parallel at the Manitoba-Saskatchewan boundary, the diagonal joining the 53rd parallel at the Manitoba-Saskatchewan boundary to the 55th parallel at the Saskatchewan/Alberta boundary and the 55th parallel from the Saskatchewan/Alberta boundary to the Pacific Ocean.

Specialty flying service
Consists of activities such as sightseeing, flight training, aerial photography, and survey, or other types of flying which do not involve the transport of passengers or goods from one place to another. The specialty flying services are performed under a Class 7 licence.

Tonne-kilometre
Represents the carriage of one tonne of goods or passengers for one kilometre. The number of tonne-kilometres is the sum of the kilometres flown with each tonne of goods or passengers.

Transport Canada (a.k.a. Department of Transport)
The Federal Government Department which, through its **Canadian Air Transportation Administration (CATA)** provides and operates domestic airway facilities, a national air terminal system, and regulatory services required for aviation safety. (At the beginning of 1986, **CATA** was split into two groups: the **Aviation Group** and the **Airports Authority Group.)**

Turbo-jet
Turbine-powered aircraft. Aircraft operated by jet engines incorporating a turbine-driven air compressor to take in and compress the air for the combustion of fuel, the gases of combustion (or the heated air) being used both to rotate the turbine and to create a thrust-production jet.

Turbo-prop
Turbine-powered aircraft. Aircraft operated by turbine-propelled engines. The propeller shaft is connected to the turbine which operate both the compressor and the propeller.

Unit toll service
Air transportation (transportation of persons, mail and cargo at a toll per unit) service performed under Classes 1, 2, 3, 8, 9-2 or 9-3 licences as issued by the Air Transport Committee of the Canadian Transport Commission.

Warsaw Convention
"The Convention for the Verification of Certain Rules Relating to the International Carriage by Air". The rules in the Convention provide liability for damage, death or injury to passengers, destruction, loss, or damage to baggage or goods, and loss resulting from delay. It also establishes the monetary limits for the above-described losses, damages and delays. This Convention was signed at Warsaw on October 12, 1929 and came into force on February 13, 1933.

Weight group
The classification of weight classes in groups for statistical purposes. The weight groups correspond to the following:

1) For fixed-wing aircraft, the maximum authorized take-off weight on wheels are: Group A – less than 1 950 kg; Group B – 1 950 – 3 175 kg; Group C – 3 176 – 8 165 kg; Group D – 8 166 – 15 876 kg; Group E – 15 877 – 34 019 kg; Group F – 34 020 – 68 039 kg; Group G – 68 040 – 158 757 kg; Group H – greater than 158 757 kg.

2) For rotary-wing aircraft, the maximum authorized take-off weight on wheels are: Group A – less than 2 000 kg; Group B – 2 000 – 3 402 kg; Group C – 3 403 – 8 165 kg; Group D – 8 166 – 15 876 kg.

World area

The world areas as presented in Figure 2.14 (Chapter II) are defined below:

1. United States (all areas under its sovereignty, jurisdiction or trustee ship).
2. Southern (composed of Bermuda, the Bahamas, the Caribbean Islands – except Puerto Rico and the United States Virgin Islands – Mexico, Central America and South America).
3. Europe (including Iceland, Greenland and the Azores).
4. Africa (including that part of Egypt located in Asia).
5. Asia (including part of Turkey located in Europe, as well as Sumatra, Java, Borneo, New Guinea, the Philippine Islands and other adjacent islands thereto).
6. Pacific (composed of Australia, New Zealand, Melanesia, Microneasia and Polynesia, except islands in the Pacific Ocean under United States administration).

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[1] Most of the definitions were taken from Statistics Canada publications, and from 'A Glossary of the Canadian Air Travel Industry', by the Canadian Transport Commission – Research Branch.

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[1] Prior to Summer, 1971, 'Statistics Canada' was the 'Dominion Bureau of Statistics'.

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