

REGIONAL AIR TRANSPORT IN QUÉBEC: TRENDS AND CHALLENGES

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Abstract.

Regional air transport has always been a concern for the Québec government, given the location and isolation of some regional communities and the high cost for travelers using regional air transport. This paper presents a portrayal of five regions of the province of Québec, as well as the results of an intercept survey of 2,000 regional air passengers carried out between September 2006 and January 2007. The study was commissioned by the Québec Ministry of Transport and aimed at understanding the demand for regional air transport in five specific regions as well as the needs of regional passengers. The intercept survey allowed the research team to collect detailed information about the characteristics of regional travelers, their evaluation of the travel experience as well as the factors determining their choice of air transport. The research results indicate that while the demand for regional air transport had declined between 1995 and 2004, business travelers continue to be a large proportion of users of a regional air system that is characterised by high fares and inconvenient schedules. This paper suggests some forms of government intervention to break the vicious circle in which regional development is hampered by numerous weaknesses present in the regional transport system.

Key Words: Regional, urban, and rural analyses, transportation, air transportation, government policy, regional economic activity, growth, development and changes, transportation systems.

JEL Codes: O18, L93, L98, R11, R4.

Résumé. Le transport aérien régional au Québec: Tendances et défis

Comme les autres provinces canadiennes, le Québec se caractérise par la faible densité de sa population. Quatre-vingt-cinq pour cent des 7.6 million d'habitants du Québec vivent à Montréal, à Québec, ou en périphérie de ces deux centres urbains, alors que seulement 15% résident dans le reste du territoire réparti en "régions ressources" (MDEIE, 2006). Dans ce contexte, le gouvernement du Québec a toujours été préoccupé par la question du transport aérien régional, compte tenu de la localisation et de l'isolement de certaines communautés, ainsi que du coût élevé de ce mode de transport. Différentes formes de subventions aux passagers et/ou aux transporteurs aériens ont été accordées au fil du temps afin d'assurer qu'un service de transport aérien soit offert dans les marchés moins profitables. L'efficacité et la pertinence de ces mesures ont souvent été questionnées. Cet article présente les résultats d'une étude effectuée pour le compte du Ministère des transports du Québec et visant à évaluer la demande pour le transport aérien régional dans cinq régions spécifiques (Bas-Saint-Laurent, Abitibi-Témiscamingue, Côte-Nord, Saguenay-Lac-Saint-Jean, et Gaspésie-Îles-de-la-Madeleine) et à mieux comprendre les besoins des utilisateurs de ce

mode de transport. Nous dressons d'abord un portrait de ces cinq régions et présentons ensuite les résultats d'un sondage par intercept mené auprès de 2000 utilisateurs du service de transport aérien régional, entre septembre 2006 et janvier 2007. Ce sondage nous a permis de recueillir des informations détaillées sur les caractéristiques des voyageurs régionaux, sur leur évaluation de leur expérience de voyage, ainsi que sur les facteurs déterminant le choix d'un mode de transport. Alors que les résultats de recherche indiquent que la demande pour le transport aérien régional a diminué entre 1995 et 2004, ils montrent également qu'une majorité de voyageurs se déplacent par affaires. Le système de transports aériens que ces voyageurs utilisent est caractérisé par des tarifs élevés et des horaires peu pratiques. Dans cet article, nous suggérons certaines pistes d'intervention gouvernementale, visant à briser le cercle vicieux dans lequel le développement régional est freiné par les nombreuses faiblesses du système de transport régional.

Mots clés : Analyses régionales, urbain et rural, transport, transport aérien, politique gouvernementale, activité économique régionale, croissance, développement et changements, systèmes de transport.

Codes JEL : O18, L93, L98, R11, R4.

Introduction

Québec is characterised by its low-density population, as are other Canadian provinces. Eighty-five percent of its 7.6 million inhabitants are grouped in and around the cities of Montréal and Québec, whereas 15% of Quebecers live in a number of regional areas, labelled "resource regions" (MDEIE, 2006). The development of air transport has always been a concern for the Québec government, given the location and isolation of some regional communities and the high cost for travelers using regional air transport. Various forms of subsidies to passengers and/or airlines have been awarded over the years to ensure that service would be available in unprofitable markets¹. The efficiency and relevance of such measures have been questioned. However, research on the needs of passengers using regional air transport has not been conducted to date in the province of Québec. Furthermore, transport geographers such as Nutley have identified the "clear need" (2003:69) for a study into the precise role of air transport in satisfying the travel needs of rural communities. Nutley (1996) also argued earlier that the study of transportation in rural areas tends to be neglected by transport researchers. More recently, in their systematic review of studies of the impact of various public policy interventions, including transportation and travel policies, aimed at promoting physical activity Heath et al (2006)

¹ An example of an operational subsidy was the three-year "Agreement between Air Canada and the Québec government" signed in 2003 and valid until May 2006. Under this agreement, Air Canada was guaranteed minimal revenues of C\$2.5 millions in exchange for maintaining air services on a number of specific regional routes. This agreement was highly criticized by the Québec Air Transport Association (AQTA), a trade association founded in 1975 and grouping more than 60 air operators, ranging from the largest international charter operations through to the smallest flying clubs, as well as 50 companies servicing the Québec air transport industry. AQTA argued that the agreement favored unfair competition, by providing Air Canada with a financial buffer that allowed it to enter price wars and eliminate small players.

indicated that they did not find any evidence from research conducted in rural environments.

The Québec air transport network is characterised by the fact that air travel mostly takes place between regional locations and Montréal and Québec City. Air transport is not offered to and from Trois-Rivières or Sherbrooke, due to the proximity of these cities to either Montréal or Québec City. Regional passenger air transport originates from airports located in places such as Baie-Comeau, Sept-Îles, Bagotville, Gaspé, and Rouyn-Noranda, and other places located further north, such as Basse-Côte-Nord and Nunavik. The Montréal and Québec City airports serve as transfer points between regional and trans-border air transport routes.

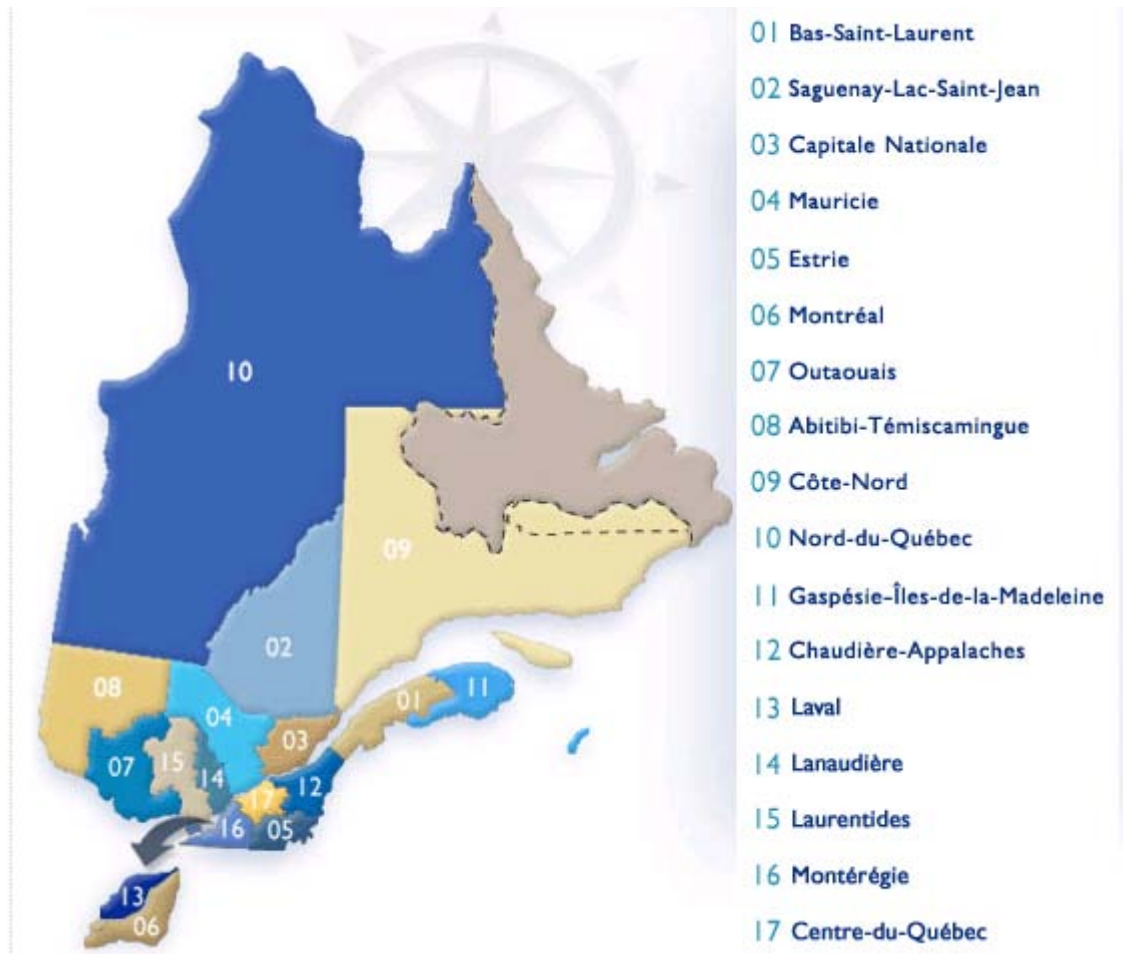
More than 70% of businesses and government offices are located in either Montréal or Québec City. Regional air travel could be dictated by social, medical, recreational, family, professional, or business reasons. Regional air transport is supplied by scheduled and chartered flights, as well as by private services. It should be noted that between 1986 and 1996 regional air transport in the province of Québec dropped by 22.7%.

Given this background, the Québec Ministry of Transport commissioned a study to (1) investigate whether this negative trend persisted after 1996 in five specific regions of the province and (2) to better understand the needs of regional passengers. The study focused on the five specific regions where the Ministry of Transport was reconsidering redesigning measures put in place to ensure the availability of proper air service. It should be noted that although Transport Québec has no regulatory authority, it has traditionally played a more active role in regional air transport than its counterparts in other Canadian provinces. In order to meet these objectives, the research addresses the following questions:

- How has the demand for regional air transport evolved between 1995 and 2004 in the five following regions: Bas-Saint-Laurent, Abitibi-Témiscamingue, Saguenay-Lac-Saint-Jean, Gaspésie-Îles-de-la-Madeleine, and Côte-Nord²? (See Regions 01, 02, 08, 09, and 011 on the map of Québec presented in Figure 1.)
- What factors explain the evolution of demand in each of the above five regions?
- What are the characteristics, the motivation, the needs and travel habits of regional air transport users? Do the currently available regional air transport services answer travelers' needs?
- What is the market potential for regional air transport and how is it likely to evolve in the short and medium term in each region?

² Three of these five regions, namely the Bas-Saint-Laurent, Gaspésie and Côte-Nord, form Québec's coastal region that has attracted particular attention from provincial and federal governments (Doloreux and Shearmur, 2006). To some extent, Québec's Ministry of Transport decision to commission the present study echoes other public initiatives and policies to support declining regions.

FIGURE 1 Map of Québec



Source: <http://www.gouv.qc.ca/portail/quebec/pgs/commun/portailsregionaux/>;
retrieved January 30, 2011

The first section of the paper examines the challenges of measuring the use of regional air service. We then explain how we have combined qualitative and quantitative methodologies to design the research and provide an answer to the above questions. Our research findings point to the demographic and economic decline of the five regions under study, as well as the decrease in the demand for regional air transport between 1995 and 2004. The questions of regional development and regional transport seem to be closely related, and we argue that this close relationship should be kept in mind in the design of air transport policies.

Use of Regional Air Service

A number of factors bearing an impact on the demand for regional air travel have been identified in the literature and used to develop multiple regression models (Kaemmerle, 1991). Typical constructs include the state of the local economy, measured by the growth rate and the level of unemployment, in addition to the characteristics of the air service offered, namely flight schedules and frequency, and ease of access to airports. Socio-demographic factors and the presence of alternative transport modes are also considered. Furthermore, the development of information technology suggests that the volume of business travel could be reduced (Lian and Denstadli, 2004).

Whereas multiple regression models sometimes explain a large percentage of the variation in the demand for air transport, some authors have questioned the validity of the data used to measure the use of air service (Costaguta, 2005). However, it should be noted that civil aviation authorities are currently devoting considerable efforts to the design and implementation of electronic systems, aimed at collecting and disseminating air transport passenger data (Villeneuve, 2007). In the meantime, valid and accurate data on the use of air service remain difficult to obtain.

The lack of air transport data is an acute problem in Québec, as the Ministry of Transport does not have jurisdiction over data collection. Origin and destination information associated with ticket coupons lifted do not provide the true origin and ultimate destination of passengers, as the trail is lost as soon as a passenger transfers to another flight (Costaguta, 2005). This situation is improving, as any carrier equipped with Global Distribution Systems (GDS) can provide information on the number of passengers, aircraft type and size and the occupation rate too. Yet, such regional air transport passenger data cannot be divulged in Québec, due to Air Canada's monopoly position. Indeed, the information is too sensitive to be made publicly available. Small aircraft and helicopter operators that are not equipped with a GDS have the option of completing a questionnaire and sending it to Transport Canada. The filling out of the questionnaire is done on a voluntary basis if the number of seats aboard the aircraft is lower than 19. As a result, the official origin-destination data provide a plausible but not real picture of the demand for regional air service in Québec.

It is also possible to use enplaned/deplaned passenger data to evaluate the demand for air transport. Whereas this type of data provides information on the complete trip, it has some limitations including the fact that each passenger is counted twice and that it is only available for large carriers. Therefore, as with the origin-destination data, enplaned and deplaned passenger data do not accurately reflect the market share held by small carriers. Given the sensitive nature of origin-destination data in a monopolistic air travel market, the number of enplaned/deplaned passengers is the only available public data on regional air transport in Québec.

In summary, while the sophisticated character of multiple regression models is appealing, their predictive quality is questionable, given the limitations of the data available to develop these models. We have therefore selected a research design that comprises a quantitative and qualitative approach. As it will be presented in the following section, our research material included archival data obtained from Transport Canada, as

well as data that we collected, providing insight on the travelers who use regional air service in Québec and information on their needs and travel habits.

Methodology

The methodology used to conduct the present research combines a qualitative and quantitative approach. A qualitative analysis of the five regions covered by the research was conducted to explore how demand for regional air transport has evolved between 1994 and 2005, as well as the factors that explain the evolution of demand in each of the five regions. This analysis (partially presented here) includes data on the demand for regional air transport during a ten-year period (1995-2004) in Canada, in Québec and within the five regions under study. The aggregate public and confidential data obtained from Transport Canada were broken down to estimate the traffic generated by scheduled and chartered flights at each regional airport covered by the study. Using data available from Statistics Canada and the Québec Statistics Institute, various published sources, as well as material collected during workshops conducted with representatives from the five regions, the research explores socio-demographic and economic factors that may explain the evolution of demand. Other explanatory elements such as substitute means of transportation, airport proximity, methods of communication and capacity are also analysed.

In parallel, an intercept survey of more than 2011 regional air passengers was carried out between August 2006 and January 2007 to identify the characteristics, motivation, needs and travel habits of regional air transport passengers and to find out whether the available regional air transport services answer travelers' needs. This sample represents a target population of approximately 37,000 travelers, estimated by the total number of scheduled seat departures. Our goal was to survey a maximum number of individuals within this population, during the data collection period. The number of seat departures was calculated by tracking down each scheduled flight from Montréal and Québec City to the five regions studied, and taking into account the size of the aircraft. It should be noted that this calculation provides only a maximum of the population size, as the occupancy rates for each flight are unknown.

The intercept survey allowed the research team to collect detailed information about the characteristics of regional travelers, their evaluation of the travel experience as well as the factors determining their choice of transportation mode. The survey questionnaire consisted of 69 questions – focusing on the traveler and on his/her appreciation of the travel experience and its determinants (attitude, intention, behaviour, satisfaction, important criteria, and hindrance factors). In addition, the questionnaire contained questions which profile the characteristics of the trip itself (e.g. itinerary, reason for travel, ...). The intercept survey was completed by personal interview of passengers at Montréal's Pierre-Élliott-Trudeau and Québec's Jean-Lesage airport gates. This approach assured the quality of the data collected and provided a response rate of 70.3% in Montréal and 80% in Québec.

Results

Declining Demand for Regional Air Transport

The five regions covered by the research, namely, Bas-Saint-Laurent, Abitibi-Témiscamingue, Saguenay-Lac-Saint-Jean, Gaspésie-Îles-de-la-Madeleine and Côte-Nord accounted for 11% of the total population of Québec and 3.6% of the province's air traffic in 2004. While the population of Québec increased between 1996 and 2005, the number of inhabitants decreased by 6% during the same period in the five regions covered by this study. This trend was caused by a low birth rate and by a negative interregional migratory balance. One of the negative consequences of this trend could be a human resources shortage resulting in lower capital investment.

The five regions covered by this study account for 10% of the province's gross domestic product (GDP), 11% of its capital investment and 9.5% of its jobs. Interestingly, Saguenay-Lac-Saint-Jean and Bas-Saint-Laurent account for 60% of the total employment of the five regions studied. Furthermore, the GDP per person in the five regions is \$30,188 in comparison with \$33,798 for the province of Québec (Table 1). The 3.8% growth rate of these regions is lower than in Québec (5%), with the exception of the Côte-Nord that had a growth rate of 5.2% between 1998 and 2005.

TABLE 1 Gross Domestic Product and Annual Growth Rate

Regions	% of Québec GDP (2005)	GDP per capita (2005)	Growth 2005/2001	Growth 2005/1998
Bas-Saint-Laurent	2.1	26323	3.3%	4.2%
Saguenay-Lac-Saint-Jean	3.4	32084	3.2%	3.9%
Abitibi-Témiscamingue	1.6	28779	3.6%	2.5%
Côte-Nord	1.7	44131	4.5%	5.2%
Gaspésie-Îles-de-la-Madeleine	0.8	21043	3.1%	2.9%
Total 5 regions studied	9.6	30188	3.5%	3.8%
Nord-du-Québec	1.7	39768	6.0%	5.1%
Montréal	36.2	49595	3.0%	4.9%
Québec	100	33798	3.5%	5.0%

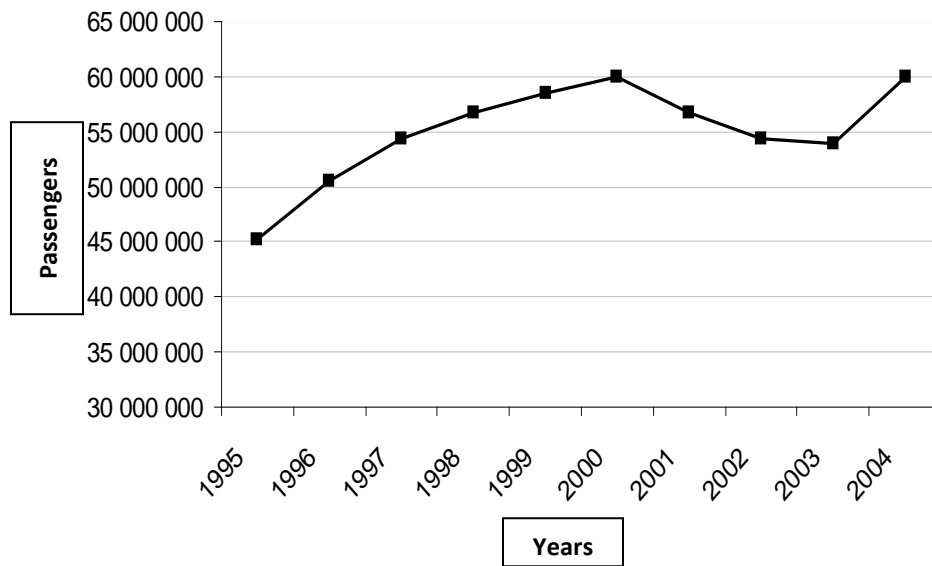
Sources: Institut de statistique du Québec, Ministère des Affaires municipales et des Régions, Fisheries and Oceans Canada, Revenu Québec, Statistics Canada.

Past research that has explored the relationship between air travel and the economic base of a community (Deosaran et al, 1977) leads us to expect that the economic and demographic decline in the five regions studied has resulted in a lower use of regional air service. An analysis of the 1995-2004 air traffic in the five studied regions will now allow us to determine whether this expectation is true.

It is well known that the global demand for air transport declined after 2000. As a result of terrorist attacks, epidemics, political instability and higher fuel prices, air transport demand and capacity have decreased, while fares have increased. Canada and Québec did

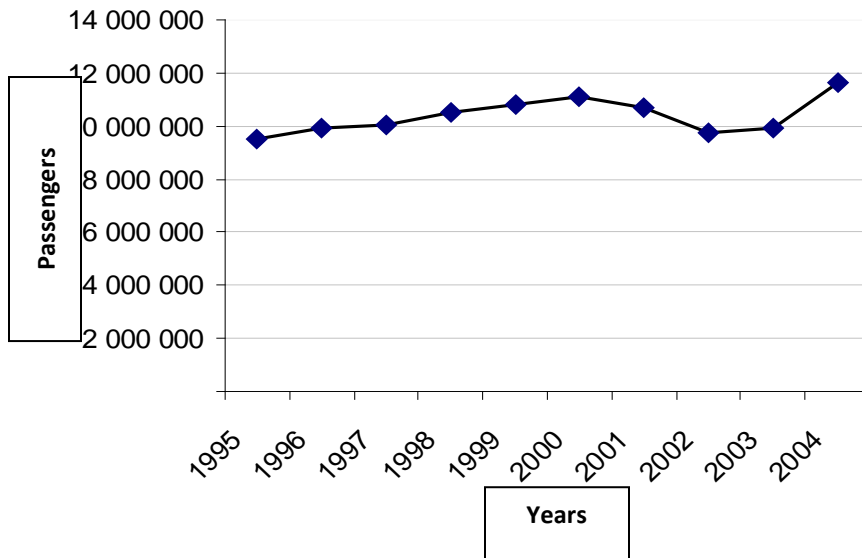
not escape this global trend. However, the demand for air transport has picked up again since 2004. Indeed, there was record traffic in Canada in 2004, while Québec experienced a 17% growth rate in air traffic that year. As indicated in Figures 2 and 3, between the 1995 and 2004 period, air traffic increased by 33% in Canada and 22% in Québec. The situation is somewhat different in the five regions covered by our study where, as indicated in Figure 4, the demand for air transport fell in all five regions except Gaspésie-Îles-de-la-Madeleine. While the average growth rate for the 1995-2004 period was 2.3% for the province of Québec, it was -2.7% for the five regions studied. In 2004, Côte-Nord and Abitibi-Témiscamingue accounted for 43% and 25% respectively of the five regions' combined traffic.

FIGURE 2 Passenger Traffic in Canada, 1995-2004



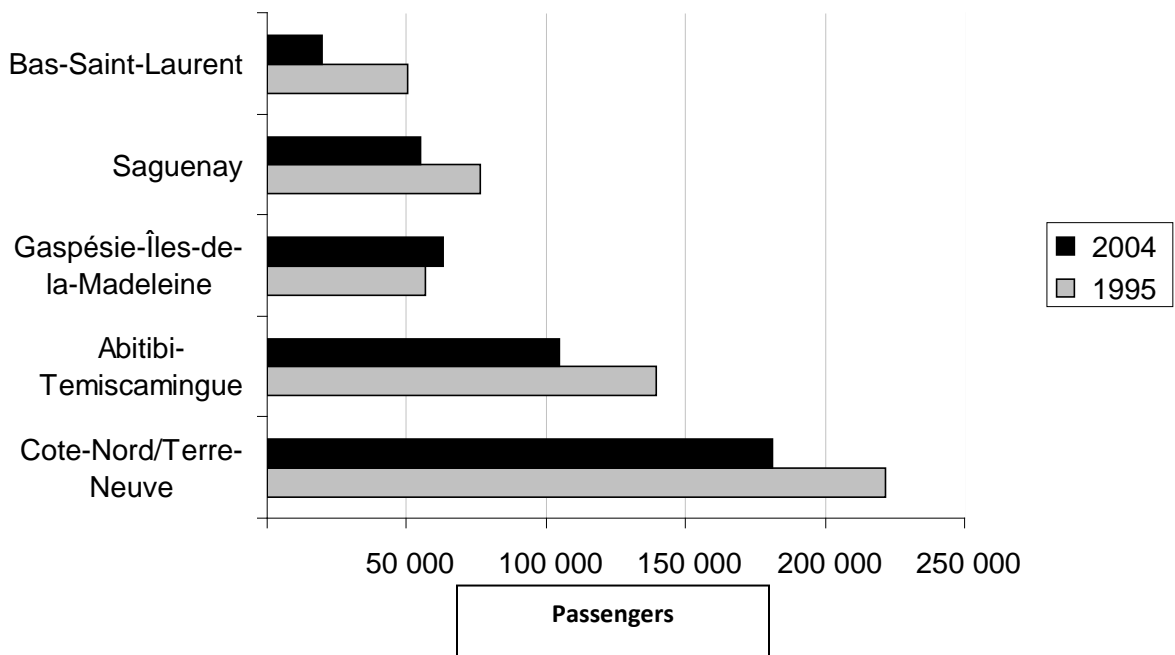
Source: Transport Canada

FIGURE 3 Passenger Traffic in Québec, 1995-2004



Source: Transport Canada

FIGURE 4 Use of Air Service in the Five Studied Regions



Source: Break down of aggregate public and confidential Transport Canada data on traffic generated by scheduled and chartered flights at each regional airport covered by the study.

The portrayal of each of the five regions studied did not allow us to establish a statistical link between the use of regional air service and a number of independent variables such as the growth rate of the economy, the level of unemployment, flight schedules and frequency, as well as ease of access to airports. We could nevertheless formulate a number of propositions as to why the demand for regional air transport has declined in all four regions but one, where it has increased very slightly. To some extent, conventional explanations seem to remain valid. For example, Côte-Nord experienced the lowest decrease in demand for air transport and the highest level of air traffic. Interestingly, this is also the region that experienced the highest economic growth and where the average income per person was the highest, as indicated in Table 2. The employment rate³ in Côte-Nord was also the highest (58.8%), while the lowest rate was observed in Saguenay-Lac-Saint-Jean (53.3%).

TABLE 2 Average Income per Person (\$)

Regions	1995	2004
Bas-Saint-Laurent	13 667	18 346
Saguenay-Lac-Saint-Jean	15 740	18 760
Gaspésie—Îles-de-la-Madeleine	12 906	15 256
Abitibi-Témiscamingue	15 463	18 111
Côte-Nord	16 149	19 849
Québec	16 294	21 649

Sources: Institut de la statistique du Québec, Statistics Canada, Ministère du Développement économique, de l'Innovation et de l'Exportation.

As mentioned above, the demand for air transport has decreased in all five regions except for Gaspésie-Îles-de-la-Madeleine. This is somewhat surprising given that this region has experienced the largest decline of younger people (15-29 years old: -26%; 30-44 years old: -29%). Gaspésie-Îles-de-la-Madeleine is also the region where GDP and economic growth are the weakest and where income is the lowest.

Traffic data as well as key economic and demographic indicators point towards a decline in air traffic in the five regions studied. Still, a review of various publications and an analysis of the material collected during the workshops conducted with representatives of the five regions allow us to draw a more positive picture of the situation. Each region is working hard to ensure its survival. Considerable effort is being devoted to developing value added industrial activities, such as marine technology and wind power, to enable each region to go beyond its traditional role as primary resource extractor. Moreover, a number of regional programs have been established by local actors (Racicot, 1999) aimed at attracting immigrants and encouraging college graduates to return to their regions of origin. For example, in 2000, the Gaspésie region decided to act against the population exodus and resulting labour shortage by attempting to attract young workers and future university graduates. In 2007, a more aggressive strategy was put forward and a “Seduction Week”⁴ was organised during which approximately forty recent graduates in fields where

³ The employment rate is the percentage of working-age people who have jobs.

⁴ In French: “La semaine de la séduction”

specialists were needed were invited to spend seven days in Gaspésie to discover what the region had to offer to newcomers.

Other examples of regional programs can be found in Abitibi-Témiscamingue and Saguenay-Lac-Saint-Jean. A “2007 - 2011 Strategic Development Plan”⁵ was formulated in Abitibi-Témiscamingue. This ambitious plan was designed after eighteen months of consultation within Abitibi-Témiscamingue and adjacent regions, and focuses on human, social, cultural, environmental and economic development. Similarly, in an effort to encourage the positive migration of young people, Saguenay-Lac-Saint-Jean has launched a program imaginatively called the “Boîte à Bleuets.” This program promotes the region’s lifestyle and endeavors to inject enthusiasm in Saguenay-Lac-Saint-Jean’s socio-cultural environment, and enhance its social fabric.

It should be added that a number of carriers have appeared and disappeared from the regional markets in the ten year period covered by the study. It is suggested that a change in capacity caused by the appearance and disappearance of small carriers has a short-term impact on the demand for regional air transport. This was made evident during the workshops conducted with representatives from the five regions. Participants mentioned that very often the demand for regional air travel must adjust to the capacity offered: “We make do with the situation,” as one representative from Îles-de-la-Madeleine pointed out. Although some transportation economists believe the relationship between transport investment and economic development to be a myth (Black, 2001; Wilson, 1966), it could be argued that the situation of some Québec regions creates a vicious circle in which regional development is hindered by the absence of an adequate air transport system; in turn, the decline in the economic base results in a decrease in air traffic.

The above analysis points towards a decline in the size of the population, the economic base and air traffic in the five regions studied. However, some industrial sectors have favourable prospects and the trend could be slightly reversed, at least in some of the regions. In this context of lower traffic, we will now try to identify the travelers who use and will continue to use air transport in the five regions studied, and whether they are satisfied with the service offered.

A Closer Look at Regional Air Transport

The 2011 completed questionnaires were analysed in order to understand passengers’ past travel habits and to explore the way they actually travel within Québec’s regions. Travelers’ perceptions and expectations regarding various aspects of air transport service were also considered.

Description of the sample: There was a marked difference between the men and women represented in the research sample. Indeed, women constituted only 38.7% of the sample. Furthermore, the largest age group was between 45 and 54 years old (30.5%). The second-largest age group, 26.2 % of our sample, was between 35 and 44 years of age. Some of social characteristics of the sample are as follows: about three-quarters of the sample

⁵ In French: “Plan stratégique de développement 2007-2011”.

(76.4%) were full-time employees, 3.3% were part-time employees, whereas only 4.5% were retirees. Most of the full-time employees worked in either the private sector (50.6%)⁶ or public sector (32.0%); 14.3% of the full-time employees interviewed worked in the parapublic sector whereas the remaining 3.1% worked in not-for-profit organizations. Passengers were also asked about where they lived and worked. The data indicate that, for the most part, regional air travelers work and live in the same region. Residents of Abitibi-Témiscamingue made up the largest group, with 38.6% of respondents living in this region. Côte-Nord was the second largest group (22.3%), followed by Saguenay-Lac-Saint-Jean (16.2%), Gaspésie-Îles-de-la-Madeleine (15.0%) and Bas-Saint-Laurent (7.9%).

Regional business travel: The survey indicated that a vast majority of respondents (69.7%) traveled by air for professional reasons. Furthermore, employers paid for the fare in 65.2% of the cases. Only 18.7% of respondents traveled to visit relatives or friends. It should be noted that this proportion rose considerably during the months of December 2006 and January 2007. The other reasons for traveling by air were holidays or medical appointments (11.6%). The survey also indicated that regional air transport travelers largely tend to use their cars when traveling for personal reasons. This is not surprising as countries characterised by low rural densities and long distances are dominated by private road vehicles given that population densities are not high enough to sustain viable public transportation services (Nutley, 2003).

In four regions out of five, a majority of the regional air travelers interviewed worked for firms with 500 employees or more. The only exception was Gaspésie-Îles-de-la-Madeleine, where the firm size distribution was rather homogeneous. In general, in the five regions studied, we observed that respondents working for firms with more than 500 employees travel by plane rather than by car to or from other Québec regions, in 75% of the cases.

Regional travelers' expectations and level of satisfaction: A great majority of the respondents (90.5%) indicated that they travel by air to save time and 79.5% of them tend to travel with the same carrier. Regional air travelers were asked about their level of satisfaction with previous air travel. Most of the travelers were satisfied (62.8%) or very satisfied (16.6%), resulting in 79.4% of the sample being fairly satisfied about their past air travel experience within Québec. However, the survey questionnaire also suggested a list of items related to air service quality such as, baggage handling, comfort, airport ease of access, flight schedules, on-time departure, safety and airline employees. While respondents considered these factors as very important⁷, a vast majority of them (75%) indicated that they would not be willing to pay more for an improvement in any of them. For example, 76.5% of the passengers interviewed were not willing to pay more for

⁶ This was particularly noteworthy in Bas-Saint-Laurent and Saguenay-Lac-Saint-Jean regions.

⁷ It is interesting to note that, depending in which region the respondents are domiciled, the importance that they attach to specific aspects of air service varies. For example, the Bas-Saint-Laurent residents who were surveyed were the least concerned with air fare and airline employees. Inversely, these criteria were the most important ones for the Gaspésie-Îles-de-la-Madeleine respondents.

improved on-time departure; these respondents have also rated this aspect of service quality as 4.56 on a scale of 5.

This could be interpreted in two different but complementary ways. Respondents either thought that the price was already high and did not want it increased, or they believed that the carrier is responsible for providing a satisfactory level of service for all of the items listed in the questionnaire. Consequently, although they consider all the services to be important, they expect all of them to be included in the fare. Besides, regardless of whether or not they were willing to pay more for service improvement, respondents attached considerable importance to air fare, with an average score of 4.49 on a scale of 5.

In order to better understand passengers' expectations in a context of declining demand for regional air transport, we have tried to identify the reasons that would encourage regional air passengers to travel by plane more often. As expected, lower fares came first for 52.5% of the sample. The second most important factor, a direct flight, was chosen only by 9.8% of respondents. This was somewhat surprising as regional travelers often complained about having to transit through the Montréal or Québec hub to travel from one region to the other. One of the workshop participants gave the example of Rimouski's hospital, that is in theory considered a "supra-regional" institution. However, this hospital is not as busy as was planned when it was constructed. The respondent thought that this was due to the fact that it was easier for Îles-de-la-Madeleine's residents to fly to Québec City than to Rimouski to receive medical care.

Finally, 32.2% of the regional air travelers surveyed estimated that the flight schedules were not suited to their needs. This could deter half (49%) from traveling by plane more often to Québec's regions. In other words, 15.5% of all the regional air travelers surveyed could choose not to fly to Québec's regions because flight schedules are not convenient. It should be noted however that we also asked regional air passengers what the probability was of their taking this flight again or recommending it to a friend. Using a 1 to 5 Likert scale (where 1 was "very low" and 5 was "very strong"), 64.3% of the respondents estimated that the probability of their recommending this flight to a friend would be somewhat strong. Furthermore, 87.5% of the sample estimated that they would probably take this flight again, if they had to travel to the same place. This result should be interpreted with care, given the monopoly position occupied by Air Canada Jazz in Québec. This high probability might be an indicator of lack of choice rather than passenger loyalty. As a matter of fact, 87.0% of respondents were about to fly Air Canada Jazz when we surveyed them.

In light of the research results, various forms of intervention aimed at improving Québec's regional air transportation system will be suggested in the following section.

Suggested Forms of Intervention

The key message from the portrayal of the five regions and the intercept survey of more than 2,000 regional air passengers is that the demand for regional air transport had declined between 1995 and 2004. However, various initiatives to favour regional development could reverse this trend in the medium to long term. Business travelers continue to be a large proportion of regional air service users, but the regional air transport system that they

use is characterised by high fares and inconvenient schedules. Not only does this deter 15.5% of the regional air travelers surveyed from traveling by plane more often, but it probably prevents a certain proportion of the regional population from using air transportation at all. Canada, together with the USA, Australia, and New Zealand, form a category of countries characterised by low rural density and long distances. Nutley (2003) argues that because these countries are affluent they are believed not to suffer from problems of mobility or access. Our research results indicate that Québec regional communities have to put up with air transport rather than benefit from it. We argue that it is imperative to break the vicious cycle in which regional development is impeded by the numerous weaknesses of the regional transportation system, which in turn, impedes the improvement of the same transportation system. While some consider that Québec's prosperity depends solely on the level of economic activity that is conducted in its urban areas (Dubuc, 2006), we believe that regional development bolsters the geographic diversity that is much needed in the context of globalisation. It should also be added that an efficient transportation network is a "necessary concomitant to the pursuit of convergence and cohesion objective" (Graham, 1998:87) and can therefore serve to reduce disparities between levels of regional development.

As referred to earlier, although Transports Québec has no regulatory authority, it has traditionally played a more active role in regional air transport compared with similar agencies in other Canadian provinces. Québec's interventionism was particularly manifest in the early 1980s when the government owned the regional air carrier Québecair. More recently, the 2003-2006 agreement between Air Canada and the Québec government was an attempt at ensuring that regional air transport services would be maintained. This agreement had undesirable effects on the competitive dynamics in the regional air travel industry and was not renewed. Minimal revenues of \$C2.5 million, in exchange for maintaining air service on a number of specific regional routes, provided the carrier with a financial buffer that helped it to retain its quasi-monopoly position. In addition, the granting of financial subsidies to a single carrier indirectly supports a business clientele for which government help is hardly justified. Other existing programs designed by Transports Québec, such as the Airfare Reduction Program and the Air Transportation Assistance Program, are much more appropriate, as they provide direct help to residents of remote and isolated regions where air transportation is the only option.

While the public help granted to highly remote and isolated communities is easily justified, the transportation needs of rural regions located closer to Québec City and Montréal are not easily fulfilled. For example, what should be done for the Basse-Côte-Nord residents living at the end of Route 138? Should the situation of people living within a fifteen hours driving distance from urban areas be considered as acceptable? Interestingly, the very fact that Transports Québec commissioned this study reveals the government's concern about the specific transportation needs of citizens who live neither in truly remote communities nor urban areas. As evidenced by our research results, regional air transport services in the five regions studied are perceived as too expensive and inconvenient. This can be seen as a consequence of low population density, a structural characteristic against which little can be done. Indeed, the situation in Canada is drastically different than in Europe where the regional airline sector has experienced dramatic growth after liberalization (Graham, 1997) or even Africa, a continent characterised by a large

population base and a geographically challenged terrain, that did not see a decline in air traffic following September 11, 2001 (Irandu and Rhoades, 2006). In spite of Canada's own geographical challenges, improving regional air transportation services could have a positive impact on economic development, as will be suggested below.

Our research indicates that air transportation services are mainly used for business reasons. Nevertheless, a large majority of the 2,000 travelers interviewed worked for companies employing more than 500 individuals. There could be a considerable number of small entrepreneurial companies that do not have sufficient financial resources to allow their employees to travel by plane within the province. But, smaller companies could constitute a potential market for regional air transportation, if fares were lower. Providing regional small and medium-sized enterprises easier access to cities as well as other regional areas, could favour economic development and job creation. Programs put in place in regions such as Gaspésie, Abitibi-Témiscamingue and Saguenay-Lac-Saint-Jean to attract young workers and future university graduates would have greater chances of success, if regional transportation were easier. The prospect of easy and affordable travel to the urban areas or to the foreign countries from where they came could appeal to the individuals targeted by such programs.

What could be done to make fares more affordable and flight schedules more convenient? Increased levels of competition are one avenue. As a matter of fact, the quasi-monopolistic position of Air Canada hides the entrepreneurial capacity that exists in the Québec aviation industry, an industry whose roots go back to the bush-flying aviation days that started in Mauricie in 1919. Entrepreneurial air carriers are trying to increase their share of Québec's regional markets. For instance, Pascan Aviation operates from St. Hubert Airport, on the south shore of Montréal, and offers day-return flights to regions such as Abitibi-Témiscamingue, Saguenay-Lac-Saint-Jean or Basse-Côte-Nord, thus allowing travelers to avoid overnight stays. Without granting direct financial support to these entrepreneurial companies, the government could favour the development of conditions that would facilitate their becoming profitable. For example, an effort could be made to aggregate the demand for air travel in regions where the population density is particularly low, in order for small regional carriers to benefit from economies of scale. Governments have some power to play a role in this endeavour, given that a large part of regional business travelers are civil servants as was the case in our research sample. It could therefore be argued that the decentralized policy allowing civil servants or employees of government-related service sectors to arrange their own business travels implemented by Québec's Conseil du Trésor represents a missed opportunity to gather travelers together as much as possible in order to create profitable routes. As a matter of fact, in low-density countries potential air travelers constitute a "rare" resource that must be allocated with great caution.

Helping Québec's small private regional air carriers to be better known by the traveling public constitutes another possible form of intervention. During the intercept survey carried out at the Montréal and Québec airports, we were surprised by the little information respondents had about air travel options available to them. For example, Starlink offers a daily flight to Sept-Îles at prices that are comparable to those offered by Air Canada Jazz. Moreover, since this carrier operates from a private service center located at the edge of the Montréal airport, passengers can avoid security measures employed at the main terminal.

Most of the travelers we interviewed were unaware of that option. Similarly, Air Labrador was offering a new direct flight between Québec City and Rouyn/Val d'Or, during our data collection period. Yet, this flight was eventually cancelled due to low demand. Again, many travelers interviewed simply did not know of the existence of this air carrier. A well-designed communication strategy could correct the misconceptions about charter flights and increase the associated demand. Whereas the traveling public tends to believe that only wealthy people can afford private aviation, it is often less expensive to charter a small aircraft than to buy ten seats on an Air Canada Jazz flight.

Adding tourists to the pool of potential users could also result in economies of scale for regional air carriers. Interestingly, this category of travelers represented a very small part of our sample. The high fares that characterise the Québec regional air transport network most probably hinder the development of the Québec tourism industry. However, given the size of Québec's territory, air travel is the only way to travel within the province, within a reasonable timeframe. Even if the low density of Québec's population represents a considerable challenge, European-style short-stay tourism could serve to stimulate demand for regional air transport. A single currency, the absence of borders, and decreasing air fares have made travel within Europe much easier in recent years. As a result, the demand for short two-to-four day trips to various European destinations has increased significantly. Even if the density of Québec's population cannot be compared with that of Europe, short-stay tourism, supported by a rapid and reasonably priced transportation system, could be a valuable avenue worthy of exploration. Furthermore, branding Québec as an eco-tourism destination for which international eco-travelers would be ready to pay a premium, could also be an interesting option.

Increasing the number of tourists traveling to Québec can only be done with a well-targeted communication strategy. As mentioned previously, small regional carriers should be encouraged to advertise the air services that they offer. There is an opportunity here for joint marketing efforts that could make a highly positive impact to Québec's economic development. Other countries that have carefully coordinated their marketing efforts have had some success. The most impressive example is Singapore. With its 4.5 million inhabitants (a small number by Eastern standards), Singapore hosts an airport that handles over 32 million passengers and has developed a tourism industry that had attracted approximately nine million overnight visitors in 2005 (Lohmann et al, 2007). The city-nation has tightly combined airline, airport and tourism marketing strategies to achieve the status of a shopping and tourism destination. It should be noted, however, that Singapore is a single high-density destination and, as such, can hardly be compared with the multiple very low-density destinations characterising Quebec.

The forms of intervention suggested above lead us to claim that coordination is the watchword for economic development. Business administration literature, and more specifically, the school of thought known as the resource-based view, envisions business enterprise as a collection of resources and capabilities that are carefully combined and integrated (Barney, 1995). This concept can very well apply to public administration, by ensuring that the policies originating from the various ministries that compose the government are integrated and reinforce one another. Although primarily related to the Québec air transportation network, the forms of intervention suggested above are also relevant to tourism and economic development authorities.

Conclusion

This study has provided a rather grim picture of air transport in five regions of Québec, namely Bas-Saint-Laurent, Abitibi-Témiscamingue, Saguenay-Lac-Saint-Jean, Gaspésie-Îles-de-la-Madeleine and Côte-Nord, where air traffic, as well as the size of the population and the economic base have declined over the last ten years. When taking a closer look at the five regions, however, it appears that local dynamism could lead to an improvement of many aspects of regional development and air transport. In addition, our study suggests that the capacity available might have an impact on the demand for regional air service, with the withdrawal of small carriers that have a hard time competing with Air Canada Jazz.

In keeping with commentators who argue that regional development depends on an efficient transport network (Bouchard, 2006), and regional science researchers who have concluded that access to highways is a form of public intervention that could stop the decline of thinly populated localities (Simard, 2005), we believe that the question of regional development and regional transport are closely related. It seems that there is no way of avoiding government intervention in regional air transport, specifically when surface transportation is not available. However, policies should be designed in such a way as to avoid both the disadvantages of regulation and those of liberalization. Regional voices that are against air transport deregulation can often be heard. The most extreme opinion (which was expressed during the workshops held during the study) is that regional air transport should be considered in the same way that urban public transportation is. An entirely subsidized regional air transport network would evidently not be reasonable, especially when surface transportation is available. Remoteness has a cost that cannot be entirely borne by the state.

Lastly, given that the aim of the research commissioned by Transports Québec was to measure the demand for regional air transport and to identify the profile and expectations of regional air travelers, we did not take account of the fact that other modes of transportation could have smaller carbon footprints than that of air transportation. Environmental activists would rightly argue that the best way to support economic development is to design and implement a seamless intermodal system connecting air, surface and maritime transportation.

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