ASOCIACION ARGENTINA
DE ECONOMIA POLITICA

ANALES | ASOCIACION ARGENTINA DE ECONOMIA POLITICA

LIII Reunión Anual

Noviembre de 2018

ISSN 1852-0022
ISBN 978-987-28590-6-0

Challenges of measuring Accessible Tourism from two different sides of the world

Porto Natalia
Rucci Ana
Darcy Simon

Challenges of measuring Accessible Tourism from two different sides of the world

Porto Natalia[1], Rucci Ana[2], Darcy Simon[3], Garbero Noelia[4] y Almond, Barbara[5]

Resumen

En este trabajo se construye un Índice de Accesibilidad en Turismo (IAT), de carácter exploratorio, mediante el desarrollo de un conjunto objetivo de indicadores, en el espíritu y la intención de la Convención de las Naciones Unidas sobre los derechos de las personas con discapacidad en lo que se refiere a turismo (artículo 30) y aquellos aspectos del entorno físico, la accesibilidad de la información y el transporte (artículo 9) relacionados también con el turismo. El IAT se basa en los resultados de otros tres estudios y desarrolla una contribución integral y operativa a los entendimientos comparativos de la accesibilidad turística. Cuatro países en dos regiones del mundo (Argentina, Brasil, Australia y Nueva Zelanda) fueron identificados como estudios de casos, abordando el tema a nivel nacional y regional en cada país. La investigación se trasladó más allá de la recopilación y análisis de los datos de turismo y discapacidad actualmente disponibles, para interrogar los sistemas políticos, incorporar estas variables dentro del análisis y construir una metodología de análisis factorial y componentes principales como una innovadora aproximación a la medición de la accesibilidad en turismo, incluyendo consideraciones de series temporales (1990-2015).

Clasificación JEL: C43, L83, J14

Palabras claves: índice, accesibilidad, turismo, discapacidades

Abstract

This paper seeks to ambitiously construct an exploratory nationally comparative Tourism Accessibility Index (TAI) through developing an objective set of metrics in the spirit and intent of the UN Convention of the Rights of Persons with Disability as it relates to tourism (article 30) and those aspects of physical environment, information and transport accessibility (article 9) that relate to tourism. The TAI draws upon foundation work taken by 3 other studies and develops a comprehensive and operational contribution to comparative understandings of tourism accessibility. Four countries across two regions of the world were identified as nationstate case studies; seeking to address the issue from a national and regional level in each country. The research moved beyond currently available tourism and disability data to interrogate broader policy and data systems, incorporate these with available tourism and with tourism data and policy, construct a sophisticated and methodologically innovative and validated approach to a Tourism Accessibility Index, including time series considerations (1990-2015).

JEL Code: C43, L83, J14

Keywords: index, accessibility, tourism, disability

[1] Universidad Nacional de La Plata (UNLP), Facultad de Ciencias Económicas, Mendoza, Argentina. E-mail: natalia.porto@econo.unlp.edu.ar.
[2] Instituto de Investigaciones en Turismo – UNLP. E-mail: anaclararucci@gmail.com.
[3] UTS Business School - University of Technology Sydney – Australia. E-mail: simon.darcy@uts.edu.au.
[4] Fundación Ideal, Universidad Nacional de La Plata, Universidad Nacional de Cuyo (UNCuyo), Facultad de Ciencias Económicas, Mendoza, Argentina. E-mail: ngarbero@ideal.org.ar.
[5] UTS Business School - University of Technology Sydney – Australia. E-mail: barbara.almond-1@uts.edu.au.

1. Introduction

According to World Health Organization (WHO & WB, 2011), more than one billion people live with some form of disability. This means that one out of seven people in the world face some sort of limitation in their everyday lives, ranging from seniors to families with young children or temporarily injured people (Darcy & Dickson, 2009). In future years, disability will be an even greater concern, as its prevalence is increasing. This is because the population is aging and the risk of disability is higher among older adults, and also because chronic diseases such as diabetes, cardiovascular diseases, cancer and mental health disorders are increasing worldwide (WHO, 2011). At the same time, medical technology has improved life expectancy, people with invisible disabilities (e.g. mental health) are more willing to disclose their disability, and the collection of disability data becomes more sophisticated and systematic across developed and developing economies. Disability is part of our lives, directly or indirectly, and in that way, it is characterized as a universal phenomenon. It includes not only taking into account physical and mental health conditions, characteristics of educational or labor markets, or the role of human rights, but also the possibility of a full participation in social, recreational and touristic activities and other areas of disability citizenship (Darcy & Taylor, 2009; Meekosha & Dowse, 1997)

Although the introduction of the Universal Declaration of Human Rights in 1948 signaled the importance of equal treatment of all humanity, it wasn't until the 1970s that disability was first specifically identified as a human rights issue: in 1971 through the Declaration on the Rights of Mentally Retarded Persons (sic intellectual or developmental disability now the preferred term) and in 1975 through the Declaration on the Rights of Disabled Persons (CRPD, UN, 2018). And it was only after three decades that the rights for tourists with disabilities were introduced through the Convention on the Rights of Persons with Disabilities (UN, 2006). It was the beginning of the concept of "accessible tourism" considered as more than just the combination of tourism and disability; it involves

> "collaborative processes between stakeholders that enables people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services, and environments. These include people with permanent and temporary disabilities, seniors, obese, families with young children and those working in safer and more socially sustainably designed environments" (Buhalis & Darcy, 2011:11).

Accessible tourism has become a developing interdisciplinary, multidisciplinary and transdisciplinary field of research and industry practice; set within a dynamic social context; influenced by geography, aging and disability studies, economics, public policy, among others (Michopoulou, Darcy, Ambrose & Buhalis, 2015). Tourism was recognized as a fundamental right of the human being that can improve the quality of life and create better living conditions for all people (Manila Declaration, UNWTO, 1980). The UN Convention considers the right for tourists with disability (see Article 9 & 30) to access transport and built environment and also to tourism experiences, goods and services.

From a political will of governments' perspective, accessible tourism has become an evolving field in which some governments have focused policy and marketing efforts. For instance the European Union has been investing in accessible tourism for the last three decades (Ambrose, 2012); Australia has some of the first accessible tourism initiatives (Darcy, Cameron & Schweinsberg, 2012); Argentina has had a specific law about accessible tourism since 2002. Accessibility is now being considered as a way to increase the tourism competitiveness of destinations (Madeiro Barbosa, 2008; Kastenholz, Eusébio, Figueiredo &

Lima 2012; Dominguez, Darcy & Gonzalez Alen, 2015; UNWTO, 2015d; Porto, Rucci & Ciaschi, 2016, 2017; Rucci, 2018; Porto & Rucci, 2018).

WHO recognizes disability as a global public health issue as well as a human rights issue. The UNWTO identifies accessible tourism as a public policy concern, referring to it also as a human rights issue. In this context -apart from removing barriers and improving access to health services and programs- one of the main objectives of the Global Disability Action Plan 2014-2021 is to strengthen the collection of relevant and internationally comparable data on disability and support research on disability and its related services (WHO, 2013). This paper seeks to assist with this objective by proposing an instrument to measure the relationship between tourism, disability and accessibility, in a broad sense at a national and regional level. The research is built on an examination of overarching tourism destination competitiveness from a disability and broad accessibility perspective. It lays out the conditions of accessibility in the tourism sector showing, on one hand, political willingness for accessible tourism in a country, and, on the other hand, the consideration of tourism accessibility as a factor to be included into a destination competitiveness measure. The index computes four components: i) international tourism and population with disability importance, ii) legal framework, iii) policy, and, iv) access conditions in tourism resources. Therefore, it sets out a logic that shows that, if a country has people with disabilities, which it recognizes as a vulnerable population (WHO, 2011) with needs that must be attended to, and the international tourism in that country is significant, the government must guarantee the full exercise of rights to persons with disabilities. The tourism sector is a critical arena for such achievement. In this way, the index is a tool that shows: i) the political will of the countries through the existence of laws that establish rights; ii) the implementation of such willingness, through the existence of organizations that design and develop policies with persons with disabilities in mind; and, iii) the conditions of access at tourism attractions and World Heritage Sites (UNESCO).

The selection of nationstate case studies (Argentina, Brazil, Australia and New Zealand) was based on the notion that the four countries have accessible tourism policies and resources at different stages of development and a convenience sample of the collaborative research team who had deep knowledge of the social and tourism data availability. Internationally, Australia is one of the most influential players in human rights: accessibility was introduced in the Federal Disability Discrimination Act in 1992, after each state in the Federation had separate antidiscrimination and disability services legislation. It has a long history of initiatives involving disability and access provisions in tourism, as well as some of the first accessible tourism initiatives (Darcy et al., 2012). New Zealand has considered the rights of people with disability since 1990 and information about accessible facilities is available from the official website of the tourism organizations (Gillovic & McIntosh, 2015; Rhodda, 2012). These statistical, political and legislative frameworks provide the foundations for the implementation of accessible tourism provision in the four countries. Similarly to Australia, Brazil has implemented several initiatives in the accessible tourism field and is one of the Latin-American countries that have shown more progress in this area (Porto et al., 2016, 2018; Rucci, 2018). Similarly Argentina has had a national law in accessible tourism (N° 25,643) since 2002; has a national program of accessible tourism to encourage the tourism sector to improve their accessibility conditions and is one of the Latin-American countries with the greatest access condition of it's World Heritage Sites by UNESCO (Porto et al., 2016, 2018).

The aim of this paper is to create a Tourist Accessibility Index through which to identify the main variables that must be part of a measure of this kind for the four countries (Australia and New Zealand from the Pacific and Argentina and Brazil from South America). The general index is built as the weighted sum of different dimensions summarizing a broad set of data in a smaller number of variables relevant to explain the accessibility of tourism

determining the relative importance of each variable. Then, it is useful to position each country in relation with the other countries and to compare the situation for countries in different stages of development and their change over time. Finally, the index was constructed following an extensive data search and the methodology of a principal components analysis. The process of index construction will allow replication in future research across more countries. Such an index would contribute to the UN Convention on the Rights of Persons with Disabilities' (2006) international reporting and comparison measures of signatory nations where tourism is identified under Article 30 and transportation accessibility under Article 9.

The structure of the paper begins with Section 2 presenting a brief review of the literature about the main items that the disability and the accessibility concepts include, leading to the conceptual underpinnings of tourism accessibility. Section 3 describes the data and section 4 deals with the methodology of the principal component analysis. Section 5 presents the results and Section 6 provides the final discussion.

2- Literature review

According to UNWTO (2014a), the exponential growth of the tourism sector over the last few decades offers limitless opportunities for socio-economic development and job creation, but it also poses significant challenges. Along with concerns about economic and environmental sustainability, there are different segments of society that are not yet able to equally enjoy the rights of disability citizenship (see millennium development goals and disability United Nations, 2010) including tourist attractions, facilities and services. One of those segments is people with access needs. The CRPD (2006) define "persons with disabilities" as those who "have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others", while "people with access needs" considers not only those with disabilities but also includes ageing population, those with temporary disability, pregnant women and families with young children (Darcy & Dickson, 2009; Dickson, Misener & Darcy, 2017). As stated by WHO (2011), more than a billion people are estimated to live with some form of disability, or about 15% of the world's population (based on 2010 global population estimates), and what is more, by 2050 this figure is set to increase approximately 1.2 billion (WHO, 2011). Other groups that also benefit indirectly from enhanced accessibility, as it was already mentioned, include seniors, pregnant women, people with temporary disabilities, families with young children and employees through the benefits of accessible/universal design creating safer working environments. In future years, disability will be an even greater concern, as its prevalence is increasing. This is because the population is aging and the risk of disability is higher among older adults, and also chronic diseases such as diabetes, cardiovascular diseases, cancer and mental health disorders are increasing worldwide (WHO, 2011).

Research into tourism and disability has gained relevance in academia, amongst policy makers and practitioners over the last two decades; however, it is only recently that accessible tourism has become an evolving field of research and industry practice, set within a dynamic social context (Michopoulou et al., 2015; UNWTO, 2015a-f). The accessible tourism field is interdisciplinary, multidisciplinary and transdisciplinary, and is influenced by geography, aging and disability studies, economics, public policy, technology, among others. People with disabilities are representative of one market largely mistaken and unwarranted by the global tourism industry (Daniels et al., 2005; Darcy & Buhalis, 2011; Richards et al., 2010). The following notable studies have identified the constraints faced by tourists with disabilities (Daniels, Rodgers, & Wiggins, 2005; McKercher & Darcy, 2018; Nyaupane & Andereck, 2008), market dynamics (Burnett & Baker, 2001; Domínguez, Fraiz, & Alen, 2013; Dwyer & Darcy, 2011; Van Horn, 2012), motivations (Figueiredo, Eusebio, & Kastenholz,

2012; Shi, Cole, & Chancellor, 2012), information needs (Buhalis & Michopoulou, 2011; Darcy, 2010; Eichhorn, Miller, Michopoulou, & Buhalis, 2008), cross-country comparisons (Freeman & Selmi, 2010), approaches to disability discrimination (Shaw, 2007; Veitch & Shaw, 2011), general attitudes towards people with disabilities (Bizjak, Knezevic', Cvetreznik, 2011; Daruwalla & Darcy, 2005), supplier attitudes towards people with disabilities (Darcy & Pegg, 2011; Groschl, 2012; Kim, Stonesifer, & Han, 2012; Ozturk, Yayli, & Yesiltas, 2008; Yaniv, Arie, & Yael, 2011), whole of life approaches (Darcy & Dickson, 2009; Pagan, 2014), measuring accessibility into destination competitiveness (Madeiro Barbosa, 2008; Kastenholz, et al., 2012; Dominguez, et al., 2015; Porto, et. al, 2017; Porto & Rucci, 2018); and political will of countries in accessible tourism (Rucci, 2018). More recently, the UNWTO has published a growing body of work related to accessible tourism (UNWTO, 2014a, 2014b, 2015ae, 2016a, 2016b) and declared the 2016 year under the motto "Accessible Tourism for All. Promoting Universal Accessibility" to celebrate the 10th anniversary of the adoption of the CRPD.

In regards to destination accessibility, Israeli's (2002) early study sought to understand what accessibility factors were required by the group to visit tourist sites. This first attempt to articulate the underlying foundations required for tourists with disability to visit a tourist site or precinct developed over the coming decade with later studies utilizing a destination competitiveness framework to enhance the theoretical framework and examine accessibility as a component of competitiveness between destinations (Ritchie & Crouch, 2003; Dwyer & Kim, 2003; WEF, 2011). However, only a few that have studied accessibility in tourism in the context of competitiveness (Madeiro Barbosa, 2008; Kastenholz, et al., 2012; Dominguez, et al., 2015; UNWTO, 2015d; Porto, et al., 2016, 2017, 2018; Rucci, 2018). For instance, Madeiro Barbosa (2008) applied a methodology to measure competitiveness in 65 tourism destinations in Brazil based on five macro-variables: infrastructure (general and access); tourism (tourism infrastructure, tourist attraction and marketing and promotion of destinations); public policies; economy (economic activities and business capacity); and sustainability (social, environmental and cultural aspects) that include a total of thirteen micro-variables. Within one of its macro-variables (tourism), this study includes the measurement of compliance with the access requirements for people with disabilities. Although the main objective of the research was not the measurement of accessibility in tourism, it is one of the first competitiveness investigations that include accessibility as a variable into competitiveness destination measurements. Starting in 2008 and based on the information detailed above, the Ministry of Tourism of Brazil computed the National Tourism Competitiveness Index which incorporates, since 2011, the measurement of accessibility in one of its variables (access). Further to this inclusion, since 2013 accessibility has been incorporated it into three other variables: general infrastructure; tourist services and equipment; and, tourist attractions. The 2015 index results reflect that the presence of accessibility conditions in the different variables increases the competitiveness value of its variable.

Kastenholz et al. (2012) present the initiative of the municipality of Lousa in Portugal to become the first Portuguese accessible tourism destination. Lousa has a long history of supporting initiatives regarding the population with disabilities, and given the area's nature and rural tourism potential it was a considered a suitable focus. The study shows the results of the project carried out by Lousa which consisted of analyzing the potentialities of the municipality to enhance its competitiveness and the central strategic objective to become an accessible destination. It achieved this by making the accommodation units more accessible; implement a certification "Lousa Accessible" to award for both recognition and branding of those establishments that have invested in making their products and services more accessible; creating an accessible rout to observe the destination's wildlife and many others. The study indicates that Lousa takes accessible tourism as a strategic tool to gain competitiveness through an underserved and typically loyal market, creates a culture of

social responsibility and enhances a shared human experience by improving the vision of the destination amongst stakeholders, including tourists who increasingly value socially responsible positions of economic actors in the tourism industry.

In another investigation of destination competitiveness, Dominguez et al. (2015) considered 17 attributes and focused on the measurement of two variables: the level of accessibility (degree of access) and the number of accessibility products and services offered by tourist destinations. The authors analyse the competitiveness in accessible tourism between Australia and Spain at a country level and, also, on the tourist regions of both countries through a cluster analysis, suggesting three possible stages based on their accessibility: (i) destinations that have advanced tourist accessibility through the offer of specific products; (ii) destinations that have identified the accessible tourism market as a business opportunity and incorporate accessibility conditions as a point of differentiation; and (iii) destinations that are not working to improve tourism accessibility and, therefore, will not have advantages derived from the development of this segment or, indirectly, from the segment of family and senior tourism. While the study concluded that tourism destinations in both countries have similar behavior, interesting findings emerged in the detailed comparison. It was observed that intrinsic tourism charactaristics such as climate, location or tourism structure are more important for Spain, whereas the quality of services, brand and infrastructure were more significant for Australia's competitive position. These aspects suggest that the concept of an accessible tourism market is possible in both countries, where there seems to be a concordance of demands to promote the development of infrastructure, products, services, promotion and marketing information, and the provision of adequate information for people with disabilities. Finally, the findings suggest that the competitive factors of the destination are country-dependent and that destination competitiveness must be considered according to the different types of disabilities because the needs of people with disabilities vary between each group based on their support needs (see Darcy, 2010). For instance, larger cities tend to be the main focal points of greater accessibility (for example, Sydney, Melbourne, Madrid and Barcelona).

Table 1: Model comparison

Models	**Tourism competitiveness (Madeiro Barbosa, 2008)**	**Competitiveness in accessible tourism (Dominguez Vila, Darcy & Gonzalez Alen, 2015)**	**Political will in accessible tourism (Porto & Rucci, 2018)**
N° variables and subvariables	13	17	11
Variables	*Infrastructure* *Tourism* *Public Policies* *Economy* *Sustainability*	*Core resource and attractors* *Supporting factors and resources* *Qualifying and amplifying determinants* *Destination planning and management*	*International tourism and disability's importance* *Legal & Political recognition* *Accessibility in tourist attractions*
Methodology	Data collection: questionnaire	Principal determinant and cluster analysis	Data collection: statistics, normative and policies
Geographical units	65 destinations of Brazil (capitals and non capitals)	Australia and Spain (tourist regions and capitals)	Argentina, Brazil, Chile, Paraguay, Uruguay and Venezuela
Period	2013-2015	2014	1990-2015

Source: Collected by Madeiro Barbosa (2008); Dominguez Vila, Darcy & Gonzalez Alen (2015) and Porto & Rucci (2018)

Note: Each variable of Dominguez et al.'s model is measured through number and level of accessibility

The importance of understanding this area of scholarship is better demonstrated by the attention paid to the area by the UNWTO to create a global approach to measuring the factors. Their efforts over the last decade to measure tourism accessibility culminated in the UNWTO (2015d) publishing a model of indicators to measure accessibility into the tourism value chain. The model has eight stages (and sub-stages), each of them with a number of indicators. In the first step, UNWTO suggests a definition of the tourism value chain and then applies the indicators given, which must be evaluated through the following key-issues: access; cleanliness; common spaces; management; information & communication; mobility; staff training; services; use. While considered a comprehensive measurement of accessible tourism, this model has the disadvantage of being very difficult to put into practice given all the information required for the components.

Research problem

Given the literature review, the approach proposed in this paper seeks to draw upon the studies that have been previously identified (Table 1) and develop a comprehensive and operational contribution to the issue. Four countries across two regions of the world were identified as nationstate case studies; seeking to address the issue from a national and regional level in each country. The research moved beyond currently available tourism and disability data to interrogate broader policy and data systems, incorporate these with available tourism and accessible tourism data and policy, construct a sophisticated and methodologically innovative and validated approach to a Tourism Accessibility Index (TAI), including time series considerations (1990-2015).

3. Description of the data

The aim of this paper is to create the TAI -through which to identify the main variables to explain tourism accessibility in broad terms- for four countries, Australia and New Zealand from the Pacific, and Argentina and Brazil from South America. A panel database for five periods of five years each, between the years 1990 and 2015, is used. The selection of the countries was based on a convenience sample of the collaborative research team who had deep knowledge of the economic, legal, social, touristic data availability. However, the country selection also presented some challenges to the research because the asymmetric characteristics and the idiosyncrasy of the countries sociocultural contexts. Table 2 shows the components of the information.

Based on the analysis of the literature of Section 2 and on the availability of information, the data includes broad information about general characteristics of the countries, people with disabilities, importance of the tourism sector, accessibility in the World Heritage Sites (UNESCO), legal framework conditions, infrastructure, availability of publicly accessible data and availability of the types and kind of information related to accessibility. The data was collected from different national and international organizations (Appendix 1).

Table 2: components of the index

General information	Accessibility in World Heritage Sites (WHS)
Population	Nº of WHS FA (% WHS FA)
Areas (km²)	Nº of WHS Cultural FA (% WHS Cultural FA)
Density	Nº of WHS Natural FA (% WHS Natural FA)
Gross Domestic Product (per capita)	Nº of WHS Mixed FA (% WHS Mixed FA)
Human Development Index	Nº of WHS PA (% WHS PA)
Population with disability	Nº of WHS Culural PA (% WHS Cultural PA)
Total Population with disabilities	Nº of WHS Natural PA (% WHS Natural PA)
Total Population with disabilities (% Total Population)	Nº of WHS Mixed FA (% WHS Mixed PA)
PWD with one type of disability (% PWD)	**Legal Framework**
PWD with more than one disability (% PWD)	Adherence to International Treaties
Pw sensory disability (% PWD)	Vocational Rehabilitation and Employment of PWD (1983)
Pw intellectual impairment (% PWD)	Inter-American Convention for the Elimination
Pw motor impairments (physical disability) (% PWD)	of all Forms of Discrimination against PWD (1999)
Pw Psychological/Psychiatric impairments (% PWD)	UN CRPWD (2006)
Pw other impairments (% PWD)	Optional Protocol (2006)
Tourism	National- Disability
International tourist arrivals (nº of arrivals)	PWD in National Constitution
Tourist arrivals for 1000 habitants	PWD main Law
International tourist departures (nº of departures)	Disability National Organization
Tourism inbound (millons dollars)	PWD Program-Plan
Inbound in relation to tourism arrivals	National- Tourism
Inbound (% GDP)	Tourism National Organization
International tourism expenditure (% total imports)	Tourism accesible Law
International tourism receipts (% total exports)	Accessible Tourism Program
Infrastructure	**Stats & Availability of information**
Nº International Airport	Accessibility in official web sites
Nº Domestic Airport	Information in web sites
Accesible facilities main airline	Books/ Guides of Accessible Tourism
Accommodation with accessibility (% of rooms)	Building Code/Accesible transport law
	Statistics

Source: Developed by authors

Table 3 summarizes some selected indicators.

General Information

By area, Brazil is the world's fifth-largest country, Australia the sixth and Argentina the eighth. However, New Zealand is significantly smaller than the other countries studied. Even though Australia and Brazil both have similar geographical areas, the density of population is eight times higher in Brazil (24.4) than in Australia (3.07). To show some universal indicators across countries, Gross Domestic Product (GDP) and Human Development Index (HDI) were selected for this study. With regards to GDP, Australia is the only country which almost triples data indicators from 1990 to 2015, while the rest of the countries doubled the 1990 number. Related to the HDI, the four countries have similar increases throughout the years (Table 3).

Population with disabilities

With regards to the population with disability, not all the countries have census or disability surveys in all periods of time. Also, the measurement of disability population throughout the years in each country is not the same (See ´conceptual definitions´ in Table A2, Appendix). The World Health Organization and World Bank (2011) note a series of measurement and data collection issues that prevent uniform comparisons between countries. The last census shows that people with disabilities represent 23.11% of the total population of New Zealand, 22.96% for Brazil, 18.04% for Australia and 12.41% for Argentina. Australia and Brazil

consider those numbers as people with at least one type of disability while Argentina and New Zealand have both, one and more than one disability (Table 3). [6]

Tourism Indicators

Table 3 shows different indicators of tourism performance for the four countries. Australia presents the major number of international tourist arrivals with 8,263 thousand tourists per year. The second place is Brazil (6,430) and the third Argentina (5,935). Tourists arriving in Australia and New Zealand spend three to four times more than tourists going to Brazil and Argentina. As a consequence, income from tourism represents 4% of GDP in New Zealand, 2.4% of GDP in Australia and does not reach 1% in the Latin American countries. However, New Zealand is somewhat disadvantaged due to its isolated geographical location and distance from major inbound tourist markets –China, Germany and the UK– outwardly permeating a sense of inaccessibility (Rhodda, 2012).

In Argentina the international tourism expenditure -as a percentage of total imports- has decreased since 1990 from 15% to 9%. This value for Australia and Brazil are currently 10% and 9%, respectively. The international tourism receipts –as a percentage of total exports- has also decreased in Argentina, from 10% in 1990 to 6% in 2015, and decreased in Australia from 17% in 1990 to 11% in 2015. This value is near to 3% in Brazil in the last period and about 17% in New Zealand in 2010.

[6] In 2001, the Washington Group on Disability Statistics (United Nations, 2001) recognized that statistical and methodological work was needed at an international level in order to facilitate the comparison of data on disability across nations. The set of questions proposed by the Group of Washington was applied in the 2010 Census by Argentina and Brazil; Australia used them in the 2016 Supplementary Disability Survey (SDS) and New Zealand included them in the New Zealand General Social Survey for the 2016/17 collection year (Stats NZ, 2017). In the set of question people with disability were considered those who declare a difficulty or permanent limitation and restrictions to participate in the daily activities, to see, to hear, to walk, to seize objects, to learn, etc. and that affect a person permanently to be enrolled in their daily life in their physical and social environment.

Table 3: General Information, Population with disabilities and Tourism Indicators about Australia, New Zealand, Argentina and Brazil (1990-2015)

Variable	Period	Australia	New Zealand	Argentina	Brazil
Total population (in millions)	1990-1995	18.07	3.67	34.99	162.76
	2001-2005	20.39	4.13	39.15	188.48
	2011-2015	23.78	4.60	43.42	207.85
Population density	1990-1995	2.33	13.67	12.59	19.11
	2001-2005	2.63	15.38	14.08	22.13
	2011-2015	3.07	17.09	15.62	24.40
Gross Domestic Product (usd per capita)	1990-1995	20,384.67	17,400.42	7,373.43	4,840.79
	2001-2005	34,016.71	27,750.89	5,076.88	4,770.18
	2011-2015	56,554.04	38,201.89	13,467.10	8,757.21
Human Development Index	1990-1995	0.88	0.85	0.73	0.65
	2001-2005	0.92	0.89	0.78	0.70
	2011-2015	0.94	0.92	0.83	0.75
Population with disabilities (in millons)	1990-1995	2.92	NI	NI	1.67
	2001-2005	3.96	0.74	2.18	NI
	2011-2015	4.29	1.06	NI	NI
Population with disabilities (% Total Population)	1990-1995	16.16	NI	NI	1.02
	2001-2005	19.41	17.99	5.56	NI
	2011-2015	18.04	23.11	NI	NI
International tourist arrivals (in thousands)	1990-1995	3,726	NI	2,285	1,991
	2001-2005	5,499	2,353	3,823	5,358
	2011-2015	8,263	2,772	5,935	6,430
International tourist departures (in thousands)	1990-1995	2,519	920	3,815	2,600
	2001-2005	4,756	1,872	3,894	3,365
	2011-2015	9,114	2,276	6,517	9,048
Inbound (% GDP)	1990-1995	3.23	3.63	0.99	0.14
	2001-2005	2.84	5.65	1.61	0.47
	2011-2015	2.54	4.79	0.89	0.41
International tourism expenditure (% total imports)	1990-1995	9.63	NA	15.41	6.29
	2001-2005	10.21	7.99	10.21	6.11
	2011-2015	10.49	NA	8.82	9.41
International tourism receipts (% total exports)	1990-1995	16.98	NI	10.22	2.06
	2001-2005	14.35	20.16	6.84	3.13
	2011-2015	11.57	NI	6.35	2.80

Source: collected by World Bank Group, 2017, INDEC 2002, 2010; IBGE, 1991, 2000, 2010; ABS, 1993, 1998, 2003, 2009, 2015; Stats NZ, 1996, 2001, 2006, 2013.

Note: NI means No Information; NA means Not Applicable

Accessibility in World Heritage Sites (WHS)

For this item, we developed a methodology (Table A3, Appendix) with the aim of identifying the access conditions of people with disabilities to the sites ascribed on the World Heritage List (UNESCO) considered as the international recognized touristic places of each country. The methodology includes three aspects: i) information availability, considering if official and non-official websites provide accessibility information; ii) access conditions at the sites,

taking into consideration the travel chain (plenty of access to parking, arrival, free circulation, toilets, among others (UNWTO, 2016a)); and, iii) touristic use, considering the ability to participate in the main touristic activity of the site (i.e. in the WHS Puerto Madryn of Argentina, the most common recreational activity is whale watching, so, the touristic use will be based on the access and participation of the different types of disability embodiment in that main activity e.g. mobility, vision, hearing or cognitive). The collection of data was based on the publicly available information in official and non-official websites, tourist and travel guides and research papers, among others. However, there are two limitations that should be noted. As the data collected was only that which is publicly available this means that, on one hand, the absence of publicly available data became a barrier for travel planning for people with disabilities; and, on the other hand, there may be information about other accessible facilities in some WHS that is not documented or easily accessed. As a consequence of this review, Australia was found to have the highest percentage of WHS Fully Accessible (FA) for a tourist with disability (24%). Brazil and Argentina have 20% of the total WHS with FA while in New Zealand there is not a site identified with these characteristics (Table 4). Table 4 sets out the accessibility of each country's World Heritage Sites generally, specific to cultural, natural and mix World Heritage.

Table 4: Accessibility in World Heritages Sites about Australia, New Zealand, Argentina and Brazil (1990-2015)

Country	Fully Accessible	Partially Accessible	Initiatives of Accessibility	Non Accessible
		World Heritage Sites (%)		
Australia	26	16	11	47
New Zealand	0	33	0	67
Argentina	20	30	20	30
Brazil	20	15	10	55
		Cultural World Heritage Sites (%)		
Australia	67	0	0	33
New Zealand	0	0	0	0
Argentina	0	33	17	50
Brazil	15	23	8	46
		Natural World Heritages Sites (%)		
Australia	25	0	17	58
New Zealand	0	0	0	100
Argentina	50	25	25	0
Brazil	29	0	14	71
		Mixed World Heritage Sites (%)		
Australia	0	75	0	25
New Zealand	0	100	0	0
Argentina	0	0	0	0
Brazil	0	0	0	0

Source: Identified by authors

Political will

Table 5 summarizes the political will of the countries in terms of adherence to international treaties of disability, national normative related to tourism and disability and the national organizations for the development of policies of tourism and disability.

Table 5: Political will in accessibility and tourism in Australia, New Zealand, Argentina and Brazil (1990-2015)

Variables		Australia	New Zealand	Argentina	Brazil
Adherence to International Treaties	Vocational Rehabilitation and Employment of PWD (1983)	Ratified (1990)	No	Ratified (1987)	Ratified (1990)
	Inter-American Convention for the Elimination of all Forms of Discrimination against PWD (1999)	NA	NA	Ratified (2000)	Ratified (2001)
	UN CRPD (2006)	Ratified (2008)	Ratified (2008)	Ratified (2008)	Ratified (2008)
	Optional Protocol (2006)	Ratified (2009)	Ratified (2016)	Ratified (2009)	Ratified (2009)
Disability	PWD in National Constitution	No	No	PWD rights have a general recognison into Constitution (1994)	Most of rights considered into Constitution are related to PWD (2009)
	PWD main Law	Disability Discrimination Act (1992)	NZ Bill of Rights (1990) / NZ Human Right Act (1993)	Law Nº 7,853 (1989) / Law N° 22,431 (1981)	Law N° 13,146 (2015)
	Disability National Organization	Australian Federation of Disability Organizations (2003) / Disabled Peoples Organizations (2006)	Office for Disability Issues under the Ministry of Health (2002)	National Advisory Committee for the Integration of Disabled Persons (1967)	Human Rights Secretary (1986)
	PWD Program-Plan	National disability strategy (2010-2015) / National Disability Insurance Scheme (NDIS) (2013)	NZ Disability Strategy (2000/2001)	Accessibility Plan (CONDADIS, 2012)	Live Without Limits Plan (2013)
Tourism	Tourism National Organization	Tourism Australia (2004)	Ministry of Tourism (1991)	Ministry of Tourism (1942)	Ministry of Tourism (1992)
	Tourism accessible Law	Considered into Disability Discrimination Act (1992)	No	Accessible Tourism Law N° 25,643 (2002)	Considered into General Tourism Law (2008)
	Accessible Tourism Program	National Information Communication Awareness Network (NICAN) (1988)	Access Tourism NZ (2005)	Accessible Tourism Guidelines Program (2008)	Accessible Tourism Program (2010)

Source: Developed by authors

Note: NA means Not Applicable

The measurement of the political will in countries is divided into three steps. The first one is to identify the international treaties which the countries have adhered to; second, the

national legal framework related to tourism and disability; and, third, the implementation of that normative through the existence of a national organization of tourism, disability and accessible tourism.

Related to international treaties, all the countries have ratified the UN CRPD (2006) in 2008 as well as its Optional Protocol in 2009 except for New Zealand in 2016. Australia, Argentina, and Brazil have ratified the Vocational Rehabilitation and Employment of PWD (1983) which is one of the only backgrounds of international treaties about disability before CRPD. Only Argentina and Brazil include the rights of people with disabilities in their Constitution. While Argentina has a general recognition (1994), the Constitution of Brazil includes most of the rights (2009). As well, all the countries have disability laws but Argentina is the only one that has a specific law of accessible tourism since 2002.

All the countries have bodies for the treatment and development of disability as well as tourism policies although those from Argentina are the oldest. Likewise, all the countries have developed both disability and accessible tourism programs at a national level.

4. Construction of the Tourism Accessibility Index

The Index of Tourism Accessibility is a composite one that gathers information on the different aspects that allow the assessing of the level of development of the country, the number of people with disabilities, the access of people with disability to tourist places, the recognition of disabilities in the laws and the information regarding the degree of accessibility of the tourist places. The index is composed by sub-indices, taking into account the information described in Table 2. The sub-indices were chosen through factor analysis and principal components analysis (PCA). These statistical methods could be used to group individual indicators when correlations between them exist and allow weights to be computed (for more details of both methods see Lawley & Maxwell, 1971; Jolliffe, 1986; Dunteman, 1989; Bryant & Yarnold, 1995).

Composite indicators which compare the performance of different countries are a useful tool and its use has grown over the years because it is easier to study and interpret the trend of a single indicator than of several variables. However, composite indicators can send misleading policy messages if they are poorly constructed or misinterpreted (Nardo, Saisana, Saltelli, Tarantola, Hoffman & Giovannini; 2005). So, the construction of the indicators must respect certain statistical criteria and the methodology requires compliance with different steps: i) developing a theoretical framework; selecting variables; imputation of missing data; normalization of data; multivariate analysis; weighting and aggregation

The seven sub-indices and the general index are created following the previous steps. Steps 1 and 2 were developed in the previous sections. The candidate variables were chosen to be part of the index according to a theoretical framework of the determinants of access to tourism by people with disabilities (Porto et al. 2016, 2017, 2018; Rucci, 2018).

The imputation of missing data is needed to provide a complete dataset. The main method for the imputation of missing values is *the unconditional mean imputation (*Nardo, Saisana, Saltelli, Tarantola, Hoffman & Giovannini, 2008*).* It has the advantage of being a simple method and it performs well when there are no extreme observations or outliers. For each country with missing data, the average value of the variable was calculated. It is important to clarify that within the countries there are no extreme observations throughout the period.[7]

[7] This criterion was used for the imputation of four variables: population with disabilities (% total population), international tourist arrivals (number of arrivals), international tourism expenditure (% total imports) and

Normalization is required prior to any data aggregation. Indicators in a data set often have different measurement units and should be normalized to render them comparable. Normalization also converts the variables to a common scale between 0 and 1, which is necessary to obtain a final index between these two bounds. Despite different normalization methods exist (Freudenberg, 2003; Jacobs et al., 2004) this paper choose the Min-Max criteria which normalizes indicators to have an identical range [0, 1] by subtracting the minimum value and dividing by the range of the indicator values. Min-Max normalization could widen the range of indicators lying within a small interval, increasing the effect on the composite indicator more than the z-score transformation. We proposed an alternative version of Min- Max criteria that allows us to compare the indices across time and the values for one country are not relative to the achievement of the other countries. Instead, the relative distance to certain reference values is considered.[8]

In steps 5 and 6, the number of variables is reduced and the weights are estimated. For this purpose, factor analysis and principal components analysis (PCA) are used. The weights are then determined in a way that maximizes the variation of the resulting principal component so that the indices capture the variation as fully as possible. Table 6 presents the sub-indices with their respective weights.

The Tourism Accessibility Index (TAI) is constructed as:

$$TAI = (0.12 * GII + 0.05 * PWDI + 0.15 * TI + 0.16 * IF + 0.13 * APSI + 0.32LFI + 0.7 * SAII) * 100$$

The index takes values between 0 and 100. Higher values denote the greater level of accessibility -in the way we define it in this paper- for people with disabilities. The variables included in each sub-index with their weights are shown in Table A1 of Appendix. Finally, a robustness exercise is carried out to test the sensitivity of the index to changes in the components. For this purpose, the TAI is calculated without the infrastructure and statistics indices. The index of infrastructure is eliminated since it is constant throughout the period because it was impossible to find information for previous periods than the last one. The statistical index is eliminated because it has the lowest weight in the global index. The components and their weights are shown in Table 6.

international tourism receipts (% total exports). In the cases that there is only information for one period, the same value is imputed for the rest of the years. This approach was used for the infrastructure variables and the index of accessibility in official web sites. Finally, for some variables, the missing data was completed by recoding certain values. This strategy was followed for the infrastructure variables and for the legal framework variables.

[8] The normalization is made as: $.I_{j,it} = \frac{V_{j,it} - \min V_{jt}}{max\, V_{jt} - \min V_{jt}}$ where Ij, it is the indicator j of country i in year t and Vj, it is the variable j of country i in year t, min Vj,t and max Vj,t they are the minimum and maximum theoretical values that the variable j can take in year t. In the case of the variables where it is not possible to define the reference values, such as the GDP per capita or tourist arrivals, among others, the standard min max criteria is followed.

The Alternative Tourist Accessibility Index (ATAI) is constructed as:

$$ATAI = (0.22 * GII + 0.09 * PWDI + 0.13 * TI + 0.24 * APSI + 0.31LFI) * 100$$

Table 6: Tourist Accessibility Index and Alternative Tourist Accessibility Index. Components and weights

Sub- Index	Weight	
	Tourist Accessibility Index	Alternative Tourist Accessibility Index
General Information Index	0.12	0.22
PWD Index	0.05	0.09
Tourism Index	0.15	0.13
Infrastructure Index	0.16	-
Accessibility to World Heritage Sites Index	0.13	0.24
Legal Framework Index	0.32	0.31
Stats & Availability of Information Index	0.07	-

Source: Developed by authors

5. Results

5.1. Weighting sub-indices of the Tourism Accessibility Index

The TAI presumes a broad number of variables and arises from the weighting of a set of sub-indices, as was explained in the previous section. The Legal Framework Index presents the major weight in the global index (32%, Table 6). In this way, it can be considered that the laws and norms that regulate the rights of residents and tourists are the main variables that affect the level of general accessibility and the specific tourism accessibility in these countries. The infrastructure and the importance of tourism in the economy represent the 16% and 15%, respectively. The access of people with disability to World Heritage sites weighs 13% while the measures of the level of development of the country (resumed by general information) weighs 12%. The information available on the web pages and statistics has the lowest relevance in tourism accessibility, with a weight of 7%. However, this last category is important for being able to monitor the UNCRP as without a baseline and ongoing assessment progress or otherwise cannot be measured.

When considering the second specification, the legal framework Index remains as the main variable that influences the ATAI with a weight of 31%. The Accessibility in WHS Index and the General Information Index gain participation in the global index. In general, there is a change in the relative importance of the sub-indices.

5.2. Results

Table 7 shows the TAI and the ATAI, respectively, for Australia, New Zealand, Argentina and Brazil over the five periods. Their sub-indices are also shown. Australia is the country with the greatest tourism accessibility in the period. It rises from 45% in 1990 to 60% in 2015. In turn, Argentina ranks second in 1990 with an index of 25%. Although its index grows to 42% in 2015, the country loses position in the ranking at the end of the period. Between the years 2001 and 2005, Argentina has practically no improvement in the index, and this may be due to the consequences of the major economic crisis of 2001. In the same period, there is a fall in the general index- which includes the per capita GDP and the HDI- as well as a drop in the index of tourism indicators.

Brazil ranks second in 2015 with an index of 45% while New Zealand occupies the last place in the ranking across all the years. It is interesting to compare the performance of New Zealand with the Latin American countries. Although at the beginning they have indices with similar values, the western countries have a greater improvement in the TAI. The rises of the TAI from 1990 to 2015 is about 14 percent point (p.p.) for New Zealand, 17 p.p. for Argentina and 23 p.p. for Brazil. The TAI for Australia shows a rise of 15 p.p., showing a smaller increase than the countries of South America.

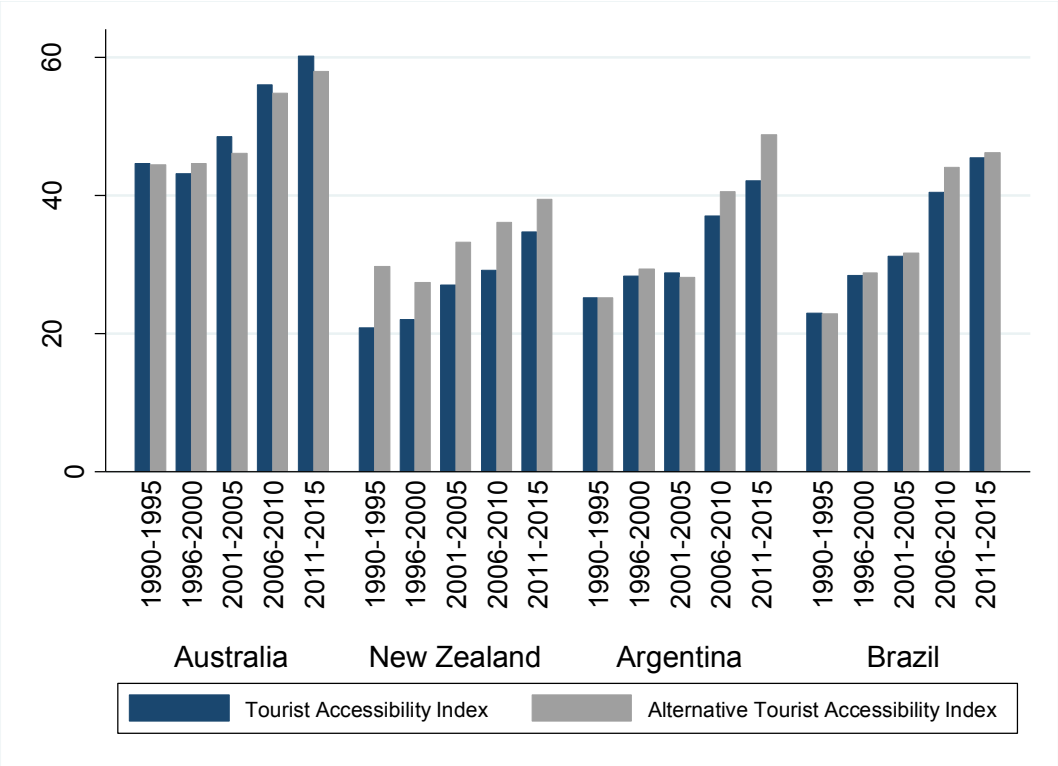
The ATAI presents similar values than the TAI as is shown in Figure 1. Australia has the highest values in the five period, Argentina ranks second, Brazil ranks third and New Zealand takes the last position.

Table 7: Tourist Accessibility Index and sub-indices. Australia, New Zealand, Argentina and Brazil. Period 1990-2015

Country	Period	Tourist Accessibility Index	Alternative Tourist Accessibility Index	Sub- indices						
				General Information Index	PWD Index	Tourism Index	Infrastructure Index	Accessibility to World Heritage Sites Index	Legal Framework Index	Stats & Availability of Information Index
Australia	1990-1995	44.63	44.45	94.10	16.16	50.41	49.76	11.93	40.03	30.11
	1996-2000	43.12	44.57	94.82	18.85	48.20	49.76	11.93	40.03	13.83
	2001-2005	48.49	46.11	95.64	19.41	54.18	49.76	14.00	40.03	58.79
	2006-2010	56.04	54.83	96.26	18.27	53.57	49.76	17.71	65.64	76.65
	2011-2015	60.17	57.95	96.87	18.04	53.35	49.76	24.97	69.80	100.00
New Zealand	1990-1995	20.80	29.73	83.01	18.62	12.92	0.74	11.93	15.67	0.00
	1996-2000	22.05	27.43	71.38	18.19	5.86	0.74	11.93	19.83	37.02
	2001-2005	27.04	33.18	83.82	17.99	11.25	0.74	11.93	27.20	45.32
	2006-2010	29.12	36.07	73.63	15.18	7.56	0.74	11.93	46.45	47.97
	2011-2015	34.68	39.45	76.93	23.11	8.60	0.74	11.12	52.81	84.95
Argentina	1990-1995	25.21	25.15	45.42	12.70	22.26	24.14	2.08	33.60	28.68
	1996-2000	28.28	29.32	50.20	12.70	25.33	24.14	2.08	42.37	28.68
	2001-2005	28.74	28.16	40.61	5.56	21.37	24.14	2.08	49.46	44.95
	2006-2010	37.03	40.53	41.84	12.41	28.60	24.14	4.37	81.75	36.82
	2011-2015	42.13	48.77	47.21	20.13	22.45	24.14	19.17	93.28	36.98
Brazil	1990-1995	22.91	22.85	33.28	1.02	7.77	35.14	2.08	44.78	8.14
	1996-2000	28.38	28.82	35.12	15.59	29.12	35.14	2.08	49.16	8.14
	2001-2005	31.23	31.63	35.79	19.28	28.92	35.14	3.35	55.77	19.12
	2006-2010	40.46	44.04	38.23	22.96	28.39	35.14	4.80	92.29	27.26
	2011-2015	45.40	46.20	38.66	19.28	28.30	35.14	12.19	94.37	67.05

Source: Developed by authors

Figure 1: Tourist Accessibility Index and Alternative Tourist Accessibility Index



Source: Developed by authors

With regards to the main sub-indices, Australia presents the highest value in the General Information Index according to its levels of GDP per capita and HDI. New Zealand also has a high index, as opposed to the low values for Argentina and Brazil. However, New Zealand is the only country that shows a decrease in this sub-index.

Australia also performs better in the Tourism Index with values of 50% in last period. This is 28% for Brazil and 22% for Argentina in the same period. New Zealand is the country with the lowest index and presents a decrease from 13% in 1990 to 8% in 2015. These results are coherent with the volume of international tourist arrivals, international tourist departures and the international tourism expenditure as a percentage of total imports. The three variables explain, as a whole, the 53% of this sub-index.

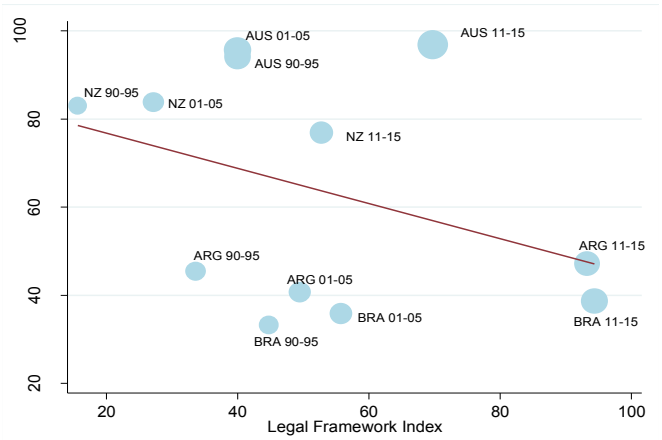
In the first period, the countries of Latin America have a very low level of accessibility to WHS. However, there is a jump in Accessibility in the WHS Index in the last period. In this way, the first place in the ranking is for Australia, the second for Argentina, the third for Brazil and the last place is occupied by New Zealand.

The four countries present an improvement in their Legal Framework Index, which in part can be explained by the UNCRP. Brazil and Argentina show values greater than 93% while it is 70% for Australia and 93% for New Zealand. It is worth remembering that only Argentina and Brazil include the rights of people with disabilities into their Constitutions. It seems that a high level of GDP per capita and the HDI (General Information Index) are not enough to achieve a greater inclusion of the people with disability in the legal framework. For example, Australia and New Zealand present high values for the General Information Index but both countries have a Legal Framework Index lower than 80%. On the other hand, Brazil and Argentina show values near 90% for the Legal Framework Index and have a General Information Index below 50% in the last period. This suggests that while the legal framework

exists the political will or resources to implement the legal framework are not evident through the General Information Index (Figure 2).

At the same time, the consideration of people with disabilities in the different laws and regulations (Legal Framework Index) has a positive correlation with the importance of tourism in the economy (Figure 3) and the access for them to the WHS (Figure 4). Australia presents higher than average values in both indices, the Latin American countries show a good performance in the last period and New Zealand has a low Tourism Index and a mean value of the Accessibility in WHS.

Figure 2: General Information Index and Legal Framework Index

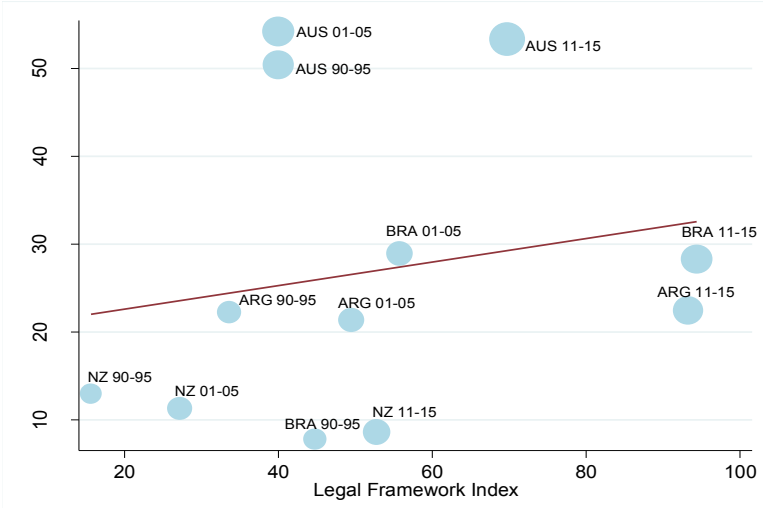


A

Source: Developed by authors

Note: the size of the circle change with the values of the TAI

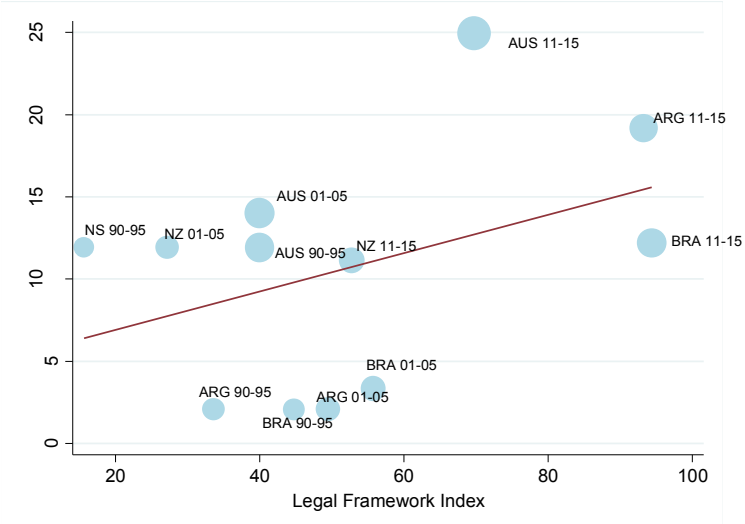
Figure 3: Tourism Index and Legal Framework Index



Source: Developed by authors

Note: the size of the circle change with the values of the TAI

Figure 4: Accessibility in WHS and Legal Framework Index



Source: Developed by authors

Note: the size of the circle change with the values of the TAI

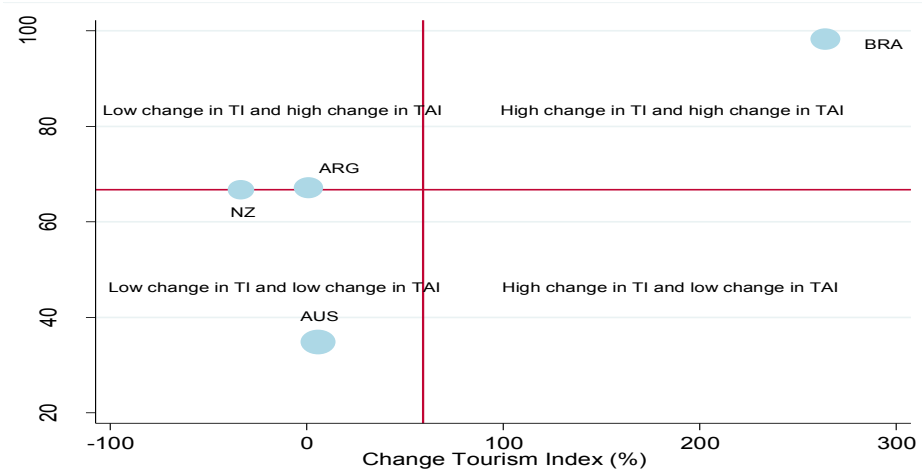
Figure 5 shows the relationship between the growth rate of the general index and the growth rate of the different sub-indices, considering the first and last period. In this way, countries are located according to whether they have high growth in the two indices (quadrant 1), low growth in two indices (quadrant 4), high growth in ATI and low growth in sub-index (quadrant 2) and low growth in ATI and high growth in sub-index (quadrant 3). Brazil shows the best performance. The country is located in quadrant 1 for the cases of Tourism Index, General Information Index and Accessibility in WHS Index and it is located in quadrant 3 for Legal Framework Index.

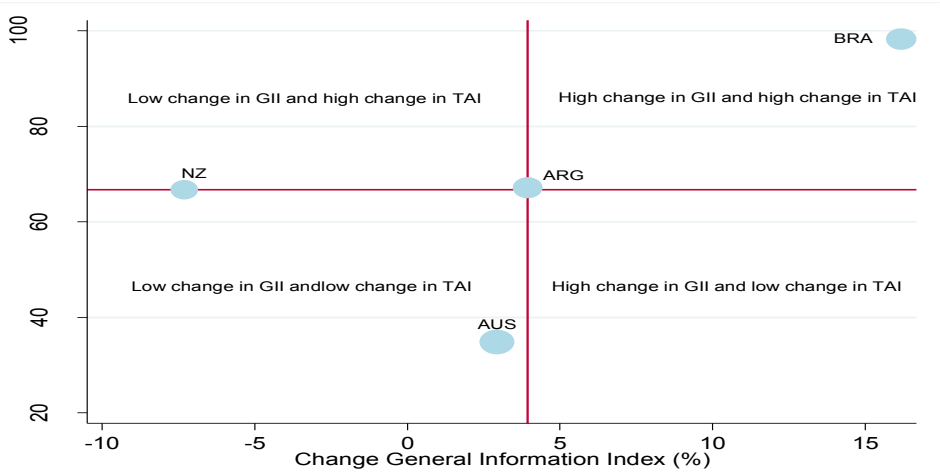
Argentina also has a good performance and is located in quadrant 1 for three cases, Legal Framework Index, General Information Index and Accessibility in WHS Index. The country has a low change in the Tourism Index but presents a high growth rate in the ATI.

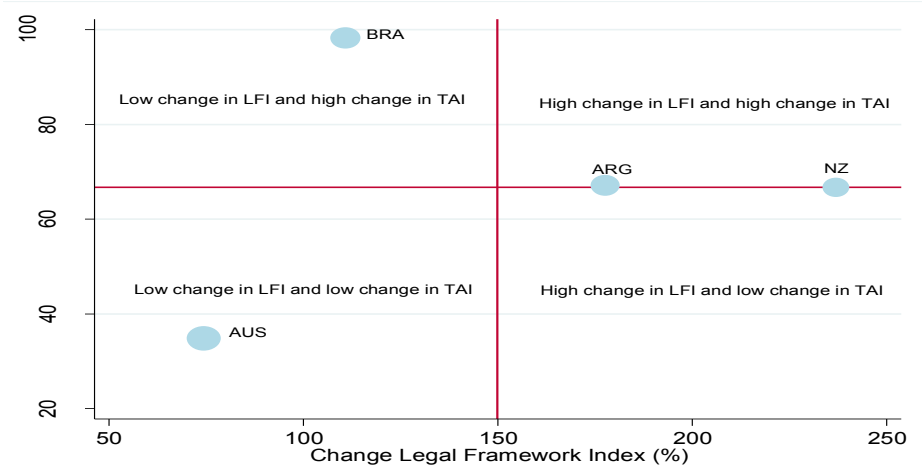
New Zealand presents an average change rate in the global index and a low growth rate of Tourism Index, General Information Index and Accessibility in WHS Index while it presents a high growth rate of Legal Framework Index.

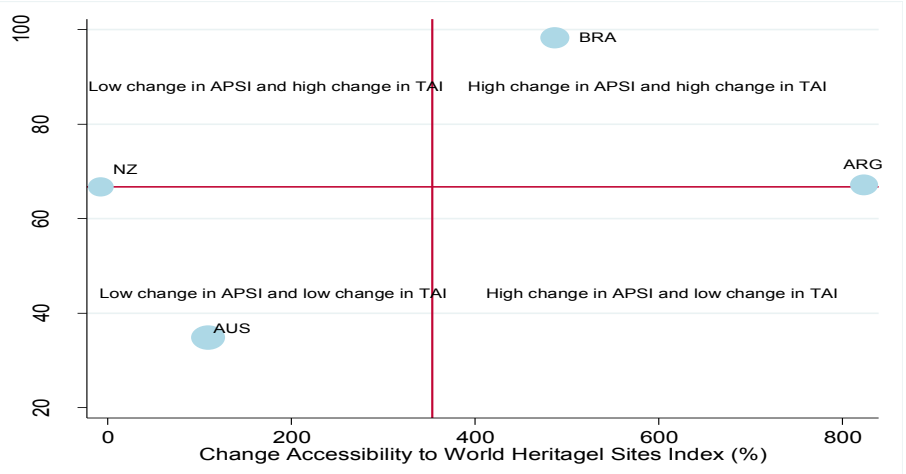
Australia figures in quadrant 4 in all cases, so this country presents a low growth rate for all four indices and for the general index. This result may be due to the fact that their indices have high initial values with less room for significant improvement.

Figure 5: Change in Tourist Accessibility Index (%) and change in the main sub- indices (%)









6. Discussion

This paper contributes to the literature with evidence for countries with different levels of development, collecting a wide set of data on the major items which perform the disability and accessibility concept related to tourism. This work has extended the embryonic work of Israeli (2002) on the accessibility of tourist sites by examining the factors that contribute towards perceptions of accessibility. By moving beyond individual tourist sites or precincts, this paper has sought to understand the comparative components across 7 sub-indices involving 55 variables of 4 nation states. The research focuses on Argentina, Brazil, Australia and New Zealand due to the fact that the four countries have accessible tourism backgrounds at different levels and the selection was based on a convenience sample of the collaborative research team who had deep knowledge of the availability of data. As it was shown, statistics, policy and legal frameworks provide the foundations for the implementation of accessible tourism provision in the four countries.

The methodology proposed provides a contribution to reach a validated approach to measure Tourism Accessibility in a broad sense for each nationstate. While previous studies have examined a single country and its regions (Madeiro Barbosa, 2008), 2 countries and their regions (Dominguez Vila, Darcy & Gonzalez Alen, 2015), and 6 countries from the same continent with identical statistical foundations (Porto & Rucci, 2018), this study has extended that work to compare countries from 2 continents with different statistical and sociocultural contexts. In doing so, as it was already mentioned, this study involves some 7 sub-indices and 55 variables that were regarded as comparable across the nation states. Hence, methodologically one of the main complexities of such an exercise is the challenge of the availability of comparable data across countries.

The construction of the index itself deals with the theorical issues discussed in the literature review section. The index computes four components: i) international tourism and population with disability importance, ii) legal framework, iii) policy, and, iv) access conditions in tourism resources. Therefore, it sets out a logic that shows that, if a country has people with disabilities, which it recognizes as a vulnerable population (WHO, 2011) with needs that must be attended to, and the international tourism in that country is significant, the government must guarantee the full exercise of rights for persons with disabilities. The tourism sector is a critical stakeholder to delivering products and services to this group. Yet, as we have seen through multiple studies that identify that the attitudes of the industry, their product and experiential offerings often fall well below what is regarded as accessible and inclusive for people with mobility, vision, hearing and cognitive disabilities.

Hence, the index is a tool that shows: i) the political will of the countries through the existence of laws that establish rights; ii) the implementation of such willingness, through the existence of organizations that design and develop policies with persons with disabilities in mind; and, iii) the conditions of access at tourism attractions and World Heritage Sites (UNESCO). As suggested, for the products and services to offer a requisite level of equitable, dignified and independent access all stakeholders must be deeply engaged across government, private sector and the non-for profits so that access and inclusion moves beyond compliance to our valued series of market segments based on embodied experiences. For example, specialist providers for people with mobility, vision, hearing and cognitive disabilities have developed across many destination regions to service the influx of people with disability travelling. However, unless the requisite components identified by the TAI are present then the provision of products and services is lacking (see Small, 2015 for innovative business development for people with vision impairment)

The results indicate that Australia has the higher accessibility value of the index for tourists with disabilities in the five periods. Argentina ranks second in 1990 but losts its position after

2001 as consequence of the major social economics crisis of that year, so the country ranks third in 2015. Brazil has the second place in 2015 while New Zealand has the lowest ranking of the TAI from 1990 to 2015. Although the four countries have improved their levels of accessibility, the countries of the West have performed better. As discussed in the methodology, this paper was reliant on the information for the components to be available. New Zealand proves the most difficult of the case areas to collect data and the awareness of these issues may in themselves create an environment for improving the situation in the New Zealand context. This is not dissimilar to the major improvement in global disability statistics that occurred with the publication of the World Health Organisation and World Bank publication of global disability statistics (2011).

The Legal Framework Index has the greatest weight in the global index. In this way, it can be considered that the laws and norms that regulate the rights of tourists are the main variables that affect the level of tourist accessibility in these countries. This finding reinforces the importance of the CRPWD as both a foundation for having the requisite legal frameworks in place in order to have an environment where the political will can be tested through human rights actions. While the CRPWD assists advocates to put pressure on nation states to provide the relevant accessibility requirements under Articles 9 and 30, it also creates a comparative environment as long as the metrics collected can be compared. This paper provides an opportunity for the international community to have such an understanding in the tourism and transport area for people with disability. Further, these then create the environment for the next 2 areas of importance of infrastructure and the importance of tourism in the economy that also have a high weight in the index.

The main limitation of this research is the availability of information about disability and accessible tourism issues. The research was based on the information that was publicly available but it is stated as a first approach that needs further investigation (e.g. the inclusion of accessibility to public transport, airport, among others). Although those things are on the political agenda and the collection of data and statistics is a requirement of different international organizations (UN CRPD, 2006; WHO, 2011), the absence of accessibility information became a barrier for people with disabilities and an opportunity lost for the government to improve their access conditions. As such, it is an opportunity for tourism organisations, both public and private sector, to enhance accessibility and open their markets to the world.

Bibliography

Bizjak, B., Knezevic, M., & Cvetreznik, S. (2011). Attitude change towards guests with disabilities: reflections from tourism students. *Annals of Tourism Research, 38*(3), 842-857.

Bryant, F. B., & Yarnold, P. R. (1995). Principal-components analysis and exploratory and confirmatory factor analysis. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 99-136). Washington, DC, US: American Psychological Association.

Buhalis, D., & Darcy, S. (2011). *Accessible Tourism: Concepts and Issues*. UK: Channel View Publications.

Buhalis, D., & Michopouloub, E. (2011). Information-enabled tourism destination marketing: addressing the accessibility market. *Current Issues in Tourism, 14*(2), 145-168.

Burnett, J. J., & Baker, H. (2001). Assessing the travel-related behaviours of the mobility-disabled consumer. *Journal of Travel Research, 40*(1), 4-11.

Daniels, M. J., Rodgers, E. B., &Wiggins, B. P. (2005). "Travel Tales": an interpretative analysis of constraints and negotiations to pleasure travel as experienced by persons with physical disabilities. *Tourism Management, 26*(6), 919-930.

Darcy, S., & Dickson, T. (2009). A whole-of-life approach to tourism: the case for accessible tourism experiences. *Journal of Hospitality and Tourism Management, 16*(1), 32-44.

Darcy, S. (2010). Inherent complexity: disability, accessible tourism and accommodation information preferences. *Tourism Management, 31*(6), 816-826.

Darcy, S., Cameron, B., & Schweinsberg, S. (2012). Accessible tourism in Australia. In D. Buhalis, S. Darcy, & I. Ambrose (Eds.), *Best practice in accessible tourism: Inclusion, disability, ageing population and tourism* (pp. 79-113). Bristol, UK: Channel View Publications.

Darcy, S., & Pegg, S. (2011). Towards Strategic Intent: Perceptions of disability service provision amongst hotel accommodation managers. *International Journal of Hospitality Management, 30*(2), 468-476.

Darcy, S., & Taylor, T. (2009). Disability citizenship: An Australian human rights analysis of the cultural industries. *Leisure Studies, 28*(4), 419-441.

Daruwalla, P. S., & Darcy, S. (2005). Personal and Societal Attitudes to Disability. *Annals of Tourism Research, 32*(3), 549-570.

Dickson, T., Misener, L. & S. Darcy (2017). Enhancing destination competitiveness through disability sport event legacies: Developing an interdisciplinary typology. *International Journal of Contemporary Hospitality Management, 29*(3), 924-946.

Dominguez Vila, T., Darcy, S. & Gonzalez Alen, E. (2015). Competing for the disability tourism market - A comparative exploration of the factors of accessible tourism competitiveness in Spain and Australia. *Tourism Management, 47*, 261-272.

Domínguez, T., Fraiz, J. A., & Alen, E. (2013). Economic profitability of accessible tourism for the tourism sector in Spain. *Tourism Economics, 19*(6), 1385-1399.

Dunteman G.H. (1989), *Principal components analysis*, Thousand Oaks, CA: Sage Publications, Quantitative Applications in the Social Sciences Series, No. 69.

Dwyer, L., & Darcy, S. (2011). Economic contribution of tourists with disabilities: an Australian approach and methodology. In D. Buhalis, & Darcy (Eds.), *Accessible Tourism: Concept and Issues* (pp. 213-239). Bristol, UK: Channel View Publications.

Dwyer, L., & Kim, C. (2003). Destination competitiveness: determinants and indicators. *Current Issues in Tourism, 6*(5), 369-414.

Eichhorn, V., Miller,G., Michopoulou, E.,&Buhalis, D. (2008). Enabling access to tourism through information schemes. *Annals of Tourism Research, 35*(1), 189-210.

Figueiredo, E., Eusebio, C., & Kastenholz, E. (2012). How diverse are tourists with disabilities? A pilot study on accessible leisure tourism experiences in Portugal. *International Journal of Tourism Research*. http://dx.doi.org/10.1002/jtr.1913.

Gillovic, B., & McIntosh, A. (2015). Stakeholder perspectives of the future of accessible tourism in New Zealand. *Journal of Tourism Futures, 1*(3), 223-239.

Kastenholz, E., Eusébio, C., Figueiredo, E., & Lima, J. (2012). Accessibility as Competitive Advantage of a Tourism Destination: The Case of Lousã, in Kenneth F. Hyde, Chris Ryan, Arch G. Woodside (ed.) *Field Guide to Case Study Research in Tourism, Hospitality and Leisure (Advances in Culture, Tourism and Hospitality Research, Volume* 6) Emerald Group Publishing Limited, 369 – 385.

Freeman, I., & Selmi, N. (2010). French versus Canadian tourism: response to the disabled. *Journal of Travel Research, 49*(4), 471-485.

Freudenberg, M. (2003). *Composite Indicators of Country Performance: A Critical Assessment*. OECD Science, Technology and Industry Working Papers 2003/16, OECD Publishing.

Gillovic, B., & McIntosh, A. (2015). Stakeholder perspectives of the future of accessible tourism in New Zealand. *Journal of Tourism Futures, 1*(3), 223-239.

Groschl, S. (2012). *Presumed incapable: exploring the validity of negative judgments about persons with disabilities and their employability in hotel operations*. Cornell Hospitality Quarterly, 54(2), 114-123.

Instituto Nacional De Estadísticas y Censos de la República Argentina [INDEC]. (2001). *Primeros resultados de la Encuesta Nacional de Personas con Discapacidad, 2002-2003. (Complementaria del Censo 2001).* Retrived from: http://www.indec.gov.ar/micro_sitios/webcenso/aquisecuenta/Aqui14.pdf

INDEC. (2010*). Publicación del Censo Nacional de Población, Hogares y Viviendas 2010. Censo del Bicentenario. Resultados definitivos. Serie B Nº 2.* Retrived from: http://www.censo2010.indec.gov.ar/resultadosdefinitivos_totalpais.asp.

Instituto Brasileiro de Geografía y Estadística [IBGE]. (2000). *Censo Demográfico 2000. Características Gerais da população. Resultados da amostra.* Retrived from: http://www.ibge.gov.br/home/estatistica/populacao/defaulttab_amostra.shtm

IBGE. (2000). *Censo Demográfico 2010: Características gerais da população, religião e pessoas com deficiência.* Retrived from: https://ww2.ibge.gov.br/home/estatistica/populacao/censo2010/caracteristicas_religiao_deficiencia/default_caracteristicas_religiao_deficiencia.shtm

Israeli, A. (2002). A Preliminary Investigation of the Importance of Site Accessibility Factors for Disabled Tourists. [Swetswise]. *Journal of Travel Research, 41*(1), 101-104.

Jacobs R., Smith P. and Goddard M. (2004), Measuring performance: an examination of composite performance indicators, Centre for Health Economics, Technical Paper Series 29.

Jolliffe I.T. (1986), *Principal component analysis*. New York: Springer.

Kim, W. G., Stonesifer, H. W., & Han, J. S. (2012). Accommodating the needs of disabled hotel guests: implications for guests and management. *International Journal of Hospitality Management, 31*(4), 1311e1317.

Lawley D. N. & Maxwell A. E. (1971), *Factor analysis as a statistical method*, London: Butterworth and Co.

Madeiros Barbosa, L. G. (Octubre de 2008). Midiendo la competitividad en los destinos: el modelo brasilero. En: El conocimiento como valor diferencial de los destinos turísticos. Exposición llevada a cabo en la Conferencia Internacional de Turismo, Málaga, España.

McKercher, B., & Darcy, S. (2018). Re-conceptualizing barriers to travel by people with disabilities. *Tourism Management Perspectives, 26*, 59-66.

Meekosha, H., & Dowse, L. (1997). Enabling Citizenship: Gender, disability and citizenship in Australia. [Yes]. *Feminist Review, 57*(Autumn), 49-72.

Ministerio de Turismo de Brasil. (2015). *Índice de competitividade do Turismo Nacional.* Retrived from: http://www.turismo.gov.br/acesso-a-informacao/63-acoes-e-programas/4885-indice-de-competitividade-do-turismo-nacional.html.

Michopoulou, E., Darcy, S. Ambrose, I. & D. Buhalis (2015). "Accessible tourism futures: the world we dream to live in and the opportunities we hope to have". *Journal of Tourism Futures, 1(*3), 179-188.

Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A. & Giovannini, E. (2005). "Handbook on Constructing Composite Indicators: Methodology and User Guide". OECD Statistics Working Papers, No. 2005/03, OECD Publishing, Paris. http://dx.doi.org/10.1787/533411815016

Nyaupane, G. P., & Andereck, K. L. (2008). Understanding travel constraints: application and extension of a leisure constraints model. *Journal of Travel Research, 46*(4), 433-439.

Ozturk, Y., Yayli, A., & Yesiltas, M. (2008). Is the Turkish tourism industry ready for a disabled customer‘s market? the views of hotel and travel agency managers. *Tourism Management, 29*(2), 382-389.

Pagan, R. (2014). The contribution of holiday trips to life satisfaction: the case of people with disabilities. *Current Issues in Tourism*. http://dx.doi.org/10.1080/13683500.2013.860086.

Porto, N. & A.C. Rucci (2018). An approach to measure accessibility in tourism. Mimeo.

Porto, N., Rucci, A.C. & Ciaschi, M. (2016, november). "Tourism & accessibility in the world heritage sites of Latin America". *L Annual Meeting of the Argentine Association of Political Economy.* Meeting held in Tucumán, Argentina.

Porto, N., Rucci, A.C. & Ciaschi, M. (2017). Tourism specialization and accessibility in World Heritage Sites of MERCOSUR. *Transitare, Vol. 3(*1), p. 1-31.

Porto, N., Rucci, A.C. & Ciaschi, M. (2018). Tourism accessibility competitiveness. A regional approach for Latin American countries. *Journal of Regional Research_Special Issue on Tourism*. In press.

Rhodda, S. (2012). Accessible Tourism in New Zealand. In D. Buhalis, S. Darcy & I. Ambrose (Eds.), *Best Practice in Accessible Tourism: Inclusion, Disability, Ageing Population and Tourism* (pp. 114-123). Bristol, UK: Channel View Publications.

Richards, V., Pritchard, A. & Morgan, N. (2010). (Re)envisioning tourism and visual impairment, *Annals of Tourism Research. Vol. 37*(4), 1097-116.

Ritchie, J. R. B., & Crouch, G. I. (2003). *The competitive destination: A sustainable tourism perspective*. Wallingford, UK: CABI Publishing.

Rucci, A. C. (2018). *Discapacidad en el MERCOSUR: accesibilidad turística como una propuesta de desarrollo regional* (Master thesis). University of La Plata, Argentina.

Shaw, G. (2007). Disability legislation and empowerment of tourists with disability in the United Kingdom. In A. Church, & T. Colespp (Eds.), *Tourism, power and space* (pp. 83-100). London: Routledge.

Shi, L., Cole, S., & Chancellor, H. C. (2012). Understanding leisure travel motivations of travelers with acquired mobility impairments. *Tourism Management, 33*(1), 228-231.

Small, J. (2015). Interconnecting mobilities on tour: Tourists with vision impairment partnered with sighted tourists. *Tourism Geographies*, *17*(1), 76-90.

United Nation -UN. (2006). Convención sobre los Derechos de las Personas con Discapacidad y Protocolo Facultativo. Nueva York: ONU.

UN (2001). *Guidelines and Principles for the Development of Disability Statistics*. Statistics on Special Population Groups, No. 10. Sales No. E.01.XVII.15.

United Nations. (2010). Disability and the Millennium Development Goals - A Review of the MDG Process and Strategies for Inclusion of Disability Issues in Millennium Development Goal Efforts Vol. 2010. Retrieved from http://www.un.org/millenniumgoals/ United Nation World Tourism Organization -UNWTO. (1980). Manila Declaration. Madrid: OMT.

UNWTO. (2014a). Manual sobre Turismo Accesible Para Todos: Alianzas públicas-privadas y buenas prácticas. Retrieved from.

http://cf.cdn.unwto.org/sites/all/files/pdf/accesible_aa_manual_turismo_accesible_omt_final.pdf.

United Nation World Tourism Organization -UNWTO. (2014b). Recomendaciones de la OMT por un Turismo Accesible para Todos. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/accesibilityes.pdf.

UNWTO. (2015a). Manual sobre turismo accesible para todos: Principios, herramientas y buenas prácticas, Modulo I: Definición y contexto. Retrieved http://www2.unwto.org/sites/all/files/docpdf/manualturismoaccemoduloi27ene015acc.pdf.

UNWTO. (2015b). Manual sobre turismo accesible para todos: Principios, herramientas y buenas prácticas, Modulo II: Cadena de accesibilidad y recomendaciones. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/150520manualturismoaccesiblemoduloiiwebopta cc.pdf

UNWTO. (2015c). Manual sobre turismo accesible para todos: Principios, herramientas y buenas prácticas, Modulo III: Principales áreas de intervención. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/150526turismoaccesiblemoduloiiiwebacc.pdf.

UNWTO. (2015d). Manual sobre turismo accesible para todos: Principios, herramientas y buenas prácticas, Modulo IV: Indicadores para el estudio de la accesibilidad en el turismo. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/150616turaccsmodulo4webacc.pdf

UNWTO. (2015e). Manual sobre turismo accesible para todos: Principios, herramientas y buenas prácticas, Modulo V: Buenas prácticas de turismo accesible. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/150909turismoaccesmodulovwebacc.pdf

UNWTO. (2015f). Recomendaciones de la OMT sobre accesibilidad de la información turística. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/accesibilidadinfoturwto2015accesible.pdf

UNWTO. (2016a). Turismo Accesible para Todos: Una oportunidad a nuestro alcance. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/turismoaccesiblewebaccesible.pdf

UNWTO. (2016b). Día Mundial del Turismo, 2016 «Turismo para todos: promover la accesibilidad universal» Buenas prácticas en la cadena de valor del turismo accesible. Retrieved from: http://cf.cdn.unwto.org/sites/all/files/docpdf/goodpracticesintheaccessibletourismsupplychain es20162web.pdf

VanHorn, L. (2012). The united states: travellers with disabilities. In D. Buhalis, S. Darcy, & I. Ambrose (Eds.), *Best practice in accessible tourism: Inclusion, disability, ageing population and tourism* (pp. 65e78). Bristol, UK: Channel View Publications.

Veitch, C., & Shaw, G. (2011). Disability legislation and empowerment of tourists with disability: the UK case. In D. Buhalis, & Darcy (Eds.), *Accessible Tourism: Concept and Issues* (pp. 62e72). Bristol, UK: Channel View Publications.

World Economic Forum -WEF. (2011). *The Travel & Tourism Competitiveness Report 2011*. Geneva, Switzerland: Beyond the Downturn. Available from http://es.scribd.com/doc/49473673/Travel-Tourism-Competitiveness-Report-2011.

World Health Organization & World Bank. (2011). World Report on Disability, from http://www.who.int/disabilities/world_report/2011/report/en/index.html

World Health Organization -WHO. (2013). "Disability". Report by the Secretariat A66/12, 11 March 2013, including EB132/10. Geneva: WHO.

Yaniv, P., Arie, R., & Yael, B. (2011). Dimensions of hotel experience of people with disabilities: an exploratory study. *International Journal of Contemporary Hospitality Management, 23*(5), 571e591.

NZ Stats. (2001). Disability Survey. Retrieved from: http://archive.stats.govt.nz/browse_for_stats/health/disabilities/disability-counts.aspx

NZ Stats. (2006). Disability Survey. Retrieved from: http://archive.stats.govt.nz/browse_for_stats/health/disabilities/DisabilitySurvey2006_HOTP06.aspx

NZ Stats. (2013). Disability Survey. Retrieved from: http://archive.stats.govt.nz/browse_for_stats/health/disabilities/DisabilitySurvey_HOTP2013.aspx

Australian Bureau of Statistics -ABS. (1993). Disability, Ageing and Carers, Australia: Disability and Disabling Conditions, 1993. Retrieved from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/A3F1AC40B8E12A48CA25722E001A3AD2?opendocument

ABS. (1998). Disability, Ageing and Carers, Australia: Summary of Findings, 1998. Retrieved from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/FC0848D8195F79F0CA256F0F007B1094?opendocument

ABS. (2003). Disability, Ageing and Carers, Australia: Summary of Findings, 2003. Retrieved from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4430.0Main+Features12003?OpenDocument

ABS. (2009). Disability, Ageing and Carers, Australia: Summary of findings. Retrieved from: http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/9C2B94626F0FAC62CA2577FA0011C431/$File/44300_2009.pdf.

ABS. (2015). ABS Survey of Disability, Ageing and Carers: Summary of Findings—2015. Retrieved from: http://www.abs.gov.au/ausstats/abs@.nsf/0/C258C88A7AA5A87ECA2568A9001393E8?Opendocument

Appendix

Table A1: Tourist Accessibility Index. Components and Weights

Sub-Index	Weight
General Information Index (GII)	**0.12**
Per capita GDP	0.49
HDI	0.51
PWD Index (PWDI)	**0.05**
Tourism Index (TI)	**0.15**
International tourism expenditure (% total imports)	0.21
International tourism receipts (% total exports)	0.32
Tourism inbound (millons dollars)	0.16
Tourist arrivals	0.22
Tourist departures	0.10
Accessibility to World Heritage Sites Index (APSI)	**0.13**
World Cultural Sites PA (% World Cultural Sites)	0.08
World Natural Sites PA (% World Natural Sites)	0.09
World Heritage IA (% World Heritage)	0.09
World Cultural Sites IA (% World Cultural Sites)	0.10
World Natural Sites IA (% World Natural Sites)	0.08
World Heritage FA (% World Heritage)	0.07
World Cultural Sites FA (% World Cultural Sites)	0.11
World Natural Sites FA (% World Natural Sites)	0.09
World Heritage PA (% World Heritage)	0.07
World Mixed Sites PA (% World Mixed Sites)	0.09
World Cultural Sites NA (% World Cultural Sites)	0.02
World Mixed Sites NA (% World Cultural Sites)	0.12
Legal Framework Index (LFI)	**0.32**
Vocational Rehabilitation and Employment of PWD (1983)	0.13
PWD main Law	0.13
Tourism accesible Law	0.07
Accessible Tourism Program	0.07
UN CRPD (2006)	0.13
Optional Protocol (2006)	0.13
Inter-American Convention for the Elimination of all Forms of Discrimination against PWD (1999)	0.09
PWD in National Constitution	0.13
Tourism National Organization	0.07
PWD Program-Plan	0.04
Infrastructure Index (II)	**0.16**
Nº Domestic Airport	0.33
Accommodation with accessibility (% of rooms)	0.33
Nº International Airport	0.34
Stats & Availability of Information Index (SAII)	**0.07**
Information in web sites	0.17
Books/ Guides of Accessible Tourism	0.21
Statistics	0.24
Building Code/Accessible transport law	0.38

Source: Developed by authors

Table A2: Conceptual definitions

	1990-1995		1996-2000		2001-2005		2006-2010		2011-2015	
	Source	**Categories**	**Source**	**Categories**	**Source**	**Categories**	**Source**	**Categories**	**Source**	**Categories**
Australia	1993 Australia Social Trends +65	Disability Handicap	1998 Disability, Ageing and Carers, Australia Survey All population	Physical Mental	2003 Disability, Ageing and Carers, Australia Survey All population	Physical Mental	2009 Disability, Ageing and Carers, Australia Survey All population	Physical Mental	2015 Disability, Ageing and Carers, Australia Survey All population	Sensory (Hearing, vision) Intellectual Physical Psychosocial Head injury, stroke or acquired brain injury
New Zealand			1996 NZ Disability Study +15 The data for total population includes adults and children	Sensory (Hearing, Vision) Physical (Mobility, Agility) Intellectual Psychiatric /psychological Other	2001 NZ Disability Study +15 The data for total population includes adults and children	Sensory (Hearing, Vision) Physical (Mobility, Agility) Intellectual Psychiatric /psychological Other	2006 NZ Disability Study Highlights +15 The data for total population includes adults and children	Sensory (Hearing, Vision) Physical (Mobility, Agility) Intellectual Psychiatric /psychological Other	2013 NZ Disability Study Highlights +15 All population	Sensory (Hearing, Vision) Physical (Mobility, Agility) Intellectual Psychiatric /psychological Other
Argentina			Complementary Disability Survey 2002 Not all population	Disabilities: Visual (blind, dificulty in seeing) Hearing (deaf, difficulty in hearing) Speaking difficulty Physical (inferior, superior, both) Mental (developmental delay, mental problems) Other 2 disabilities / 3 disabilities or more			INDEC 2010 All population	Difficulties in: Seeing, even if wearing glasses* Hearing, even if using a hearing aid* Walking or climbing steps* Doing daily activities. Mental / Intellectual 2 difficulties or more (with/without mental problems)		
Brazil	IBGE 1991 All population	Mental Sensory (blinds, deaf-and-dumb) Physical 2 disabilities or more	IBGE 2000 All population	Disabilities: Mental Able to see ** Able to hear ** Able to walk / climb** Other (Total / Leg / in both sides of the body, lack of body, none of them)			IBGE 2010 All population	Difficulties in: Doing daily activities. Mental / Intellectual Seeing, even if wearing glasses* Hearing, even if using a hearing aid* Walking or climbing steps*		

Source: Developed by authors based on INDEC 2002, 2010; IBGE, 1991, 2000, 2010; ABS, 1993, 1998, 2003, 2009, 2015; Stats NZ, 1996, 2001, 2006, 2013

Notes: * no difficulty, some, a lot, cannot do at all; ** inable, a lot of difficulty, some difficulty, no difficulty

Table A3: Methodology to measure accessibility in WHS

Criteria	SI	NO	NA*
Information availability			
Is accessibility information available on the official website? (e.g. official website of the local / provincial / national tourism organization, WHS website, research publication, travel guide, etc.)			
Is accessibility information available on non-official websites? (e.g. blogs, social networks, etc.)			
WHS facilities			
Is the staff trained to attend people with disabilities requirements?			
Access facilities are provided? (e.g. PWD parking, accessible seating, ramps, accessible toilets, etc.)			
Touristic Use			
Are mobility aids, devices, assistive technologies, or other forms of assistance, support services and facilities provided for people with physical disabilities? (e.g. caddy, wheelchairs loan, etc.)			
Are mobility aids, devices, assistive technologies, or other forms of assistance, support services and facilities provided for people with hearing disabilities? (e.g. Signal Languague tours, videos with subtitles, tactile sign language, Hearing Loop, etc.)			
Are mobility aids, devices, assistive technologies, or other forms of assistance, support services and facilities provided for people with visual disabilities? (e.g. audio-guide tour, tactile sign language, Braille, tactile maps, etc.)			
Are specific tourism actitivities for people with disabilities? (e.g. activities for children with mental disabilities, access program, adapted activities, etc.)			

Source: Rucci, 2018