

MPC MAJOR RESEARCH PAPER

ACCESSIBILITY AND TRANSPORTATION: A SPATIAL ANALYSIS OF GO
TRANSIT

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ABSTRACT

This major research paper presents a spatial analysis of GO Transit's accessibility coach and explores accessibility and transportation using service design theory. Social implications are also investigated in order to understand the communication of spaces for those with physical disability. There are three guiding questions in this case study, which are: (1) How is the GO Train passenger carrier car designed for able and disabled riders? (2) What kinds of choices are available to able and disabled riders while using the GO Train's accessibility coach? (3) What implications do these choices and affordances suggest about the separation of able and disabled riders? To address these questions, an observational study of the accessibility coach was conducted. The data collected yielded qualitative data that was then analyzed using concepts informed by service design theory, accessibility scholarship and social separation concepts. The findings of this study indicate that there are general patterns that occur within the space that are influenced by the affordances of the environment. In addition, this case study demonstrates that a blended approach, incorporating service design theory, accessibility scholarship and social separation concepts is best used to understand services and their social implications as well as how different parts of the service fit together to create an whole experience.

Keywords: service design, accessibility, transportation, ableism, social separation

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INTRODUCTION

Public social spaces, such as school classrooms, shopping centres and public transit, are representative of social structures and form rich places of meaning. These environments can act as a site to examine the way we interact through the design of the space and with those who occupy them. An interesting element of social spaces is that its influence on the users of the environment operates through a reflective process. A space can influence how people will use it and in turn how people use the space informs its structure both physically and socially.

Many public places have been designed to accommodate different kinds of users. Disabled users with various kinds of disability, whether physical or cognitive, are more frequently considered in the design of spaces, especially as policy is developed to support these groups. Accessibility has become an increasingly important issue to consider when examining public places because a significant amount of Canada's population faces some sort of disability. Statistics Canada reported that "between 2001 and 2006 the number of persons who reported having a disability increased by three-quarters of a million people" (Disability Statistics Canada, 2008, para. 2). In addition, elderly populations are on the rise signifying a larger demographic with mobility issues and concerns. In 2012, the number of seniors represented "...14.9% of the total population, up from 11.6% in 1992. The proportion of seniors will grow rapidly in the coming years as baby boomers reach the age of 65" (Statistics Canada, 2012, pg. 1). It is imperative that the creators of social

spaces take these facts into consideration or these spaces will fail to serve those who occupy them.

In Ontario there has been a push for accessibility standards through policy. The Accessibility for Ontarians with Disabilities Act (AODA) came into force in 2005 as a mandate for barrier-free access to public and commercial services in Ontario. AODA has two official purposes. First, the act aims to “[develop, implement and enforce] accessibility standards in order to achieve accessibility for Ontarians with disabilities with respect to goods, services, facilities, accommodation, employment, buildings, structures and premises” (AODA, 2005, Part One). Second, the Act mandates the involvement of persons with disabilities, the Government of Ontario and representatives of industries, and various sectors of the economy to contribute to the development of the accessibility standards in Ontario (AODA, 2005). The aim for AODA is to provide barrier free organizations and services in Ontario before January 1, 2025. AODA, and other documents like it across the country and around the world, demonstrate that there is an acknowledged need to improve the lives of those living with disability. For example, the United States, Australia, Ireland, European Union, New Zealand, and the United Kingdom all have legislation that define legal rights for those who are physically and cognitively impaired (Harpur, p. 331). As such, service designers are needed to appropriately address the issues, design and build barrier free spaces.

Service design aims to provide useful, usable, desirable, efficient and effective environments for all users (Stickdorn and Schneider, 2011, p. 31). There are many stakeholders involved in the process of creating spaces, especially where a public service is provided, and these stakeholders can have conflicting needs. There are often differing

agendas between users, builders and providers, and a lack of knowledge and proven application within service design for improved accessibility. Furthermore, the traditional separation between theory and practice in academia keeps deep and integrated understanding from being accomplished. In terms of design theory, “we possess great knowledge, but the knowledge is fragmented into so great an array of specializations that we cannot find connections and integrations that serve human beings” (Buchanan, 2001, p. 6). This disconnect constricts both academics and the general population in both “their desire to know and understand the world [and] in their ability to act knowledgeably and responsibly in practical life” (Buchanan, 2001, pg. 6).

This major research paper examines accessibility and transportation through a spatial analysis of a public transportation service using service design theory. Through this combined theoretical and practice-based examination, I hope to uncover any underlying social power struggles between those with disabilities and those without for a specific public transportation service. I also aim to answer key questions regarding whether or not the selected site successfully meets its purpose as a transportation service for disabled passengers. In addition, I aim to bring further relevance to service design theory as an ideological framework to examine social spaces.

IMPORTANCE OF THE STUDY TO PROFESSIONAL COMMUNICATION AND RELATED FIELDS

This study is relevant to professional communication because it is important to understand how public social spaces communicate to its users and because these spaces are often reflective of larger social structures and ideologies in a particular society. The gap that will be addressed in this study is the lack of research in service design for spatial accessibility from a North American perspective and, more specifically, within the context of Toronto, Canada. In addition, the research takes a timely look at transportation in the city of Toronto with recent reports about congestion issues in the city and its surrounding areas. As our population ages, Toronto will have more people with physical disabilities relying on public transit. GO Transit has also acknowledged that this growth will occur and has reported that “approximately 20% of the population of the GTA will have varying degrees and types of disabilities within the next two decades. As a result, reliance on public transportation will grow as more people with disabilities use it because of its availability and ease of use” (Accessibilitiy Plan, 2009, pg. 3). It is imperative that careful attention is paid to the services that this growing demographic will use.

Based on the trend of services design scholarship, which is founded in both practice and theory, this study will have two applications. Firstly, this study will advance service design theory by increasing the awareness of social implications in environmental construction; secondly, this study will have realistic application to GO Transit, a key public transportation agency for Toronto and the surrounding area, regarding how the organization can improve its service to disabled riders and evaluate the changes they have

already enforced to comply with AODA standards. Findings from this study can be further applied by other organizations that provide similar transportation services. Finally, this interdisciplinary approach can benefit other areas of research such as environmental design and sociology.

LITERATURE REVIEW

Service Design and Design Theory

Service design is a unique area of scholarship directed by a wide variety of definitions. Stickdorn and Schneider (2011) feature some of these definitions to show the wide variety that exists. One definition says, “service design is all about making the service you deliver useful, usable, efficient, effective and desirable” (Stickdorn and Schneider, 2011, p. 31). Another definition by the same authors describes service design as “the application of established design process and skills to the development of services. It is a creative and practical way to improve existing services and innovate new ones” (Stickdorn and Schneider, 2011, p. 32). Many researchers, both practical and theoretical, within the field have used service design to analyze and assess spaces and the functions of services. They have also looked to improve best practices and fundamentals of service design purposes. Buchanan (2001), a design professor at Carnegie Mellon University in Pittsburgh, outlines the difficulty of defining service design but also the *affordances* given to this flexibility. “One of the great strengths of design is that we have not settled on a single definition” (Buchanan, 2001, p. 8). Affordances are “the perceived and actual properties of [a] thing, primarily those fundamental properties that determine just how the thing could be used” (Norman, 1988, p. 9). Affordances are also a concept that is frequently used to understand and determine how a specific product of service will be used. For the purpose of this paper Buchanan’s definition of design will inform my own use of service design, as it incorporates both the practical and applied purposes of design and power relations that exist within the production and interaction of designed products

and services (Buchanan, 2001). This definition is preferred over other narrow definitions of service design given by Gummesson (1991) and Norling et al. (1992), which focus more directly on concepts within service design and do not account for greater influence from social factors.

Scholars such as Shostack and Goldstein have examined service design in greater depth looking at the purpose and process of creating comprehensive services. Shostack (2007) states that there is an inherent difference between services and products but that they are important to understand together in order to create *rational services* (Shostack, 2007). Products can become the evidence of a service and contribute to the users “mental reality for the service” (Shostack, 2007, p.53). Goldstein et al (2002), also notes that users have a perceived reality of a service. “Customers have an image of the service concept regardless of whether it has been defined by word-of-mouth or other sources of information or from real service experiences” (Goldstein, 2002, p. 122). From a service designer’s viewpoint, the way to understand the relationship between products, services and the reality of the environment is through *service blueprinting*. Service blueprinting consists of the potential or intended purpose of the designed service, but in reality, the actual use of the space “...will almost always deviate in some way” (Shostack, 2007, p.55). The greater the complexity of a service, the greater chance there is for deviation from the desired or intended use. It is important to understand both the intended services and the actual service in order to critically assess its purpose. Goldstein et al. suggests that understanding the service design concept is another way of understanding the reality of the service because the service design concept is how an “organization would like to

have its services perceived by its customers, employees, shareholders and lenders” (Goldstein et al, 2001, p. 123).

Described by Norman (1988), service blueprinting is very similar to conceptual models. Norman (1988) considers conceptual models as a mapping process used to decide how something should be used. “A good conceptual model allows us to predict the effects of our actions” (Norman, 1988, p. 13). Within a conceptual model there are two interpretations: the design model and the user’s model. The design model is made by the person who has created the item. This interpretation reflects the intended purpose of a service. Alternatively, there is the user’s model, which reflects the user’s concept of what the service should be like. Norman also presents the concept of *system image*, which is built from the interaction between the designer’s model and the user’s model (Norman, 1988, p. 13). This is closely related to the actual use of a service as it represents the struggle between those who design and those who use a particular system, as well as the communicative success and failures of that interaction.

Service Design Concepts

Keywords within service design are specific to the field and are used to classify different parts of the service and its creation. These key terms include wayfinding, touchpoints and affordances.

Wayfinding is a service design tool that aims to bridge the gap between the perceived purpose of a space and the actual use of a space. “Over the past 50 years, [wayfinding] has evolved to become a very specific concept in the realm of architecture and environmental design” (RGD Ontario, 2010, p. 20). Passini (1981 and 1996)

discusses the importance of wayfinding as an element in service design. “Wayfinding design concerns all features of the built environment which are related to the purposeful circulation of people and their ability to mentally situate themselves in a setting” (Passini, 1996, p.320). Wayfinding design is the thoughtful process that accounts for the user’s ability to make conscious choices within a space and also accounts for the fact that not all people will make the same choices. In this sense, wayfinding tries to predict the user’s response and what will occur within a space by including the desired usability and also consideration for potential deviations.

Touchpoints is another service design concept that has become more frequently studied. As Secomandi and Snelders (2011) state: “one of the issues motivating current research is the idea that service designers create multiple contacts, or touchpoints, between service organizations and their clients” (Scomandi and Snelders, 2011, p. 30). Touchpoints are used to describe “every contact between a customer and a service provider” (Stickdorn and Schneider, 2011, p. 30) and can include “material artifacts, environments, interpersonal encounters, and more” (Scomandi and Snelders, 2011, p. 30). The entire process of providing a service from initiation to completion can encompass many touchpoints and can be divided into three steps: the pre service period, the actual service period and the post service period (Stickdorn and Schneider, 2011). Each part of the service contains touchpoints and combine to complete the service process. Touchpoints, both tangible and intangible, are important because they reinforce how they service should be experienced and they provide guidance for the user so that the service is used appropriately.

Holistically *affordances* are used to explore specific parts of the service portion of design. Based on Norman's definition (1988), an example of affordances would include the physical properties of paper that encourage a user to write a message, transport it, fold it, shred it and burn it, among other things. Gibson (1966) coined the term affordance in conjunction with a shift from understanding behaviour as a stimulus and reaction relationship, to a reaction to action possibilities (Withagen, R. et al, 2012, p. 250). The shift in behavioural psychology gave the subject -- Gibson refers to them as animals -- agency to make decisions. "[Animals] are not mere puppets pushed by the environment like machines; rather, animals have agency" (Withagen, R. et al, 2012, p. 250). Gibson formed his theory to understand the perception of animals that directly related to how environments are built because the perceptions of a space are informed through the subject's use of it. Gibson posits that "... the [animal's] environment consists of opportunities for action and "that the environment does not contain stimuli that influence the animal's perception and action (Withagen, R. et al, 2012, p. 253). Withagen (2012) points to the ontological status of affordances. He quotes Gibson:

"An affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer" (Withagen, R. et al., 2012, p. 253).

As such, there is a unique relationship between the environment, the person who encounters it and the fact that this relationship can change diachronically and synchronically. Affordances are also designed to meet physical and psychological demands of the user. A physical design can be represented by a chair, which affords the action of sitting by its shape and material characteristics. While abstract affordances “require some internal representations (e.g., patterns and schemas) that match the external stimuli presented to the user. This type of connection is consistent with Norman’s emphasis on the role of users’ existing internal models in their perception of affordances” (Kannengiesser and Gero, 2012, p.54).

Visual cues can create strong indicators as to how something should be used. Consider how people gravitate towards feeling a soft sweater in a store and avoid touching a prickly cactus. Both items have visual indicators that either invite the user to respond or communicate to desist action. Visual cues are used when designing for everyday tools and objects. “Complex things may require explanation, but simple things should not. When simple things need pictures, labels, or instructions the design has failed” (Norman, 1988, p. 9). Every object composed of a visual structure that communicates what it can or cannot be used for. In addition to affordances, these visual structures include constraints and mapping (Norman, 1988). If affordances indicate what can be done, constraints limit specific possibilities. For example, a glove is designed to form the hand, but this object is constrained by size. Mapping is the process of determining what the affordances and constraints will be for each object.

There are differing approaches to understanding affordances. One approach sees “...affordances as post-hoc properties of a user-artifact system, and they are either known

in advance or discovered by the user. Here, an affordance is assumed to pre-exist, regardless of whether the individual user is aware of that affordance” (Kannengiesser and Gero, 2012, p.51). A second approach “...emphasizes the situation of the user interacting with and reasoning about the artifact. In this view, affordances are defined with respect to the user’s individual situation, rather than from the perspective of an omniscient observer” (Kannengiesser and Gero, 2012, p.51). This second approach allows for each user to experience a service uniquely and find new affordances based on their points of reference (Kannengiesser and Gero, 2012). This second approach suggests a cyclical relationship between the user and the affordances of the service design. The user can interpret a service and then determine his or her actions. Similarly, the actions of the user encountering a service can determine how this service is shaped. As such, affordances have the ability to influence behaviour, and behaviour can influence the design of affordances.

Most design researchers and, more specifically, service design specialists, identify the need to link social science investigation with practical application in order to better understand the usability of services. Service design concepts are used in conjunction with accessibility research in order to see the challenges disabled users may have. Passini (1996) states “wayfinding difficulties tend to be exasperated for people with physical impairments” (p. 320). Due to this fact it becomes increasingly important to consider what Ron Mace coined as *universal design*, which is defined as a “disability-inclusive architectural design approach” (Audirac, 2008, p. 4). Moreover, universal design “not only subscribes to the ideals of accessible and barrier-free design and assistive technology, it also professes to be a broader paradigm of design that celebrates diversity

and is inclusive of all users regardless of age or ability” (Audirac, 2008, p. 4). It is often noted that by considering the spatial needs of an “atypical” user, the design of a space or service can be improved and more useful for all users, regardless of their ability.

Accessibility within Service Design

Policy and policy makers also provide varying definitions for accessibility. The Accessibility for Ontarians with Disabilities Act (AODA) provides a very detailed definition of what the government of Ontario considers the term to represent. According to the policy document, disability refers to:

*“ (a) any degree of physical disability, infirmity, malformation or disfigurement that is caused by bodily injury, birth defect or illness and, without limiting the generality of the foregoing, includes diabetes mellitus, epilepsy, a brain injury, any degree of paralysis, amputation, lack of physical co-ordination, blindness or visual impediment, deafness or hearing impediment, muteness or speech impediment, or physical reliance on a guide dog or other animal or on a wheelchair or other remedial appliance or device,
(b) a condition of mental impairment or a developmental disability,
(c) a learning disability, or a dysfunction in one or more of the processes involved in understanding or using symbols or spoken language,
(d) a mental disorder, or
(e) an injury or disability for which benefits were claimed or received under the insurance plan established under the Workplace Safety and Insurance Act, 1997; (“handicap”)” (AODA, 2005, Definitions).*

AODA’s definition includes a wide range of individuals with cognitive and physical impairments who acquired these impairments in different ways and at different times. In addition, the Government of Ontario advises that the term *disability* should be interpreted broadly as “it includes both present and past conditions, as well as a subjective component based on perception of disability” (OHRC, Section 2.1). This legal definition

adopted from the Human Rights Code and attempts to define a complex term without implying judgment. From an academic perspective, there is strong debate over the definition of “disabled” and how broadly it should be considered in its role to shape perceptions as well as sub topics surrounding this issue.

Accessibility is an increasingly common subtopic within service design. Scholars in the field have examined the integration between theory and practice, as well as the problems accessibility issues can cause for many societies and their daily functions. The term “accessibility” can be defined differently based on the opinions and goals of each scholar. Some scholars use the term to discuss geographical accessibility. Beimborn et al. (1994) represent a strand of research that ties accessibility with geographical reach. These researchers present the concept of *transit captivity*, which explores individuals who have no other option for transportation beyond public transit. These individuals do not have access to a personal car because of “...their age, disability, or past driving record” (Beimborn et al, 1994, p.2). Other scholars use the term to discuss the physical mobility of individuals (Kitchin (1998), Preston & Raje (2007), Campbell (2008). The term is increasingly paired with the issue of aging populations and the challenges populations will face as they lose their full mobility (Musselwhite et al., 2010).

A prevalent argument within accessibility studies revolves around the use of the terms *ableism* and *disableism*, which debates the labeling of physical and cognitive disability, as well as addresses the social connotation behind each of these terms. It is important to note that debate around the use of either term is largely rooted in the acknowledgement of injustices against people with physical and psychological disabilities and the social processes that allow this inequality to exist in society. Scholars,

such as Campbell (2008) and Wolbring (2008), recognize that *ableism* and *disablism* have been used interchangeably. *Disablism*, as defined by Campbell (2008), is “a set of assumptions and practices promoting the differential or unequal treatment of people because of actual or presumed disabilities” (p. 152). While Wolbring (2008) defines *ableism* as “a set of beliefs, processes and practices that produce - based on abilities one exhibits or values – a particular understanding of oneself, one’s body and one’s relationship with others of humanity, other species and the environment, and includes how one is judged by others” (p. 51-52).

The definitions of *ableism* and *disablism* contain similar components with subtle undertones. Harpur (2012) argues that the word *disabled* was formed and commonly used in the English language to support ableist ideologies. In the past, “the labeling of a person as disabled placed them in a category separate from the able-bodied population. This separating arguably contributed to the ableist ideology of exclusion and oppression” (Harpur, 2012, p.329). Harpur recognizes that “...in essence, both disableism and ableism are describing the same concept” (Harpur, 2012, p.329) and offers his own definition for the two terms; “essentially, disableism and ableism could be defined as discriminatory or abusive conduct towards people based upon their physical or cognitive abilities” (p. 329). These two terms can be considered just as other *isms*, such as the terms sexism, racism and ageism (Wolbring, 2008). Harpur does argue, however, that ableism is the more appropriate term to use because it emphasizes ability over disability, as “...the actual word ‘disability’ was not developed by the disability community” (Harpur, 2012, p.330). In fact, the term ‘disabled’ is associated with a historical period where society discounted the value and contributions of people who were not fully able. As a result, the term

privileges able over disabled and perpetuate the negative treatment of those who are different. “The current phrasing of the debate has divided society into disabled and nondisabled” (Harpur, 2012, p. 331).

Adopting more appropriate syntax can make it possible to address physical disabilities in a more inclusive manner. “One of the major advantages of ableist nomenclature is the ability to describe discrimination without the necessity to define what impairments constitute a disability” (Harpur, 2012, p. 331). Although it is legally important to have definitions of disability, socially, it may be more useful to have a looser and more flexible interpretation guided by those who are living with disability themselves. Disability is often determined by those outside the experience. Disability occurs “...when society decides that the abnormality is sufficient to be labeled disabled” (Harpur, 2012, p. 332), instead of it being determined by the person who is experiencing the difference. It can be argued that everyone, at some point in their life, will experience some kind of imperfection and, therefore, will experience “disability” due to being placed in a constrained situation. “Impairment is the reality for most people and normalcy is a fantasy” (Harpur, 2012, p. 332). As such, it does not seem appropriate to use terms that alienate people from themselves to describe a physical difference. The term accessibility connotes a more inclusive approach to the identification of social structures surrounding disabled individuals by removing the root word ‘able’.

Given the points above, this paper will only use the term, *disabled* as a way to clearly describe levels of physical ability, without discrimination, while acknowledging the term has a tremulous past. Furthermore, the importance of recognizing debate over

the proper use of terms is critical to the basics of accessibility scholarship and should be acknowledged by all scholars researching in the field.

Social Separation

“All social interaction is affected by the physical container in which it occurs” (Bitner, 1992, p. 61), demonstrating that physical space not only influences social interaction but also that the social space that contains the interaction should be initially considered to produce intended results. Visible aspects of our society cannot be examined without the consideration of the social implications since these structures are largely ideological. Furthermore “physical environments represent a subset of social rules, conventions and expectations ... serving to define the nature of social interaction” (Bitner, 1992, p.61). Service designers are increasingly interested in the social implications behind a physical space to improve the intended service and user response. Another important aspect to consider when examining the social response in spaces is users interpellate or define themselves. *Interpellation* is described as a way that a person recognizes themselves as subjects in society. Althusser identifies that, “*all ideology hails or interpellates concrete individuals as concrete subjects*, by the functioning of the category of the subject” (Althusser, 1970, Part 13).

The process of interpellation requires the subject to recognize him or herself within an ideological framework. This can be done through identity formation. “It is now a truism that identities, or at least some identities, are socially constructed. These identities include gender identity, racial identity, and what we might call ability identity, as a disabled or non-disabled person” (Overall, 2006, p. 126). People with impairment

will go through a process of identifying themselves as disabled. This process is enabled through social interaction and as a result impaired persons will continue to recognize themselves in this negative light. Impaired persons struggling with this identity are often subjected to the discrimination present in social interactions, emphasized by the design of spaces.

Kitchin (1998) critically examined social spaces and how they exclude disabled people by positioning them as different from the physically able and therefore constituting the disabled as 'other'. This *othering* process is maintained through ideologically constructed power relations. As such, Kitchin argues "disabled people are taught to 'know their place', to believe the logic of the oppression; that they are unworthy and deserve to be [lower] on the social ladder" (1999, p.346). Social spaces can become arenas for social inequalities to occur because situations for accommodating disabled people in society remain segregated from others. Kitchin (1998) states, "Imrie (1996) argues that segregation, whilst promoted as ways to help assimilate disabled people in society through empowerment and independence, perpetuates disablism by labeling disabled people as different, as needing specialized and segregated facilities" (Kitchin, p.346).

Public transit spaces have been scrutinized by researchers as a vehicle for the negative social structures described by Kitchin. Preston and Raje (2007) explore the relationship between transportation and accessibility through case studies to understand how the relationship influences social inclusion or exclusion. Preston and Raje (2007) define social exclusion as "a constraints-based process, which causes individuals or groups not to participate in the normal activities of the society in which they are residents

and has important spatial manifestations” (p.151). The study recognizes that accessibility has the capacity to marginalize people in a way that is not traditionally thought of. It is not based on income, race or any of those traditional markers, but instead based on a person’s ability to “...participate in social society” (Preston and Raje, 2007, p. 152). Our society has never been more vulnerable to social exclusion. A “decline in collectivism and emergence of more individualised, atomistic lifestyles, in part the result of technological developments such as the automobile and the television, arguably increases the risks of social exclusion” (Preston and Raje, 2007, p. 152). The inability to participate can affect anyone and can have severe consequences this occurs. Preston and Raje (2007) demonstrate that high levels of social exclusion correlate to low levels of mobility, meaning that those who have low levels of mobility are often excluded from participating in society, leading to inequalities in our social system.

Another factor that is beginning to be considered in the examination of able versus disabled is the growing population of elderly people. This factor is especially relevant as it is scientifically and culturally recognized that as people age they often lose some or all of their physical or cognitive ability. “There is a real (though quite imperfect) correlation between years lived and certain bodily features designated as impaired. For example, as the number of years lived increases, an individual is more likely to experience arthritis” (Overall, 2006, p. 132). Overall notes that the concept of elderly as impaired is socially constructed. “A large number of years lived is stigmatized at least partly because people associate it with the supposedly inevitable development of features regarded as impairments” (Overall, 2006, p.132). Ability is affiliated with youthfulness and, therefore, we often automatically think of the elderly as having lost their “youthful”

attributes. Overall (2006) describes two ways that the social construction of impairment is generated. “The term “impairment” itself is [defined] by picking out certain states of physical features... and attributing significance to them as fundamentally defining particular individuals and groups of individuals as abnormal or defective in ways that are believed to be ‘biological’” (Overall, 2006, p. 127). Secondly, Overall notes that “a characteristic designated as an impairment, and considered to be a biological given, might not be an impairment within a different cultural environment” (Overall, 2006, p. 128). An example is given to illustrate this point where half the global population has Down syndrome (DS) and, rather than having this condition recognized as an impairment, it is often seen as a basic physical difference similar to genetic variations between blue eyes or green eyes (Overall, 2006).

Overall (2006) suggests that “both ableism and ageism incorporate normative ideas of uniformity... the ideal human body is a body that has not lived a long time and does not have any of the features designated as impairments” (p. 132). Besides the polarization of disabled and able bodies, it becomes problematic on a social level “...because disability and aging are considered shameful, weak, and low in value, those who are disabled and/or aged by culture experience pressures to pass as non-disabled or non-aged” (Overall, 2006, p. 132). These concepts are all framed within a Western societal context and the resulting ideology is that “...lives with so-called impairments, and lives that are elderly, are of lesser value than lives without so-called impairments or lives that are youthful” (Overall, 2006, p. 131).

Overall (2006) does acknowledge the positive points of social identity construction. “The societal implications of the social construction of aging are not all

negative. By recognizing that old age is socially constructed we could create a truly radical transformation of prevailing cultural ideas about age and being ‘old’” (Overall, 2006, p. 134). Creating inclusive spaces that do not hail individuals based on their age and ability is part of social liberation.

Musselwhite and Haddad (2010) highlight why mobility remains important to aging demographics. There are three kinds of needs that older people consider for travel which include by hierarchy: “utilitarian (primary) needs; affective (secondary) needs; aesthetic (tertiary) needs” (Musselwhite & Haddad, 2010, p.27). Utilitarian needs respond to travel as a way for the elderly to access external things – to live their day-to-day lives, and participate in social interactions. Affective needs are linked to interpersonal needs such as a feeling of independence and control over one’s life. Finally, aesthetic needs simply reflect the joy of going on a journey and this having some level of importance to the elderly. The adequacy of these needs being fulfilled can determine an elderly person’s quality of life.

Musselwhite and Haddad (2010) state “...quality of life is described by participants themselves as meeting basic needs, but also of going beyond that to support their social and emotional needs” (p. 34). “Mobility, although linked to accessibility, is more than that to the older individuals in this research, especially when relating travel to quality of life” (Musselwhite & Haddad, 2010, pg. 34). Quality of life is important to consider both in this context and the aforementioned context of able versus disabled bodies. These demographics can be connected and face similar issues with participating in social spaces. This participation is important and must occur in order for inclusive social practice and quality of life to improve.

METHODOLOGY

Description of the Site

This study will examine GO Transit's accessibility coach. GO Transit is a Toronto-area public transportation service that links the city core to the surrounding suburbs. GO Transit is a government body, reporting to the Minister of Transportation, tasked to provide transportation for individuals living in the Greater Toronto and Hamilton Area (GTHA), with a focus on moving commuters within a 20 to 50 kilometer radius from the Toronto core. The trains are maintained, controlled and operated through contracts with CN, CPR and Bombardier. GO Transit services a significant amount of the population in the GTHA and, according to their most recent strategic plan published in 2012, served over 55 million passengers in the past year. A high majority of these users are repeat customers and, even more noteworthy, 80% of train riders are choice riders which means that they choose to use this service even if they have a car available (Strategic Plan, 2012).

More specifically, I will closely examine the service design and layout of the cars and observe how people with full mobility and people with physical disabilities interact within the space. The accessibility coach was specifically selected because it is the only allocated coach providing a designated area for persons with mobility devices to park during their ride. It is the only coach that is accessible with a ramp and it is the only place where a customer service representative is present to provide assistance. By investigating the accessibility coach, I will be able to assess whether or not the GO Train provides adequate access for riders with physical disabilities. Users of the service are aware of the

accessibility coach for several reasons. First, the layout is different to accommodate mobility devices. The accessibility coach is always in the centre of the train and aligns with a raised portion of the station platform or with a ramp area. Finally, the customer services representative informs over loudspeaker that he is located in the accessibility coach after the departure from each station.

Since AODA's formation, GO Transit has been working to ensure that it is abiding by the regulations that have been stated. Many initiatives have started across various GO Transit's services to accommodate AODA as well as reporting to ensure that communication of these initiatives is properly disseminated. As part of GO Transit's compliance with AODA they must publish annual Accessibility Plans that outline what has been accomplished, what is in the process of being completed and what will be done in the future. "GO Transit's first Accessibility Plan, the 2004 Plan, was issued in September 2003" (Accessibility Plan, 2009, Pg. 1). These plans are the product of internal and external committee meetings attended by GO Transit representatives with extensive knowledge of the services, facilities and legislation as well as experience with project planning and with members of the accessibility community who have varying levels of physical and cognitive disabilities. This integrated process produces a comprehensive document that has input from a wide variety of people, ensuring that the goals and initiatives are both realistic and purposeful. In addition, public meetings are held in each region GO Transit services in order to accommodate suggestions from the public and share plans with customers in each area.

There have been many enhancements to GO Transit's system over the past several years to improve their service and comply with AODA. For example, improvements have

been made to stations across their seven lines to ensure that they are all completely free of barriers. GO Transit is working to ensure that there are elevators at all stations where it is needed. In 2012, e-signage (electronic signage) was introduced to better serve all users. More specifically, audible signage was introduced to serve the visually impaired and those with low level hearing. Self-serve ticket kiosks designed with accessibility needs in mind were approved in 2012 and will be installed following a series of trials. These self-serve ticket kiosks will be equipped with some of the most comprehensive accessibility features available such as text to speech reading in French and English, mid-frequency sound cues for those with hearing loss, tactile PIN pad, user interface with buttons in consistent locations screen to screen and a receipt tray for use with limited motor control (Multi-Year Plan, 2012, pg. 39). Downloadable guides for users with accessibility needs are available through GO Transit's website as well. Published in 2010, these documents provide "step-by-step information on how to plan for and use GO Transit's services" (Accessibility Guide, 2010, pg. 1). GO Transit's approach to accessible service, as outlined in its Accessibility Guide "is to offer accessible customer service, vehicle and station features, as well as policies and staff training that will enable customers who have a disability to use GO's services independently or with the assistance of a traveling companion" (Accessibility Guide, 2010, pg. 4). The guide speaks directly to users with varying accessibility needs and acts as a resource for planning trips, general use of the service and indicates the most appropriate contacts for additional information. In addition to these examples, there are countless other improvements and initiatives completed, planned and in the process of being completed to improve the facilities, the employees, the corporate culture and the holistic service environment.

Research Questions

This research paper will answer the following research questions, which were informed and refined through the literature, observation of the research site and the pilot project.

Q1: How is the GO Train passenger carrier car designed for able and disabled riders?

Q2: What kinds of choices are available to able and disabled riders while using the GO Train's accessibility coach?

Q3: What implications do these choices and affordances suggest about the separation of able and disabled riders?

The first question examines service design aspects and concerns, such as flow, touch points and layout. The last two questions address the social concerns behind spatial design, the implications of choice (or lack of choice) that can create separation between able and disabled users, and affordances that contribute to the user's choice on the GO Train's accessibility coach.

Pilot Study

A pilot data collection and analysis was conducted as a test for my selected forms of data collection. This pilot informs my final data collection and analysis. The total amount of data I obtained in the pilot was 105 minutes of observations, based on 3 rides and a total of 81 detailed riders and 95 additional riders. The pilot was used to polish the data collection process for the final observational study. Most notably in the pilot, there were only three zones, but upon reflection of the data that the pilot yielded I determined that dividing the largest zone (Zone 2) in half to create four zones would provide me with

a more detailed map for data collection (see Appendix B and Appendix D for comparison).

The Research Role

The observational study draws from methodology in anthropological research. I employed an etic approach to the study, which starts with understanding general concepts, theories and questions before applying it to the object of study. “An etic analytic view of a scene [evaluates] it through the conceptual categories provided by our disciplinary knowledge and theory” (Lindlof and Taylor, 2011, p. 95). The scholars that use this analytical approach begin by introducing themes and concepts, usually referencing notable scholars in the field, compare the literature to a specific case study, and use their observations to either support or refute the theory originally presented and its application to the selected case study.

Although I used an etic analytical approach, during the reflective time at the outset of my study I spent a lot of time on the GO Train thinking about what the space could communicate to its occupants. This reflection indicates that there is space for furthering this study through an emic approach. Lindlof and Taylor (2011) note that etic and emic approaches are best used together. “The combined use of emic and etic conceptual lenses yields a binocular – and thus multidimensional – view of culture and helps the researcher establish a prolonged contact with the scene” (Lindlof and Taylor, 2011, p. 95).

As the primary investigator, I took on an observational role. This approach is well suited to observing public spaces without interfering with the subjects or influencing the

use of the space by my presence. Although observed subjects did not ask what I was doing while conducting my research on the GO Train accessibility coach, the study was transparent to subjects if they were curious about my investigation. Since I am participating in the act of riding the train with the users, my documented observations also stemmed from my participation in the space. The train ride took approximately thirty minutes. I did not interact directly with the riders of the train and, for the scope of this study, that interaction was not needed.

As a regular GO Transit rider, I had to remain objective when examining the events and activities that took place. I had to separate my experience as a user before the study and look at the space with fresh eyes. My pilot study allowed me to consider different ways I could objectively collect data and I was able to refine my methods for the final observational study to minimize bias or inconsistency.

Another way I avoided personal bias was through journal entries. As noted in my February 4, 2013 entry, “this past week has really made me think about my stance on my project in terms of bias. I certainly have preconceived notions of my study site... I think it is something I will have to remain conscious of” (Campana, 2013), indicating that I was aware of my possible biases as a regular GO Train user and understood the importance of separating my own views of the service from the data collected (see appendix E). Remaining conscious of my experience as a user and acknowledging the fact that I likely have preconceived biases allowed me to better remove my personal thoughts about the GO Train’s service to objectively observe how other riders use the accessibility coach.

Data Collection Methods

My research takes place on the GO Transit train's accessibility coach. On each train is one accessibility coach that provides service for those with disabilities. This coach was selected because it is the most probable place to observe disabled riders using the GO Transit train. Access to this site is given to the public with the purchase of a single or return trip ticket. As a regular GO Transit service passenger, I used the time I spent riding the train to collect data. Train services operate on a set schedule (see Appendix F). The data was collected during "rush hour" times (7am-9am), in order to observe a high volume use of the space. Although I selected to collect data during rush hour, one consideration I had to make was to collect data towards the end of the rush hour period. I knew from previous experience as a user that the number of people who use the service during prime rush hour time would make it difficult to collect data accurately. My typical train ride was approximately thirty minutes long, traveling between downtown Toronto (Union Station) and a suburb of the Greater Toronto Area (Oakville), on the Lakeshore West service line. During the ride there was one additional stop that allows people to exit and enter the train. After this stop, the train operates express to Toronto where all riders exit the train. I conducted observation over five separate rides, starting in Oakville and traveling eastbound to Toronto. Data collection took one week to accomplish as I rode the train once a day. I took the same train at the same time each day to ensure consistency. The entire data collection period resulted in approximately 2.5 hours of data collection and the observation of 157 riders. 100 of those riders were documented in detail using both a map and a chart. These riders will be referred to as "new riders." 57 of the riders were partially documented in the map. These riders will be referred to as "existing riders."

In addition, 164 riders were documented in making a choice to sit upstairs. This was the only data collected on those individuals.

I created a map of the area I studied and a table to track and document the riders (see Appendix C.1). The table charts the riders' approximate age, their activity on the train and any other points of interest. Most importantly, the table documents their observed physical ability on a scale of one to five – i.e. “one” being fully physically able; “two” to “four” corresponding to levels of partial disability; and “five” being fully disabled (see Appendix A). As discussed in the Literature Review, there is contention surrounding the use of *disabled* as a term due to its negative connotation. The field of service design does use the term to describe those who have some form of accessibility need. Since this paper stems from the field of service design, the term *disabled* will be used to describe a person with any visible limit to their physical ability. It is not meant as a device to situate able bodies as superior to disabled bodies but merely as a descriptive term for the purposes of this investigation.

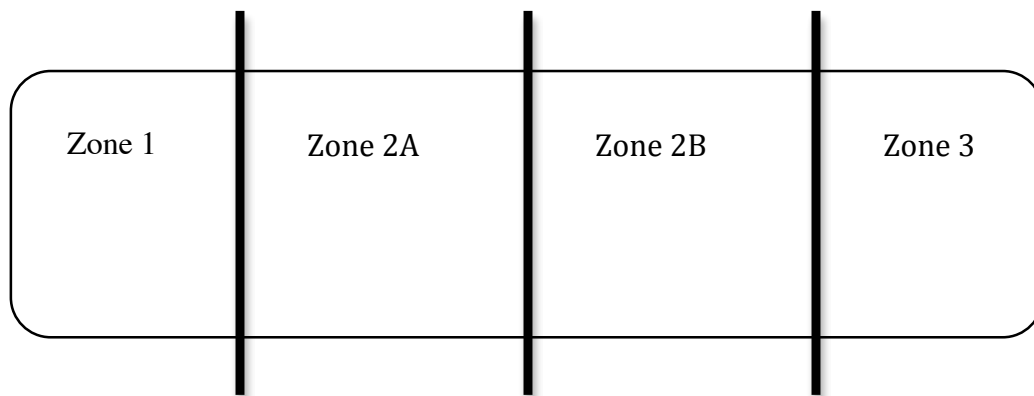
For the observational study, I documented passenger activity on the map. My visual method of documentation was a flexible tool to record which zones were used by able and disabled passengers. Riders who boarded the train at the station I boarded were considered “new riders” and were numbered within the table. New riders had their approximate age, path selection and observed disability level noted. Riders that were already seated on the train when I entered were documented as “existing riders” and only their path selection was noted on the map during the duration of the trip. The visual representation outlined any patterns that occurred on the accessibility coach during my ride. Based on the literature and the research questions, the data collection tools were

designed to highlight four different categories, including the riders' (A) path selections, (B) rider's seat selection through the occupancy of certain zones, (C) touchpoints and (D) selection of selection.

A. Path Selection - A rider's selected path is influenced by the design of the environment but it cannot be guaranteed that a rider will select a path in a prescribed way. A general path selection for GO Transit users is door selection to enter the train, the path selection to find and select a seat, and a door selection to exit the train. Path selection was documented visually on the map.

B. Zones - The train has various areas within the layout that designates spaces for users to sit during transport. These areas have been divided into 4 zones (see Figure 1). By looking at the kinds of users that occupy each zone, you can see patterns of use that indicate where different kinds of users sit during the ride. Each zone has certain characteristics that were used to define it as separate from the others.

Figure 1: Zones



Zone 1 is an accessibility zone as it contains a designated area for wheelchairs, strollers, and walkers. It also is the only area on the train that has a ramp that extends to the

platform that may be used without a change in level. All other doors require the rider to step up or down from the train to the platform. Zone 1 also has a customer service representative located in that zone that makes announcements to the train over a public address system and puts the ramp for accessibility users out and in at each station, among other duties. Zone 2A and 2B are strictly seating areas. The area is divided by an aisle accessible by wheelchair, but would block flow of traffic if the wheelchair remained stationary in the aisle. Therefore, the aisle is intended only for movement and not for obstruction. There are also alcoves with seating, generally used by able riders. The alcoves have been split into two areas so that it can show more detailed patterns of riders within that area. Zone 3 has seating and doors to the platform, but these doors have the step that requires riders to be able to use them. Both Zones 1 and 3 have stairs that lead to upper levels. Zones were documented on the map through visual representation.

C. Touchpoints - The train and the service system that encompasses the experience from start to finish contain various touch points that users interact with or have the potential to interact with. A touchpoint is a point of interaction between the rider and the service (Stickdorn and Schneider, 2011). A unique touchpoint is defined in this study as a total experience at the touchpoint that starts and ends but may be experienced more than once. Therefore the same touchpoint may be interacted with more than once but if each instance would be considered unique from the other. This information will be collected through documentation on the map, counting the number of times a rider interacts with the touchpoints and recording it in the table. The train coach has one notable touchpoint: the customer service representative. It was noted if the rider interacted with this service person.

D. Selected Level - There are riders who can select to sit in the mid and upper levels of the train. They are able to access these floors because they do not have disability and can manage the set of stairs that take riders to the different levels. This shows that they have extra choices that they can make while using this service. This choice was documented in the data collection tools through a tally of the number of riders that choose to sit in the mid and upper levels of the train.

Method of Analysis

The organization of my data collection, through tables that categorize riders based on ability, approximate age and maps of behaviour, provided an organized layout for data analysis. Analysis was conducted on the patterns and behaviour recorded through a coding system, specifically for disabled users on the accessibility coach.

Figure 2. Codebook for Analysis of Typical and Atypical Riders

Codes	Meaning
T	Typical rider with full ability of both arms and legs.
AT	Atypical rider with full ability of both arms and legs.
TD	Typical rider with some physical disability.
ATD	Atypical rider with some physical disability.

Through this system, I determined how the majority of users interacted in the space from my initial pilot study and from the re-examination of patterns in my final data collection. I was able to then develop codes that grouped the data into four categories, which are: typical able (T), atypical able (AT), typical disabled (TD) and atypical disabled (ATD) (See Figure 2). Each of the codes represents the wayfinding pattern of each user and whether or not they followed the normative pattern for their ability group.

RESULTS

Summary of Results and Trends

The results indicated a normative trend in how the space was used by both typical and atypical riders. Roughly 50% of riders were fully able and used the space in a normative way. Normative use for a fully able rider meant that they would enter through door C, sit in any seat during the duration of the trip and then exit through door D. Approximately 30% of riders were fully able and used the space in a non-normative way. This meant that these riders entered or exited through doors A or B and stood for the duration of the trip. About 15% of riders were disabled and used the space in a normative way. The normative use of the space for these riders was to enter and exit through doors A or B and sit in any seat for the duration of the trip. Figure 3 is a summary of the results.

Figure 3. Summary of Results

Type of Rider	Number of Type per Ride				
	Ride One	Ride Two	Ride Three	Ride Four	Ride Five
T (Typical Rider with Full Mobility)	13	18	18	12	13
AT (Atypical Rider with Full Mobility)	10	10	4	12	12
TD (Typical Rider with Disability)	2	5	6	5	6
ATD (Atypical Rider with Disability)	0	0	3	3	4

Approximately 6% of riders were disabled and used the space in a non – normative way. A non-normative use of the space for disabled riders was to enter or exit through doors C or D. Based on the patterns exhibited by riders in the space, approximately 65% of the riders, regardless of ability, behaved in a normative way. The remaining 35% strayed from normative use. The results demonstrate that there is a clear pattern of use for riders and riders typically follow these patterns. However, there were instances of non-normative use that occurred across the different trips, regardless of a rider’s ability. The results were determined normative or non-normative based on what the general trend in behaviour was on the train. The larger group of riders that behaved in the same way seemed to indicate the normative use of the space. The smaller group of riders that deviated from this normative use indicated a non-normative use of the space.

Zones

The train has various areas for users to sit during transport. By looking at the kinds of users that occupy each zone, one can see patterns of use that indicate where different kinds of passengers may choose to sit during the ride. Figure 4 shows where the “new riders” sat during the trip. Zone 1 was completely occupied by disabled riders. More specifically, these riders were completely disabled and used mobility devices such as wheelchairs or scooters. Zone 2A was used by all kind of riders, but was dominated by the remaining disabled riders that had some level of disability but were not in a wheelchair or scooter, as well as a significant number of able riders who were using the space in an atypical way. Zone 2B is where the majority of able riders sat. These riders

also used the space in the normative way. Able riders who used the space in an atypical way only occupied Zone 3.

Figure 4. Riders by Zone

Number of Riders by Type	Zones			
	Zone 1	Zone 2A	Zone 2B	Zone 3
T (Typical Rider with Full Mobility)	0	11	35	0
AT (Atypical Rider with Full Mobility)	0	14	2	15
TD (Typical Rider with Disability)	3	13	0	0
ATD (Atypical Rider with Disability)	0	1	4	0

All of these riders stood for the duration of the trip either by choice or because the seating was full. The results show a trend of separation between users. Disabled users were primarily in zones 1 and 2A, while able users were primarily in zone 2B and 3.

Choice of Level

There were a number of riders that chose to sit in the mid and upper levels of the train. Figure 5 shows the total number of people that selected to sit upstairs and the total number of people that selected to sit downstairs. More than 50% of the time, as evidenced by ride one, four and five, more physically able riders chose to sit upstairs and were able to use the stairs to access other levels of the train. Out of the 34 riders with

some level of disability, all were observed to stay on the first level and did not use the stairs to go to any other level.

Figure 5. User Choice between Upstairs and Downstairs

Ride Number	Number who sit Downstairs	Number who sit Upstairs
One	25	28
Two	33	32
Three	32	31
Four	32	36
Five	35	37

Over the course of the data collection period, more riders were able to make the choice to sit in the mid and upper levels of the train compared to the riders that stayed on the lower level. All passengers that selected to go to the mid and upper levels were physically able.

TouchPoints

During the train ride, the only touchpoint that riders have opportunity to directly interact with was the customer service representative. Only the accessibility coach on the GO Train has a customer service representative. The observed duties for the customer service representative included releasing the ramp bridging the accessibility coach to the station platform and creating an entrance and exit point accessible to users with mobility devices. The observed data indicated that there were two kinds of passengers that interacted with the customer service representative -- passengers who are disabled and functioned in the normative pattern, and fully able passengers who functioned in an atypical pattern. Of the passengers who interacted with the customer service representative, 50% were in the highest age range, 20% were in the 45-60 age range and 20% were in the 30-45 age range. Only 10% of the people that interacted with the customer service representative were in the 18-30 age range. About 15% of fully able

riders, identified as “one” on the accessibility scale, interacted with the customer service representative. Roughly 60% of riders identified as “two” on the accessibility scale interacted with the customer service representative. 66% of riders identified as “three” on the accessibility scale interacted with the customer service representative. All riders identified as both “three” and “five” on the accessibility scale interacted with the customer service representative. This shows an increasing trend where the higher a passenger’s need for accessibility assistance the more likely the passenger will interact with this specific touch point.

Ages of Users

The train was used by riders of all ages. The ages of riders were documented to track patterns for varying age groups. Figure 6 shows the approximate age range of disabled riders that were documented in the data collection tables. 69% of riders with at least some level of physical impairment appeared to be over the age of 60. The data indicates that there was a significant increase in the number of riders with some disability in the later years of life.

Figure 6. Approximate Age of Disabled Riders

Approximate Age Range	Number of Documented Riders with Some Level of Disability
18-30	3
30-45	3
45-60	1
60+	16

Interestingly, most of the 60-and-over riders were not fully disabled and were only documented as being a 2 or a 3 on the disability scale and had laboured movement or needed a cane or walker. Of the “new riders” the age group with the least level of disability were individuals between 45-60 years old. The 18-30 and the 30-45 age ranges had the same number of riders with some disability. For 18-30 year olds, however, two riders were observed to have disabilities that could be considered temporary impairments (i.e. visible use of crutches).

Additional Observations

Qualitative observation showed additional general trends and provided insight to patterns that were not easily documented in a table or map. For example, before the train arrived passengers generally knew where to gather on the platform for the accessibility coach. More specifically, disabled passengers seemed to know that where the accessibility coach would stop. Raised portions of the platforms, accessed by ramps, gave indication to riders. All the seats on the train were generally full and, as a result, some passengers had to stand for the duration of the trip. During the trip, a customer service representative came over loudspeaker and provided information audible to all passengers on the train. Most importantly, the customer service representative reinforced treatment of accessibility services and the passengers that use them. For example, the customer service representative will remind passengers that priority to the elevators should be given to those with mobility devices.

Passengers also seemed to develop habits or patterns similar to other riders. For example, a rider would generally sit in the same coach of the train and in a similar spot

each day. This was prevalent during the selected route as most passengers seemed to primarily use the train for a routine weekday commute. Most passengers seemed to be highly familiar with the accessibility coach and situated themselves close to their desired exit points or near available seats.

Some riders on the train would chat with other passengers nearby or meet with people they knew. Many passengers kept to themselves for the duration of the trip and listened to music through headphones or read. Young children were not present during the selected rides and most passengers appeared to be commuting to work during the rush hour schedule.

Since 2008, GO Transit has been introducing improvements to the train service to better accommodate passengers with accessibility needs and to also fulfill AODA requirements. These improvements have slowly been implemented across the various transit lines and I began to see some of these changes during my data collection. Pull-down seats were included in some of the accessibility coaches in order to provide barrier-free aisles and improved mobility for passengers. Pull-down seats are a new feature that was still not available across all coaches in the GO Train's fleet but is one of the newer features being implemented as indicated by GO Transit's strategic accessibility plans.

ANALYSIS

The findings suggest interesting implications about GO Transit users and their experience with the service. The concepts presented in the literature review shed light on how the findings can be interpreted.

In terms of how the space is designed to accomplish a service, the GO Train is fairly successful in accommodating riders' needs as a transportation service. The train is accessible to a wide degree of riders with an array of physical abilities. Services, according to Stickdorn and Schneider (2011), are supposed to be "all about making the service you deliver useful, usable, efficient, effective and desirable" (p. 31). In this case GO Transit fulfils each one of the listed qualities. The GO Train is useful because it provides transportation for people living in the Greater Toronto Area. The service is usable because GO Transit has considered the kinds of passengers likely to use the service and accommodates these riders by providing a train that affords ridership. For example, there are doors for passengers to enter and exit the coaches, designated seating zones to ensure a comfortable journey and fully accessible restrooms in the accessibility coach. The GO Train is relatively efficient and effective as it makes many trips throughout the day and increases the frequency during volume traffic periods. Finally, it is a desirable option for transportation as it created a wider network of geographically accessible locations and operates in a timely manner for reasonable monetary cost. In addition, GO Transit has demonstrated that it is committed to fulfilling AODA requirements and aims to create better services for users with accessibility needs through improvements to their service.

Although the entire service has a number of touchpoints, the primary touchpoint in the accessibility coach was the customer service representative. The findings indicate that the greater a passenger's need for accessibility assistance the more likely these passengers will interact with a customer service representative (as a main touchpoint). This suggests that those with accessibility needs require more assistance to effectively use the transportation service, while those who are more able require less guidance. For passengers who have accessibility needs a customer service representative touch point becomes an essential part of the transportation service and vice versa for fully able riders. If the customer service representative were not present on this coach, passengers using mobility devices would be unable to enter or exit the train as the representative is responsible for releasing the access ramp from the coach to the platform.

The findings indicate that a normative use of the space consists of passengers entering through the coach doors, sitting in designated seating areas for the duration of the trip and then exiting through the coach doors at their destination point. Normative uses of the space are reinforced, especially since many passengers who were unfamiliar with the environment were prone to follow what other passengers were doing. This pattern of use represented the intended purpose of the service but, as with all services, there was deviation. Deviation in the use of the space included passengers choosing to stand because there are not enough seats or passengers with accessibility needs not using the accessibility assistance services. The combined use of the space can be considered the *system image* (Norman, 1988, p. 13), which is built from the interaction between the designer's model and the user's model. Understanding the GO Train in terms of the

system image is the most realistic approach because the data has indicated that both the desired use and deviated use of the space occurs.

Wayfinding pathways in the GO Train show that there are opportunities for passengers to make decisions. Passengers are expected to choose which door they will enter at, where to sit, and where they will exit the train. In addition, at each station stop, riders will negotiate if they need to relocate based on if they perceive needs of someone else as more important than their own. For example, riders who stood for the duration of the trip must make room for new passengers boarding the train. The findings indicate that most passengers who share similar accessibility needs make similar decisions. This is evidenced through the normative use of the space for fully able passengers and the normative use of the space for passengers with some level of disability. The findings also suggest that passengers who are fully able have a greater variety of choice they can make in their wayfinding circuit because they have the ability to choose what level to sit on and they have more ways to safely exit the train. Moreover, it is possible to speculate that fully able passengers could select to move to a different coach in the train if they found the accessibility coach uncomfortable or crowded.

Within the wayfinding circuit, the various choices that can be made are influenced by affordances. Affordances help control the desired use of the space, which is why passengers do not crawl over the seats to get to the interior of the train and use the isle instead. Nearly every part of the GO Train service affords or prohibits an action, from the raised platform to afford boarding the trains to the curvature of the seats to afford comfortable seating. Each component of how the coach is specifically built had to consider what its function would be and how it would afford this function. For example,

the accessibility coach is outfitted with neon yellow emergency buttons. The button shape indicates that they can be pushed but the colour indicates that it should be pushed in an emergency. It is important to remember, however, that even though an object can afford or prohibit a certain use, it falls on the individual to make a choice to follow the visual cues. In the observations, there were several instances where passengers with some level of disability chose to not use the ramp to enter the train and used the step instead. Typically, stairs afford entrance to the train if you have the full ability to use them, whereas a ramp affords those without full physical ability to use when entering or exiting the train. Some atypical disabled users, however, decided to ignore the visual cues they were given and use the stairs anyway. There were also several instances where passengers either chose or were forced to stand for the duration of the trip because the seats were occupied. The space is purposely designed to afford users to be comfortably seated during the trip. In this sense, the service failed to provide passengers with the primary intention of being seated during the trip and passengers were forced to adopt the secondary intention of standing. These occurrences support Gibson's (1966) idea that individuals have agency when selecting how they will respond to visual cues. These occurrences also support the concept of affordances that asserts how these "...are defined with respect to the user's individual situation, rather than from the perspective of an omniscient observer" (Kannengiesser and Gero, 2012, p.51).

Observational findings also clearly illustrated the patterns of division between able and disabled passengers in the specified zones. The data indicates that disabled users are primarily in Zones 1 and 2A, while able users are primarily in Zone 2B and 3. Various attributes of the space afford this trend of separation to occur. For example, it

seems logical that people who enter at Door A -- an accessibility entrance -- will sit near this door. These trends mean that there is a general separation between those who are physically able and those who have some level of disability. An even more drastic trend, indicated by the data, was that passengers who were the highest on the disability scale were completely isolated to Zone 1 where no other rider was present. These trends illustrate the arguments accessibility scholars have regarding Western society's negative opinions of disabled individuals as well as the separation of able and disabled in our social spaces.

In Zone 1 and 2A, it was noted that there was a higher concentration of disabled users and a higher concentration of older users. Older generations will begin to rely more heavily on public transit to address their “utilitarian (primary) needs; affective (secondary) needs; aesthetic (tertiary) needs” (Musselwhite & Haddad, 2010, p.27). Since elderly individuals often lose access to personal vehicles they will rely on services such as the GO Train to access external things – to live their day-to-day lives, and participate in social interactions. They will use public transit to feel like they have independence and control over their life. Public transit will also be used purely for the joy of traveling. This demographic will heavily rely on the GO Train so, if it is a service that alienates them, GO Transit will not be providing a successful service for a growing population of the Greater Toronto Area which will ultimately affect the quality of life of the elderly. Furthermore, it encourages a negative association between this age group and an overall lack of ability.

DISCUSSION

Based on the findings, there are some suggestions for improvement that GO Transit can implement to enhance their service for passengers with accessibility needs. These suggestions include providing more than one accessibility coach throughout the train so passengers with accessibility needs can have the same amount of choice as their able bodied peers. The next would be to create flexible seating areas so that both able and disabled persons can be seated together. This may require flexible seating and a variety of areas that can accommodate mobility devices mixed in with other seating options to create alternative environments. GO Transit may also need to monitor the number of users and their patterns of use in an atypical way to improve the design of the interior coach of the train. Monitoring user patterns needs to be a continuing process because patterns of use can shift or change over time. By understanding how all these pieces fit together the service is closer to incorporating *universal design*, which is defined as a “disability-inclusive architectural design approach” (Audirac, 2008, p. 4). Universal design, when applied, creates a more usable service for all those who experience it, not just for those with disabilities. Adopting these recommendations would strengthen the GO Transit’s train service to provide a more inclusive environment to its users regardless of their physical ability. These suggestions would also bring greater equality of choice to physically disabled riders and enhance quality of life. In terms of fulfilling AODA requirements, GO Transit shows they are committed to accomplishing its goals of creating a barrier free service before the 2025 deadline. GO Transit should ensure it continue to improve the service at the same pace and continue to report on the various

initiatives. Furthermore GO Transit should stay updated on the latest research within service design, environmental design and accessibility scholarship so that the latest thoughts and recommendations can be considered, especially since standards can change quickly.

Recalling that the term, “disability” stems from a period in history where the contributions of people with a “disability” were devalued by society, one could parallel this social separation with that of racial separation of public places seen in previous decades in North America. Although this separation may not be the intended outcome of the environment, by labeling the needs of someone with a perceived disability we are automatically separating them from what is seen as the norm because they have to be accommodated. As a result, those people who are perceived to be disabled risk being excluded from participating in social society because they are designated to certain zones. “Segregation, whilst promoted as ways to help assimilate disabled people in society through empowerment and independence, perpetuates disablism by labeling disabled people as different, as needing specialized and segregated facilities” (Kitchin 1998, p.346). The accessibility coach of the GO Train demonstrates that there is this designated area and although it is helpful to those who need it, it encourages this underlying negative opinion of those who are different.

Acknowledging the separation that occurs between able and disabled in our society is also important when examining how elderly people generally transition from the able category to the disabled category. Of those who had some physical disability, a high percent were older in age. This means that as a person ages they are more likely to be excluded from participation in social society as they become more reliant on

accessibility services. “Ableism and ageism incorporate normative ideas of uniformity... the ideal human body is a body that has not lived a long time and does not have any of the features designated as impairments” (Overall, 2006, p. 132). This indicates that as you moves away from the ideal state of ‘young and able’ you become more likely to be excluded.

Despite aiming to maintain objectivity throughout this process, this major research paper is not without its limitations. I have only observed a small sample of behaviour and occurrences in the research space and there may be different results in different areas of the train. In addition, this research may not be accurate when applied to other transportation systems. Furthermore, different results may occur in regions where social customs are not the same as Western ideologies. During data collection, I made assumption on age and ability based on what I could see. This means that there may be some inaccuracies with age and the actual level of disabilities people had. This major research paper does not interact with any users of the space so I am drawing conclusions based on how I have interpreted what occurred. There is a possibility that individuals may not agree with what is presented here but, again, my conclusions have come from my personal observations and were informed through the literature. In addition, my classification of each rider’s ability is based on what I was able to observe. Therefore, unobservable factors such as a heart or respiratory condition may contribute to a rider’s level of accessibility, which could contribute to their use of the GO Train.

To further enhance and validate the conclusions drawn from this study, further research should be conducted. Future research should study all lines of the GO Train service to see if they reflect similar patterns. Additionally, the entire service period

should be examined from the point a rider enters the GO Transit premises, purchase their ticket, through their navigation of the station, platforms and trains, and their exit of the premises. Next steps could also include conducting qualitative interviews with disabled users to see how they perceive their experience on the train. This would reveal a deeper understanding of the physiological impact of social spaces on the people who use them. An examination into how those with cognitive impairments experience the train would also be helpful. Finally, examining other transportation services within the city would give a comprehensive overview into how Toronto's transportation services operate.

Finally, this major research paper reveals that understanding public spaces and services cannot simply use service design concepts, accessibility scholarship or social separation theory in isolation. Despite GO Transit's efforts to abide by AODA standards, instances of social separation still occur in the space. This demonstrates that service design theory does not always serve the interpersonal needs of a user. Instead, the blending of approaches is required to fully understand the intricacies of the space or service and the holistic nature of those who use it. Furthermore, a successful space or service from a service designer's perspective does not necessarily mean that the space or service is fulfilling social needs such as inclusion, participation and choice. In order to create a realistic service, people will have to be classified based on their needs. This classification will, by nature, situate one group or individual over the other and separate people. Service design requires a balance between providing realistic and usable services and understanding the social implications of providing designed service spaces. Service design theory and social theory as ideological frameworks for investigation help uncover qualities of spaces that would not be understood if one framework was used on its own.

By incorporating both perspectives we are more likely to encounter services that are usable and also reflect the social needs of all those that use a service or space. These improved services and spaces may influence how people perceive individuals with accessibility needs and allow individuals with accessibility needs to be seen as persons who have different qualities rather than a defining quality that reduces their value.

CONCLUSION

In summation, this major research paper examined accessibility and transportation through a spatial analysis of the GO Train's accessibility coach using service design theory. Through this combined theoretical and practice-based examination, social power struggles between those with disabilities and the way we classify these individuals, as well as the implications of this classification, were deconstructed. GO Transit does provide a relatively successful service for those with accessibility needs and those without. However, social exclusion and the separation of able from disabled riders is still prevalent in a transportation space. It may be difficult to fully eradicate exclusion from public spaces but this research paper and continuing research can act as a step towards improved inclusion within public spaces for individuals with or without disabilities.

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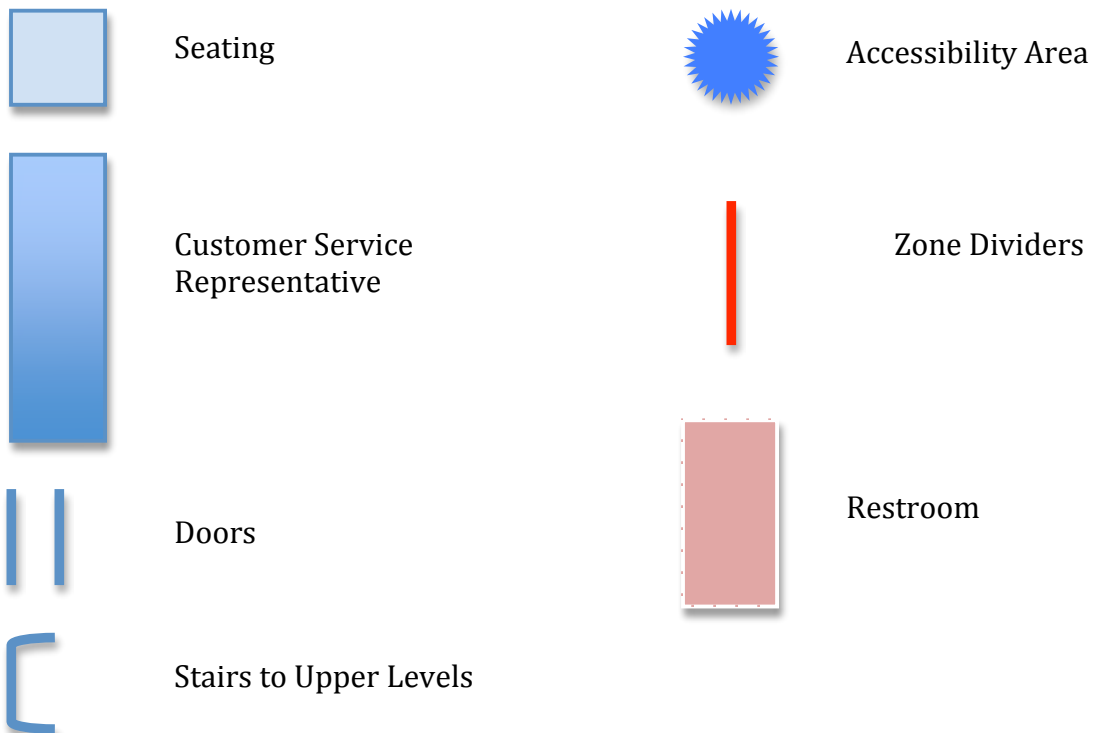
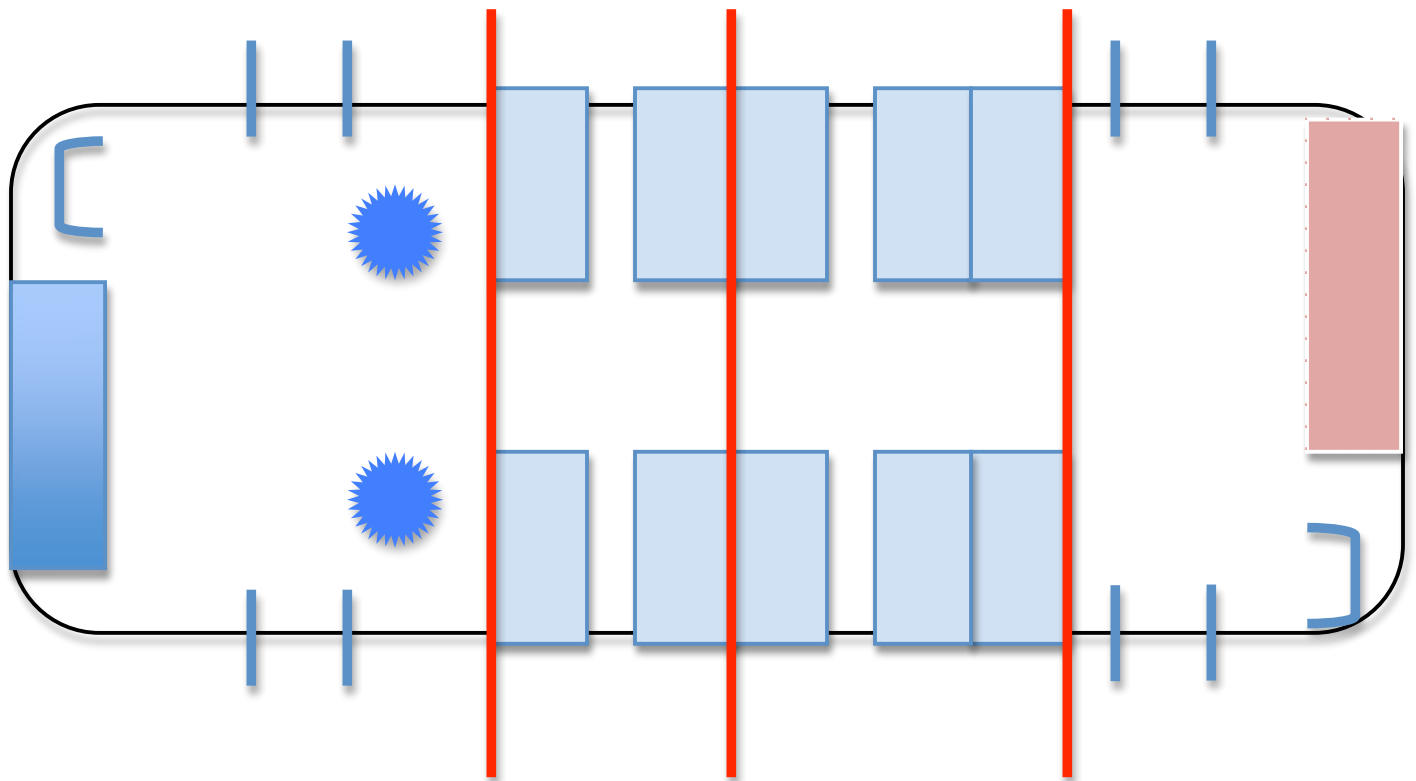
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APPENDICIES

Appendix A: Physical Disability Scale

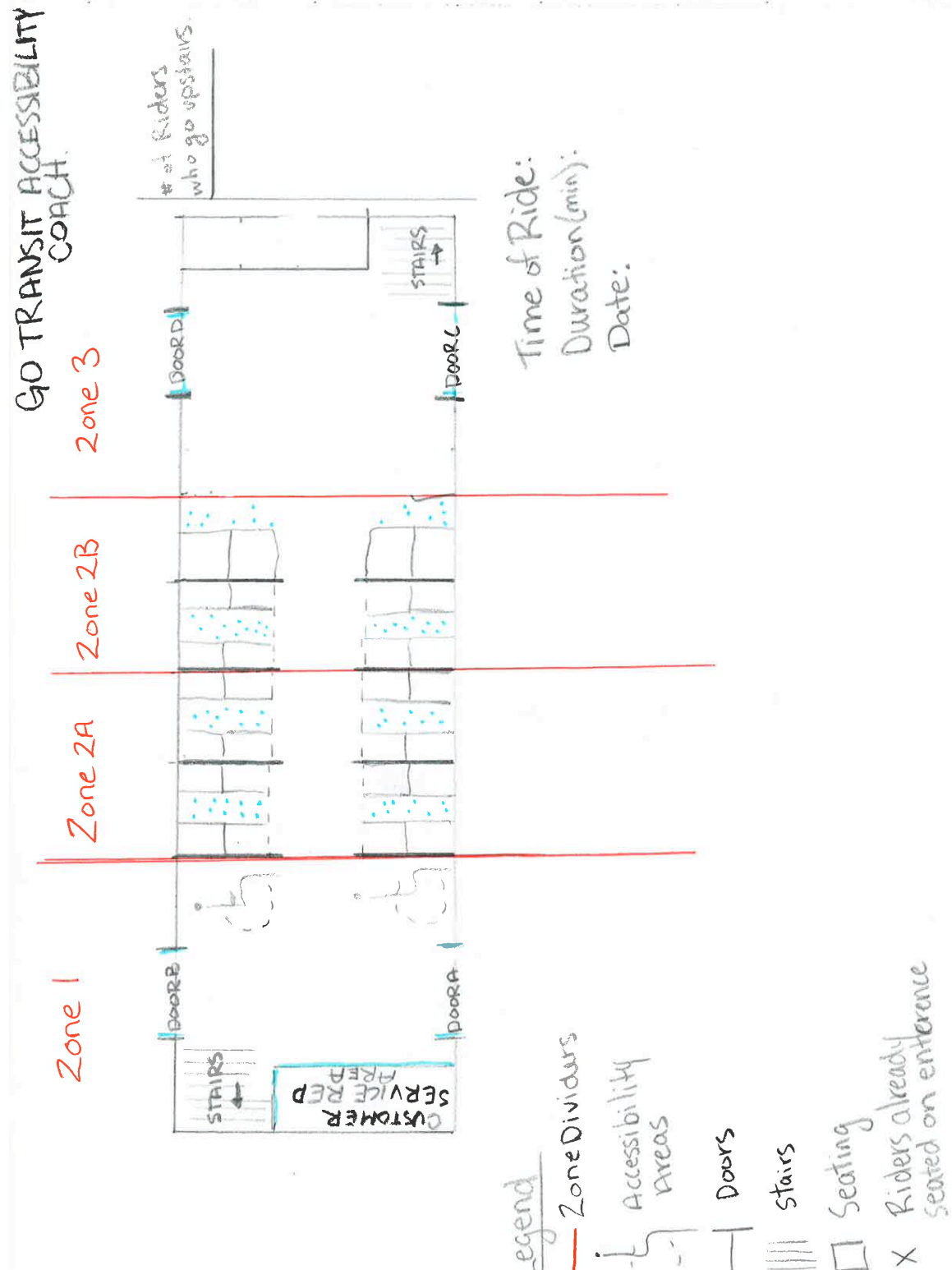
Number on Scale	Description
1	Fully Physically Able
2	Limp or Physical Struggle with no aid
3	Walking aid using one hand (Ex. cane)
4	Walking aid using both hands (Ex. walker)
5	Fully Disabled (Ex. Wheelchair)

Appendix B. Approximate Blueprint of Area



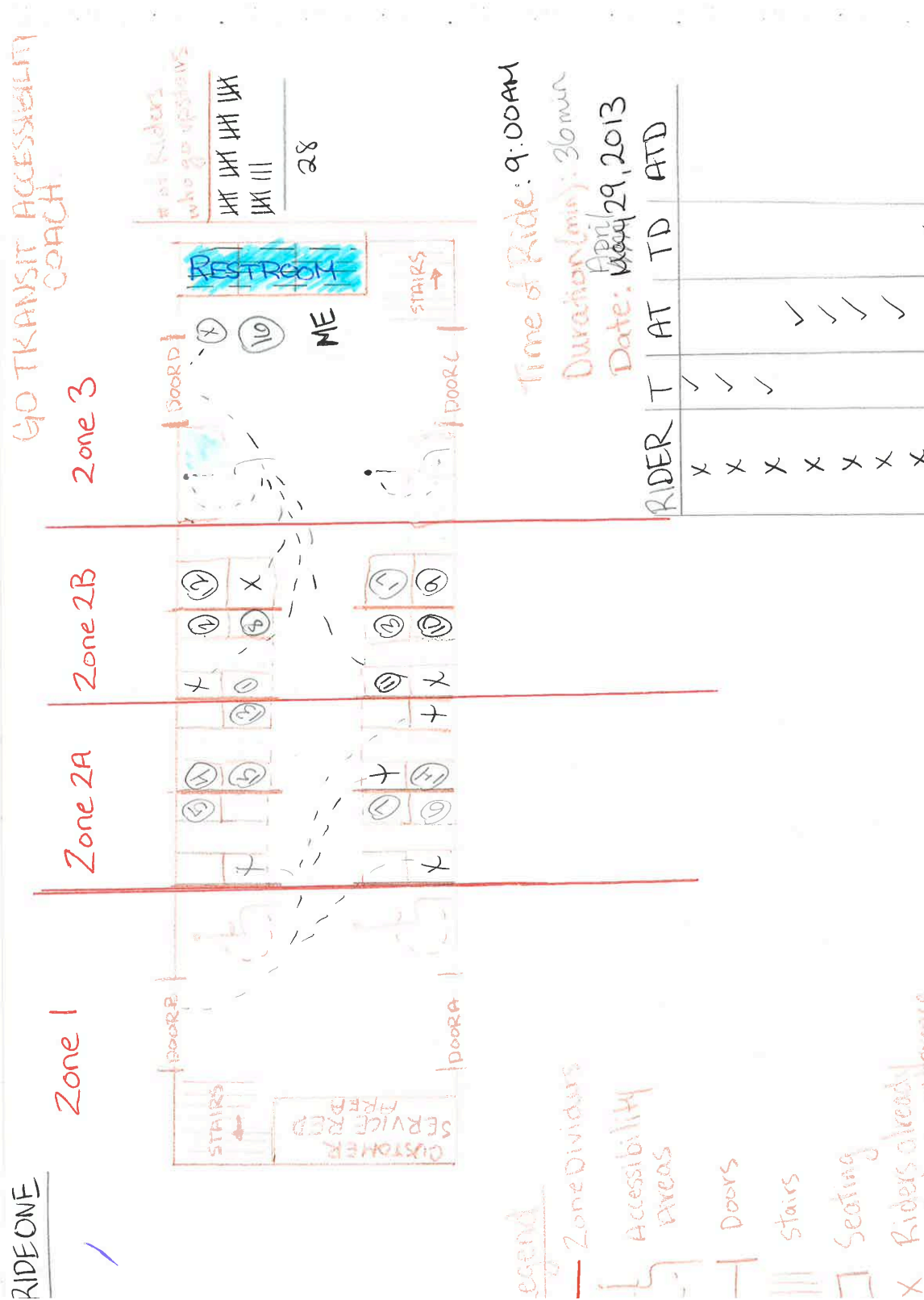
Appendix C. Collected Data

Appendix C.1 Blank Template



USER	DISABILITY LEVEL	AGE	PHYSICAL MOVES	# of Touch Points	OTHER
①	1 2 3 4 5				
②	1 2 3 4 5				
③	1 2 3 4 5				
④	1 2 3 4 5				
⑤	1 2 3 4 5				
⑥	1 2 3 4 5				
⑦	1 2 3 4 5				

Appendix C.2 Ride One



USER	DISABILITY LEVEL	AGE	PHYSICAL MOVES	# of Touch Points	OTHER
1	1 2 3 4 5	45-60	Enters C, Zone 2B, Exit D	III	
2	1 2 3 4 5	45-60	"	III	
3	1 2 3 4 5	45-60	"	III	
4	1 2 3 4 5	30-45	"	III	
5	1 2 3 4 5	30-45	Enters A, Zone 2A, Exit B	III	6-limping
6	1 2 3 4 5	60+	Enters A, Zone 2A, Exit B	III	
7	1 2 3 4 5	60+	"	III	Laboured Movement
8	1 2 3 4 5	18-30	Enters C, Zone 2B, Exit D	III	
9	1 2 3 4 5	18-30	Enters C, Zone 2B, Exit D	III	
10	1 2 3 4 5	18-30	"	III	
11	1 2 3 4 5	30-45	"	III	
12	1 2 3 4 5	30-45	"	III	
13	1 2 3 4 5	45-60	"	III	
14	1 2 3 4 5	45-60	Enters C, Zone 2A, Exit B	III	
15	1 2 3 4 5	45-60	Enters A, Zone 2A, Exit B	III	
16	1 2 3 4 5	45-60	Enters C, Zone 2B, Exit D	III	stands
17	1 2 3 4 5	30-45	Enters C, Zone 2B, Exit D	III	

GO TRANSIT ACCESSIBILITY
COACH.



RIDER	T	AT	TD	ATD
X		>	>	
X				
X	>			
X	>			
X	>			
X	>			

Legend

Accessibility Areas

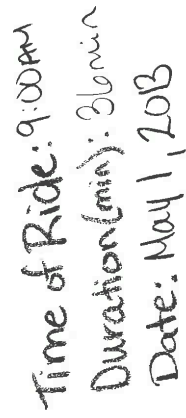
Doors

stairs

Seating

USER	DISABILITY LEVEL	AGE	PHYSICAL MOVES	# of Touch Points	OTHER
① T	1 2 3 4 5	18-30	Enters C, Zone 2B, Exit D		
② T	1 2 3 4 5	18-30	"		
③ T	1 2 3 4 5	30-45	Enters C, Zone 2A, Exit D		
④ D	1 2 3 4 5	60+	Enters A, Zone 2A, Exit B		Laboured Movement
⑤ D	1 2 3 4 5	60+	"		"
⑥ D	1 2 3 4 5	60+	"		"
⑦	1 2 3 4 5	18-30	Enters C, Zone 2A, Exit D		
⑧	1	30-45	Enter C, Zone 2B, Exit D		
⑨	1	30-45	Enter C, Zone 2B, Exit D		
⑩ T	1	30-45	Enters C, Zone 3, Exit D		
⑪ T	1	45-60	Enters C, Zone 2A, Exit D		
⑫ T	1	45-60	Enters C, Zone 2B, Exit D		
⑬ T	1	45-60	Enters A, Zone 2A, Exit B		
⑭ T	1	45-60	"		
⑮ D	3	45-60	"		Cane
⑯ T	1	18-30	"		
⑰ T	1	18-30	Enter C, Zone 2B, Exit D		
⑱ T	1	18-30	"		
⑲ T	1	30-45	Enter C, Zone 2A, Exit D		
⑳ T	1	30-45	Enter C, Zone 3, Exit D		Stands for Duration of trip
㉑ T	1	30-45	"		"

GO TRANSIT ACCESSIBILITY
COACH.

[illegible]

Legend

- Zone Dividers
- Accessibility Areas
- Doors
- stairs
- Seating
- ✓ Riders already

USER	DISABILITY LEVEL	AGE	PHYSICAL MOVES	# of Touch Points	OTHER
1	1 2 3 4 5	30-45	Enters A, Zone 1, Exit B	III	Wheelchair
2	1 2 3 4 5	60+	Enters A, Zone 2A, Exit B	III	Laboured Movement
3	1 2 3 4 5	60+	"	III	Laboured Movement
4	1 2 3 4 5	18-30	Enters C, Zone 2A, Exit B	III	
5	1 2 3 4 5	18-30	Enters C, Zone 2A, Exit D	III	
6	1 2 3 4 5	30-45	Enters C, Zone 2B, Exit D	III	
7	1 2 3 4 5	30-45	"	III	
8	1	30-45	"	III	
9	1	45-60	"	III	
10	1	45-60	"	III	
11	1	45-60	Enters C, Zone 3, Exit D	III	Stands
12	1	18-30	"	III	"
13	1	18-30	Enter C, Zone 2B, Exit D	III	
14	1	30-45	"	III	
15	1	30-45	Enters C, Zone 2A, Exit D	III	
16	1	45-60	"	III	
17	1	30-45	"	III	
18	1	45-60	"	III	
19	2	60+	Enter C, Zone 2B, Exit D	III	Laboured Movement

RIDE FOUR
 GO TRANSIT ACCESSIBILITY COACH.

Zone 1	Zone 2A	Zone 2B	Zone 3
DOOR STAIRS CUSTOMER SERVICE RED	DOOR STAIRS 9 4 6 2 1 3 5 7 8 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 50		

Time of Ride: 9:00 AM
Duration (min): 35 min
Date: May 2 2013

ROER	T	AT	TD	ATD
x x x x x x x x x x			>>	>>
		>> >		
	>>>>>			

Legend

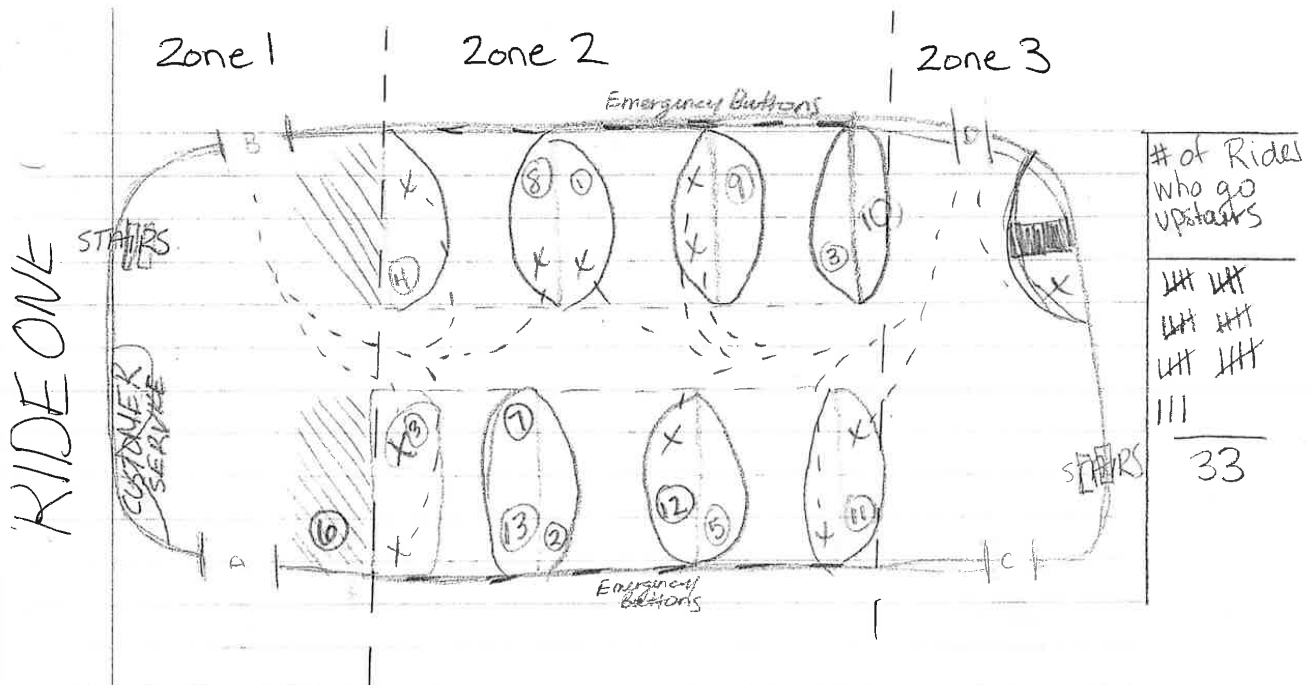
- Zone Dividers
- Accessibility Areas
- Doors
- Stairs
- Seating
- Doors already

USER	DISABILITY LEVEL	AGE	PHYSICAL MOVES	# of Touch Points	OTHER
D ①	1 2 3 4 5	60+	Enter A, Zone 2A, Exit B	III	Walker
K ②	0 2 3 4 5	60+	" "	III	
K ③	0 2 3 4 5	60+	" "	III	Cane
D ④	1 2 ③ 4 5	60+	" "	III	
I ⑤	0 2 3 4 5	30-45	Enter C, Zone 2B, Exit D	III	
I ⑥	0 2 3 4 5	18-30	" "	III	
I ⑦	0 2 3 4 5	18-30	" "	III	
I ⑧	1	18-30	" "	III	Extremely overweight
D ⑨	2	30-45	Enter C, Zone 2A, Exit D	III	
I ⑩	1	30-45	Enter C, Zone 2B, Exit D	III	Stands for Duration
I ⑪	1	45-60	Enter C, Zone 3, Exit D	III	
I ⑫	1	45-60	Enter C, Zone 2B, Exit D	III	Stands
I ⑬	1	45-60	Enter C, Zone 3, Exit D	III	
I ⑭	1	18-30	Enter C, Zone 2B, Exit D	III	
K ⑮	2	60+	Enter A, Zone 2B, Exit D	III	Laboured Movement
D ⑯	5	18-30	Enter A, Zone 1, Exit B	III	Wheelchair
K ⑰	1	30-45	Enter C, Zone 3, Exit D	III	Stands for Duration of Trip

[illegible]

USER	DISABILITY LEVEL	AGE	PHYSICAL MOVES	# of Touch Points	OTHER
D ①	1 2 3 4 ⑤	30-45	Enters A, Zone 1, Exit B		Wheelchair Laboured Movement Cane
D ②	① 2 3 4 5	60+	Enters A, Zone 2A, Exit B		
D ③	1 2 ③ 4 5	60+	" " "		
H ④	0 2 3 4 5	30-45	" " "		
H ⑤	① 2 3 4 5	30-45	" " "		
H ⑥	① 2 3 4 5	45-60	Enters A, Zone 2A, Exit D		
T ⑦	① 2 3 4 5	45-60	Enters C, Zone 2B, Exit D		
T ⑧	1	45-60	" " "		Laboured Movement Stands Laboured Movement Cane
T ⑨	1	45-60	" " "		
H ⑩	2	60+	Enters C, Zone 2B, Exit D		
T ⑪	1	60+	" " "		
H ⑫	2	60+	" " "		
H ⑬	3	60+	Enters C, Zone 2B, Exit D		
T ⑭	1	30-45	Enters C, Zone 2B, Exit D		
T ⑮	1	45-60	Enter C, Zone 2A, Exit D		Crutches
T ⑯	1	45-60	" " "		
D ⑰	4	18-30	Enters A, Zone 2A, Exit B		
H ⑱	1	30-45	" " "		
H ⑲	1	16-30	Enters C, Zone 2A, Exit B		

Appendix D. Pilot Data



Interaction Points (Touch Points)

Zone Dividers.

—+— Doors

/// Disability Area

○ Seating Areas

■ My Location

X Riders already seated on entrance = 11 riders

--- Exit Path of Seated Riders

○ Ride taken @ 9 AM
March 20, Oakville to Toronto Union Station.

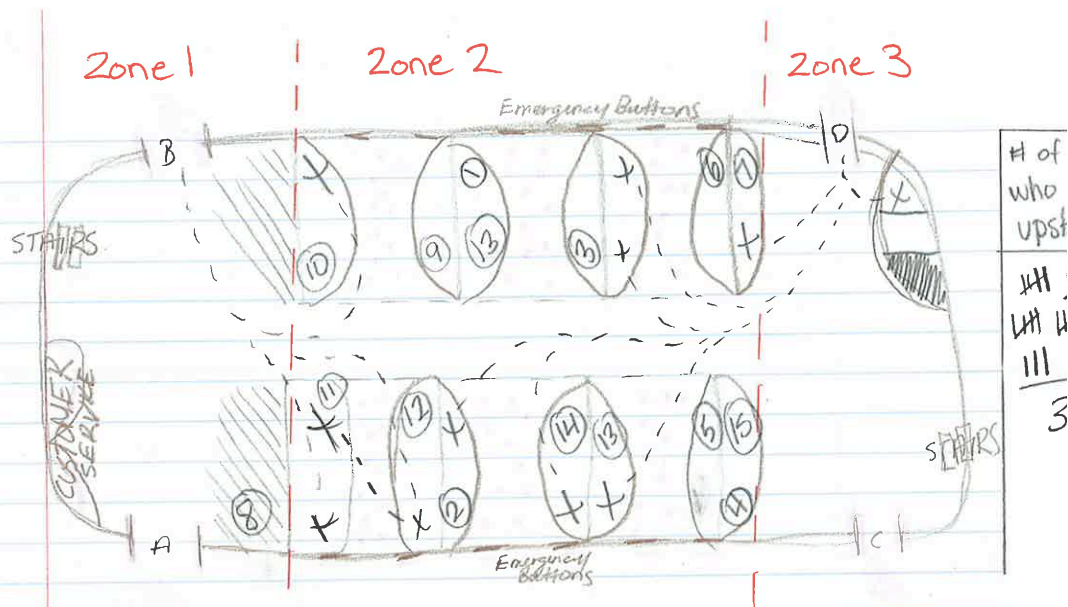
Total Time: 35 min.

	RIDER	T	AT	TD	ATD
Exit B	X		✓		
	X		✓		
	✓		✓		
	X3			✓	
	X	✓			
Exit D	X	✓			
	X	✓			
	X	✓			
	X	✓			
	X	✓			
	X	✓			
	11	7	3	1	0

USER	LEVEL OF DISABILITY	AGE	PHYSICAL MOVES	# of TOUCH POINT INTERACTIONS	OTHER NOTES
① T	-	18-30	Enters through door C, sits in Zone 2	2+1	
② T	-	30-45	" " " " Exit D	2+	
③ T	-	30-45	" " " " Exit D	2+1	
④ TD	3	60+	Enters through door A, sits in Zone 2 - Ex. B	3+2	Can't in hand
⑤ AT	-	60+	" " " " Exit D	3+1	
⑥ TD	5	30-45	Enters A, Sits Zone 1, Exits B	3+1	tasks to customer service
⑦ TD	4	60+	Enters A, Zone 2, Exits B	3+2	
⑧ AT	-	18-30	Enters A, Zone 2, Exits B	3+2	
⑨ T	-	18-30	Enters C, Zone 2, Exit D	2+1	
⑩ ATD	2	30-45	Enters C, Zone 2, Exit D	2+1	Limp, Obese
⑪ T	-	18-30	Enters C, Zone 2, Exit D	2+1	
⑫ T	-	18-30	Enters C, Zone 2, Exit D	2+1	
⑬ T	-	18-30	Enters C, Zone 2, Exit D	2+1	

Set up for people to do

RIDE TWO



Interaction Points (Touch Points)

Zone Dividers.

— | — Doors

▨ Disability Area

(Seating Areas

▨ My location

X Riders already seated on entrance = 10 riders

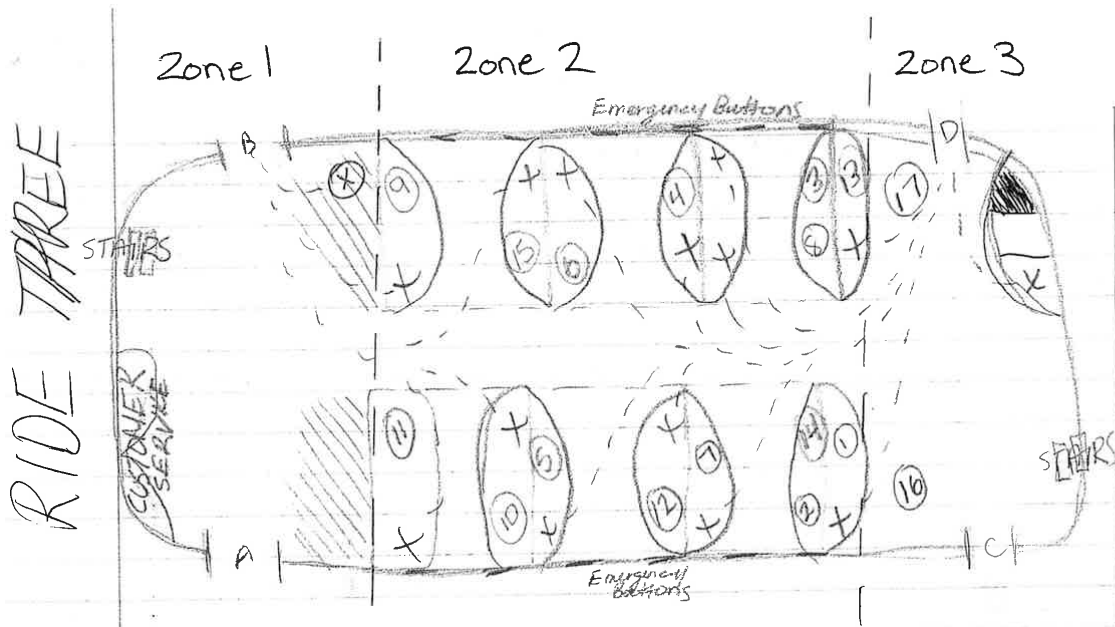
	RIDER	T	AT	TD	ATD
Exit B	x		✓		
	x		✓		
	x		✓		
Exit D	x	✓			
	x	✓			
	x	✓			
	x	✓			
	x	✓			
	x	✓			
	10	7	3	0	0

• Ride taken @ 9AM
March 21, Oakville to
Toronto Union Station

Total Time: 36min.

RIDE TWO

USER	LEVEL OF DIFFICULTY	AGE	PHYSICAL MOVES	# TOUCH POINT INTERACTIONS	OTHER NOTES
AT ①	1	18-30	Enters A, Zone 2, Exit D	4	
AT ②	1	45-65	"	3	
T ③	1	45-65	Enters C, Zone 2	3	
T ④	1	30-45	"	3	
ATD ⑤	2	65+	"	3	Struggled to use steps.
T ⑥	1	18-30	"	3	
T ⑦	1	18-30	"	3	
TD ⑧	5	30-45	Enters A, Zone 1 Exit B	4	wheelchair
TD ⑨	3	65+	Enters A, Zone 2, Exit B	5	cane, Together converging
TD ⑩	3	65+	Enters A, Zone 2	5	already seated passengers moves to allow the
TD ⑪	4	65+	Enters A, Zone 2	5	cane seat space for walker
AT ⑫	1	30-45	Enters C, Zone 2	4	
T ⑬	1	45-65	"	4	



Interaction Points (Touch Points)

Zone Dividers.

Doors

Disability Area

Seating Areas

My location

X Users already seated on = 15 users entrance

-- exit path of already seated.

• Ride takes place @ 9AM, March 22
Oakville → Toronto, Union Station
Total time: 34 min

	RIDERS	T	AT	TD
Exit B	X		✓	
	X		✓	
	X		✓	
	X		✓	
	⊗			✓
Exit D	X	✓		
	X	✓		
	X	✓		
	X	✓		
	X	✓		
	X	✓		
	X	✓		
	X	✓		
	X	✓		
	X	✓		
		10	4	1

RIDE THREE

customer service person
puts out ramp each stop
reminds people to give priority
to disabled

USER	LEVEL OF DISABILITY	AGE	PHYSICAL MOVES	# of TOUCH POINT INTERACTIONS	OTHER NOTES
T ①	1	30-45	Enters C, Zone 2, Exit D		
T ②	1	30-45	" " Exit D		
T ③	1	45-65	" " "		
T ④	1	45-65	" " "		
T ⑤	1	18-30	" " "		
T ⑥	1	18-30	" " "		
T ⑦	1	18-30	" " "		
T ⑧	1	30-45	" " "		
AT ⑨	1	45-65	Enters A, Zone 2, Exit B		
AT ⑩	1	45-65	" " "		
TD ⑪	3	65+	Enters A Zone 2		
T ⑫	1	18-30	Enters C, Zone 2		
T ⑬	1	45-65	" " Exit D		
T ⑭	1	18-30	" " "		
T ⑮	1	18-30	" " "		

Appendix E. Journal Entries

Jan. 28, 2013 - The MRP has already started to take up a severe amount of mental space in my brain. After having my first official meeting I feel like I have a good indication of the general direction I want to go, although that path is very broad still. I am going to look at an object that steams from my own personal experience as a passenger on the GO Transit train system. I spend a significant amount of time on this form of transportation as a commuter and think that it is a good site to examine in terms of how the space communicates and what it communicates to its users. As a result, I hope to do a spacial analysis of the train environment. I am interested in how this space exerts power over the user, especially in terms of how it exerts power over those who have limited mobility. Since technology is supposed to be an extension of the body, I think it would be interesting to look at how effectively this form of technology extends our ability to travel and the way we travel from one point to another - especially from the point of view of a physically disabled user. Some other questions I am interested in or have asked myself are: What about the environment encourages certain behavior? How does it control, influence or shape our thoughts and behaviours? What are the implications for the users? What are the implications to society as a whole? What ideologies are present in the space? How does the space maintain or enforce these ideologies?

My next steps will be to do a scan of the research that has already been done in the area of policy and practice, service design, accessibility, information design and environmental manipulation. In addition, I will probably also look at theories of power and discourse from the critical perspective. I am still unsure of how I will actually gather data and the way I want to conduct that portion of the MRP but hopefully as I go through the literature I will get a better idea of how to approach it. Having a better understanding of my approach will also help me decide whether or not I need to get ethics approval too.

Finally, I am very happy to be where I am now in this whole process, especially since nearly a week ago I still didn't have a supervisor and I was completely stuck on a topic to do. ONWARDS!

Feb 4, 2013 - The past week I have really dedicated myself to trying to come up with some research questions that I can start using for my project. I am well aware that these very well might not be the questions I finish with but it was a struggle to try to find some that I thought were even good enough to write down. These are some of the potential research questions I have come up with. 1) Should GO Transit be used as a model of best practice in accessible design for users with mobility issues? 2) Does GO Transit effectively and fairly move its users 3) Why does looking at GO Transit's accessibility matter? 4) Does the physical structure of the trains maintain a social structure that privileges the mobile over the non-mobile? I think to begin, these questions will be good guides for my research and look at a few different aspects of my research site.

I have started to do background research on GO Transit by looking at their website, the information posted there and the downloadable resources they have available. I am particularly interested in their vision statement, their accessibility documents and their strategic plan. I find it interesting that their accessible information is not mentioned in their overall strategic plan and that the two are separated from each other. In addition to this research, I have read a textbook on user design and I am trying to understand the fundamental purpose of this type of work to see how I can fit it into my research and paper. My next step – research-wise – is to look at more scholarly articles and see what kind of work has already been done to examine similar things that I am looking at.

I looked over some of the ethics information and I think I am going to be able to conduct my study without having to get ethics review – YAY!

Additionally, this past week has really made me think about my stance on my project in terms of bias. I certainly have preconceived notions of my study site because I am familiar with it and use it everyday. I am a little worried that I have an already standing idea of what my outcome should be. I think it is something I will have to remain conscious of so that I do not make generalizations based on how I see things. This will really call for me to be reflexive and constantly question the conclusions I come up with.

Feb 25, 2013 - Since I won't be conducting interviews for my MRP I didn't find the chapter on interviews particularly helpful. It will, however, be helpful in my next assignment for this class. I think I will be conducting an informant interview to gain knowledge from those who are experienced and knowledgeable. I am thinking I may interview my MRP supervisor because my supervisor has expertise in one of the fields/components of my research. I think that will also be helpful for background for my MRP and also to spike interest in what I am doing since I am going to be conducting observational research only.

I feel like I am in a bit of a stand still with my MRP research. I am waiting to get some feedback on my first research assignment and I think that will help me make my next steps. I have already received some feedback from my supervisor on the assignment and they have provided me with some new theorists to explore. It has been suggested to me that I look at service-scape, work done in service blueprinting and work done in way finding design. It is also suggested that I go through the AODA document that outlines Ontario's commitment to accessibility in a very thorough and in depth way.

I have gone through the process of seeing if I need to submit an ethics review and thankfully they indicated to me that I do not have to go through that process. I think it would have been an interesting project to talk to people that use the space that I am analyzing but I think that they would turn into two very different projects. I am happy with my approach and I think it will be an interesting way to look at space and how it is used.

March 4, 2013 - In the past week I have reviewed quite a bit of my Act One document with my supervisor and have also considered the comments I received on the actual assignment. I am starting to get a lot more focused, in comparison to where I started, on what I will be actually looking at in my paper. I have come to realize that I will be approaching my paper from a very practical perspective and it will focus more on practical and applied design theory than the traditional theory I am usually used to

working with. This will be a challenge for me because I will be approaching something from a place that I am unfamiliar with but at the same time I am excited to be doing something that is a bit different than my peers.

My supervisor and I worked on creating a topic statement that would help me focus my research and potential research questions. This is still a beginning point and will need to be finessed. My initial statement is as follows: The research paper will explore how the design of GO Transit Trains meet the transportation needs or mobility functions for partially or fully physically disabled people. This topic statement centers on the topics of transportation and accessibility and looks at how that relationship constrains the participant in any way. Through looking at this relationship I hope to uncover some social issues that lie within the elements of design theory. I am limited to my speculation about these social issues because I don't want to influence my findings.

My research questions are now going to be more tangible than the ones I had previously thought of. Some examples of these kinds of questions are: How has the train been designed? Below this main research question will be sub questions that look at more specific parts of the design of the train such as: How does the design of the train influence flow of traffic? What are the access points for those people with physical disability? What are the points of interaction for those people with disability? These questions have the potential to be answered and through answering these questions I hope to be able to look at deeper implications. I will have to keep in mind that this isn't the same scope as a thesis and I will probably not be able to look as deeply into social issues as I would like.

March 18, 2013 - I am feeling really positive about my MRP right now. Once Act 2 got me thinking about how I am actually going to conduct the research portion of the paper I have been seriously considering how I am going to mine the data I need. There will definitely be challenges to collecting my data. I had a hard time imagining how I would go through the process of coding and categorizing my data because my data is not just text. Instead, my data will come from observations that are then sorted, and then that

sorted and interpreted information will be coded. This will require a bit more time and dedication but in the end I think I will end up with a really rich set of data, which is the point of conducting research.

My next steps in my MRP and also for Act 3 of the course will require me to create a better working data collection sheet that I can use to conduct my fieldwork. This will have to include a map of the research site and various tables that I can record my data in. I have decided that I am going to record the same ride on the GO Train for a duration of 2 weeks. This means that I will come away from my research site with several hours of information. I am hoping during this time that I will get enough data to work with but, of course, if necessary I will spend more time in the research site.

I can really see how my paper will start to take shape, which is something that I was really struggling with before. I am starting to see ideas for my literature review take shape and I can definitely see that my methods and analysis will take a significant amount of time.

As I have mentioned before, I have to spend more time going through scholarly sources so that I have a really comprehensive grasp on the scholarship. I still have many sources that I need to look at. It is taking a lot of time to go through everything though. Just have to keep at it.

April 6, 2013 - Act three has really solidified the way I am going to collect and analyze my data. It has also exposed some limitations that I will have to be aware of during this phase of the MRP. There is always room for human error in data collection and interpretation. The area that is being researched is also just a piece of the total area that is used to transport riders. There is also a mid-level and upper-level available to riders but they are not included in this research because there is no way for people with disability to reach these areas since stairs are the only way to access them. In addition, there would be too much data for one person to collect if all levels of the car were observed. To the best of my ability I have tried to document them exiting the train to represent them as users of

the total space. Although collecting data from the same time each day provides a level of consistency in the research it is also leaving out a considerable amount of data from the other times of the day, which may yield different results. Another limitation is that it is very difficult to confirm whether or not people have the same behaviour every time they use the service. I would assume that people operate in a pattern and have certain ways of using the service that are repeated each time the train is used. I make this assumption based on my own use of the train and the use of other people that I know take the train. I may have to develop some ways to alter my data collection to yield more detailed results. For example, I may divide zone 2 into smaller areas to help better describe the movements in the area. Additionally, I may need to find a way to collect more detailed data on the riders that are already located on the train. These adjustments to my data collection may help me create results that show a deeper understanding of the space and the behaviours exhibited in the space.

After my Act 4 presentation, I am abundantly aware that I need to look at more literature. I have to find more support and framing for my paper and that is what I will be working towards for my proposal. Other than that, I am feeling pretty good about the remainder of the proposal.

I am also getting to the point where I want to get into the meat of writing this thing. I feel like we have been talking about it so much that it just needs to happen now.

Appendix F: GO Train Time Table for Oakville to Union

EAST/EST			
Depart/ Départ Oakville	Arrive/ Arrivée Union	Depart/ Départ Oakville	Arrive/ Arrivée Union
05 00	05 20	11 28	12 11
05 00	05 40	11 58	12 41
05 30	06 10	12 28	13 11
05 58	06 38	12 58	13 41
06 26	07 06	13 28	14 11
x06 55	07 25	13 58	14 41
07 05	07 45	14 28	15 11
x07 15	07 43	14 58	15 41
07 25	08 11	15 38	16 23
x07 35	08 05	15 58	16 41
x07 47	08 15	16 28	17 15
x07 50	08 25	16 58	17 41
x07 58	08 32	17 35	18 16
x08 14	08 52	17 54	18 41
08 32	09 15	18 24	19 07
x09 00	09 33	18 58	19 41
09 28	10 11	19 28	20 11
09 58	10 41	19 58	20 41
10 28	11 11	20 28	21 11
10 58	11 41	20 58	21 41

EAST/EST			
Depart/ Départ Oakville	Arrive/ Arrivée Union	Depart/ Départ Oakville	Arrive/ Arrivée Union
21 28	22 11	22 28	23 11
21 58	22 41	23 28	00 11
Fx22 15A	22 44		

Oakville
Union

MINI SCHEDULE

Monday - Friday
(excluding holidays)

Du lundi au vendredi
(à l'exception des jours fériés)



A Division of / Une Division de
METROLINX

 Train trip/ Horaire des trains
 Bus trip/ Horaire des autobus

A - Trip does not operate starting August 31, 2013. - Le service n'est pas exploité à compter du 31 août 2013.

D - Stops to let off passengers on request only/ Arrêt sur demande seulement

x - Fewer stops/ Moins d'arrêts

* - Trip operates Monday to Thursday only/ Service offert du lundi au jeudi seulement

F - Trip operates on Friday only/ Ce trajet fonctionne les vendredi seulement