ACCESSIBILITY AT AIRPORTS
How Digital Media can put Toronto at the Forefront for Accessible Airport Travel

by

Danielle Fraser
B.A. Political Science, McMaster University, 2016

A Major Research Project

presented to Ryerson University

in partial fulfillment of the

requirements for the degree of

Masters of Digital Media

in the program of

Digital Media

Toronto, Ontario, Canada, 2017

Author's Declaration

I hereby declare that I am the sole author of this MRP. This is a true copy of the MRP, including any required final revisions.

I authorize Ryerson University to lend this MRP to other institutions or individuals for the purpose of scholarly research.

I further authorize Ryerson University to reproduce this MRP by photocopying or by other means, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research.

I understand that my MRP may be made electronically available to the public.

ACCESSIBILITY AT AIRPORTS
Master of Digital Media, 2017
Danielle Fraser
Master of Digital Media, Ryerson University

Abstract

This major research project explores the potential function of a mobile application to organize the consignment of wheelchairs at airports. Right now, many airports around the world are struggling to deal with the influx of wheelchair passengers. Many airports do not utilize any digital technology tools to assist them in the process of providing wheelchair service. Specifically, at Toronto Pearson International Airport (Pearson), wheelchair service is decentralized meaning that all airlines are responsible for organizing their own processes and service. This research uncovers some of the most commonly reported problems from both customers and employees regarding current wheelchair service at airports. This project finds that there is currently a fundamental communication gap between the employees and customers. Many passengers reported poor service due to not being about to navigate themselves through the process. Additionally, passengers report that the overall consignment of wheelchairs is often so poor that they are left waiting long periods of time for a chair and can sometimes be taken out of their chair before they are ready to walk. This project designed a mobile application interface that could provide both customers and employees with a way of communicating. This mobile application focuses on assisting employees with the organization of chairs and helps customers guide themselves through a more efficient process. This project applies itself to the model and processes that currently exist at Toronto International Pearson Airport.

Table of Contents

1. Introduction

1.1 Canada's Aging Population

Today the world, and specifically North America, is beginning to experience unprecedented aging. As of 2011, more than 10,00 baby boomers are turning 65 every day in North America (Stanton, 2014). Statistics show that the senior population in Canada is expected in double from approximately 5 million to 10 million in just 20 years (Stats Can, 2010). But the population of seniors is not just increasing, it is proportionally growing more than any other age group in the population. In 1970, only one-tenth of the population was 65 and older (Jacobsen et el., 2011). Statistics Canada predicts that seniors will comprise approximately 25% of the population by 2036 (Stats Can, 2016). Population aging has become one of the most prominent demographic trends among developed nations in the 21st century. This demographic rebalance will begin to bring dramatic changes to Canada's society and economy. It will mean that every industry learns to adapt and accommodate for this new type of population.

In an article titled, *Why the elderly could bankrupt Canada*, Sinha SK argues that that the elderly could eventually challenge Canada's financial stability and will ultimately force Canada to redesign their care service (SK, 2011). Looking at the statistics, he points out that in 2005, seniors made up approximately 14% of the population but 60% of critical care service funding (SK, 2011). These statistics are important when thinking about the future as the senior population begins to double. Industries such as transportation and health care are expected to be the most affected. Nonetheless, it is crucial for Canada to begin rapidly developing solutions for these industries to be able to accommodate for these new challenges.

1.2 Increasing Need for Accessibility

Today's increasing number of seniors is already beginning to show an increasing number

of those with mobility disabilities. Moving forward, one of the biggest challenges from an increasingly senior population will be the rising need for appropriate and efficient accessibility everywhere. Today, every one in five adults has a disability in the United States, the most common being mobility (CDC, 2015). Mobility disabilities have already been particularly challenging for several industries, especially public transportation. Over the past decade, there has been proactive development of accessibility programs as Canada prepares for a rapidly increasing need for accessible solutions. However, unlike the United States, Canada's disability laws are not federal, they are determined by each province separately.

In 1993, Canada's government decided that accessibility regulations were no longer required and they would instead be replaced by regulatory codes (Baker, 2005). Unfortunately, many have argued that these regulatory codes have since slowed the pace of change towards full accessibility in Canada (Baker, 2005). The Charter of Rights and Freedoms outlines "equal protection" for those with disabilities and the Human Rights Act forbids discrimination against those with disabilities (Picard, 2015). However, the current Canadian laws do not force businesses to be barrier-free. Statistics show that today in Canada there are roughly 4 million individuals with physical or psychiatric disabilities and it is predicted that there will be 9 million by 2030 (Picard, 2015). Furthermore, with laws in Canada that have been painfully slow at forcing inclusiveness and accessibility, it will be more important than ever the Canada adapts quickly to accommodate for an aging population.

1.3 Accessibility at Airports

One industry that is already being affected by this demographic rebalance is airport travel. Accessibility at airports must involve the removal or all barriers that prevent those with disabilities from experiencing equal access to public transportation. Today, the number of elderly

travels is increasing too. The U.S Travel Association reports that today older travelers (65 and up) account for approximately 21% of all leisure travelers (Mein et al. 2014). They predict this statistic will increase rapidly with more affluent elders that have higher education levels (Mein et al. 2014). Airports and airlines particularly in North America will be challenged with accommodating the physical and psychological needs of this vulnerable demographic. Unfortunately, Canadian airports are being overwhelmed by the number of customers in need of wheelchair service and are ultimately struggling to provide efficient experiences. In addition, with slow paced Canadian regulations, airports could soon be facing complex challenges.

Canada's busiest airport, Toronto Pearson, reports getting approximately 80,000 wheelchair requests every month (Seglins, 2016). These requests have overwhelmed Pearson. In September 2016, Pearson announced they abandoned the coordination of wheelchair service, leaving it up to airlines to organize independently (Seglins, 2016). With over 65 different airlines at the airport, this is daunting news for not just the wheelchair passengers, but the airlines too. Staff of the Greater Toronto Airports Authority (GTAA) report that there can be up to 40 different wheelchair passengers on a single flight (Seglins, 2016). One of the most common complaints has been the shortage of both wheelchairs and attendants to provide this service (Seglins, 2016). With a now decentralized service, organizing this could be more challenging than ever for many airlines.

There are currently almost a dozen different lawsuits against Pearson and many of the different airlines all involving problems with their wheelchair service that led to injuries and even one death (Seglins, 2016). Most notably, the case of one death was reportedly a result of a woman who fell after not receiving pre-arranging wheelchair service when she arrived from Air Transat (Seglins, 2016). In this case, Air Transat and a company hired by the GTAA, Toronto

Ground Airport Services are being sued for negligence (Seglins, 2016). In another case against WestJet, a woman claims she had to walk to her aircraft without a wheelchair and was injured during her trip (Seglins, 2016). In a case against Air Canada, a woman argues that she was left unattended at an elevator leaving her to be injured after feeling compelled to walk on her own (Seglins, 2016). In many of these cases, wheelchair service was pre-arranged with the airline, but the ultimate lack of organization led to shortages of both wheelchairs and attendants to provide adequate service.

1.4 The Potential for Digital Application

As the aging population prepares to double in size, and mobility disabilities rapid rise against outdated regulations, it will be more important than ever for Canada to invest in innovative technology solutions for the increasing need for accessibility in every industry. This project aims to explore the power of a mobile application for the consignment of wheelchairs are airports. With a lack of effective communication and wheelchair shortages reported as some of the key factors, digital technology could become a central tool for improvement. This project proposes that a digital application could be utilized to fill fundamental communication gaps between all the parties involved including the airline employees, airport employees, and passengers.

2. Accessibility at Airports

2.1 Employee Reported Problems

To understand the complexity of the problems with wheelchair service at airports, this project looked at both articles that explored employee perceptions in addition to passenger reported issues. There are many different areas where issues can arise from parking all the way to landing in the new location. The main barriers to access can be seen differently from

passenger to employee and even from passenger to passenger. In an article by Mein, Kirchoff, and Fangen, they attempt to uncover the main barriers that exist for passengers with mobility disabilities by interviewing airport staff across several North American airports (Mein et al. 2014). Airport staff hold details about the service that most passengers would not be aware of. This is an important consideration in understanding how to better the process of wheelchair service altogether. Their research shows that despite many employees being aware of the barriers that still remain, operational costs often constrain them from making the adequate accommodations (Mein et al. 2014). More specifically, they find that many employees report the physical restraints of the building to be an issue when attempting to accommodate for passengers with disabilities (Mein et al. 2014). This is a significant factor for understanding how to improve accommodations for individuals with disabilities as this is a challenge for older airports that were not designed entirely with accessibility in mind.

Aside from building and cost constraints, there are other employee reported issues. Other research by Wang and Cole also attempts to investigate what some of the most common problems are for passengers with disabilities by getting the perspectives of employees (Wang et al. 2014). These authors argue that one of the most prominent barriers cited by employees is the lack of two-way communication with passengers (Wang et al. 2014). Further, the authors found that employees recognize how often passengers are misunderstood about onboarding instructions and other service related information (Wang et al. 2014). When asked to propose suggestions for improvement, employees admitted that more crew members need to be more aware of passengers needs (Wang et al. 2014). From this research, it can be suggested that a solution for improvement and more efficient wheelchair service should do at least two major things. Firstly, improvement will begin with employees having more knowledge about passengers with disabilities. Secondly,

to provide adequate service, airlines and airports need to ensure that there is more effective communication between staff and passengers.

2.2 Customer Reported Problems

Mein's research also identified the top four issues faced by elderly travelers travelling through the airport. These top issues include wayfinding, meaning the challenges presenting when navigating through the airport environment such as roadways, parking facilities and terminal buildings (Mein et al. 2014). Another issue identified was fatigue, simply meaning the physical efforts that are required for passengers to get through the entire process of flying including waiting in line and lifting any luggage. A third issue reported is using the required technology automation tools like self-service machines, screen processes as well as using escalators. The last key issue identified in this article is using the amenities in usually congested areas.

In a different article on Meeting the Needs of Disabled Passengers, over 200 passengers are interviewed and reveal some of the main challenges they've experienced (Chang et al. 2012). One of the most commonly cited problem from passengers is the overall perceptions and attitude from the employees providing the service (Chang et al. 2012). The authors therefore identify the current legislation to be a factor behind poor attitudes (Chang et al. 2012). More specifically, they argue that the Americans with Disabilities Act (ADA) and Air Air Carrier Access Act (ACAA) are not as effective as they are intended to be (Chang et al. 2012). From this research, it can be suggested that moving forward there is better education and awareness of accessibility laws. If airport staff are not being adequately trained of the laws, this can affect the overall quality of the service for passengers. Moving forward, educated employees should be a top priority for accommodating for the rapidly rising new demographic. The other common issue

reported by passengers in this article was the consignment and retrieval of wheelchairs. This is one of the most important considerations for developing solutions for the future since the population of those with mobility disability is only increasing. If the current consignment processes are already being identified for their flaws, a solution for the future will have to focus on improving the efficiency of the process.

2.3 Pearson's Growing Problem

As discussed earlier, airlines at Pearson are beginning to experience some major flaws with their wheelchair service programs. With several ongoing lawsuits, some of the common and specific issues with the current wheelchair service can be identified. Air Canada currently has three major lawsuits against them all of which resulted in passenger injuries. In a 2014 case, a man reports that he requested a wheelchair but attendants simply told him there were none available at that time for him, leaving him to walk off the plane and injure himself (Gomez, 2016). Air Canada claims that it was a challenging situation as the passenger did not request a wheelchair or inform them of his needs beforehand (Gomez, 2016). Similarly, in a 2013 case, a woman was injured after being left unattended by the elevator (Gomez, 2016). These two cases, though still unsettled, showcase situations where customers were left dissatisfied with the customer service they received. But poorly reviewed customer service is not an exclusive issue to Air Canada (Gomez, 2016).

In a case involving West Jet's service at Pearson, a woman claims that she did not receive the wheelchair service she requested and injured herself walking to her aircraft (Gomez, 2016). A case against Jet Airways, another airline at Pearson, a woman claims her wheelchair was taken from her at luggage claim, despite the fact that she still needed it and injured herself thereafter (Gomez, 2016). In 2014, a man flying with Turkish airlines at Pearson launched a suit claiming

he was forced with walk through the security scanner without a wheelchair and then was left without one on the other side, leaving him to injure himself walking (Gomez, 2016). In all these recent cases, passengers have made poor claims against the customer service they've received. Moving forward, it will be imperative for airlines to focus on improving their customer service by adjusting their processes and becoming more aware of the disability regulations.

3. Existing Solutions

3.1 Improved Processes

With the already increasing number of those with disability needs, airports have made adjustments in their processes to make new accommodations. The Director of Operations at Southwest Florida International Airport, where a large number of the passengers are 65 or older, states that they have been able to make the terminal experience for passengers safer over time with adjustments (Mein et al. 2014). More specifically, for elders taking the shuttle bus, they are given a card with their parking lot number on it so that buses can pick up and drop off passengers right at their car and assist with luggage (Mein et al. 2014). The Director claims the airport has made several of these service type adjustment to reduce the walking time for elders (Mein et al. 2014). Many airports have made similar changes, but ultimately, very few have invested in digital tools to fundamentally improve their processes. At Pearson, several airline employees operating the wheelchair service utilize phones and tablets to communicate with other employees during the process. Additionally, some airlines have begun to idealize and test innovate concepts to improve their processes. For example, in the United States, United Airline is currently using beacons in the nearby roadway to track the arrival of their passengers.

4. The Application

4.1 The Main Functions: Communication and Location

One of the main purposes of introducing this mobile application is to provide a new way for effective two-way communication between the passengers and employees. Noting back to the employee reported problems, poor communication is one of the most commonly cited problems among those with mobility disabilities. The app allows customers to create a personal profile which holds their main details on their assistance needs. Users also have an inbox with various notifications to help guide them through their travel experience. More specifically, the app knows when a customer books a flight and allows them to update their needs at any time before their flight. It also notifies users on the day of their flight to check in along the way such as when they are on their way to the airport, at the door, or at check in, depending on when the user wants a wheelchair. This check in feature helps the airline better predict when and where wheelchairs will be needed. Additionally, users also receive a notification about when their wheelchair is ready. This feature will help passengers using the designated seating area after check in and before security as they wait for a wheelchair. Users are able to reply to any of these notifications with questions or issues they may be having along the way of their travel experience.

Another major feature of this app is location. In addition to being able to locate passengers that use the check-in feature, the app also tracks every individual wheelchair. Using RFID technology, chairs will be located and shown on the map for employees to use and direct to passengers. This feature is purposed to help the overall consignment of wheelchairs by knowing exactly where chairs are at all times and avoid shortages.

Lastly, the app is purposed to act as an educational mechanism. Another top complaint from passengers is the overall lack of knowledge employees have about accessibility. Unfortunately, the provincial regulations in Ontario do not currently apply to airports resulting in many employees to be unaware of how to deal with some of the most vulnerable passengers. As the regulations in Canada change and begin to apply to the airport, this app could become more important than ever for airlines to have in order to improve the education of their employees. The app is purposed to help employees understand what is expected of them during the process of providing service to passengers with disabilities and overall help improve the quality of customer service.

4.2 A Step-by-Step Process

There are two platforms of this mobile application: passenger and employee. Passengers begin by registering and opening an account. Their account is able to store basic information about the user such as their general mobility needs, plus any past or upcoming flights. The app allows passengers to view their upcoming flights and update their needs for their trip at anytime before their flight. Beginning from the time passengers book a flight, they receive notifications from the app about preparing for their travels. For example, passengers are encouraged to share their location on the day of their flight, such as when they leave and when they are at the door, depending on when they require a wheelchair. Most commonly, passengers wait for a wheelchair after they have checked-in and prior to crossing through security. It is at this point when the app is able to provide real-time information on when their wheelchair will be ready and where it is within the airport. After each trip, passengers are given the chance to rate their experience with the app and the airline in order to continually improve the service.

On the other side, employees are also required to register. After their specific airline has purchased the app, employees are requested to create an account user their employee number in order to organize communication between both employees and customers. After registering, employees are taken to their main dashboard that presents daily statistics regarding their wheelchair service. More specifically, this part of the app is most important for organizing the overall consignment of wheelchairs. This screen showcases all the wheelchairs which are currently needed and where. Employees are able to see the most recent incoming flights that will need wheelchairs, exactly how many and at what gate. Throughout the day, employees are able to keep in contact with any passengers by emailing them using the app.

4.3 Employee Participation

Several major airlines at Pearson such as Air Canada and West Jet already have their own staff members dedicated to working with the organization of wheelchairs. These employees will be introduced to the app and moving forward will be required to use the app when organizing the service. There are several tasks required by the employee to operate the app. Firstly, there is a daily dashboard provided by the app that shows the exact number of wheelchairs that have been requested for the day. Here, employees are able to see how many chairs are needed where and at what time. The app will require all wheelchairs to carry a GPS tracker in order for the app to provide location details.

4.4 Implementation and Next Steps

The app is currently going through continuous user testing before it goes into the development stage. It intends to be available for download for both Android and iPhone. It will be free for all passenger users. The app will be sold to airlines individually that decide they need this aspect to add to their customer service and overall improving their wheelchair accommodations. The app will need to undergo several user testing stages prior to being widely launched at many airlines. The app has already begun to be tested by users in it's prototype stage before being fully developed. Once designs are finalized, the app will be tested by much larger groups and move on to being sold to one airline for further testing.

Once the app has been sold to an airline at Pearson, and the major user testing stage is complete, the app has the ability to be sold to many of the different airlines at Pearson. In fact, many airlines use the same contracted company and therefore once sold to this company, it may be used more widely across Pearson. After the app is able to find success at Pearson, it can be transferred to any airport across Canada. However, before being implemented in other countries, the app will need to undergo more research to understand new accessibility laws in foreign

regions.

5. Conclusion

5.1 Overall Findings

This research has determined that with the rapidly rising senior population and the rising need for accessibility that Canada will need to prepare for this demographic rebalance by considering all industries that need to develop quick and innovative solutions. In particular, when analyzing the current accessibility this research found that airports are already facing major challenges. Currently, the accessibility regulations do not apply to airports, but as this begins to change, it will become more important than ever that airlines are ready to adapt. This research proposes the ability of a mobile application to solve communication and educational gaps that are preventing adequate accessibility services, particularly at Pearson. This mobile application aims to provide clear and effective two-way communication between the airline employees and customers and allow for a smoother overall customer experience. Additionally, this app focusing on utilizing location technology to organize the consignment of wheelchairs in order to improve the current service. This research found that some of the current top complaints from customers is the shortage of wheelchairs and staff to provide the service. This proposed mobile app aims to help better organize wheelchairs in order to move them around the airport faster and be able to better predict when and where they're needed. Overall, this application intends to be an educational mechanism that will help push the new regulations into place while also preparing airlines for these major law changes. To conclude, it will be crucial for airlines in North America to prepare for the demographic rebalance that will soon start to challenge their current manual processes more than ever. It will be more important than ever for airlines to improve accessibility with technology and innovation and provide barrier free travel experiences for all.

Works Cited

Baker, David. "Moving Backwards: Canada's State of Transportation Accessibility in an International Context." *Moving Backwards: Canada's State of Transportation Accessibility in an International Context | Council of Canadians with Disabilities*. N.p., Feb. 2005. Web.

Bourne, L. S., & Rose, D. (2001). The changing face of Canada: The uneven geographies of population and social change. *The Canadian Geographer/Le Géographe canadien*, *45*(1), 105-119.

"CDC: 53 Million Adults in the US Live with a Disability." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 30 July 2015. Web.

Gavrilov, Leonid A., and Patrick Heuveline. "Aging of population." *The encyclopedia of population* 1 (2003): 32-37.

Gomez, Chelsea, and Dave Seglins. "Summary of 8 Lawsuits That Allege Wheelchair Service Problems at Pearson Airport Led to Injuries." *CBCnews*. CBC/Radio Canada, 22 Sept. 2016. Web.

Jacobsen, L. A., Kent, M., Lee, M., & Mather, M. (2011). America's aging population: population reference bureau.

Mein, Philip, Andrew Kirchhoff, and Patrick Fangen. *Impacts of Aging Travelers on Airports*. No. Project A11-03, Topic S07-01. 2014.

Picard, Andre. "It's Well past Time for a Canadians with Disabilities Act." *The Globe and Mail*. The Globe and Mail, 25 Mar. 2017. Web.

Seglins, Dave, and Chelsea Gomez. "Pearson Airport VP Predicted 'free for All,' Shortages for Wheelchair Travellers." *CBC News: Toronto*, September 23, 2016. Accessed October 2016. http://www.cbc.ca/news/canada/toronto/pearson-wheelchairs-service-labour-1.3774494.

Sinha, S. K. (2011). Why the elderly could bankrupt Canada and how demographic imperatives will force the redesign of acute care service delivery. *HealthcarePapers*, *11*(1), 46-51.

Stanton, Melissa. "Age-Friendly Housing Options, Aging in Place, Retirement Communities." *AARP*. N.p., 15 July 2014. Web.