COMPARING AIR TRANSPORTATION POLICIES FOR SMALL REMOTE COMMUNITIES: U.S.A., CANADA, PORTUGAL, SPAIN AND BRAZIL

Alda Metrass Mendes[1]
The Icelandic Tourism Research Centre – University of Akureyri
Borgum v/Norðurslóð - 600 Akureyri, Iceland

Richard de Neufville
Engineering Systems Division, Massachusetts Institute of Technology
77 Massachusetts Avenue, E40-245, Cambridge, MA, 02139, United States

Álvaro Costa
CITTA – Research Centre for Territory, Transports and Environment
Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, s/n, 4200-465 Porto, Portugal

Alessandro Vinícius Marques de Oliveira
Instituto Tecnológico de Aeronáutica, Latin American Center for Transportation Economics
Praça Marechal Eduardo Gomes, 50, 12228-900, São José dos Campos, SP, Brazil

ABSTRACT

This study examines the past and ongoing worldwide deregulation or liberalization in the aviation industry, and the efforts of the United States, Canada, Portugal, Spain and Brazil to adopt air transportation policies and mechanisms to provide their populations with universal accessibility. Using a cross-national case-based comparison, we look at the impacts of different policies and mechanisms on the effectiveness and efficiency of service to small remote communities at the international, national and regional levels. Further, we discuss the strengths and weaknesses of various policy programs, as well as opportunities of and threats to their implementation. The goal of this study is to shed light on the role of national and local governments in, and their capacity for, developing and implementing equitable air service in their territories.

We find that the effectiveness and efficiency of a policy design critically depends on five factors: 1) the joint support of infrastructure investment, maintenance and operations and air services; 2) governments' ability to promote competition and protect passengers in markets where competition does not exist; 3) the operating carrier's choice of business model, technology for thin routes, and network; 4) political interest; and 5) local participation. Moreover, our research demonstrates that when policy intervention targets de facto isolated communities, governments are more likely to succeed in implementing successful mechanisms, and that tourism can be a key factor for air service development. We also find that social assistance may be better handled by offering residents of small remote communities support in the form of direct discounts on airfares. An assessment of the distribution of benefits is recommended to aid policy-makers in establishing policy priorities.

[1] Corresponding author. Phone: +354 460 8930, Fax: +354 460 8919, Email: aldametrass@gmail.com

We show that, despite its appeal for improving policy design, most governments have not developed performance-measurement systems. We recommend the use of performance-based measures related to social equity, costs, service and reliability to improve decision-making.

A major contribution of this study is that it develops a novel cross-national case-based comparison for evaluating policy designs. It applies this approach to assess policies in five substantially different national contexts. Policy makers in countries reforming the airline industry can draw several strategic lessons from our research findings.

Keywords: Transport, Deregulation, Liberalization, air transportation policy, universal service, small remote communities, cross-national comparison, case studies, United States, Canada, Portugal, Spain, Brazil.

1. INTRODUCTION

Governments are expected to ensure cohesion of their territories by sustaining accessibility to all regions, including small and remote communities. In the case where alternative transportation links are scarce or unavailable, air service becomes essential (Ishutkina and Hansman, 2008; and Reynolds-Feighan, 1995). Typically, governments' role in serving these population centers was facilitated through regulatory provisions (Halpern and Pagliari, 2007, Williams, 2002, and Button, 1990). The paradigm shift launched by liberalization of the airline industry, and caused by loosening of control over markets, questions the traditional mechanisms for ensuring equitable air accessibility. As the result, nations worldwide now face the challenge of providing effective and efficient air service to small communities under regulatory reforms and conditions. The circumstances provide incentives for air transportation policy design deployment and intervention worldwide.

This study seeks to understand the conditions under which transportation policies provide more effective and efficient air accessibility to small remote communities, and the factors that influence the public policy outcomes. The main goal is to understand the causal relations behind policy implementation and air service access.

We employed a relatively unique research strategy, compared to more conventional cross-national comparative case studies. We attempted to identify various conditions under which transportation policies provide effective and efficient air accessibility to remote areas and the factors that influence the public policy outcomes by using a systems engineering "grounded theory" methodology. Evidence of policy design outcomes was sought through a collection of a combination of documentary sources, quantitative data, and interviews.

The study succeeded in identifying the world best-practices for air transportation policy making by drawing lessons from both communities' and national case studies and insiders' perspectives through in-depth interviews with public policy and air transportation professionals. Policy makers can draw several strategic lessons from our research findings.

This paper is organized as follows. Section 2 reviews the literature on deregulation and its impacts on small remote communities. In Section 3, we describe the proposed methodology. Section 4 discusses the national case-studies and the patterns of air service provision to small remote communities in five countries: the U.S., Canada, Portugal, Spain, and Brazil. Section 5 shows the actor's views on the policy implementation. Section 6 summarizes the major key policy insights. Finally, in Section 7, we offer some conclusions.

2. DEREGULATION AND ITS IMPACTS ON REMOTE COMMUNITIES

More than three decades have elapsed since the first national liberalization of the aviation industry occurred and the effects of deregulation on the airline industry organizational form and air service general users have been extensively analyzed in the economic, transportation policy, and geographical literatures within numerous frameworks. Many scholars have studied various aspects of airline liberalization. Their studies include topics such as the spatial effects of deregulation on connectivity and accessibility (Grubesic and Zook, 2007), market competition and consolidation (Goetz, 2002; and Oliveira and Salgado, 2008).

Yet, a review of the literature shows that specific literature on the impacts of liberalization on small remote communities is much scarcer. With regards to air service to small remote communities, the early work of Morrison and Winston (1986), and more recent studies of Reynolds-Feighan (2000, 1996, and 1995), and Metrass-Mendes and de Neufville (2011) offer some valuable initial insights into the impact of deregulation on the accessibility of these small remote centers. Because the potential detrimental impacts of liberalization on small remote communities have been a major concern for policy makers, the effects of deregulation are also analyzed by governmental agencies. For example, and since the late 1980s, the US Government Accountability Office has been conducting and produced numerous studies and reports on the topic of fare and service changes among small and medium communities (US GAO, 1991 and 1996). In Europe, the public service obligation mechanism (PSO) to serve small remote communities has been discussed by authors such as Cabrera et al (2011), Calzada and Fageda (2010); and Merkert and Williams (2013).

While the motivation for providing universal essential air services is clear (though not without controversy) and there exists research on policy options for providing these services, there is a gap in comparative literature. Specifically, a gap was identified in case-based cross-national studies on policy for air accessibility of small remote communities. To date, the majority of studies have focused on the examination of the air transportation industry organizational form in large or high density markets. Though some inroads have been made, the literature on the "natural monopolies" of small remote communities is much scarcer. There is another clear gap in the analysis of the industrial organization form of low density markets. The current research addresses these gaps by conducting an examination and

comparison of the air transportation industry and policies focused on the small remote communities market.

3. METHODS

Regulatory framework and policy programs and the aviation industry influence each other, and there are many factors affecting the outcomes of a policy design. Because this makes establishing causality difficult and theory is still being formed in this area, a "grounded theory" approach was adopted. A case-based cross-national (CBCN) comparison design is used to identify best practices in air policy for small peripheral centers. The CBCN comparison method is similar to the multiple-case study approach. Cross-national comparative research is done in a variety of fields (for examples see Xu, 2007).

The research systematically evaluates support programs taking into account the economic and social dimensions of the problem and utilizes quantitative and qualitative tools to address country specificity. This choice reflects the intent to move away from survey methodologies and evolve towards more quantitative, qualitative and mixed methods in a cross-national enquiry. Qualitative techniques were expected to be useful in probing the contextual embedding of policy, providing a deep understanding of the situational and contextual factors and their impact on the performance of policy designs.

The approach is based on both holistic and multi-level analyses. An engineering systems approach is proposed. The system was decomposed into three components that are analyzed at three different levels of observation. At the highest level of observation (the international level), the diverse country policies effects on air service provision to small remote communities are compared among nations. One level down, policy mechanisms are analyzed at the country level (the individual national level). Finally, this individual national level is decomposed into the finest grains of analysis – the communities supplied by airports and air service in each country (the community level).

3.1. National cases

The universe of cases defined in this study is the countries with sparsely populated territories who face the challenge of providing their remote regions with essential air services. Within this universe of cases, the focus of the study lies in the institutional and regulatory framework governing air transportation in the United States, Canada, Portugal, Spain and Brazil.

Four strategies have been used in the selection of these cases. First, they have been selected because they are relevant, representing the geographic spread of countries that rely on aviation to serve small remote communities. The US, Canada and Brazil are large nations with populations distributed unevenly across their territories. As a consequence of geography, climate, vast distances, and environmental concerns, their remote areas are highly dependent on aviation to transport passengers and freight on a year-round basis. Spain and Portugal, on the other hand, are two very different countries when it comes to size

with insular communities sharing remote accessibility issues. In addition, the two nations are also geographically peripheral in reference to Europe.

The second rationale for selecting cases is to ensure that they cover different stages of the aviation industry. Each country is at a different phase of deregulation and the industry's development (with the exception of Portugal and Spain that face similar conditions). The US, for example, who was the pioneer of airline liberalization, presents a mature fully deregulated domestic market. Conversely, Brazil maintains some degree of regulation on a young airline industry, under turbulent development.

Third, the countries have been chosen for the reason that they use various intervention policies and strategies for delivering universal accessibility. Though all the cases agree on the necessity of providing universal air service to their communities, their approaches to providing equitable air accessibility are not homogeneous. Each nation has different institutional structures, regulatory frameworks, and different actors operating within their policies. The US, for example, maintains a centralized structure for sustaining both infrastructure and operations at remote locations. Unlike the US, Canada chose to decentralize both supports. The cases of Spain and Portugal give two examples of European Union member states that impose Public Service Obligations on their territories and fund otherwise unviable peripheral operations with central and local governments' grants. Furthermore, Brazil offers a contrast to both European and Northern American approaches by continuing to fund a few regional thin routes with cross-subsidies paid by air travel users on domestic fares in the absense of a formal State Program. Finally, for all these five nations it was possible to find enough information about public policy, and to have good data sources (both documentary and quantitative).

3.2. Data Sources

Access to informative data is a crucial condition for solid economic policy advice (Schmidt, 2007). Since the scope of this research is not limited to the economic aspects of the policy mechanisms, other data, related to the social evaluation performance are required. Therefore, evidence of policy design success is sought through a collection of several sorts of data that reflect this duality. A combination of documentary sources, quantitative data, and interviews are used as a data source.

Documentary elements used for the policy analysis include industry databases, statistics reports with data on passenger air traffic for specific airports, airport reports, strategic planning documents, airline reports, government reports on their policies and specific programs, accountability reports on State Budget for air transportation and the explicit allocation of funds to small more remote, and regulatory documents (e.g. legislative provisions). Descriptive statistics about individual countries, communities, airports and airlines, and institutions are available from different sources, including Government Departments/Agencies, other institutions, and academia.

Additionally, this information is complemented with interviews with airport managers, carriers,

and members of local government authorities or institutions that can provide precious insight to the policy impact, implementation issues and barriers to success.

As this research attempts to cover diverse regulatory and economic contexts, by including a variety of nations, with different confidentiality and transparency policies on accountability and statistic information, the data collected for one country differed to some extent from the data collected for another.

3.3. Interviews

Semi-structured interviews were carried out with a selected sample of participants, using a qualitative and largely inductive approach in order to explore the implications that participants assigned to their experiences of policy implementation. The purpose of the survey is to build upon the information gathered from documentary sources and quantitative data, and to explore organizational and individual perceptions of regulatory decisions and effectiveness and efficiency of policy mechanisms. Participants were encouraged to provide their own detailed narrative, interpreting their understanding of their experiences.

The interviews were conducted from a position of open ended and flexible enquiry, probing interesting areas that emerged and using a facilitative attitude. Once the interviews had been conduct, a systematic review and organization of the interview notes was done. Interview "coding" classifies the interview responses into major topics for further analysis. The interview responses were manually coded based on pre-defined broad categories that derived from the developed research questions. Based on the content of the responses, subcategories were also created.

4. NATIONAL PATTERNS OF AIR SERVICE PROVISION

It is clear from the preceding discussion that the countries have achieved only a limited success in the development of equitable air accessibility within their territories. However, the states did develop and implement policies and mechanisms that assure basic services to their small remote communities. What were the major factors that influenced the development of these air services? How exactly did governments influence that development? How did the industry organizational form react to regulatory frameworks and national and regional contexts?

The strategies adopted by the five countries for developing equitable air accessibility differ to some extent or sharply from each other. Though every community case examined presents useful illustrations of what worked and what did not in the US, Canada, Portugal, Spain, and Brazil, it is helpful to conduct a comparative cross-case analysis of the five countries to investigate the systematic linkages between Government policies, market structure, and the development of air services in these nations and their communities. Analyzing the community level outcomes assists supporting and validating of the overall conclusions drawn from the analysis on different national policies.

This section examines the set of policy design options implemented for the provision of air service to small remote communities. A comparison - cross-sectional (communities cross country and inside the country) and longitudinal - of the key policy insights obtained from the case-study approach and the interview method is provided. We identify the major policy differences in our five national cases, and attempt to account for their different results.

4.1. Form of support

One important distinction between the five countries lies in the form of support of air service development, both in terms of air service and infrastructure provision. This is important as it has different impacts on the communities' air accessibility. Table 1 and Table 2 summarize the major differences and common aspects between the U.S, Canada's, Portuguese, Spanish and Brazilian policies.

Table 1: Cross-national comparison of form of support of air service development

	Type of support	U.S.A.	CANADA	PORTUGAL	SPAIN	BRAZIL
Air Service	**Program for support of air service development for small remote communities**	**Yes** (EAS and SCASD)	**No**	**Yes** (PSO)	**Yes** (PSO)	**No**
	Financial support of air carriers	**Yes** (EAS and SCASD)	**Yes**. Indirect financial support. Inuit and First Nations organizations established fully-owned or joint-ventures carriers with funds from land claim and self-government agreements that are negotiated and implemented by Indian and Northern Affairs Canada (INAC)	**Yes** (PSO financial compensations offered to carriers and other non-PSO compensations)[2]	**Yes** (in Spain PSO offers no financial compensation to carriers but some autonomous regions choose to subsidize airlines[3] and there are subsidies for airport fees[4])	**No**

[2] In Portugal, carriers are offered compensations on a few non-PSO routes. This is the case of the route Lisbon-Funchal (Madeira) that is operated by the LCC Easyjet.
[3] Even though the Spanish PSO mechanism does not include the financial compensation of carriers, the autonomous governments of several regions have chosen to pay airlines (LCCs and regionals) to develop air services for their communities. Some examples are given by the LCC Ryanair serving the airport of Vitoria (province of Álava) and the regional Air Nostrum serving the case-study airport of Logroño.
[4] Airport fees on domestic routes that link the mainland and the islands are about 40% lower than other Spanish domestic routes, and airports fees on inter-island routes are nearly five times cheaper than on other domestic routes (Calzada and Fageda, 2010).

Table 2: Cross-national comparison of form of support of air service development (continued)

Type of support			U.S.A.	CANADA	PORTUGAL	SPAIN	BRAZIL
Air Service	Traveler support	Resident discounted airfare scheme	**No**	**Yes** (for members of Inuit and First Nations organizations)	**Yes** (for residents and students of the Portuguese archipelagoes)	**Yes** (for residents of the two Spanish archipelagoes and of the two autonomous cities of Ceuta and Melilla)	**No**
		Other	**No**	**Yes**, for passengers with specific medical travel needs. Airfares are paid by the national Health care system.	**Yes**, for passengers with specific medical travel needs. Airfares are paid by the national Health care system.	**Yes**, for passengers with specific medical travel needs. Airfares are paid by the national Health care system.	**Yes**, for passengers with specific medical travel needs. Airfares are paid by the national Health care system.
Infrastructure	**Program for support of small airport infrastructure**		**Yes** (AIP)	**Yes** (ACAP)	**No**	**No**	**Yes** (PROFAA)
	Financial support of operations, maintenance and capital investments		**Yes** (AIP)	**Yes** (ACAP)	**Yes**. Cross-subsidies for ANA and ANAM airports. Central and regional governments and EU funds support for others. E.U. funds.	**Yes**. Cross-subsidies between AENA airports. E.U. funds.	**Yes**. Cross-subsidies between INFRAERO airports. PROFAA for airports managed by municipalities and states.

Three countries in the sample – the U.S., Portugal, and Spain - have specific policy programs for the development of air services for their small remote communities. While the U.S. uses the federal program Essential Air Service (EAS), the European countries adopted the Public Service Obligation (PSO) mechanism. Canada and Brazil do not have formal policy programs for the support of air services, yet Canada does support accessibility equity and shares regional balance and territory cohesion with the U.S., Portugal, and Spain.

The U.S. and European approaches appear to be more consistent and transparent and therefore lead to more efficient mechanisms than the one of Canada. In the U.S., and in PSOs in Portugal and Spain, it is possible to identify exactly which communities are being covered by state support, which is extremely important considering that the main policies' goal is to provide equitable accessibility as well as regional balance and territory cohesion. In the cases of the U.S. and Portugal, where the carriers give estimates of the fully allocated cost of provision of the service level, the level of transparency is greatly improved.

Financial support to air carriers is provided by four nations: the U.S., Canada, Portugal, and Spain. While U.S. and Portugal offer direct financial compensations to airlines operating thin routes covered by their policy programs EAS and PSO, Canadian policy provides indirect support to carriers through its Department of Indian and Northern Affairs Canada (INAC) that funds Inuit and First Nations fully-owned or joint-ventures carriers with land claim and self-government agreements. Spain does not subsidize carriers serving small remote

communities with the PSO mechanism, but offers compensation to airlines willing to serve some of its smaller airports. Brazil is the only country in the sample that does not currently provide airlines serving small remote communities with any form of support.

Three countries in the sample – Canada, Portugal, and Spain – support air travelers through a resident discounted airfare scheme. The Portuguese and the Spanish mechanisms are quite similar[5], while the Canadian differs to some extent in that it is not formally a resident discount but a discount for members of Indigenous communities. In addition, in these three countries and in Brazil, it is the national Health Care System that covers traveling expenses (airfares) of passengers with specific medical needs. We find that these national approaches handle better social assistance compared to the U.S. policy that does not discriminate travelers.

We observe that three countries in the sample – the U.S., Canada, and Brazil - have specific policy programs for the support of small airport infrastructure. While the U.S. uses the federal program Airport Improvement Program (AIP), Canada uses its Airports Capital Assistance Program (ACAP), and Brazil the Programa Federal de Auxílio a Aeroportos (PROFAA) mechanism.

4.2. Governance, decentralization and local intervention

Another significant difference between the national policies is each government's approach to management of policy programs and infrastructure, and local intervention. These differences are important as they also have different impacts on the communities' air accessibility. Table 3 and Table 4 summarize the major differences and common aspects between the U.S, Canada's, Portuguese, Spanish and Brazilian policies.

The financial support of carriers is centralized in all the countries that include it in their programs, with the exception of Spain. The Spanish policy is decentralized in that several autonomous regions choose to offer compensations to carriers for development of non-PSO routes and there is no central control over these decisions. Some degree of centralization takes place also in Canada; however, in this case, the central government, through the INAC, coordinates the regional decisions, in a more efficient approach compared to the Spanish.

The financial support of travelers through the resident discounted airfare scheme is centralized in the case of two of the three countries that provide it – Portugal and Spain. The remaining country - Canada, on the other hand, has a decentralized mechanism. Regarding traveler support given to passengers with specific medical needs, we found no significant differences between the approaches of countries providing it. There is insufficient data to compare management approaches and to conclude about their efficiency gains; however, it is expectable that the centralized approaches are more transparent and therefore more efficient.

[5] In Portugal there is a resident and student discount, while in the case of Spain the discount is exclusively for residents.

Table 3: Cross-national comparison of governance, decentralization, and local intervention

Type of support			U.S.A.	CANADA	PORTUGAL	SPAIN	BRAZIL
Air Service	Program for support of air service development for small remote communities		**Centralized** (EAS and SCASD are managed by the U.S. Department of Transportation – U.S. DOT)	-	**Centralized** (PSO)	**Centralized** (PSO)	-
	Financial support of air carriers		**Centralized** (EAS and SCASD are managed by the U.S. Department of Transportation – U.S. DOT)	**Centralized** (Indian and Northern Affairs Canada - INAC). **Some degree of decentralization** at the regional and provincial level.	**Centralized** (Central Government) in both the PSO and non-PSO cases.	**Decentralized**	-
	Traveler support	Resident discounted airfare scheme	-	**Decentralized** (Inuit and First Nations Organizations)	**Centralized** (Central Government)	**Centralized** (Central Government)	-
		Other (Health Care)	-	**Centrally** managed by the national Health care system. **Some degree of decentralization** at provincial level.	**Centrally** managed by the national Health care system. **Some degree of decentralization** for the autonomous regions.	**Centrally** managed by the national Health care system.	**Centrally** managed by the national Health care system.

Capital investment in small infrastructure is centralized in the U.S., Canada, and Spain and in the case of Portuguese ANA and ANAM's airports and Brazilian INFAERO's facilities. Investment is decentralized for a few Portuguese regional airports, and for many Brazilian smaller airports that are either managed by their municipalities of by their state. Centralized and decentralized approaches have achieved mixed results. Local community management of airports presents good results when communities have a tradition of effective management or strong interest in the infrastructure (as in the U.S. and the Portuguese cases). On the other hand, in cases where local communities lack such a tradition and/or funding and/or do not recognize the infrastructure as important for the community (as in the case of most Brazilian airports managed by municipalities), the decentralized approach fails. In the Canadian case, where the two forms of governance are present, we found no evidence that one approach is performing better than the other.

Table 4: Cross-national comparison of governance, decentralization, and local intervention (continued)

Type of support		U.S.A.	CANADA	PORTUGAL	SPAIN	BRAZIL
Infrastructure	Program for support of small airport infrastructure	**Centralized** (AIP is managed by U.S. Federal Aviation Administration - FAA)	**Centralized** (ACAP is managed by Transport Canada)	-	-	**Decentralized** (regional authorities "Comandos Aéreo Regionais" – COMARs)
	Management, operations, maintenance and capital investments	**Centralized** capital investment (AIP is managed by U.S. Federal Aviation Administration - FAA). **Decentralized** management and operations and maintenance.	**Centralized** capital investment (ACAP is managed by Transport Canada). **Rather decentralized** management and other support (provincial and municipalities' levels).	**Centralized** for ANA and ANAM airports (managed by ANA). **Some degree of decentralization** for others.	**Centrally** managed by AENA	**Centralized** by INFRAERO for INFRAERO airports (**some degree of decentralization** through INFRAERO regional divisions). **Decentralized** (COMARs) for airports managed by municipalities and states.
Local Intervention	Public	**Yes**. Local authorities participate on the selection of the EAS carrier.	**Yes**	**Yes**. Regional governments and local authorities participate on the imposition of PSOs.	**Yes**. Autonomous governments participate on the imposition of PSOs and chose whether to pay subsidies to carriers on other routes.	No
	Private	No	**Yes** (in a few cases)	No	No	**Yes** (in a few cases)

Local public participation is present in four countries - the U.S., Canada, Portugal, and Spain, and appears have positive impacts on air service development as shown in communities' case-studies. There are no major differences between local private interventions among the five nations in the sample. In Canada and Brazil, there are a few cases of Public Private Partnerships for air service development, but those are the exception and not the rule.

4.3. Communities

Another significant difference between the U.S., Canada, Portugal, Spain, and Brazil lies in their communities' contexts. These differences are important because they impact the performance of policy mechanisms. Table 5 summarizes the major differences and common aspects between the U.S, Canada's, Portuguese, Spanish and Brazilian communities.

To be able to provide effective and efficient air transportation services, it is important to have an adequate balance between level of service, airfares and financial compensations. These present a major challenge for all the countries in the sample as they all need to provide very small remote communities with accessibility. For these communities, air services are lifelines; yet, their population sizes do not guarantee demand levels.

The extent of the problem is different for each country: in the U.S. and in Spain there are several communities with sufficient population size to guarantee passenger demand, while in Portugal there appears to be only one (the Island of Madeira). In Brazil, from the population size viewpoint, there would be several communities with no major problems; however, their low income levels lower demand for air services.

Table 5: Cross-national comparison of communities' contexts

Community	**U.S.**	**CANADA**	**PORTUGAL**	**SPAIN**	**BRAZIL**
Population size	Medium, small and very small in Alaska	Very Small	Medium to very small	Medium to very small	Medium to very small
Isolation	Remote (Alaska) to not isolated	Remote to moderately remote	Remote to moderately remote	Remote (Canary Islands) to not isolated (mainland)	Remote to moderately remote
Average income levels	Medium	Medium	Medium	Medium	Low
Tourism	Relevant for a few communities in Alaska and a few other non-Alaskan communities	Relevant for a few communities	Relevant for the insular locations	Relevant for the insular locations and exclaves	Relevant for a few communities

In terms of communities' level of isolation, the extent of the problem is also different for each country. While targeting remote locations may not present a major challenge for governments, finding efficient solutions for support of their air services requires considerable effort.

4.4. Market regulation

Another significant difference between the U.S., Canada, Portugal, Spain, and Brazil is found in the level of intervention of governments on the small remote communities' markets. These differences are important as they also impact the effectiveness and efficiency of policy mechanisms. Table 6 summarizes the major differences and common aspects between the U.S, Canada's, Portuguese, Spanish and Brazilian policies.

Portugal is by far the most interventionist nation in the sample. Central and regional governments dictate impositions that range from minimum service frequencies, schedule, and cargo services, to the system airlines use for selling flight tickets. On the opposite side of the spectrum lies Brazil that does not currently impose any restrictions on its regional aviation market.

Table 6: Cross-national comparison of policy market regulations

Regulation	U.S.A.	CANADA	PORTUGAL	SPAIN	BRAZIL
Frequency	No.	No	**Yes** (PSO). Minimum services.	**Yes** (PSO)	No
Schedule	No	No	**Yes** (PSO). Convenience, work schedules, and to allow for connections with other flights.	**Yes** (PSO)	No
Airfare	No	No	**Yes** (PSO). Price cap for residents and students and regulation of fare structure – available seats at a discount fare.	**Yes** (PSO). Price cap for all travelers.	No
Operating period	No	No	**Yes** (PSO)	**Yes** (PSO)	No
Punctuality	No	No	**Yes** (PSO)	No	No
Marketing and airfare purchase	No	No	**Yes** (PSO)	No	No
Capacity	**Yes**	No	**Yes** (PSO)	**Yes** (PSO)	No
Load factor	No	No	**Yes** (PSO)	**Yes** (PSO)	No
Aircraft	**Yes**	No	**Yes** (PSO)	**Yes** (PSO)	No
Cargo	Only for Alaska	**Yes** and Mail Service	**Yes** and Mail Service (PSO)	**Yes** (PSO)	No
Cargo fare	No	**Yes**	**Yes** (PSO)	**Yes** (PSO)	No

4.5. Industry structure and age of deregulation

Another significant difference between the U.S., Canada, Portugal, Spain, and Brazil is observed in their deregulatory stages and industry structures. These differences are important as they will bring different results for policy mechanisms. Table 7 summarizes the major differences and common aspects between the U.S, Canada's, Portuguese, Spanish and Brazilian policies.

The U.S. case represents the oldest deregulation and the most mature regional aviation market of the sample. Canada, Portugal and Spain reforms are more recent and have approximately the same age. While the Canadian market is mature, on the Portuguese and the Spanish markets there still exists some growth and innovation. The Brazilian market is the youngest, which is consistent with the economic developing stage of Brazil and its very recent regulatory reforms.

Table 7: Cross-national comparison of industry structure and age of deregulation

	U.S.A.	CANADA	PORTUGAL	SPAIN	BRAZIL
Market and Age of deregulation	Mature (>30 years)	Mature (From the mid-1990s)	Not yet mature (From the mid-1990s)	Not yet mature (From the mid-1990s)	Young market. Under regulatory reform. Recent re-regulation
Competition	Moderate to low or non-existent/natural monopolies (?)	Moderate to low or non-existent/natural monopolies (?)	Low or non-existent/natural monopolies (?)	Moderate to low or non-existent/natural monopolies (?)	Moderate to low or non-existent/natural monopolies (?)
Carrier business model	Private regionals and LCC	Fully owned or joint-venture with Inuit or First Nations organization, private regionals and LCC.	Publicly owned flag and regional. Private regional and LCC.	Private regionals and LCC	Private regionals and LCC
Traffic feeder	Generally feeds majors	Generally does not feed majors	Generally does not feed majors	Yes for regionals	Yes for regionals, no for LCC
Technology and Aircraft capacity	Turboprops and regional jets /Small capacity	Turboprops and regional jets /Small capacity	Turboprops and mainline and regional jets /Small to medium capacity	Turboprops and mainline and regional jets /Small to medium capacity	Turboprops and mainline and regional jets /Small to medium capacity

Some competition is present all countries – the U.S., Canada, Portugal, Spain, and Brazil; however, there are important differences between competition levels within each country. Thinner markets appear to be natural monopolies in every country of the sample – they present little or no competition at all – both in tendering processes and in operations. This situation represents a high risk of loss of service with potential very negative impacts in the most remote communities.

5. ACTOR'S VIEWS ON POLICY IMPLEMENTATION

It is found that there is a general consensus among policy makers and industry members of the five countries that liberalization of the airline industries has improved carriers' operational efficiency. The deregulatory processes have been accompanied by a shift towards commuter carriage, with the utilization of smaller aircraft and consequently lower capacity supply in the U.S., Canada, Portugal, Spain, and Brazil. Respondents recognize this allows for more efficient flying on a frequent and timely basis, when comparing to previous service.

Despite the variations in the U.S., Canadian, European, and Brazilian approaches to aviation deregulation and the variations among European countries, and its effects on air service provision to small communities, some aspects are common to the five nations:

1. All policy makers recognize the need and support the provision of air service to small remote communities and this need is sustained in their Government policies and administrative and financial provisions;
2. Respondents in the U.S., Canada, Europe, and Brazil recognize the need for support of both the transportation infrastructure and the air service;
3. Actors identify inefficiencies that are present in all systems and derive from the complexity of the "isolation" criteria and classification, failure to include changing conditions, and lack of coordination between transportation modes. There is general consensus among policy makers that the effectiveness and efficiency of policy mechanisms rely on their ability to address communities' heterogeneity and populations' specific needs and to incorporate changing conditions in their statutes. Respondents agreed that it is essential to prioritize communities with scarce transportation alternatives and requiring social integration and economic development;
4. Policy makers and industry members recognize that tourism can play an important role in supporting the sustainability, effectiveness, and efficiency of air service in communities where there is a potential for this economic activity. They are, therefore, of the opinion that policy design should stimulate tourism to improve service schedule and frequency and reduce marginal costs of use by raising scale efficiencies.

On the other hand, there is some disagreement concerning the following aspects:

1. Though provisions for infrastructure investment are essentially similar in the five cases (in most cases, smaller airports are cross-subsidized by the fee collection at larger facilities), not all respondents support that this is the most efficient solution. European and Brazilian policy makers are more supportive of Public private partnership models investment solutions compared to North American ones;
2. Although policy officials in the five countries share common concerns regarding essential universal accessibility, they appear to have different expectations as to the level of support and air service populations should expect from their governments;
3. While it is clear that Governments' provisions have been unsuccessful in incorporating evaluation measures into policies, not all nations prioritize or recognize

the need for the implementation of these procedures. Portugal appears to be the nation with fewer concerns regarding the situation.

6. KEY POLICY INSIGHTS

The variations in performance highlight the fact that countries range widely in their policy choices and outcomes. There are clearly better and worse ways to approach air accessibility of small remote communities. The analysis provided here offers important information on best practices. Likewise, clearly articulating the range of possible outcomes is in itself a valuable contribution. The research provides considerable evidence that cross-country differences in small remote communities' accessibility are directly related to the quality of the policy program in place. Table 8 summarizes the major key policy insights.

Table 8: Key policy insights

	THINGS TO DO	THINGS TO AVOID
A balanced approach	**Support both airports and airlines**	Focus on only transport, or only fixed facilities
Targeted to needs – Regional balance and social assistance	**Address specific community needs** (small communities lacking resources and alternative transportation)	Support communities with good overall accessibility and promote regional inequality -- inefficient and wasteful
	Direct subsidies to travelers needs (pay for medical/educational visits, etc)	Subsidies to all users -- inefficient and wasteful
Promoting competition	**Auction off subsidized routes**, (getting carriers to adapt aircraft, cost of operation to limited means of region)	Supporting established major carriers (they will not adapt fleet to small markets or reduce fares, and this will be inefficient)
And local responsibility	**Encourage local responsibility** (central control is expensive, unresponsive to local needs, talents)	Central government control (costly, unresponsive). Delegation of control to local entities lacking sufficient skills and resources
And tourism development	**Foster tourism activity where potential exists** (cost-effective solutions for service sustainability)	Failure to recognize opportunities and cost-effective solutions
Encourage private initiative	**Explore opportunities for private participation** (infrastructure investment and air service development)	Lack the resources and ignore communities' needs
Assess results	**Incorporate performance measures** into quality improvement programs (focus on performance and results)	Lack internal and/or external evaluation (ineffective and inefficient)

A central conclusion of our research is that effective policy design and implementation requires attending to both infrastructure requirements and air service. We find that policy programs should include assistance to small airports to fund both capital investments and expenses for maintenance and operations. Centralized support is recommended where local communities lack the resources. The damaging effects on efficiency of cross-subsidies under monopolistic infrastructure management are also clear.

Policy performance appears to improve with the promotion of competition between carriers, and the implementation of tendering processes seems to help. Our results suggest that supporting established major carriers creates inefficiency and that the rigor and structure of market regulation have particular impact on competition. Moreover, the creation of competitive markets is important not only for the removal of bureaucratic barriers, but also for transparency of subsidies. Independence of the regulatory authorities is also required. Essentially, our findings suggest that targeting communities that are de facto isolated and have specific travel needs (medical, education, etc.) results in efficiency gains and is an effective way of achieving equity and social assistance. Subsidies to all passengers, on the other hand, prove to be a wasteful use of resources. An assessment of the distribution of benefits is recommended to evaluate the effectiveness and need.

The significance of political and local authorities' interest to program results argues for the drive for political and local contribution. Private participation, on the other hand, seems to have a limited impact on policy performance, based on our analysis. Significant efficiency gains seem to be achievable by implementing annual and long-term performance benchmarking procedures and performance measures. Likewise, independent assessment of policy results should be conducted to support its choices.

The strong association between tourism and air service development for some communities also carries important policy implications. It provides powerful corroboration for a policy emphasis on the promotion of tourism growth as a key mechanism for improving air accessibility cost results.

7. CONCLUSIONS

While this study demonstrates improved methodologies for analyzing policies, the main thrust of equitable air transportation policy needs to be near, short and long term action. Moreover, the advantages of a single integrated air transportation policy which allows for beneficial flexibilities as well as a certain simplicity need to be balanced with the fact that the complexities of the problem are not necessarily well served by a one-size fits all approach. There are advantages to be gained from tailoring policies to individual communities, regions, and countries.

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