

Environmental Scan of the Impacts, Including Social Benefits, of Accessibility and Social Inclusion for Persons with Disabilities

Final Report

Full Version

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Executive Summary

Estimation of the Societal Benefits of an Accessible and Inclusive Canada

Understanding the magnitude of the economic benefits, including both social and market/financial dimensions, of an accessible and inclusive society is vital for policymakers attempting to set priorities and implement effective measures in this policy arena. Insights into these benefits can raise awareness of the magnitude of the cost of excluding persons with disabilities from full participation in society and identifying priorities and opportunities for more efficient allocation of resources. Estimating the economic benefits of accessibility and inclusion (or conversely the cost of exclusion) is an essential component of economic evaluation and impact analysis in this area. The total economic benefits and the per case benefits identified in this study are ideal for this purpose.

This study measures the gap between the current situation in Canada in terms of accessibility and inclusivity, and a counterfactual world that would include an implemented Accessible Canada Act (ACA) and, more broadly, an accessible and inclusive Canada. A society that is fully accessible and inclusive is the ideal. In practice, it is likely a continuous process of improvement.

The key question addressed by this study is:

What would be the benefits to Canadian society, in reference year 2017, if Canada was accessible and inclusive in all domains relevant to full participation?

The reference year 2017 was chosen because of the availability of a rich data source for that year, namely the Canadian Survey on Disability (CSD).

We note that only the benefits of an accessible and inclusive society are considered in this project. Invariably, there will be expenses/costs incurred by the public sector in developing and enforcing regulations, as well as in the delivery of goods and services associated with accessibility. For employers, there will be compliance costs and other expenses incurred in creating accessible and inclusive workplaces. Other organizations may also incur expenses/costs associated with the provision of accessible goods and services. These expenses/costs must be estimated as part of a full economic evaluation or impact analysis. Ideally, the benefits outweigh the costs at the individual stakeholder and aggregate level. The costing of regulatory development and enforcement, compliance activities and other expenses of creating accessible workplaces, and costs associated with the provision of accessible goods and services is not part of this project, but rather, will be undertaken as a separate exercise.

Literature that Informs the Model and Methods

Some related, applied work on the economic burden of injury and illness has been done in the occupational health and safety field and in the broader health sciences field. For example, Leigh (2011, 1997) has estimated the economic burden in the United States of work injury and illness across a range of conditions. The economic burden of injury and illness in Canada has been estimated by Health Canada (e.g., EBIC, 1998 and subsequent years). Many disease-specific costs of illness studies are also found in peer reviewed and broader literatures. These studies

estimate the economic burden based on a counterfactual scenario of no injury, illness or disease of the type being investigated. In the case at hand, a cost of exclusion study, one does not consider a counterfactual scenario of the absence of impairment or disability, but rather the absence of barriers to inclusion. Thus, a different conceptual approach needs to be developed to measure the cost of exclusion, or conversely the benefits of inclusion.

Some attempts have been made to estimate the economic benefits of accessibility and inclusiveness in certain domains of society, but the literature in this area is modest. To our knowledge, there is no study that has estimated the social benefits of an accessible and inclusive society in all domains for any country. In fact, to our knowledge, there is no study that draws on domestic and international expertise in order to propose and test a conceptual framework or specific methods for how to do so.

Development of a Conceptual Model

Given the modest literature base, we realized that there is much new terrain to explore in both conceptualizing and executing such a model. To facilitate the process, we took a multi-pronged approach in this project, which included synthesizing various studies that begin to explore components of the cost of exclusion, or conversely the benefits of inclusion. This synthesis informed the creation of our conceptual model.

Additionally, we undertook three parallel sub-studies to produce insights that were directly integrated into the model development. We provide a brief overview of our findings from each sub-study here. In the first sub-study, we undertook a scan of the international policy arena, including interviews with key informants and a review of existing international legislation and policy. In the second sub-study, we undertook a synthesis of Bill C-81 consultations via reports and briefings written by various stakeholder groups in Canada. In the third sub-study, we interviewed key informants from across Canada about their thoughts on the impacts/benefits of achieving the ideal of an accessible and inclusive Canada.

Key informants interviewed in the sub-studies emphasized the importance of including a broad spectrum of domains when considering the benefits of removing barriers to inclusion. Of significance, key informant consistently indicated that an accessible and inclusive Canada could have spillover effects beneficial to all members of society. For instance, increases in labour-force participation of persons with disabilities was cited by many informants as one of the most important benefits for people with disabilities as well as for the broader labour market. Many noted that labour productivity of both persons with and without disabilities would be improved. Other areas mentioned as being significant outcomes were higher quality of life (QOL), reduced human rights complaints, lower levels of dependency on social safety net programs, reduced health care expenses, increases in tourism and reduced caregiving burden, to name a few. We have included these areas identified by key informants into our conceptual model.

In our international environmental scan, we were surprised to find that no comprehensive work on the cost of exclusion had been undertaken within industrialized contexts. In fact, several of the individuals we spoke to in senior policy positions in other countries and with international organizations were pleased to hear of the work we were undertaking and were interested in following up with us when the project was complete. They noted the importance of such work

for impact analysis of new legislation, and that our work would be of great value for their efforts in this area.

In summary, gathering field knowledge and stakeholder thoughts on a vision of an accessible and inclusive society has greatly informed the development of our conceptual model. Our search for relevant literature to help with both the development of the conceptual model and its execution was met with the realization that we were exploring substantially new terrain.

Execution of the Conceptual Model

The final version of our conceptual model has 14 domains as follows:

1. Healthcare Expenses;
2. Out-of-Pocket Expenses;
3. Output and Productivity;
4. Quality of Life and Social Role Engagement;
5. Life Expectancy;
6. Informal Caregiving;
7. Children with Disabilities;
8. Human Rights;
9. Transportation;
10. Tourism;
11. General Productivity;
12. Administration of Social Safety Net Programs;
13. Pensions; and
14. Market Multiplier Effects.

These domains are summarized in the body of the core study. We note that the aggregation of benefits into distinct domains is secondary to ensuring that the model is comprehensive and includes all relevant areas that could be impacted.

To execute our model for the Canadian context, we used a bottom-up approach. As noted, our reference year for the benefits was calendar year 2017. We considered all relevant domains of society as identified by key informants and the literature and listed above, rather than estimating only a subset of the benefits. A societal perspective was taken, so that benefits accruing to all stakeholders directly and indirectly were included in the analysis. These benefits were aggregated across all stakeholders to identify the societal benefits in broad domains, in total and per capita. Given the interrelated nature of many of the domains, we sought to minimize overlaps in our estimation and aggregation. We note that the lack of data on key parameters in the conceptual model presented many challenges to its execution, but we borrowed and adapted data from various sources to fill in gaps.

Results of the Model Execution

A summary of the results of our model is presented in the table below. Total benefits were estimated at \$337.7 billion, or 17.6% of the Gross Domestic Product (GDP) in 2017, our reference year. In multiple one-way sensitivity analyses the maximum magnitude of benefits range was \$252.8 billion to \$422.7 billion, or from 13.1% to 22.0% of GDP.

The largest portion of benefits arises from improvements in the QOL and social role function for persons with disabilities, estimated at \$132.2 billion (6.9% of the GDP). The second largest benefits are attributed to increases in output and productivity associated with a higher level of labour-force participation and concomitant earnings of persons with disabilities. These benefits were estimated at \$62.2 billion (3.2% of the GDP). The spillover effects (i.e., benefits to other stakeholders, a composite of several of the domains listed above) were estimated at \$76.7 billion (4.0% of the GDP). The market multiplier effects (i.e., market effects associated with higher levels of disposable income of consumers) were estimated at \$47.3 billion (2.5% of the GDP). Averted healthcare expenses associated with improvement in the health of persons with disabilities were estimated at \$19.4 billion (1.0% of the GDP). On a per capita basis, total benefits are estimated at \$54,006 per person with a disability. The breakdown by component on a per capita basis (in order of magnitude) is \$21,156 per person from increases in QOL and social role engagement, \$9,957 per person from increases in output and productivity, \$12,273 per person for spillover effects, \$7,578 per person for market multiplier effects and \$3,100 per person for averted healthcare expenses.

Table. Total economic benefits of an accessible and inclusive society

Category	Healthcare expenses	Output and productivity	Quality of life and social role engagement	Spillover effects	Market multiplier effects	Total benefits	Range for Total benefits*
Total	\$19.4 B	\$62.2 B	\$132.2 B	\$76.7 B	\$47.3 B	\$337.7 B	\$252.8-\$422.7 B
Percent	5.73%	18.42%	39.13%	22.70%	14.02%	100.00%	100.00%
Per person	\$3,100	\$9,957	\$21,156	\$12,273	\$7,578	\$54,066	\$40,473-\$67,675
Percent of GDP	1.0%	3.2%	6.9%	4.0%	2.5%	17.6%	13.1%-22.0%

*Range based on the widest confidence interval from the sensitivity analysis

We also estimated the benefits that accrue to the public sector, specifically the federal and provincial governments. Total potential increased revenues for the public sector were estimated at \$61.0 billion. The largest proportion of increased total revenues is from the output and productivity impacts at \$34.9 billion, comprising 57% of total revenues (federal: \$17.0 billion, provincial \$18.0 billion). This is followed by revenues from tourism and the market multiplier effects at \$11.4 billion, comprising 19% of total revenues (federal: \$5.4 billion, provincial \$6.0 billion). The next is averted costs of social safety net program administration at \$10.5 billion (17% of total revenues) (federal: \$5.2 billion, provincial \$5.2 billion). Then it is averted healthcare expenses at \$4.2 billion (7% of total revenues) (federal: \$0.3 billion, provincial \$3.9 billion). Lastly, averted human rights discrimination complaints costs are \$0.04 billion (0.1% of total revenues) (federal: \$1 million, provincial \$4 million).

Summary and Conclusions

In summary, people with disabilities and all members of society have the potential to significantly benefit from an accessible and inclusive Canada. Drawing from international and domestic insights and published literature we built a complex and multidimensional model to estimate the cost of inclusion. We estimated that removing barriers to inclusion could have contributed over \$337.7 billion (with a range of \$252.8 to \$422.7 billion) to Canada's GDP in our reference year of 2017. This is a sizeable portion of the GDP in that year (17.6%, with a range of 13.1% to 22.0%) and is likely a very conservative estimate of the potential benefits.

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Essentially, our study highlights the magnitude of the potential benefits to be supported through implementing the ACA and provides critical inputs needed for economic evaluation and impact analyses in this policy arena.

Glossary of Definitions and Acronyms

Definitions of Key Terms

Convention on the Rights of Persons with Disabilities (CRPD) – An international human rights treaty of the United Nations intended to protect the rights and dignity of persons with disabilities.

Discrimination – Situations in which a person with a disability is treated less favourably than a person without the disability in the same or similar circumstances

Gross Domestic Product – Measure of the market value of all final goods and services produced in a specific time period.

International Classification of Functioning, Disability and Health (ICF) – Biopsychosocial model of disability endorsed by the World Health Organization. Through the framework of the ICF model, *disability* is seen as an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. ICF also considers personal and environmental factors as being related to disability.

Quality of Life (QOL) – Umbrella term which captures multiple dimensions related to objective and subjective measures of *physical*, *mental*, *emotional*, and *social* functioning within one's life.

Reasonable Accommodations – Necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms.

Universal Design – Design of physical and virtual environments and products that are accessible to all people regardless of age, disability or other personal factors.

List of Acronyms

Accessibility for Ontarians with Disabilities Act (AODA)
Accessible Canada Act (ACA)
Accessible Transportation for Persons with Disabilities Regulations (ATPDR)
Americans with Disabilities Act (ADA)
Canada/Quebec Pension Plan-Disability (CPPD/QPPD)
Centers for Disease Control and Prevention (CDCP)
Canadian Community Health Survey (CCHS)
Canadian Institute for Health Information (CIHI)
Canadian Radio-television and Telecommunications Commission (CRTC)
Canadian Survey on Disability (CSD)
Canadian Transportation Agency (CTA)
Canadian Urban Transit Association (CUTA)

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Community Integration Questionnaire (CIQ)
Craig Handicap Assessment and Reporting Technique (CHART)
Employment and Social Development Canada (ESDC)
Employment Insurance (EI)
Evaluation of Quality of Life Instrument (EQLI)
Federal Sector Labour Relations Board (FSLRB)
General Social Survey (GSS)
Gross Domestic Product (GDP)
Health and Medical Services Act (HMSA)
Health Assessment Questionnaire (HAQ)
Health Utilities Index (HUI)
Health-Related Quality of Life (HRQOL)
Human capital approach (HCA)
Impact on Participation and Autonomy Questionnaire (IPAQ)
Information Technology (IT)
Institute for Clinical Evaluative Sciences (ICES)
International Classification of Functioning, Disability and Health (ICF)
International Classification of Impairments, Disabilities, and Handicaps (ICIDH)
Life Habits Scale (Life-H)
Multifaceted Life Satisfaction Scale (MLSS)
Marginal Propensity to Consume (MPC)
Marginal Propensity to Import (MPI)
Mental Health Commission of Canada (MHCC)
National Disability Strategy (NDS)
National Health Service (NHS)
National Population Health Survey (NPHS)
Oxford Happiness Questionnaire (OHQ)
Participation and Activity Limitation Survey (PALS)
Patient Reported Outcomes Measurement Information System (PROMIS)
Pemberton Happiness Index (PHI)
Personal Wellbeing Index (PWI)
Pooled Registered Pension Plans (PRPPs)
Quality of life (QOL)
Quality of Life Interview Schedule (QUOLIS)
Quality of Life Profile (QOL-P)
Quality of Life Questionnaire (QOL-Q)
Quality-adjusted life years (QALY)
Registered Pension Plans (RPPs)
Registered Retirement Income Fund (RRIF)
Registered Retirement Savings Plans (RRSPs)
Restriction of Activities (RAC)
Convention on the Rights of Persons with Disabilities (CRPD)
Royal Canadian Mounted Police (RCMP)
Satisfaction with Life Scale (SWLS)
Social Role Participation Questionnaire (SRPQ)

Social Services Act (SOL)¹

The Organisation for Economic Co-operation and Development (OECD)

Traumatic Brain Injuries (TBI)

WHO Quality of Life-BREF (WHOQOL)

World Health Organization (WHO)

¹ Initials reflect the original Swedish name

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Core Study: Estimation of the Societal Benefits of an Accessible and Inclusive Canada

Full Version

Introduction

Prior to the late 1960s and early 1970s, disability was viewed from a medical perspective and was considered as arising from an impairment which requires medical care, rehabilitation and individual adjustment (Kazou, 2017). However, in the period that followed, a social approach to understanding the nature and consequences of disability emerged, as disability activists and organisations run by persons with lived experiences drew attention to their social and economic exclusion and campaigned for social changes to improve their lives. The previously dominant medical understanding of disability was challenged, with focus placed instead on the impacts of social and environmental barriers and the discrimination and disadvantages experienced by persons with impairments. The social approach was further advanced through the advocacy of persons with disabilities, which led to a growing academic discourse on disability, especially within sociology. Although disability was traditionally studied within the sub-field of medical sociology, and particularly the sociology of chronic illness and disability, the new discipline ‘disability studies,’ that was developed in the 1980s and 1990s, began approaching disability from a social perspective (Kazou, 2017).

The social model of disability was first developed in Britain during the 1970s and 1980s. However, the social understanding of disability has been advanced by activists and disability studies scholars in several countries. This understanding proposes that disability is a form of oppression caused by social barriers that exclude persons with impairments from participation in society. Attention is drawn to the role of environment and society in creating barriers. This approach very much underpins the human rights approach to disability.

Over the period that followed, the World Health Organization (WHO) and others integrated the social understanding and medical understanding into a biopsychosocial framework, known as the disablement process, which is described in the International Classification of Functioning, Disability and Health (ICF) (WHO, 2001) and in earlier work by the WHO (1980). In this framework, a health condition or impairment is a necessary but not sufficient condition for disablement. The social and built environments are seen as key factors that can be enabling or disabling. Earlier work by Nagi (1965, 1991) also took this approach. With this approach, disability is conceptualized as arising out of the complex interaction between a health condition or impairment, barriers in the physical and social environment, and personal factors (Kazou, 2017).

The human rights model of disability looks to societal norms, practices and structures to understand the barriers that persons with disabilities experience. This approach focuses on the social, attitudinal and physical barriers that restrict the life choices and participation of persons with disabilities. Quinn et al. (2002) explain that the human rights paradigm for persons with disabilities is inspired by the values of dignity, autonomy, self-determination and equality. Moreover, the human rights paradigm for persons with disabilities considers that “Each individual is deemed to be of inestimable value, and nobody is insignificant. People are to be valued not just because they are economically or otherwise useful but because of their inherent self-worth” (Quinn and Degener, 2002, p. 14). This means that persons with disabilities have a stake in, and claim on, society regardless of considerations of economic or social utility.

Nonetheless, accessibility and financial affordability are inextricably linked. For example, the *Canadian Human Rights Act* requires accommodation of the needs of persons with disabilities up to the point of undue hardship, considering the cost, sources of available funding and health and safety requirements. However, previous research indicates that, when implemented effectively, accessibility accommodations have substantial benefits for persons with disabilities and others—such as employers—and these benefits may outweigh their costs (Padkapayeva et al., 2016; Jethoa et al., 2018)

The ICF framework suggests that disability is the variation of human functioning caused by one or a combination of the following: loss or functional deficit of a body part (i.e., impairment or health conditions); difficulties an individual may have in executing activities (i.e., activity limitations); and problems an individual may experience in involvement in life situations (i.e., participation restrictions). The three dimensions are co-equals in significance and are different facets of a single emergent phenomenon known as disablement. The framework also emphasizes that variations in human functioning are influenced by contextual factors, including environmental factors or aspects of the external or extrinsic world such as social systems and services, and personal factors such as age, ethnicity, gender, social status, etc. (Imrie, 2004). If these are not inclusive of the full range of abilities in society, then some individuals will be excluded due to a health condition or impairment. Exclusion from social role engagement (i.e., participation restriction) can occur in any number of social roles (e.g., paid work, education, leisure and sports, community and religious activities, and home and family).

In this study we draw on both constructs/models of disability—the social/human rights model and the socio-medical/biopsychosocial model advanced by the WHO and Nagi—to develop a conceptual framework/model for the costs of exclusion (or alternatively, the benefits of inclusion) of persons with disabilities from full participation in society. These two models are inclusive of the meaning of disability as identified in consultations with Canadians held by the federal government in 2015 and 2016 to develop Bill C-81, now the Accessible Canada Act (ACA). At that time, it was emphasized that disability should include a full range of abilities and limitations, including "invisible" disabilities, such as learning disabilities or mental health issues, and episodic disabilities, represented by fluctuating limitations that can occur with conditions such as multiple sclerosis or epilepsy.

Quantification/monetization of the cost of exclusion (or the benefits of inclusion) is, in principle, an economic exercise like the approach taken in the cost of illness/economic burden literature where economic methods are used to quantify and monetize the cost to society of particular injuries and illnesses (e.g., the economic burden of occupational asbestos exposure estimated by Tompa et al., 2017). These studies measure the gap between the current situation in which a health condition exists (e.g., lung cancer) and a counterfactual world in which it does not. Ultimately, the gap, which is the economic burden, is a burden that could be alleviated if the health condition were eliminated through some preventive mechanism. Essentially, it is the benefit that would be realized.

The counterfactual world for this study would be a fully implemented ACA and, more broadly, an accessible and inclusive Canada. Full accessibility and inclusiveness are an ideal or a gold standard. In practice, it is likely a continuous improvement process.

Cost of illness/economic burden information can be extremely useful to governments and industry leaders because it provides invaluable information on the benefits of investing in burden reduction efforts, such as legislation, policies, programs and practices to reduce the burden. Case costing from these studies can also serve as inputs in economic evaluations and impact assessments. In some instances, in which knowledge needs to be developed, information on burdens provides impetus for prioritizing knowledge development efforts. Nevertheless, estimation of the economic burden/cost of exclusion of persons with disabilities has not been undertaken for most countries, including Canada. This is likely due to the challenges associated with such a task. One of the challenges is methodological. There is little standardization of methods and some uncertain conceptual issues (Hays et al., 2002; Rohwerder, 2015; Walton, 2012). Data availability is another challenge. It is difficult to identify sources for the range of data needs.

Economic burden estimates are typically reported for a specific calendar year and are based on costs for all individuals newly diagnosed with and/or living with a health condition. If costs for both newly diagnosed and existing cases are included, the aggregate cost studies are referred to as prevalence cost studies because they encompass costs for individuals across the disease trajectory. If only newly diagnosed cases are included, then the studies are referred to as incidence cost studies. In this study, we take a prevalence cost study approach, since we are interested in costing the exclusion of all persons with disabilities in Canada at a point in time (a specific calendar year), regardless of the time of disability onset.

Prevalence study: An economic burden estimate in which the costs/burdens of all individuals experiencing a state and related stakeholders are considered, whether individuals are new to it or have been in that state for a long-time. Costs/burdens are generally estimated for only a one-year reference period.

Incidence study: An economic burden estimate, in which the costs/burdens of only individuals newly experiencing a state and related stakeholders are considered. Costs/burdens are generally estimated for the entire lifetime of the individuals and discounted to a reference year.

Some applied work on the economic burden of injury and illness has been done in the occupational health and safety field, and in the broader health field. For example, Leigh (2011, 1997) has estimated the economic burden in the United States of work injury and illness across a range of conditions. The economic burden of injury and illness in Canada has been estimated by Health Canada (e.g., EBIC, 1998 and subsequent years). Disease-specific cost of illness studies are found in the literature. These types of studies generally focus on three broad categories of costs: 1) direct costs (i.e., healthcare expenses), 2) indirect costs (i.e., labour-market output and productivity costs), and 3) intangible costs. In a cost of exclusion study, one does not consider a counterfactual scenario of the absence of impairment or disability, but rather the absence of barriers to inclusion.

In summary, the economic framework of cost-benefit/economic burden analysis has various tools that can be adapted to address the objectives of this study, but much work is needed to identify

the relevant domains of impact. Thus, we need to develop an understanding of the full range of relevant domains to consider in an economic burden/cost of exclusion study, how they might be measured (qualitatively, quantitatively and ideally monetarily), and how to aggregate them into a summary without double counting. The latter issue (i.e., double counting) is particularly a concern because of the interrelated nature of many of the domains.

Given the modest literature base, we realized that there was much new terrain to explore in both conceptualizing and executing such a model. To facilitate the process, we took a multi-pronged approach. Specifically, we undertook three parallel sub-studies to produce insights that were directly integrated into the model development. In the first sub-study, we undertook a scan of the international policy arena, including interviews with key informants and a review of existing international legislation and policy. In the second sub-study, we undertook a synthesis of Bill C-81 consultations via reports and briefings written by various stakeholder groups in Canada. In the third sub-study, we interviewed key informants from across Canada about their thoughts on the impacts/benefits of achieving the ideal of an accessible and inclusive Canada.

In this core study we synthesize the findings from the three sub-studies and review various studies that begin to explore components of the cost of exclusion to create the template for our model. We then execute the model using data from multiple sources.

Key Research Question

The key research question addressed by this study is as follows:

What would be the benefits to Canadian society, in reference year 2017, if Canada was accessible and inclusive in all domains relevant to full participation?

As noted in the question, the reference year we use is 2017, which is the year in which the Canadian Survey on Disability (CSD) was completed. We draw on this survey for baseline information on key measures such as incidence of disability in the Canadian population. Specifically, the prevalence of disability, demographics, employment and income profiles of Canadians with disabilities have been extracted from the CSD (Morris et al., 2018). Population size and other key statistics are also drawn from 2017 data. We adjust all values (including monetary measures) to calendar year 2017.

A societal perspective is taken, so the benefits accruing to all stakeholders directly and indirectly impacted by an accessible and inclusive society are included in the analysis. These benefits are aggregated across all stakeholders to identify the societal benefits by broad category, in total and per capita.

We note that only the benefits of an accessible and inclusive society are considered in this project. Invariably, there will be expenses/costs incurred by the public sector in developing and enforcing regulations, as well as in the delivery of goods and services associated with accessibility. For employers, there will be compliance costs and other expenses incurred in creating accessible and inclusive workplaces. Other organizations may also incur expenses/costs associated with the provision of accessible goods and services. These expenses/costs must be estimated as part of a full economic evaluation or impact analysis. Ideally, the benefits outweigh

the costs at the individual stakeholder and aggregate level. The costing of regulatory development and enforcement, compliance activities and other expenses of creating accessible workplaces, and costs associated with the provision of accessible goods and services is not part of this project, but rather, will be undertaken as a separate exercise. In this project we focus exclusively on estimating the total benefits to society.

Definitions

The definition of *disability* that we use in the study is as follows:

disability means any impairment, including a physical, mental, intellectual, cognitive, learning, communication or sensory impairment — or a functional limitation — whether permanent, temporary or episodic in nature, or evident or not, that, in interaction with a barrier, hinders a person's full and equal participation in society.

The definition of barrier that we use in the study is as follows:

barrier means anything—including anything physical, architectural, technological or attitudinal, anything that is based on information or communications or anything that is the result of a policy or a practice—that hinders the full and equal participation in society of persons with an impairment, including a physical, mental, intellectual, cognitive, learning, communication or sensory impairment or a functional limitation.

These definitions are used in ACA (House of Commons of Canada, November 27, 2018) and are a summary of the social model of disability upon which the CSD 2017 is based. They are also consistent with our key question, noted above, that is focused on the benefits of an accessible and inclusive society.

Conceptual Framework

In Figure 1, we identify various domains drawn from the literature on disability-inclusive legislation and policy, as well as the knowledge gathered from the three sub-studies of this project. The figure identifies key domains that could be impacted. An attempt has been made to identify domains that are reasonably distinct, though invariable there are connections across domains. These are depicted with the two-way arrows linking adjacent domains. These arrows are meant to be representational. Though the arrows point to adjacent domains, in reality there are connections across many domains in the model. The model also includes the seven priority areas of the ACA, which received royal assent in the spring of 2019. These priority areas are as follows:

1. Employment;
2. Built Environment;
3. Information and Communication Technologies;
4. Communication Other than Information Communication Technologies;
5. Procurement of Goods, Services and Facilities;
6. Design and Delivery of Programs and Services; and

7. Transportation.

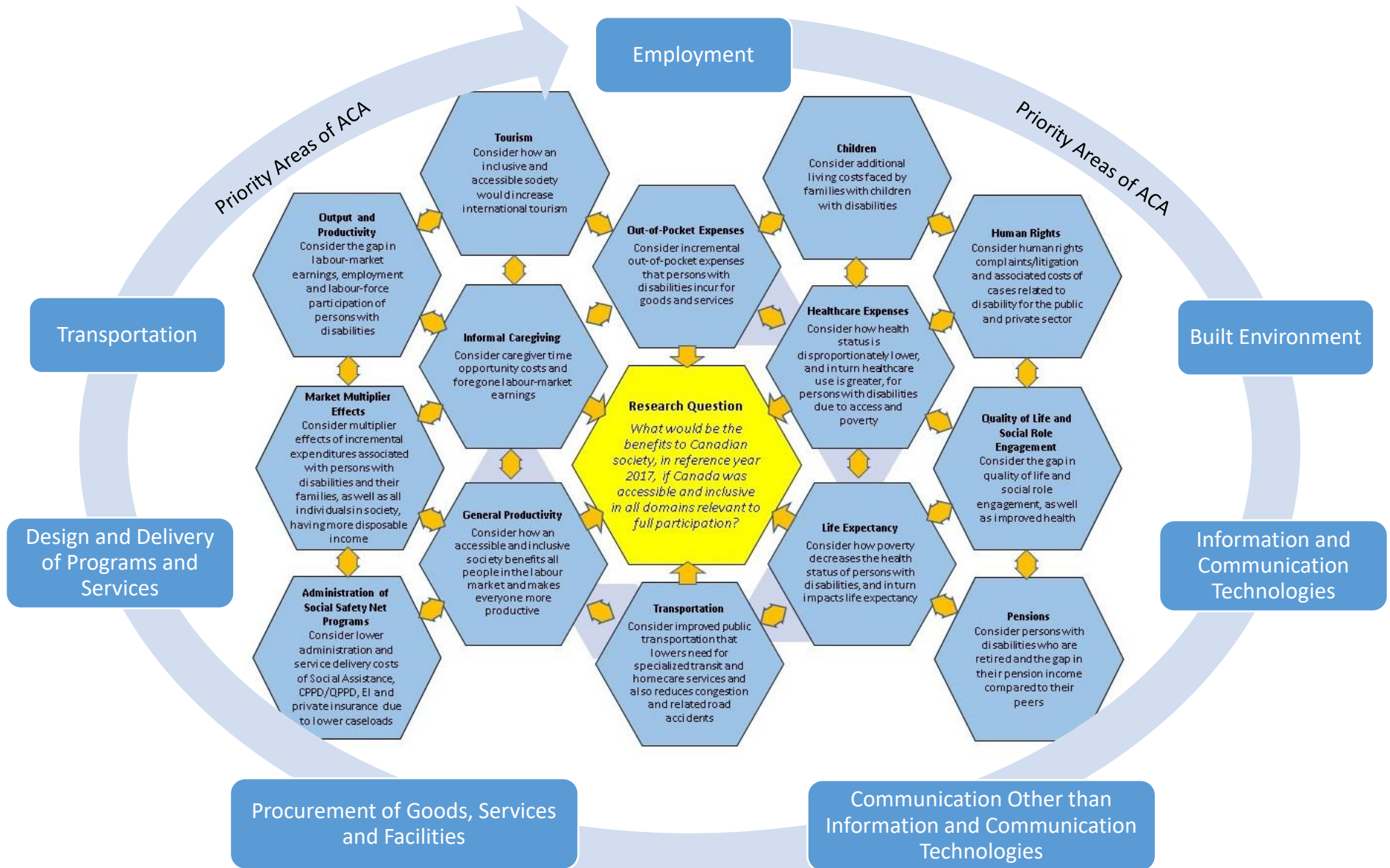
The priority areas support accessibility and inclusion in all the domains identified. Essentially, they are the structural underpinnings that facilitate the objective of making Canada accessible and inclusive in all facets of society. Hence, we have presented them as encircling the domains of our conceptual model.

The details and references for our methodology are presented in the following sections, organized by domain. Specifically, each section unpacks the details of the domains presented in Figure 1. There are 14 domains in total:

1. Healthcare Expenses;
2. Out-of-Pocket Expenses
3. Output and Productivity;
4. Quality of Life and Social Role Engagement;
5. Life Expectancy;
6. Informal Caregiving;
7. Children with Disabilities;
8. Human Rights;
9. Transportation;
10. Tourism;
11. General Productivity;
12. Administration of Social Safety Net Programs;
13. Pensions; and
14. Market Multiplier Effects.

These domains are summarized in the body of this core study.

Figure 1. Domains in the cost of exclusion



Methodology

We use primarily a bottom-up approach to estimate the economic benefits of an accessible and inclusive society, i.e., the forgone benefits in the current situation or cost of exclusion. The method has been synthesized from a number of studies, the key ones being: 1) *The Price of Exclusion: The Economic Consequences of Excluding Persons with Disabilities from the World of Work* (Buckup, 2009); 2) *The Economic Benefits of Disability-Inclusive Development* (Walton et al., 2012); and 3) *Releasing Constraints: Projecting the Economic Impacts of Increased Accessibility in Ontario* (Kemper et al., 2016). We also draw heavily on the literature reviewed and key informants interviewed in our three sub-studies. In particular, the key informants provided rich insights into the various domain where benefits might be realized from a more inclusive and accessible society.

We advance the methods drawn from previous studies in several ways. In particular, we consider all relevant domains in our study, rather than estimating only a subset of the benefits. Given the interrelated nature of many of the domains, we make the effort to minimize overlaps in our estimation and aggregation. Below we summarize the conceptualization of each of the domains and the computations undertaken in them.

Some of the benefits in the domains we include in our model may be considered direct benefits in that they accrue to persons with disabilities directly or are directly related to their experiences. The domains that fit into the direct category are healthcare expenses; out-of-pocket expenses; output and productivity; QOL and social role engagement; and life expectancy. Note that we include intangible benefits of QOL and social role engagement under the direct benefit category for simplicity, even if they are not readily monetizable. Other domains may be considered indirect benefits in that they accrue to persons without disabilities and other entities in society. Given this fact, they are sometimes described as spillover effects. The domains that fit into the indirect/spillover category are: informal caregiving; children with disabilities (which is focused on incremental costs incurred by families who have children with disabilities); human rights; transportation; tourism; general productivity; administration of social safety net programs; and pensions (which focuses on the impacts on the economy of increased spending of retired persons with disabilities). Note that the distinction between direct benefits and indirect benefits/spillover effects is not crisp, in that many of the domains are multifaceted with impacts on persons with disabilities, as well as others in society. More important than the distinguishing between direct and indirect is ensuring that the model is as comprehensive as possible, and that the benefits estimated within domains are distinct from those in others to minimize double counting (i.e., counting the same benefit twice). In general, we attempt to be conservative in our estimation of the magnitude of the benefits associated with each domain.

As a separate exercise, we also estimate the benefits that accrue to the public sector, specifically the federal and provincial/territorial governments. These are comprised of increased tax revenue and reduced expenditures on social safety net programs. Some elements of public sector benefits are simply reduced transfer payment arising from the fact that higher labour-force participation of persons with disabilities results in lower levels of dependency on social safety net programs and other such transfers. Even though they are included here, changes in transfer payment are not included in the societal perspective, since they do not reflect a loss or gain to society, but simply a transfer of purchasing power from one entity to another.

Domain of Healthcare Expenses

Conceptualization of the Impact on Healthcare Expenses

In this domain, we consider how health status is disproportionately lower, and in turn, healthcare use is greater for persons with disabilities due to accessibility and poverty. More broadly, they have lower levels of income compared to persons without disabilities. In general, persons with disabilities are more likely to report greater healthcare use compared to their peers without disabilities (Drum et al., 2008; Cott et al., 1999), but we focus solely on poor health and associated increased healthcare use due to higher levels of poverty and reduced access compared to persons without disabilities. Much of these healthcare expenses could be averted if poverty levels and healthcare access of persons with disabilities were similar to persons without disabilities.

Data from the representative Canadian National Population Health Survey (NPHS) (1994) indicate that a chronic condition or long-term disability is associated with 4.73 times greater odds of reporting poor health compared with excellent health (Cott et al., 1999). Studies highlight that disability is associated with higher healthcare utilization costs (Hoffman et al., 1996; Dunlop et al., 2003). A descriptive analysis of the NPHS (1998-1999) indicates that persons with disabilities saw their family doctor more than 12 times per year, were twice as likely to have seen a medical specialist, and were three times more likely to have seen a nurse, social worker, physiotherapist, or occupational therapist/speech therapist (McColl, 2005).

The association between disability and healthcare utilization costs has been highlighted in other industrialized contexts. According to data from the United States, in 2006, disability-associated healthcare expense accounted for 26.7% of all healthcare and totaled \$397.8 billion (Anderson et al., 2011; CDCP, 2019). Nevertheless, it is important to acknowledge differences in the healthcare context when comparing the United States to Canada.

A recent study conducted by the Institute for Clinical Evaluative Sciences (ICES) and the Centre for Addiction and Mental Health (CAMH) highlights the difference of healthcare utilization among persons with disabilities. The study examined patient records between 2010-2016 of 65,000 Ontarian adults with developmental disabilities. When compared to those without a developmental disability, persons with developmental disabilities were two times more likely to report return visits to emergency departments, three times more likely to report repeat hospitalizations, 17.5 times more likely to live in a long-term care facility, and four times more likely to experience premature mortality (Lin et al., 2019). The authors indicate that the relationship between healthcare utilization and developmental disabilities was consistent across age or poverty levels.

Research from Statistics Canada indicates that 81.3% of persons with disabilities report using some kind of aid or assistive device. At the same time, 1.6 million Canadians with disabilities are unable to afford required aids, devices, or prescription medications due to cost (Statistics Canada, 2018a). Thirteen percent of persons with disabilities were unable to purchase prescription medications because of the cost, leading them to ration medication by taking less than required and/or not taking required medication at all (CSD, 2017). Other research indicates that transportation, proximity to healthcare centres, longer wait lists within clinical settings, and psychosocial and physical barriers represent challenges to accessing healthcare services

(Sakellariou et al., 2017). Type of disability, geography, and gender are also factors associated with the likelihood of poverty and healthcare utilization.

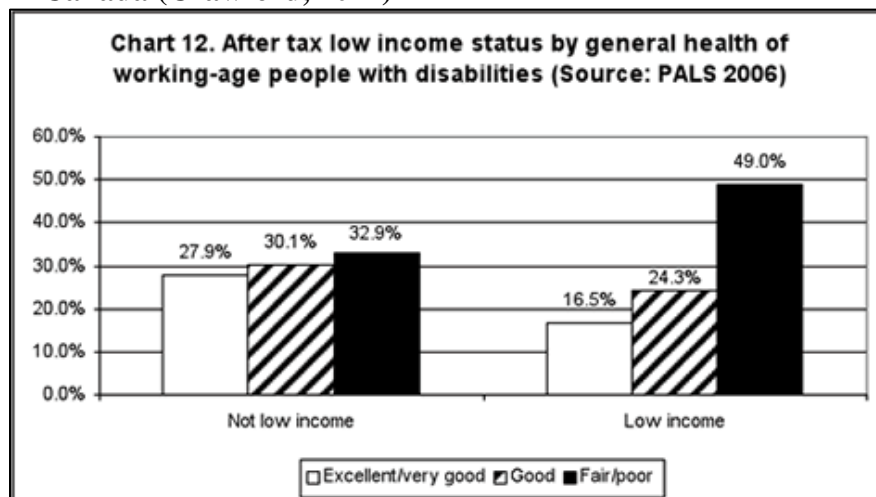
The relationship between healthcare utilization and disability is, to some degree, related to access and poverty. We consider how poverty and social exclusion of persons with disabilities decrease their health status, and in turn impacts healthcare expense. Poverty and poor health are inextricably linked, as poverty is both a cause and a consequence of poor health. Poverty and poor health result in higher costs for the Canadian healthcare system. Rosella et al. reported that the top five percent of healthcare users in Ontario and Manitoba account for at least two-thirds of healthcare expense (Rosella et al., 2014).

The World Health Organization (WHO) has declared poverty to be the single largest determinant of health. Poverty can and does lead to illness (due to poor nutrition, inadequate shelter, greater environmental risks and lesser access to healthcare) but the opposite is also true; illness leads to poverty by reducing household savings, overall productivity, and QOL for individuals and families (Canada without Poverty, 2019).

Briggs et al. identified 148,000 non-elderly families in Alberta in 2009 who experienced poverty, and estimated poverty in Alberta had a negative impact of \$1.2 billion on the healthcare system (Briggs et al., 2012). In another study, Briggs et al. estimated that the healthcare expense in Toronto associated with income disparities was about \$2.2 billion (Briggs et al., 2016).

The Canadian Participation and Activity Limitation Survey (PALS) and the NPHS, provides evidence of the relationship between poverty and poor health, specifically for persons with disabilities. As indicated in Figure 2, persons with disabilities with low income are more likely than those with higher incomes to be in fair or poor health (Crawford, 2014; Cott et al., 1999). Also, findings from the CSD 2017 highlight that those with more severe disabilities are more likely to live below the poverty line. Specifically, 28% of those with more severe disabilities were living below Canada's official poverty line (based on the Market Basket Measure), compared with 14% of those with milder disabilities and 10% of those without disabilities (Statistics Canada, 2018a).

Figure 2. After-tax low-income status by the health of working-age persons with disabilities in Canada (Crawford, 2014)



Impact of Healthcare Expenses Associated with Access and Poverty

We begin with an estimate of the incremental healthcare expenses associated with poverty of approximately 20 percent, based on figures generated by the Health Council of Canada (Alliance for Healthier Communities, 2010) and the Public Health Agency of Canada (2004). Total healthcare expenses in Canada in 2018 were \$242 billion (11.3% of GDP), or \$6,604 per person (CIHI, 2018). Based on this information, we estimate the total healthcare expenses associated with poverty at \$48.4 billion (20% of \$242 billion).

We also estimate that 3.74 million people live below the official poverty line in Canada, according to the 2017 census (Statistics Canada, 2017a). Having the total healthcare expenses associated with poverty, and the number of people living below the official poverty line, we estimate healthcare cost associated with poverty at approximately \$13,000 per case, as indicated in Table 1 below. We use per case healthcare expenses associated with poverty to estimate the total healthcare expenses of persons with disabilities that are associated with poverty.

Table 1. Healthcare expenses associated with poverty, 2017

Parameter	Value
Total healthcare expenses in Canada ^[1]	\$242 Billion
Percent of healthcare expenses associated with poverty ^{[2],[3]}	20%
Expected healthcare expenses associated with poverty	\$48.4 Billion
Number of people living below the official poverty line ^[4]	3,739,000
Expected healthcare expenses associated with poverty (per case)	\$12,945
Canadians with disabilities living below Canada's official poverty line ^[5]	1,044,602

[1] CIHI, 2017. Available at: <https://www.cihi.ca/en/how-much-does-canada-spend-on-health-care-2017>

[2] Health Council of Canada, 2010. Available at: <https://www.allianceon.org/poverty>

[3] Public Health Agency of Canada, 2004. Available at: http://www.phac-aspc.gc.ca/ph-sp/disparities/pdf06/disparities_recommended_policy.pdf

[4] Statistics Canada, 2017a. Persons living below Canada's official poverty line. Available at: <https://www150.statcan.gc.ca/n1/daily-quotidien/190226/t002b-eng.htm>

[5] CSD, 2017

Given that there are no available studies on healthcare expenses for persons with disabilities in an accessible and inclusive society to draw on for precedence, the difference in poverty rates between persons with and without disabilities serves as a basis for estimating the healthcare expenses associated with access and poverty. In the baseline counterfactual scenario, we assume no difference in poverty among persons with and without disabilities, and hence no difference in healthcare expenses associated with poverty. We define two other *what if* scenarios for sensitivity analysis. To do so, we draw on studies by Anderson et al. (2011), and the CDCP (2019), who estimated the US national healthcare expenses associated with disability at \$397.9 billion in 2006 for the adult population (representing 26.7 percent of the US national health expense). Assuming the US percentage regarding additional healthcare expenses for persons with disabilities compared to persons without disabilities, healthcare expenses associated with disability in Canada are estimated to be approximately \$64.61 billion. This estimate represents the “additional” healthcare expenses associated with disability over and above healthcare expenses of persons without disabilities. In the lower and upper bound scenarios, we assume that 5 and 20% of healthcare expenses associated with disability could be averted.

Domain of Out-of-Pocket Expenses

Conceptualization of the Impact on Out-of-Pocket Expenses

In this domain, we consider incremental out-of-pocket expenses that persons with disabilities incur for goods and services.¹ In an accessible and inclusive society, the cost of living for persons with disabilities would be similar to their peers without disabilities. This would arise due to lower levels of need because of increased accessibility and inclusiveness, as well as the provision of needed services through social safety net programs.

Some out of pocket costs can be associated with healthcare needs, and others with expenses such as the provision of basic and instrumental activities of daily living or engaging in various social roles. Some expenses may be incurred for specialized aids and devices. Studies indicate that person with disabilities and their households incur increased direct costs, which may impact economic wellbeing and QOL (Mitra et al., 2017). Categories of out-of-pocket expenses include general household items (e.g., healthcare, food) in addition to disability-specific items (e.g., assistive devices, rehabilitation, personal assistance, and house adaptation). Some of these additional costs are borne by the individuals and their families, while others may be incurred by private and public service providers (e.g., private insurance plans, public healthcare systems).

According to economic analytical approaches that aim to quantify the out-of-pocket and medical expenses reported by persons with disabilities, several methodologies can be utilized (Mitra et al., 2017; Zaidi et al., 2005; Berthoud et al., 1993). These include:

1. **The goods and services used approach** directly measures expenditures for persons with disabilities and compare them against persons without disabilities with the differential implied as to the costs of disability.

¹ Some costs for devices, healthcare, medication, therapies, etc. may be covered by private insurance. Such expenses may be incurred out-of-pocket at the front end, but subsequently reimbursed to varying degrees. Our intent is to capture net out-of-pocket expenses that result in a higher cost of living for persons with disabilities.

2. **The goods and services required approach** examine the extra costs of goods and services required by individuals with disability to perform activities that individuals are not currently performing due to their disabling health condition.
3. **The expenditure equivalence/standard of living approach** examines how much extra money a person with a disability would need to spend on all activities to achieve the same level of wellbeing he or she could achieve with no disability.

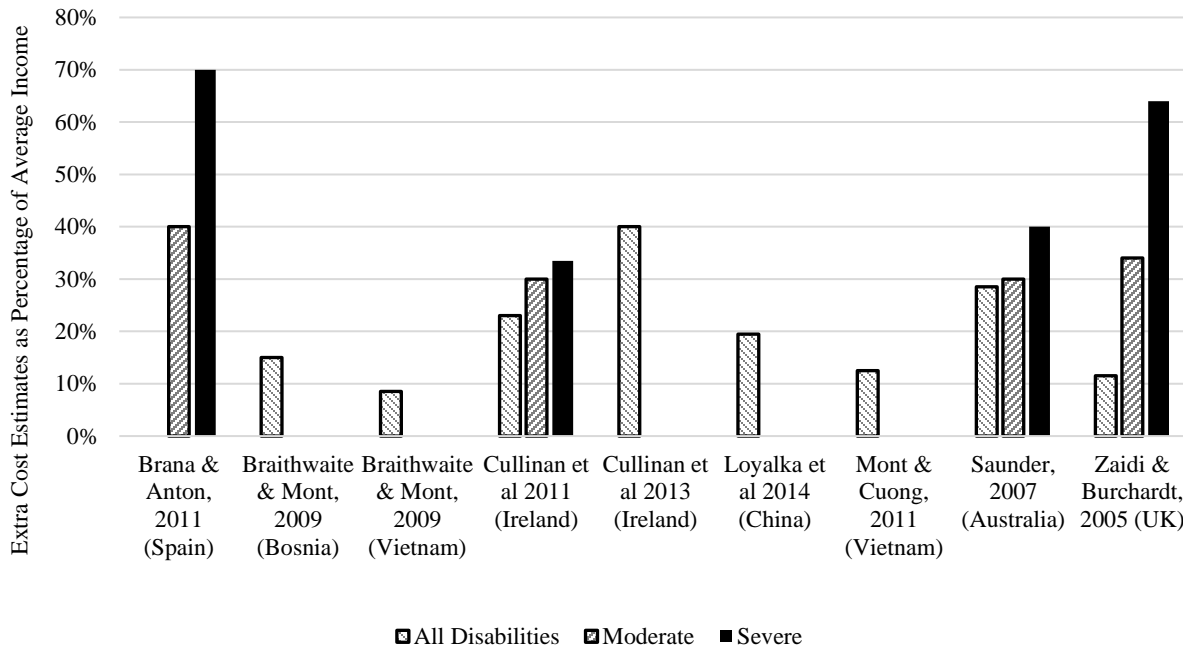
Recently, Mitra and colleagues conducted a systematic review that examined additional costs attributed to disability (Mitra et al., 2017). The study identified 20 articles primarily from developed countries (e.g., the United States and the United Kingdom). Eleven of the papers estimated overall disability costs. Eight studies measured extra costs that persons with disabilities incurred; nine studies estimated the equivalent level of expenditures for persons with disabilities to maintain the same standard of living as persons with no disabilities; eight papers measured extra costs of disability using the standard of living approach. Overall, findings indicated a wide range of estimated annual mean total costs associated with a disability ranging from US \$1,170 to \$6,952 (Mitra et al., 2017; Burton et al., 2009; Ke KM, 2010). Studies found that the highest costs were observed among persons with severe disabilities, and among persons with disabilities living alone or in small-sized households. Expenses strongly depended on the level of inclusiveness and social support available in a country.

Based on the three approaches to quantifying costs associated with a disability noted above, studies indicate that persons with disabilities may need to spend more on transportation or modified housing, or be restricted in what neighborhoods they can live in, due to a need to be closer to work or accessible services, and require additional income to obtain the same standard of living had they not reported a disability (Zaidi et al., 2005). Some of these additional costs might be avoided through factors such as universally accessible infrastructure and transportation, or the availability and access to healthcare such as rehabilitation services that prevent impairments from becoming worse, e.g., corrective surgery for contractures due to cerebral palsy or post-polio (Bruijn et al., 2012; Zola, 2010).¹ Persons with disabilities may also spend more on the cost of general household purchases, e.g., the cost of special diets such as gluten free, sugar-free, etc. Additionally, some research indicates that the largest and most significant cost is for fuel, with a point estimate of 1.64, indicating relative consumption costs that are 64% higher for a two-adult household with a disability compared to a similar household without a disability. In sum, studies based in the US context suggest that persons with disabilities have approximately 65% higher out-of-pocket expenses in comparison to peers with no disabilities (Mitra et al., 2017).

It is important to acknowledge that out-of-pocket expenses are influenced by the individual circumstances of a person and are determined by factors such as the nature and severity of impairment, resources available, and physical and social environment factors including the access to goods and services. For instance, some studies indicate that the out-of-pocket expenses associated with a disability may differ based on a person's age. In particular, older persons with disabilities are more likely to incur higher transportation and out-of-pocket expenses than young persons with disabilities (Stallard, 2011; Stu metal., 1998).

¹ Note, we do not use data from this study, but mention it here to provide an example of the extra costs that persons with disabilities may incur.

Figure 3. Extra costs estimates for persons with disabilities using the standard of living approach (Mitra et al., 2017)

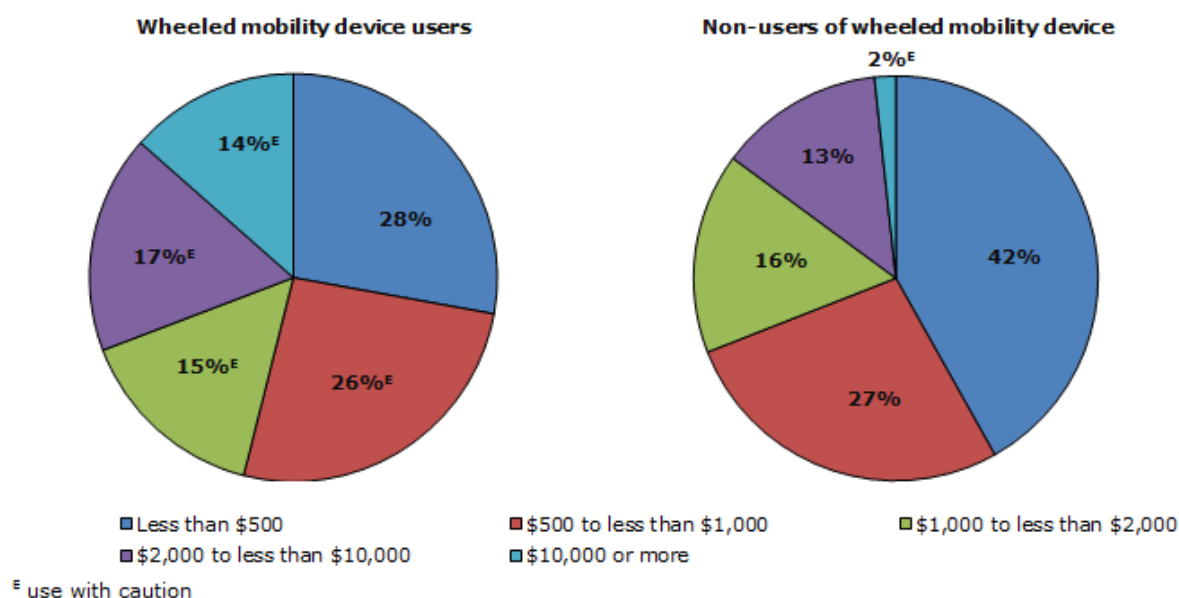


Expenses may be incurred for specialized aids and devices, which can help persons with disabilities perform their routine activities and increase their social participation. The CSD (2012) indicated that more than 80% of persons with disabilities reported using at least one aid or assistive device, while 27% indicated that they did not have at least one aid that they needed. The use of at least one aid or assistive device generally increased with the severity of the disability. Sixty-six percent of persons with mild disabilities, 80% of those with moderate disabilities, 89% of those with severe disabilities, and 95% of those with very severe disabilities reported using at least one aid or assistive device (CSD, 2012).

Employment and Social Development Canada (ESDC) reported in 2010 that persons with disabilities, particularly those with severe disabilities, have considerable out-of-pocket expenses related to visits with health professionals. In 2005-2006, 24.3% of the adults with disabilities who have visited at least one health professional had out-of-pocket expenses for those visits, at an average cost of \$642.58 (National Expert Commission, 2012).

Giesbrecht et al. reported that a majority of wheeled mobility device users who received assistance received help every day. The figure ranged from about 50% of those with mobility scooters to more than 70% of those with wheelchairs. Two-thirds (65%) reported help from family members in the same household, and 44% reported help from family who lived elsewhere. A third (35%) were assisted by unpaid organizations/individuals, and a quarter (27%) paid for assistance. For 14% of wheeled mobility device users who paid for assistance, out-of-pocket expenses in the previous 12 months amounted to \$10,000 or more; among non-users who paid for assistance, the comparable figure was 2% (Figure 4) (Giesbrecht et al., 2017).

Figure 4. Annual out-of-pocket expense for assistance with activities of daily living, by use of wheeled mobility device, household population aged 15 or older with disabilities who reported expenses in 2012 (Giesbrecht et al., 2017)



In many cases, persons with disabilities incur extra costs for assistance with accessing goods and services, and with domestic activities. As indicated in Table 2, help with heavy household chores, getting to appointments or running errands, and doing everyday housework were the most commonly reported types of assistance received by persons with disabilities. Overall, 49% of persons with disabilities reported having received help with heavy household chores, but the percentage varied with the severity of the disability, rising from 34% among those with mild disabilities to 67% among those with very severe disabilities (CSD, 2012).

Table 2. Most common help received, by Canadians aged 15 years or older with disabilities (CSD, 2012)

Help received	Global severity class				
	Total	Mild	Moderate	Severe	Very severe
Heavy household chores	49.1	33.9	40.6	57.7	66.7
Getting to appointments/running errands	36.7	17.0	26.3	44.4	61.9
Everyday housework	35.2	17.1	26.5	42.6	57.6

Estimation of Out-of-Pocket Expenses

To estimate the out-of-pocket expense for persons with disabilities, we use several reports that have been published in Canada. We started with the CSD (2012) and estimate out-of-pocket expense for assistance with activities of daily living under nine categories: preparing meals; everyday housework; heavy household chores; getting to appointments/errands; personal finances; personal care; basic medical care at home; moving around in the house; and childcare. Figure 4 indicates that these expenses are reported for wheel-mobility devices users separately. For estimation of the weighted average of out-of-pocket expenses, we estimated 288,800 out of

3,775,920 of persons with disabilities are wheel-mobility devices users (Giesbrecht et al., 2017). We estimated the average out-of-pocket expense of wheel-mobility devices users at \$1,649, and for non-users at \$3,142 (CSD, 2012). We applied these average values to estimate the average out-of-pocket expense for the total population of persons with disabilities in 2017.

To estimate other types of out-of-pocket expense, we use a survey of the out-of-pocket expenses of families with children with disabilities undertaken by Employment and Social Development Canada (Roy et al., 2016). Different types of out-of-pocket expenses are presented in Table 3 through Table 6. Nevertheless, it is important to note that the survey on which these tables are based includes a particular age ranges, specifically children, and as such is not representative of a comprehensive picture of out-of-pocket expense for adults with disabilities.

Table 3. Out-of-pocket expenses for prescription and non-prescription drugs (2006 Canadian dollars) (Roy et al., 2016)

Range	Degree of disability	
	Less severe	More severe
<i>No, out-of-pocket expenses</i>	65.7%	58.6%
<i>Yes, out-of-pocket expenses*</i>	34.3%	41.4%
Less than \$100	32.0%	19.6%
\$100 to less than \$200	23.2%	19.2%
\$200 to less than \$500	17.5%	27.8%
\$500 to less than \$1,000	16.2%	11.4%
\$1,000 to less than \$2,000	8.1%	12.3%
\$2,000 or more	3.0%	9.7%

**Includes amounts not covered by insurance such as exclusions, deductibles, and expenses over limits. Excludes payments for which the person has been or will be reimbursed by any insurance or government program.*

Table 4. Out-of-pocket for the purchase and maintenance of aids and specialized equipment (2006 Canadian dollars) (Roy et al., 2016)

Range	Degree of disability	
	Less severe	More severe
<i>No, out-of-pocket expenses</i>	90.4%	76.5%
<i>Yes, out-of-pocket expenses</i>	9.6%	23.5%
Less than \$200	31.9%	20.1%
\$200 to less than \$500	26.2%	24.8%
\$500 to less than \$1,000	13.7%	24.9%
\$1,000 to less than \$2,000	7.4%	16.4%
\$2,000 or more	20.9%	13.8%

Table 5. Out-of-pocket expenses for healthcare and social services (2006 Canadian dollars) (Roy et al., 2016)

Range	Degree of disability	
	Less severe	More severe
<i>No, out-of-pocket expenses</i>	80.1%	71.8%
<i>Yes, out-of-pocket expenses</i>	19.9%	28.2%
Less than \$200	30.1%	13.3%
\$200 to less than \$500	26.6%	24.4%
\$500 to less than \$1,000	25.5%	25.7%
\$1,000 to less than \$2,000	12.0%	13.1%
\$2,000 or more	10.8%	23.6%

**Includes amounts not covered by insurance such as exclusions, deductibles, and expenses over limits. Excludes payments for which you have been or will be reimbursed by any insurance or government program.*

Table 6. Out-of-pocket expenses for transportation (2006 Canadian dollars) (Roy et al., 2016)

Range	Degree of disability	
	Less severe	More severe
<i>No, out-of-pocket expenses</i>	81.6%	61.8%
<i>Yes, out-of-pocket expenses*</i>	18.4%	38.2%
Less than \$100	39.3%	28.5%
\$100 to less than \$200	21.2%	23.1%
\$200 to less than \$500	26.1%	25.7%
\$500 to less than \$1,000	7.4%	10.9%
\$1,000 to less than \$2,000	4.5%	6.0%
\$2,000 or more	1.6%	5.7%

**For example, travel to and from treatment, therapy or other medical or rehabilitation services; or extra expenses due to the need for more expensive transportation. Include amounts not covered by insurance such as exclusions, deductibles, and expenses over limits. Exclude payments for which you have been or will be reimbursed by any insurance or government program (Roy et al., 2016).*

Given that there are no available studies on out-of-pocket expenses for persons with disabilities in an accessible and inclusive society on which to draw for precedence, we use *what if* scenarios to consider a range for sensitivity analysis. As a baseline scenario, we assume 50% of out-of-pocket expenses would not be incurred by persons with disabilities and their families if these services were provided through public sector programs. We also consider lower and higher scenarios of 20% and 80%, respectively.

Domain of Output and Productivity

Conceptualization of the Impact on Output and Productivity

Studies consistently indicate that persons with disabilities experience challenges participating in the labour market. The Statistics Canada's CSD indicates that persons with disabilities are less likely to be employed when compared to those without disabilities (59% vs. 80%) (Statistics Canada, 2018a). Commonly reported disabling health conditions (e.g., arthritis, depression, hypertension back pain) are associated with not participating in the labour market (Jetha et al., 2017).

The relationship between disability and employment can vary based on a range of personal characteristics (e.g., age, gender, educational status), health condition/status (e.g., disability severity and disability type), and contextual factors (e.g., province of residence). For instance, according to the CSD, persons with mild disabilities are more likely to be employed when compared to those with very severe disabilities (76% vs. 31%). Similarly, findings also indicate that persons with more severe disabilities are also more likely to report working part-time (Statistics Canada, 2018a). Among young adults (ages 15-24 years), those with more severe disabilities are twice as likely as those with milder disabilities to be neither in school nor employed (a measure of economic exclusion). Unsurprisingly, persons with disabilities earn less income when compared to those without disabilities (Turcotte, 2014). As an example, Statistics Canada estimates that men with disabilities with a university education earn less when compared to their counterparts without a disability (\$69,200 vs. \$92,700) (Turcotte, 2014).

Research also indicates that employed persons living with chronic health conditions are more likely to report productivity loss including absenteeism (i.e., missed workdays) and presenteeism (i.e., working while unwell) (Zhang et al., 2016). Zhang and colleagues used the Canadian Community Health Survey to examine the relationship between commonly reported chronic disease and the number of absent workdays due to health problems (Zhang et al., 2016). A marginal effect model was used, to estimate the incremental number of absent workdays attributable to a particular chronic condition per employee. Findings indicated that the average number of absent workdays due to health problems was 1.35 days over a three-month period. Mood disorders, heart disease, and bowel disorders were associated with the greatest number of absent workdays.

Studies indicate that costs associated with output and productivity loss attributed to disability are high and sometimes greater than direct medical costs associated with disability (Maetzel et al., 2004; Rat et al., 2004; Gibson et al., 2008; Birnbaum et al., 2002). Zhang and colleagues (2006) monetized the output and productivity loss using the incremental number of absent workdays multiplied by eight hours per workday and the average hourly wage of \$24.33 for Canadian employees aged 25–54 years as reported by Statistics Canada in 2010. The authors also added a 15% employee benefit multiplier (to account for employer pension contribution, workers compensation, employment insurance) and a wage multiplier of 1.44 that considers team production, time sensitivity of output, and the availability of perfect substitution. Findings indicate that back problems (\$621 million), mood disorders (\$299 million) and migraine (\$245 million) accounted for the largest incremental productivity loss (Zhang et al., 2016). In another study of persons with arthritis, a proportional odds model was used to estimate the costs attributed to lost productivity. Findings indicated that the average cost attributable to arthritis was CAD11,553 (CAD = 0.75 USD) per person per year. The largest component of the loss was the result of presenteeism, which accounted for 41% (\$4,724) of the total loss. Wage loss because of stopping working or changing jobs comprised 37% (\$4,309) of the total loss (Li et al., 2006).

Estimation of Output and Productivity Costs of Persons with Disabilities

Drawing on research that examines the relationship between disability and employment, we consider the gap in labour-market earnings, employment, and labour-force participation of

persons with disabilities. To estimate the market output and productivity losses due to disability, we use the human capital approach (HCA), in which the wage rate times the absence time is used to estimate the value of lost output and productivity. The concepts of human capital and the marginal product of labour are commonly called on in economics to estimate output and productivity losses associated with unemployment and underemployment. Just as we invest in a machine or factory (physical capital) with the intent of improving output and productivity, so too do we invest in people, again with the expectation of a future return (Rioux, 1998). In our approach, as baseline, we assume that the earnings potential of persons with disabilities is equal to their peers without disabilities in the same age bracket with similar education and skills if society were accessible and inclusive (i.e., full leveling up).¹ We also consider a lower bound scenario (i.e., partial leveling up), in which the labour-market income of persons with severe disabilities is that of persons with milder disabilities and milder disabilities is that of person without disabilities.

We draw on the methodology developed by Buckup et al. (2009), but modify it based on more recent data from the CSD (2017), building on previous analyses of the CSD data by Morris et al. (2018). Buckup et al. (2009) estimated the gap in output and productivity losses due to disability in three categories: 1) persons with disabilities who are employed but not able to use their human capital to the maximum; 2) persons with disabilities who do not find jobs (unemployed) because of their physical or mental impairment; and 3) persons with disabilities who have left the active labour force.² The approach can be expressed with the following formula (Buckup et al. 2009):

$$L = \sum_{i=1}^k P n_i \gamma_i \text{ and } \gamma_i = \underbrace{(\beta_i^* - \beta_i) e_i}_I + \underbrace{\beta_i^* (u_i - u)}_{II} + \underbrace{\beta_i^* (d_i - d)}_{III}$$

$$e_i + u_i + d_i = 100\%$$

P is the earnings of peers without disabilities, n_i is the number of persons with disabilities within a certain category identified by i , and γ_i is the productivity adjustment factor if the labour-force were accessible and inclusive. β_i^* is the potential labour-market earnings of persons with disabilities expressed as a percentage of P , β_i is the actual earnings also expressed as a percentage of P , e_i is the employment rate of persons with disabilities, u_i and u are the unemployment rate of persons with disabilities and their peers without disabilities, and d_i and d are the labour-market non participation rate of persons with disabilities and their peers without disabilities. In contrast to Buckup (2009) we assume that β_i^* is 100%, i.e., that persons with disabilities have the same labour-market earnings potential as their peers without disabilities.

To estimate the gap in output and productivity of persons with disabilities who are employed but not able to fully use their human capital, we compare the average earnings of persons with different severities of disabilities with persons without disabilities in the same age and sex group.

¹ Two stages of leveling-up labour-market earnings of persons with disabilities to that of persons without disabilities could be considered in a more detailed analysis. The first stage would consider existing levels of educational attainment of persons with disabilities, and the leveling-up of earnings with their peers without disabilities. The second stage would leveling-up educational attainment and related labour-market earnings.

² Participation rate measures the percentage of people who are in the labour force, while the unemployment rate measures the percentage of people not employed but seeking work.

We extracted median labour-market income profiles of Canadians with and without disabilities from the CSD (2017) (Data retrieved from Statistics Canada).

The CSD (2017) provided up-to-date information on the differences between the personal pre-tax income of persons with disabilities and their peers without disabilities as indicated in Table 7. Persons with zero earnings (unemployed or not in the labour force) in a particular sex and age bracket are not included in the estimated average pre-tax labour-market income.

Table 7. Median pre-tax personal income of Canadian population aged 25 years and over, by disability status, severity, age group, and sex, 2017 (CSD, 2017)

	Persons without disabilities		Persons with disabilities			
	Men	Women		Men	Women	
Age			Milder	More severe	Milder	More severe
15-24	\$11,097	\$8,891	\$8,553	\$5,605	\$7,945	\$6,038
25-34	\$42,985	\$31,151	\$39,013	\$23,689	\$29,636	\$24,513
35-44	\$57,514	\$40,934	\$54,997	\$34,257	\$36,548	\$30,707
45-54	\$62,374	\$42,147	\$54,386	\$35,868	\$38,494	\$23,922
55-64	\$48,865	\$36,582	\$41,050	\$23,877	\$33,761	\$19,427

Additionally, we add a percentage to the estimated labour-market earnings in all analyses to account for payroll/fringe benefits. This component ensures that the price weights for earnings reflect the full wage. There is a precedent for this in economic burden/cost of illness literature (e.g., Tompa et al., 2017). We draw on employer contribution data from the Canadian National Accounts to estimate the percentage for fringe benefits.

To estimate the gap in output and productivity of persons with disabilities who do not find jobs because of their physical or mental impairment, we compare the average employment rate of persons with different severities of disabilities with persons without disabilities in the same age and sex group. We extracted labour-market employment profiles of Canadians with and without disabilities from the CSD (2017). Table 8 presents the numbers of employed persons in the Canadian population aged 15 to 64 years by disability status and severity.

Table 9 displays the numbers of the unemployed Canadian population aged 15 to 64 years by disability status and severity. The information is grouped by age group (appearing as row headers), persons without disabilities, persons with disabilities, with milder disabilities, with more severe disabilities, women, and men (appearing as column headers). Note that we did not estimate the labour productivity losses for those aged 65+, due to data limitation.

Table 8. Employment of Canadian population aged 15 to 64 years, by disability status, age group, severity, and sex, 2017 (CSD, 2017)

	Persons without disabilities		Persons with disabilities			
	Men	Women	Men		Women	
Age			Milder	More severe	Milder	More severe
15-24	1,021,610	920,340	64,870	17,220	129,760	29,390
25-34	1,701,890	1,464,390	131,590	30,340	220,620	65,720
35-44	1,650,280	1,515,070	172,950	56,870	207,820	81,230
45-54	1,673,870	1,614,650	248,830	78,410	239,610	99,660
55-64	1,226,990	1,100,720	224,330	88,590	162,540	103,390

Table 9. Unemployment of the Canadian population aged 15 to 64 years, by disability status, age group, severity, and sex, 2017 (CSD, 2017)

	Persons without disabilities		Persons with disabilities			
	Men	Women	Men		Women	
Age			Milder	More severe	Milder	More severe
15-24	191,050	147,720	17,200	6,560	27,710	8,850
25-34	121,100	105,680	18,430	6,930	13,010	8,040
35-44	92,070	69,080	15,920	8,260	9,860	10,970
45-54	102,400	70,580	14,150	10,270	12,540	11,440
55-64	84,500	49,750	24,800	11,390	10,100	13,540

To estimate the gap in output and productivity of persons with disabilities who have left the active labour force, we modify the Backup methods. Backup assumed that there are higher economic inactivity rates among persons with disabilities compared to those reporting no disability. He compared the economic inactivity rates among persons with disabilities to those reporting no disability, and then monetized this gap using the average earnings of persons at a given disability level. However, we monetized this gap by considering the average earnings of persons without disabilities, as we want to be consistent with our underlying assumptions that in an accessible and inclusive labour market all people are able to participate equally, regardless of disability status.

We extracted the economic inactivity rates (labour participation) among persons with disabilities from the CSD (2017). Table 10 indicates the numbers of persons in the Canadian population aged 15 to 64 years who are not in the labour force, by disability status and severity.

Table 10. Canadian population aged 15 to 64 years who are not in the labour force, by disability status and severity, 2017 (CSD, 2017)

	Persons without disabilities		Persons with disabilities			
	Men	Women	Men		Women	
Age			Milder	More severe	Milder	More severe
15-24	687,870	640,440	72,390	52,240	71,330	48,890
25-34	155,620	324,160	29,060	29,120	35,610	37,190
35-44	101,400	271,410	21,770	42,920	51,930	62,010
45-54	139,480	270,370	35,760	101,330	65,820	129,070
55-64	395,550	607,300	96,580	171,240	149,880	256,400

The underlying assumption in this section is that an accessible and inclusive labour market would allow all people to participate equally and earnings would be leveled-up, regardless of disability status. Another assumption inherent in this leveling-up is that persons with disabilities have the same level of human capital as their peers. This would imply similar levels of educational attainment and skills, which may not currently be the case due to barriers for persons with disabilities accessing education.

Domain of QOL and Social Role Engagement

Conceptualizing the Impact on QOL and Social Role Engagement

In this domain, we consider the gap in QOL and social role engagement, as well as improved health of persons with disabilities in an accessible and inclusive society. We provide a brief overview of the concept and the measurement issues concerned. In sub-study four, we provide an extended overview of the literature on the conceptualization and measurement of QOL.

QOL for persons with disabilities is affected by many factors that may often interact in subtle ways. A key factor is the levels of engagement in various social roles. Other factors can include the type and degree of disability, the ability to accomplish everyday tasks or activities, satisfaction with social support, presence of a spouse or partner, attitude, coping skills, and level of self-esteem. Because of the adverse consequences of being marginalized in various social roles, there is likely to be a substantial improvement in the QOL of persons with disabilities within an accessible and inclusive society.

Hays et al. reported that the task of evaluating the QOL of persons with disabilities is particularly complex, as disability is not equated solely with a physical or functional impairment, but rather is a result of the social, attitudinal and physical aspects of society that create barriers to full participation (Hays et al., 2002). They evaluated the appropriateness of existing approaches for assessing the QOL of persons with disabilities (particularly the metric of health-related quality of life (HRQOL¹) and quality-adjusted life years (QALY)). They note the growing acceptance of the social model of disablement and the minority group paradigm, suggesting that disability

¹ HRQOL scale was developed by the United States Centers for Disease Control and Prevent as a measure of the impact of health outcomes (physical and mental) on a person's overall feelings of well-being. It is calculated through a series of questions (Healthy Days Measures) that ask respondents about their physical and mental health during the past 30 days. <https://www.cdc.gov/hrqol/methods.htm>

cannot be equated solely with a physical or functional impairment. Disability entails many additional dimensions, most notably, the problems of stigma and discrimination. The use of HRQOL measures, and particularly QALYs, is consequently less than optimal, as these measures are not designed to capture the full extent of QOL impacts, focusing instead and exclusively on HRQOL.

Estimation of the Impact on Quality of Life and Social Role Engagement

Due to the absence of a comprehensive approach to estimating all aspects of QOL, we use a HRQOL measure, specifically QALYs as estimated with the Health Utilities Index (HUI), to approximate QOL gains from progressing to an accessible and inclusive society. The estimation of loss of QOL is approximated by comparing the HRQOL for a person with and without disability in the current context. Subsections A to D detail the methods.

Difference of Health-Related Quality of Life for Persons With and Without Disabilities

To estimate the difference of HRQOL for persons with and without disabilities we drew on data from the Canadian Community Health Survey (CCHS). The CCHS (2014) includes disability data in the Restriction of Activities (RAC) module. The survey identifies persons with participation and activity limitations with the categories of sometimes, often, never/not applicable, and not stated. Respondents are classified according to the frequency with which they experience activity limitations imposed on them by a condition(s) or by long-term physical and/or mental health problems that have lasted or are expected to last 6 months or more. From the survey we also extracted the Health Utilities Index (HUI) of each group, (under categories of sometimes, often, never, not applicable, and not stated). The HUI provides a description of an individual's overall functional health based on eight attributes: vision, hearing, speech, ambulation (ability to get around), dexterity (use of hands and fingers), emotion (feelings), cognition (memory and thinking) and pain, and can take 1.00 (perfect health) through 0.00 (health status equal to death) to -0.36 (health status worse than death, such as some breathing machines). For more details regarding the derived variable for estimation participation and activity limitation (i.e., RACDPAL) or HUI (i.e., HUIDHSI), readers are referred to the CCHS Derived Variable (CCHS, 2014). Table 11 presents HUI by disability category (i.e., sometimes, often, never, not stated).

Table 11. Health Utilities Index (HUI) for persons (15 years and over) with and without disabilities (CCHS 2014)

Participation and Activity Limitation s ^[1]	Frequency	Mean weighted HUI
Sometimes	19.19%	0.82
Often	13.27%	0.57
<i>Sometimes + Often</i>	<i>32.50%</i>	<i>0.72</i>
Never/Not applicable	67.17%	0.93
Not stated	0.37%	0.67

[1] Variable RACDPAL denotes participation and activity limitations. For more detail regarding the method of calculation readers are referred to the Canadian Community Health Survey (CCHS), Annual Component – Public Use Microdata File, 2010. Derived Variable (DV) Specifications. pp.138.

Crosswalk Between the CCHS and the CSD

To estimate the difference in HUI score for persons with and without disabilities, we used the HUI difference between persons with participation and activity limitations in CCHS and persons without limitations. We first collapsed two categories of “sometimes” and “often” (as indicated Table 11) into one category and associated it with “persons with disabilities”. Then we compare the HUI score for this group with that of the category “Never/Not applicable,” which we associated with persons without disabilities. We did not consider “Not stated” in our calculation. We use difference in HUI score as identified above to estimate and approximate the difference in HUI score between persons with and without disabilities in the CSD (2017), under the assumption that the difference is the same for respondents in both surveys.

Table 12 provides details of the number of persons with and without disabilities that are identified in the CCHS (2014). As is apparent in the table, the number of persons with disabilities is more than what is identified in the CSD (2017) (i.e., 6,246,640 persons with disabilities in the CSD 2017). This is likely due to the difference in the definition of disability used in the surveys. Table 13 also indicates the difference of the prevalence of disability across two data set by age and sex. As it indicates, the CCHS reported higher prevalence of disability in all age groups. The issue of comparability of different health measures has been extensively discussed in a report by Grondin (2016) in Statistics Canada. Although these definitions are not exactly the same, they could provide a ballpark estimate to the difference of the HUI for persons with and without disabilities.

Table 12. Number of persons (15 years and over) with and without disabilities (CCHS 2014)

Age group	Persons with disabilities	Persons without disabilities	Total population
15-24	970,462	3,585,365	4,561,457
25-44	2,246,956	7,140,748	9,399,108
45-64	3,699,734	6,082,283	9,825,500
65-74	1,441,497	1,780,916	3,243,348
+75	1,232,333	807,122	2,065,222
Total	9,590,983	19,396,433	29,094,635

Note. The number of persons with and without disabilities does not add up to the total, as some respondents did not respond to the question on participation and activity limitations.

Table 13. Comparison of the prevalence of persons (15 years and over) with and without disabilities (CCHS 2014; CSD 2017)

Age group	CCHS 2014 ^[1]		CSD 2017 ^[2]	
	Women	Men	Women	Men
15-24	16.3%	15.1%	15.6%	10.8%
25-44	19.9%	19.5%	17.7%	12.9%
45-64	35.7%	32.3%	25.2%	23.4%
65-74	44.8%	41.2%	33.3%	30.5%
+75	63.0%	58.1%	49.2%	45.0%
Total	30.7%	27.5%	24.3%	20.2%

[1] Including both groups of sometimes and often.

[2] Including both milder and severe groups.

Scenario of Enhancements to Health-Related Quality of Life for Persons With Disabilities in an Accessible and Inclusive Society

Given that there is no study to draw on for the HRQOL for persons with disabilities in an accessible and inclusive society, we use *what if* scenarios to consider a range for sensitivity analysis. We define two scenarios for enhancements to HRQOL for persons with disabilities. In the baseline scenario, we assume that in an accessible and inclusive society there is no difference in HUI of persons with and without disabilities. For a lower bound scenario, we assume that a 10% gap in HUI between persons with and without disabilities will continue to exist in an accessible and inclusive society. Table 14 provides details on the difference in HUI for persons (15 years of age and older) with and without disabilities by age and sex, based on the CCHS (2014).

Table 14. Health Utilities Index (HUI) for persons with and without disabilities (15 years and over) (CCHS 2014)

Age group	All persons	Women Persons with disabilities ^[1]	Persons without disabilities	All person	Men Persons with disabilities ^[1]	Persons without disabilities
15-24	0.879	0.755	0.920	0.888	0.755	0.916
25-44	0.890	0.747	0.936	0.899	0.762	0.940
45-64	0.848	0.720	0.931	0.852	0.706	0.930
65-74	0.836	0.722	0.931	0.851	0.738	0.932
+75	0.724	0.606	0.907	0.763	0.655	0.901
Total	0.856	0.715	0.930	0.869	0.724	0.930

[1] identified through variable RACDPAL in CCHS 2014, includes both groups of sometimes and often. We did not consider "Not stated" in our calculation.

Monetary Benefit of HRQOL Enhancement Through an Accessible and Inclusive Society

We translated HRQOL into monetary terms, drawing on frequently used values in the health economics field. The health policy and contingent-valuation literatures offer a range of monetary values for a QALY (e.g., Mackenbach et al, 2011; Hirth et al., 2000). We use \$100,000, which is in the mid-range of the values identified in these literatures. We also undertake sensitivity analysis on the value of a QALY by using \$50,000 and \$150,000 as price weights. The former value was commonly used in the Canadian health technology assessment field in the 1990s (Tompkins et al., 2017). It is still a reference threshold but has not been revised since 1992 when it was first proposed.

Domain of Life Expectancy

Conceptualizing the Impact on Life Expectancy

Within the Canadian context and globally, a modest body of research has estimated the life expectancy of persons with disabilities. These studies indicate that current generations of persons living with disabilities report longer life expectancies when compared to previous generations. However, when compared to those not reporting a disability, studies consistently indicate that a disability is related to a lower life expectancy (Lang et al., 2018; Thomas et al., 2010; Thornton,

2019). For instance, hospital discharge data was reviewed in a 5-year study of Nordic countries. Those reporting a mental health disorder had two to three times higher mortality than those without a disability (Wahlbeck et al., 2011).

It is important to note that the impact of disability on life expectancy can be direct (i.e., associated directly with the health impairment), as well as through social pathways (e.g., poverty decreases the health status of persons with disabilities, and in turn impacts life expectancy).

In terms of direct impact, surveillance studies indicate that mortality rates for persons with disabilities have been found to vary depending on their health condition (World Health Organization, 2011). A recent analysis of Canadian data from the 2016 cycle of the Global Burden of Disease Study estimated years of life lost and mortality for all-cause and cause-specific diseases and injuries (Lang et al., 2018). Findings indicated that the largest proportion of deaths was caused by noncommunicable diseases, with an estimate of 243,553 deaths. Neoplasms and cardiovascular diseases were the leading causes. Similar findings regarding the impact of certain health conditions on life expectancy have been highlighted in some developed countries (Robine et al., 1991; Abegunde et al., 2007). Of note, the number of health impairments that a person is living with can also impact life expectancy. A study of US Medicare benefit usage ($n = 1,372,272$) found that life expectancy decreases with each additional chronic condition. In the paper, the authors estimate that a 67-year-old with no chronic disease will live 22.6 additional years, whereas those living with 5 and 10 or more chronic conditions will live 7.7 and 17.6 fewer years, respectively (DuGoff et al., 2014).

Notably, the relationship between disability and life expectancy may also differ based on gender. Belanger and colleagues (2008) used multi-state life tables to estimate disability-free life expectancy related to different health impairments in Canada for those 45 years or older. Findings indicate that women with diabetes and arthritis had greater disability-free life expectancy compared to males with diabetes (14.1 years compared to 10.5 years) and arthritis (8.8 years compared to 6.5 years) (Belanger et al., 2002). Life expectancy may also differ based on the severity of a disability. For instance, an Australian study of persons living with intellectual disabilities estimated Kaplan-Meier survival plots to estimate life expectancy. Findings indicate that those with mild symptom severity had significantly greater life expectancy (74 years) compared to those reporting moderate symptom severity (68 years) to severe symptom severity (59 years) (Bittles et al., 2002). Other studies of persons with intellectual disabilities indicate that those with mild disability severity may not have lower life expectancy compared to their peers without disabilities. However, those with moderate and severe disabilities are more likely to report lower life expectancy compared to their non-disabled peers (Patja et al., 2000; Hutton et al., 2006).

Research focusing on the social determinants of health finds that greater impairment and lower life expectancy may also be attributed to social structures (e.g., lack of access to safe housing, nutritious foods, social support, health service and education). These studies indicate that persons with disabilities may have lower life expectancy due to poverty-related health (WHO, 2008; Wilkins et al., 2010; Office of Disease Prevention and Health Promotion, 2019). The indirect effects of the social determinants of health on life expectancy is revealed in data from Statistics Canada which indicates that those who earn a lower income and live in a neighbourhood with lower incomes are more likely to report lower life expectancy. Similarly, studies indicate that

certain regions in Canada have lower life expectancies. Those with the lowest life expectancies tend to be characterized by greater rates of unemployment, fewer university graduates, rural/remote geography, larger aboriginal populations and higher rates of smoking and heavy drinking (Statistics Canada, 2010; Gilmore et al., 2010). Indeed, for persons living with disabilities, social structures may exacerbate the direct effects of a health impairment on mortality (Greenberg, 2015). As mentioned earlier, persons with disabilities may be more likely to report underemployment and experience working conditions that are associated with lower life expectancy. Results of Whitehall studies of British civil servants showed that those working in jobs with lower skill/educational requirements and having higher job demands and less control have an increased likelihood of reporting a cardiovascular disease and greater risk of mortality compared to those working in higher status occupations (Marmot et al., 1991; Marmot et al. 2008).

An investigation in the United Kingdom into health inequalities among persons with learning impairments and persons with mental health disorders found that they had lower life expectancies (World Health Organization, 2011). In an NHS Digital study, Thornton (2019) found that persons with learning disabilities had significantly lower life expectancies than persons without disabilities. The study found that persons with learning disabilities die, on average, more than 14 years younger than the population of persons without disabilities and are significantly more likely to have certain conditions and diseases. Persons with learning disabilities have 26 times higher chance of epilepsy, 8 times higher chance of severe mental illness, and 5 times higher chance of dementia. They were also three times more likely to suffer from hypothyroidism, and almost twice as likely to suffer diabetes, heart failure, chronic kidney disease or stroke. Furthermore, the study found that persons with learning disabilities are not always receiving healthcare screening for which they are eligible. For instance, only 43.2% of persons known to their general practitioners to have a learning disability had an annual health check. Yearly checkups were more common with older age groups, reaching 50% or higher in persons aged 45 years and older. It was lower with younger adults, at less than 40% for those under 25 years (Thornton, 2019).

Estimation of the Impact on Life Expectancy

Drawing on available research, we estimate the paid-labour-market output and productivity losses and HRQOL losses of persons with learning disabilities that are associated with premature mortality. We assume 14 years of losses due to shorter life expectancy for person with learning disabilities based on Thornton et al., (2019) and Learning Disability Today (2016). For sensitivity analysis we use 10 and 18 years. Following the approach taken by Tompa et al. (2017), we estimate the sum of working life years lost due to premature mortality and estimate the monetary value of lost earnings using the average wage of the general population for each age and sex category, discounting future lost earnings to the reference year 2017. We also estimate the sum of HRQOL years lost because of premature mortality and monetize QALY lost, using the values noted above.

Domain of Informal Caregiving

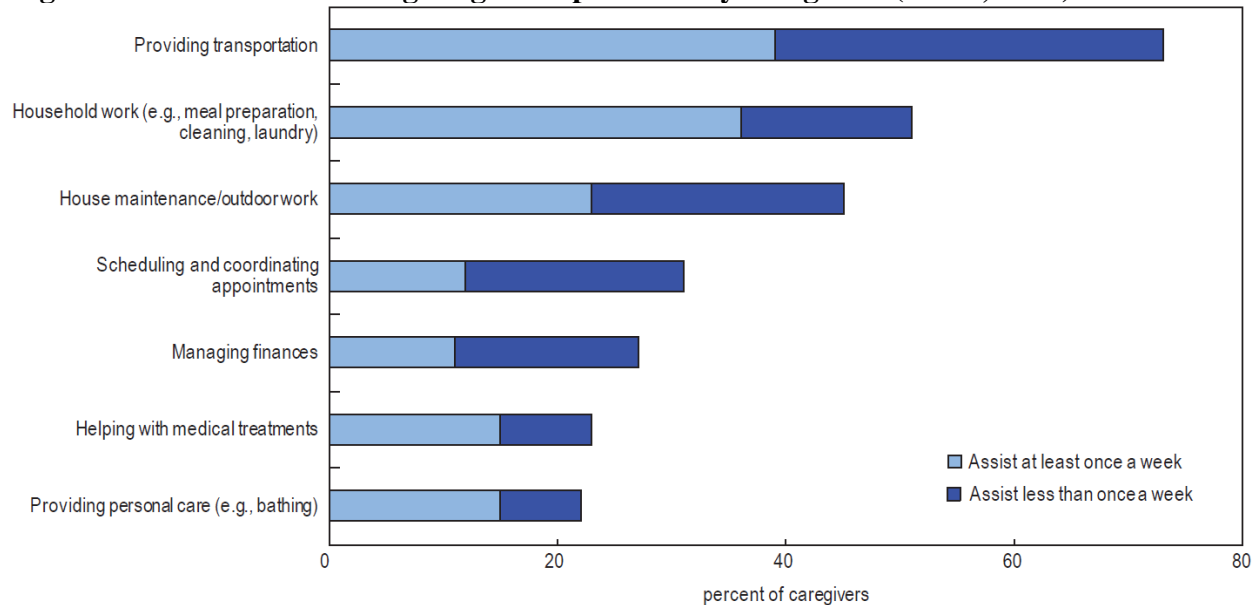
Conceptualizing the Impact on Informal Caregivers

Emerging attention has been placed on public health and economic costs associated with informal caregiving (Talley et al., 2007). Informal caregivers refer to those who offer ongoing

care and assistance, without pay, for family members and friends in need of support due to physical, cognitive, or mental conditions (Walton, 2012; Canadian Caregiver Coalition, 2001; Petch et al., 2012). In Canada, caregivers tend to be over 45 years of age and have the potential to have interruptions in their labour-market activity during prime working years. In 2001 this represented approximately 2.7 million people (Canadian Caregiver Coalition, 2001). More recent estimates suggest that 8.1 million Canadian adults provide care to a friend or family member with a disability, chronic disease or needs due to aging (Sinha, 2013). Research also indicates that women are more likely to provide care to a friend or family member when compared to men (Sinha, 2013).

A study profiled caregivers in Canada (Sinha, 2013) using data from the 2012 Canadian General Social Survey. The study indicates that age-related needs (28%), cancer (11%), cardiovascular disease (9%) and mental illness (7%) are the most commonly reported reasons for delivering caregiving to a friend or family member (Sinha, 2013). The same study suggests that caregivers spend a median of three hours per week providing care. The number of hours spent providing care can increase depending on the relationship to the receiver; hours spent caring for a spouse (14 hours/week) and child (10 hours/week) is greater than for a friend (2 hours/week). Similarly, the type of disability with which a care receiver is living will also determine care responsibilities. For instance, persons with developmental disabilities (51 hours/week) require greater time receiving care when compared to those with a mental illness (24 hours/week).

Informal caregiving activities can include a wide array of assistance with activities of daily living (e.g., preparing meals, everyday housework, heavy household chores, personal care, etc.), instrumental activities of daily living (e.g., transportation, housekeeping), and service coordination (e.g., navigating healthcare system). Figure 5 provides details from Sinha (2013). These roles and responsibilities may vary in levels of intensity and degree of physical and emotional demands on the caregiver, and can supplement care offered by the healthcare system (Sinha, 2013; Lum et al., 2011). An analysis of the Canadian General Social Survey indicates that providing transportation to their primary care receiver to run errands, shop, attend medical appointments or participate in social events was one of the most commonly reported caregiving tasks provided by over three-quarters of those who reported being a caregiver. In addition, about half of caregivers reported that they performed tasks inside the care recipient's home, such as preparing meals, cleaning, and doing laundry. Another 45% reported providing assistance with house maintenance or outdoor work (Sinha, 2013). Estimates suggest that for persons with chronic disabling health conditions, informal caregivers provide 80% of care needs (Fast et al., 2002).

Figure 5. Most common caregiving tasks provided by caregivers (Sinha, 2013)

Studies highlight several factors which have contributed to an increase in the need for informal caregiving. First, coupled with advancements in medicine and technology are longer lives that dramatically increase the need for long-term caregiving (Talley et al., 2007). Second, higher costs of care, less availability of hospital beds and spaces in long-term care facilities (Talley et al., 2007), alongside rising costs of care in industrialized countries have increased the need for informal caregiving (Decima Research Inc, 2002). Third, an aging baby-boomer population has also meant that a greater proportion of people require more care (Zukewich, 2003).

In Canada, the economic implications of informal caregiving include significant costs associated with foregone labour-market earnings for caregivers whose care recipients are persons with disabilities. Studies examining the economic impact of caregiving responsibilities have used various estimates including missed workdays, lost productivity and burnout (Canadian Caregiver Coalition, 2003). An earlier study indicated that work delivered by informal caregivers was valued at between \$5.1 to \$5.7 billion (Fast et al., 1999). The time spent by informal caregivers can vary based on the severity of disability and province (Chappell et al., 2001). Other research that has sought to estimate the economic costs associated with informal caregiving has stemmed from research on the aging population. Drawing on the General Social Survey, one study examined the imputed costs of replacing unpaid care provided by Canadians to seniors (Solan et al., 2001). Imputed costs are used to refer to costs that would be incurred if the care provided by an unpaid caregiver were, instead, provided by a paid caregiver, on a direct hour-for-hour substitution basis. Through the imputed cost method, the authors estimated (conservatively) that the imputed economic contribution of unpaid caregivers for Canada, for 2009, would be \$25-\$26 billion (Hollander et al., 2006). Other research indicates that informal caregivers provide an average of \$100/month out of their pocket to fund caregiving responsibilities (Decima Research Inc, 2002).

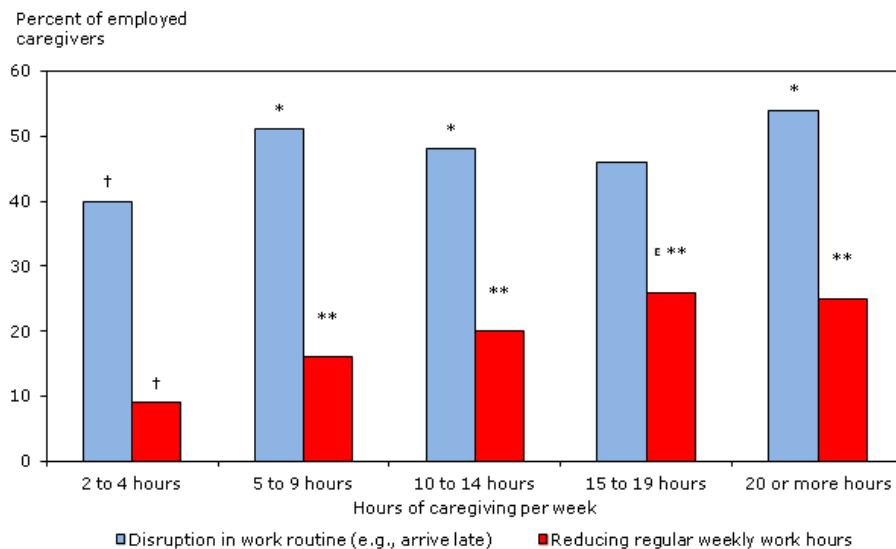
Informal caregiving can have negative consequences on employment that can be both short- and long-term, possibly impacting the caregiver's career trajectories, earnings and benefits. An

estimated 15% of employed caregivers reported cutting down on their regular weekly hours of work to accommodate the caregiving needs of family and friends. This became a greater reality with increased intensity of caregiving activities (Figure 6). For instance, about one-quarter of caregivers providing help for more than 15 hours had to reduce their regular paid work hours. The need to reduce hours, however, did not differ between those providing 15 to 19 hours of caregiving, compared to those providing more hours of care.

A reduction in paid work hours can have consequences on household income and work-related benefits. Among employed caregivers who reduced their hours of work, 14% reported losing some or all their benefits, such as extended health benefits, dental benefits, employer-provided pension, life insurance, and prescription drug plans. While reduced hours can also impact earnings, the largest proportion of caregivers (31%) reported a household income of \$100,000 or more, followed by an income of \$60,000 to \$99,999 (22%). In fact, caregivers were more likely than non-caregivers to report an income of \$60,000 or more, suggesting that individuals in higher family income brackets are more likely to afford and have the flexibility to provide care.

Closely related to earnings is career advancement. In 2012, 10% of employed caregivers turned down or did not even pursue a new job or promotion because of their caregiving responsibilities (Sinha, 2013). Again, the more hours of caregiving responsibilities, the higher the likelihood of the caregiver postponing or forgoing career opportunities. Four in ten caregivers sought a less demanding job because of their caregiving duties.

Figure 6. Impact of caregiving time on paid employment (Sinha, 2013)



E use with caution

† reference category

* significantly different from reference category - disruption in work routine for 2-4 hours of caregiving per week ($p < 0.05$)

** significantly different from reference category - reducing regular weekly work hours for 2-4 hours of caregiving per week ($p < 0.05$)

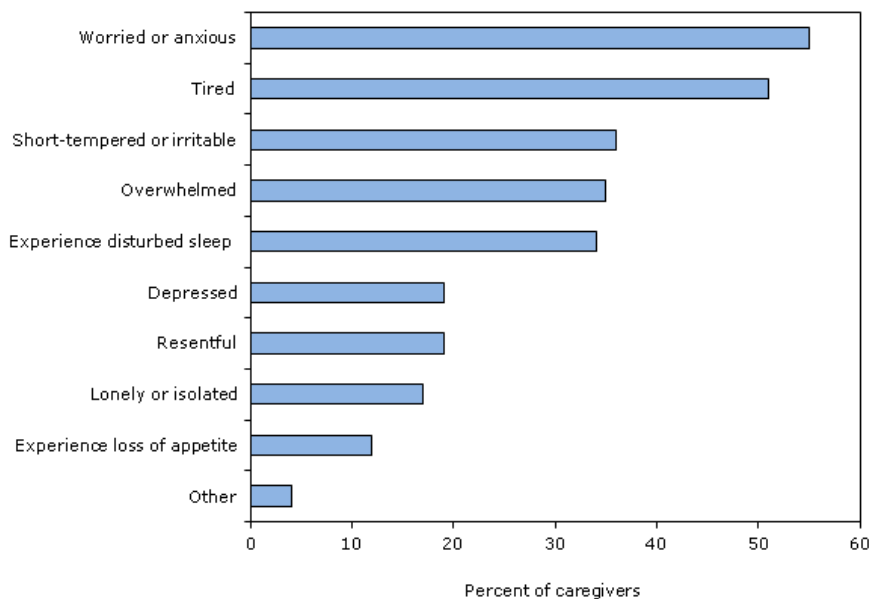
Note: Includes caregivers whose main activity was working at a paid job or business. Questions on the impact of caregiving responsibilities on employment were only asked of those caregivers providing care for 2 or more hours per week.

Informal caregivers' responsibilities are also associated with significantly lower self-rated health and QOL. For instance, studies conducted in the United States indicate that those with greater

caregiving responsibilities are more likely to report fair or poor health and more likely to be injured when compared to those with fewer or no caregiving responsibilities (Caregiving in the US, 2004; Baumgarten, 1992). Other research indicates that caregiving responsibilities are perceived as a significant stressor (Decima Research Inc, 2002). Informal caregiving responsibilities can also be associated with negative mental health impacts including higher rates of depression, anxiety, burnout and substance abuse (George et al., 1986; Dura, 1991; Schoenmakers et al., 2009; Petch et al., 2012).

Despite coping well with caregiving responsibilities, caregivers report often feeling worried or anxious (Sinha, 2013). See Figure 7 for details. Overall, the vast majority of caregivers (95%) indicated that they were effectively coping with their caregiving responsibilities, with only 5% reporting that they were not coping well. While most were able to effectively manage their caregiving responsibilities, 28% found providing care somewhat or very stressful and 19% of caregivers indicated that their physical and emotional health suffered in the last 12 months as a result of their caregiving responsibilities. In both cases, these consequences were magnified with the intensity of care, i.e., the number of hours of caregiving per week.

Figure 7. Impact of caregiving on caregivers' mental health (Sinha, 2013)



Note: Questions on the impact of caregiving responsibilities were only asked of those caregivers providing care for 2 or more hours per week.

Source: Statistics Canada, General Social Survey, 2012.

In our model, we assume the benefits of a fully accessible and inclusive society includes the provision of formal caregiving services, such that informal caregivers' time, employment/careers and health are not compromised. Thus, the benefits to be realized in this counterfactual scenario includes more personal time, higher earnings and improved health of caregivers. We draw on different literatures and develop this domain under three separate parts, that are explained in the following section.

Estimation of the Impact on Informal Caregivers

Estimation of the Value of Caregiving Services

To estimate the value of caregiving services, we use the Hollander et al. study (2009). They estimated the replacement cost of unpaid care in Canada at \$24.2 billion in 2007 dollars. However, this study only caregivers aged 45 years old and older were included. They used homemakers' cost at the hourly market rate to monetize the value of caregivers' time. For extrapolation of this cost for the year of 2017, we use the average population growth rate of Canada (Statistics Canada, 2018b). Using the above information, we estimated the value of caregiving services at \$31.6 Billion for 2017. Given that there is no study to draw on for the value of caregiving services provided by informal caregivers in an accessible and inclusive society, we use *what if* scenarios to consider a range for sensitivity analysis. For the baseline, we assume a reduction of 50% of the value of unpaid caregiving services, as in an accessible and inclusive society there would be less demand for caregiving services and some provision of caregiving services through publicly funded programs. For lower and upper bound scenarios, we assume a reduction of 30 and 100% of the value, respectively.

Estimation of Output and Productivity Costs Associated with Caregiving

We use the Vanier Institute of the Family study (Battmas et al., 2017) to estimate the productivity losses due to caregiving-related absenteeism. They reported that employers across Canada incur an estimated \$5.5 billion annually (2015 Canadian dollars) in terms of productivity loss due to caregiving-related absenteeism. This value was estimated from a study in the US about the double duty of caregivers in the workplace. In the study, a survey revealed that caregivers were estimated to miss, on average, 10 days of work each year to handle care responsibilities in 2015 (CERIDIAN, 2015). Three-quarters of family caregivers (6.1M) were employed at the time, accounting for 35% of all employed Canadians. Of the employed caregivers, 44% reported having missed an average of 8–9 days of work in the past 12 months because of their care responsibilities. More than one-third of young caregivers (36%) arrived to work late, left early or took time off due to their caregiving responsibilities. Based on the caregiver absenteeism cost of \$5.5 billion and a count of 6.1 million caregivers, we estimate the average per case productivity losses due to caregiving-related absenteeism at \$902 per year (2015 Canadian dollars). We assume all persons with a disability need a caregiver in the current situation, and that in an accessible and inclusive society there would be no productivity losses due to caregiving-related absenteeism.

Estimation of the Impact on the Quality of Life of Caregivers

Due to the absence of a comprehensive study regarding the well-being of informal caregivers of persons with disabilities in Canada, we developed our own estimate based on the HRQOL measure. To do so, we extracted the HUI for the general population from the Canadian Community Health Survey (2010) for each age and sex group. We estimated the average annual HUI of informal caregivers, using their age and sex distribution based on the data from the Canadian Portrait of Caregivers Report 2012 (Table 15) (Sinha, 2013). They reported the variance in each of the eight SF-36 scales, which ranged from 14% for physical role functioning to 29% for vitality (Hughes et al, 1999). We draw on this study and, as a conservative assumption, assume informal caregivers HUI is 14% lower than the society's average. Then we use *what if* scenarios to consider a range for sensitivity analysis of loss of HRQOL of informal caregivers. For the baseline, we assume a reduction of 50% loss of QOL for caregivers. For

lower and upper bound scenarios, we assume a reduction of 30 and 100% of the value, respectively. Lastly, we estimate the monetary value of QALY losses of caregivers, based on the approach taken by Tompa et al. (2017), as described under the domain title “Quality of Life and Social Role Engagement.”

Table 15. Age and sex distribution of Canadian caregivers (Sinha, 2013)

	Number	Percent
Age		
15 to 24	1,250,536	15.5%
24 to 34	1,157,651	14.3%
35 to 44	1,143,473	14.1%
45 to 54	1,945,545	24.1%
55 to 64	1,620,403	20.0%
65 to 74	682,641	8.4%
+ 75	283,814	3.5%
Sex		
Male	3,716,645	46%
Female	4,367,418	54%

Domain of Children with Disabilities

Conceptualizing the Impact on Families of Children with Disabilities

In this domain we focus on the incremental expenses that families with children with disabilities incur compared to families with children without disabilities. Data and evidence is drawn from several sources. The most significant hurdle is to estimate the number of children younger than 15 with disabilities in our reference year.

It is important to note that the impacts on families with children with disabilities is not limited to out-of-pocket expenses. There are also work-related impacts on the parents of children with disabilities. For example, families who have a child with a more severe disability are more likely not to have a job, quit work, refuse a job or work shorter hours compared to families with a child with a less severe disability. Some of these impacts are identified in Table 16 (Roy et al., 2016).

Table 16. Work-related impacts on parents of children with disabilities (Roy et al., 2016)

Work-related consequences	Percent
Not taking a job in order to take care of the child	26.4%
Quit working	21.6%
Lost a job	6.2%
Turned down a promotion or a better job	19.7%
Changed work hours to different times of day or night	36.5%
Worked fewer hours	38.4%
Financial problems because of child condition or health problem	17.9%

Estimation of the Number of Children with Disabilities in 2017

We recognize there are limitations and data gaps when it comes to measuring the number of children with disabilities in Canada for our reference year 2017. While there is no standardized method to estimate the number of children with disabilities, we attempt to do so by drawing on several data sources. We start with an estimate of the number of persons aged 0-14 from the 2016 Census (Statistics Canada, 2019a). We then estimate the prevalence of children with disabilities using data from the PALS (2006) (Statistics Canada, 2006). We assume that the prevalence of disability among children has remained the same since 2006 (i.e., children with disabilities as a proportion of all children has remained the same). Table 17 provides details of the computations. For sensitivity analysis, we define two scenarios. A lower bound estimate is based on the PALS (2001) (Statistics Canada, 2001). A higher bound estimate is based on the trend in prevalence of children with disabilities observed between 2001 and 2006, with the assumption that the trend continued to 2017. It is important to note that the questions used to identify disability in the PALS are not the same as in the CSD (2017), so our estimate of prevalence of disability for children less than 15 in reference year 2017 is biased by the change in the disability screening approach.

Table 17. Estimated number of the children 0-14 years old with a disability

Parameter	Value
Total number of the children (in 2017) ^[1]	5,913,180
Prevalence of disability among children (PALS 2006) ^[2]	3.7%
Prevalence of disability among children (PALS 2001) ^[3]	3.3%
<i>Scenarios</i>	
Baseline ^[4]	218,690
Lower ^[5]	192,908
Higher ^[6]	274,963

[1] <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000501>

[2] Statistics Canada, Participation and Activity Limitation Survey. 2006. Available at: <https://www150.statcan.gc.ca/n1/pub/89-628-x/2007003/t/4125025-eng.htm>

[3] Statistics Canada, Participation and Activity Limitation Survey. 2001. Available at: <https://www150.statcan.gc.ca/n1/pub/89-628-x/2007003/t/4125024-eng.htm> (Note: The Canada total excludes the Yukon, Northwest Territories and Nunavut).

[4] Estimated using Participation and Activity Limitation Survey (PALS), 2006

[5] Estimated using Participation and Activity Limitation Survey (PALS), 2001

[6] Estimated by assuming linear increase in the rate of disability among children based on the 2001-2006 trend (assuming the 2017 rate of disability among children at 4.7%).

Estimation of the Impact on Families with Children with Disabilities

To estimate the additional living costs faced by families with children with disabilities, we drew on the Roy study (Roy et al., 2016). They use the microdata file of the Statistics Canada's PALS (2006) to gather background information on families with children with disabilities as well as data on additional living costs and work-related issues for those families. Table 18 identifies expected out-of-pocket expense of families with children with disabilities under five categories: 1) prescription and non-prescription drugs, 2) purchase and maintenance of aids and specialized equipment, 3) healthcare and social services, 4) transportation, and 5) help with everyday housework. We assume that in an accessible and inclusive society 50% of out-of-pocket expenses would be averted. This would arise due to lower levels of need because of increased

accessibility and inclusiveness, as well as the provision of needed services through social safety net programs. For sensitivity analysis, we consider two scenarios of 20% and 80% for lower and upper bounds of out-of-pocket expense averted (note, these percentages are the same as the ones used in the out-of-pocket expenses domain).

Table 18. Expected out-of-pocket expense for families with children with disabilities (Roy et al., 2016)

Type ^[1]	Weighted average ^[2]
Prescription and non-prescription drugs	\$513
Purchase and maintenance of aids and specialized equipment	\$818
Healthcare and social services	\$837
Transportation	\$389
Help with everyday housework	\$1,101

[1] Includes amounts not covered by insurance such as exclusions, deductibles and expenses over limits. Excludes payments for which the respondent has been or will be reimbursed by any insurance or government program.

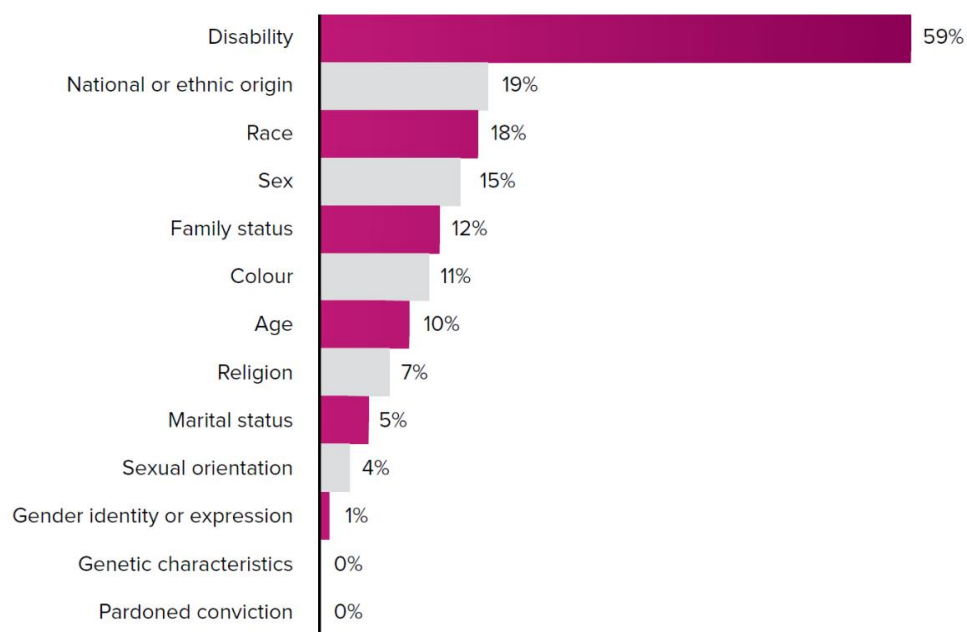
[2] Values are in 2006 Canadian dollars.

Domain of Human Rights

Conceptualization of the Impact on Human Rights

In this domain, we consider disability-related human rights complaints/litigation costs for the public and private sector. We focus on complaints that are received by the Canadian Human Rights Commission and their provincial/territorial counterparts. Between 2011 and 2017, disability-related complaints represented just over half of all the discrimination complaints received by the Canadian Human Rights Commission (Figure 8) (Canadian Human Rights Commission, 2017).

Figure 8. The proportion of complaints received by the ground of discrimination in 2017 (Canadian Human Rights Commission, 2017)



Registered complaints might be considered the “tip of the iceberg” of human rights related issues that may arise in society. Essentially, many such issues that arise in workplaces and elsewhere do not get taken to the commission level. They nonetheless result in expenses for the individuals and organizations involved. Even for cases that are registered, many get settled out of court so most of the costs incurred are by private entities rather than the public sector. For cases where there are out-of-pocket costs to the parties involved, there are output and productivity losses that impacts the employer and worker, lost revenue associated with an organization’s tarnished reputation and intangible costs in terms of QOL.

Some cases are not heard by a Human Rights Commission, but rather by entities focused on specific sectors such as the Canadian Transportation Agency (CTA), the Canadian Radio-television and Telecommunications Commission (CRTC) and the Federal Sector Labour Relations Board (FSLRB). There are provincial counterparts to the FSLRB that hear cases for workers associated with provincial government collective agreements. There are other labour unions that deal with violations of collective agreements for their members. Civil society dedicates resources to support claimants, e.g., legal aid agencies which help people navigate the system and support cases that are systemic. There are also workers’ compensation cases and appeals which are dealt with in the workers’ compensation systems. Social assistance has its own entities and processes for addressing such cases. All in all, our estimates of cases and related costs will be substantially underestimated due to data limitations. We focus exclusively on human rights cases presented to the tribunals at the federal, provincial and territorial levels, and assume that in an accessible and inclusive society there are no disability-related discrimination complaint costs.

Estimation of the Impact on Human Rights

The assumption in our counterfactual scenario is that there is equal opportunity and treatment of all persons regardless of ability and, as a result, there are no human rights issue related to discrimination against persons with disabilities. Therefore, expenses incurred by stakeholders to consider these cases at the Human Rights Tribunal would not exist. We assume that cases found in favour of the complainant would also not exist in an accessible and inclusive society.

We extract the number of new cases of disability-related discrimination complaints at the provincial/territorial and federal levels as indicated in Table 19. Given that there is no study available on disability-related discrimination complaint costs, we draw on the British Columbia average human rights tribunal operating costs as a starting point to estimate the disability-related discrimination complaints case costs (BCHRT Annual Report 2017/2018). They estimated the total tribunal operating costs at \$2,997,161 and the total number of the new complaint cases at 2,273 in 2017. We consider two times of average per case tribunal operating costs (i.e., \$4,623) as a baseline scenario for the cost of disability-related discrimination complaint. The doubling of the administration costs is to account for the out-of-pocket costs incurred by complainants and defendants. For sensitivity analysis, we assume a range of one and five time the average per case tribunal operating costs for the lower and upper bound scenarios, respectively.

Table 19. New cases of disability-related discrimination complaints at the federal and provincial/territorial levels, 2017

Province/Territory	Province/Territory human rights commission	Federal human rights commission ^[11]
Alberta	1,317 ^[1]	136
British Columbia	700 ^[2]	152
Manitoba	141 ^[3]	49
New Brunswick	100 ^[4]	27
Newfoundland and Labrador	33 ^[5]	-
Nova Scotia	147 ^[6]	34
Ontario	12,934 ^[7]	497
Prince Edward Island	46 ^[8]	-
Quebec	2,089 ^[9]	138
Saskatchewan	89 ^[10]	34
Total	17,597	1,083

[1] https://www.albertahumanrights.ab.ca/about/Pages/annual_report.aspx

[2] www.bchrt.bc.ca/shareddocs/annual_reports/2016-2017.pdf

[3] <http://www.manitobahumanrights.ca/v1/about-us/annual-reports.html>

[4] <https://www2.gnb.ca/content/gnb/en/departments/nbhrc/resources/annual-reports.html>

[5] <https://thinkhumanrights.ca/education-and-resources/annual-reports/>

[6] <https://humanrights.novascotia.ca/about/publications-reports-plans>

[7] <http://www.hrlsc.on.ca/en/reports-and-statistics/open-data>

[8] <http://www.gov.pe.ca/humanrights/index.php3?number=72437&lang=E>

[9] <http://www.cdpcj.qc.ca/fr/publications/pages/recherche.aspx?field=PublicationsMandat&value=Charte&title=Droits%20de%20la%20personne&groupbyfield=PublicationsSujet>

[10] <http://saskatchewanhumanrights.ca/learn/annual-reports>

[11] <http://chrcreport.ca/by-the-numbers.php>

Domain of Transportation

Conceptualization of the Impact on Transportation

Persons with disabilities consistently report that barriers to transportation represent a significant contextual factor that can hinder or facilitate participation in employment and educational activities (Belgrave et al., 1991; Vogel et al. 1998; Magill-Evans et al., 2008; Jongbloed, 2003). In the Canadian context, many persons with disabilities rely on specialized transit (e.g., Wheel-Trans, accessible publicly funded taxis) as a primary means of transportation. In 2011, the average cost per passenger for specialized transit services was \$25.75, as compared to a cost per passenger of \$3.31 for conventional transit in the same year (CUTA, 2013). Between 2003-2011, estimates also suggest that the kilometers traveled on specialized transit services in Canada has increased by 56% (Seider, 2013). At the same time, unaccompanied trips increased by 27% in the same time period. Literature on public transit points to many potential accommodations that can be made to improve accessibility and decrease usage of specialized transport. Low floor buses equipped with kneeling capability and ramps on existing transit routes are key accessible transit features allowing mobility restricted persons and those using mobility aids (e.g., wheelchairs, walkers, etc.) to access conventional transit systems (Seider, 2013).

Recently the Canadian Urban Transit Association (CUTA) conducted a multiple account evaluation to estimate the economic impacts from investment in accessible transit, both at the

individual level and for the national economy (Seider, 2013). Findings from the models indicate that the economic benefits of accessible transit can contribute \$40 million in increased income through greater labour-market participation. The authors also estimated that when considering the multiplier effect, accessible transit could contribute \$120 million to the economy. Lastly, through improved transit, the authors estimate that persons with disabilities could be more likely to obtain higher levels of education, and thus contribute \$25 million in increased income.

Transportation can include local/municipal transit (e.g., buses, taxis, subways, trams, and suburban commuter trains), as well as longer haul transportation (including air travel, long-haul trains, and buses, ferries and ships). Transportation plays such a vital role in many aspects of life (e.g., employment, educational pursuits, tourism, and community activities) that there is considerable spillover effects on other domains. These spillover effects are captured in the domains in which those effects are most pertinent. For example, transportation affecting the ability to commute to work and maintain employment is subsumed within the output and productivity domain. In this domain we focus on fewer road collisions due to reduced congestion, less expensive transit on a per capita basis associated with economics of scale, and reduced anxiety of commuters.

Estimation of the Impact on Transportation

We estimate accessible and inclusive public transportation-related benefit in three separate parts. In the first part, we assume accessible and inclusive public transportation lowers the need for specialized transit and homecare services, and consequently the congestion and related road collisions. In the second part, we consider how accessible and inclusive public transportation lowers the transit operating costs. Finally, in the third part, we consider how accessible and inclusive public transportation lowers anxiety for Canadians commuters and helps save time. In the following paragraphs, we describe the underlying mechanics of each part in more detail.

Estimation of the Reduction in Cost of Collisions

CUTA estimated \$800 million in economic costs for motor vehicle collisions involving senior drivers with mobility disabilities (Seider, 2013). They assumed that accessible and inclusive transit could reduce 1% of the economic and social costs of motor vehicle collisions. This study only considered the costs and potential savings related to motor vehicle collisions by seniors with mobility restrictions. We draw on this study, as a starting point, to estimate the benefit of accessible and inclusive transportation for Canadian society. In our model, we consider the total annual economic and social costs of motor vehicle collisions at \$25.0 billion, based on CUTA (Seider, 2013), and then assumed that accessible and inclusive transit could annually reduce 5% of the economic and social costs of motor vehicle collisions. For sensitivity analysis, we assume accessible and inclusive transit could reduces 1 and 10% of the costs (i.e., the lower and higher bound scenarios).

Estimation of the Reduction in Transit Operating Cost

CUTA reported making conventional transit more accessible could reduce the demand for expensive specialized transit service. The incremental net cost of serving one passenger on specialized transit rather than conventional transit is about \$22 and Canadian specialized transit systems carry about 17.5 million passengers each year. The total incremental operating cost of specialized transit services is therefore about \$385 million. Shifting 1% of specialized transit

demand (about 175,000 trips) to conventional transit would save about \$4 million in incremental operating costs; a 10% shift in demand (about 1.75 million trips) would save about \$40 million. CUTA study considered the potential savings related to reduced specialized transit operating costs to be approximately \$385 million. We assume in an accessible and inclusive society that specialized transit demand is reduced by 10%.

Estimation of Saved Time and Reduced Anxiety

The Canadian Transportation Agency estimated the benefits to Canadian passengers arising from the proposed Accessible Transportation for Persons with Disabilities Regulations (ATPDR) at \$574.73 million (in 2012 Canadian dollars) over a 10-year period following implementation of the regulations related to ACA (Canadian Transportation Agency, 2019). Table 20 indicates the monetized benefits from Canadian Transportation Agency study. They also listed the non-monetized benefits to an accessible and inclusive transportation network include reduced anxiety, increased comfort, reduced stigmatic harm, wider access to desired destinations, increased employment opportunity, and greater independence for persons with disabilities. They also mentioned that all the Canadians would benefit from time savings and the increased safety inherent in the accessible features of the national transportation network. Additionally, improvement in accessibility is expected to reduce the number of individual vehicles on the road, since public transport would be more convenient and affordable for persons with disabilities and others who would rely less on their personal vehicles. This reduction in the use of personal motor vehicles would also be expected to reduce carbon emission, decrease congestion, and lead to a reduction in the probability of accidents.

Table 20. Benefits of accessible and inclusive transportation in terms of time saving and reduced anxiety in 2012 (Canadian Transportation Agency, 2019)

Type of benefit	Value ^[1]
Reduction of anxiety for Canadians passengers	\$533,202,582
Time-savings for Canadians passengers	\$41,530,248
Total benefits (over 10 years)	\$574,730,000
Annualized benefit	\$87,560,000

[1] Values is in 2012 Canadian dollars.

Domain of Tourism

Conceptualization of the Benefits to Tourism

In this domain, we consider how an accessible and inclusive society would increase international tourism to Canada. Accessible and inclusive tourism provides not only an important market opportunity, but also helps ensure that all people are able to participate in tourism and enjoy travel experiences. In 2017, tourism in Canada generated \$41.2 billion in gross domestic product (GDP), up 6.3% from the previous year. Tourism captured a 2.06% share of the total GDP, representing a gain of 0.02 percentage points over 2016 based on the National Tourism Indicators 2017 Highlights (Destination Canada, 2018).

Persons with disabilities reported several reasons for not having traveled, such as expensive or unavailable accommodation or transportation. Some studies have placed an economic value on the potential benefit of accessible and inclusive tourism. Our inclusion of tourism as a model component draws from the emerging field of accessible tourism, which refers to an ongoing

endeavour to ensure tourist destinations, products and services are accessible to all persons, regardless of their disabilities. Research in the field of accessible tourism emphasizes the economic potential of barrier-free destinations, accessible transport, attractions that are available to all persons and marketing and booking websites that can be accessed by persons with different limitations (Buhalis et al., 2012, Darcy et al., 2009; Luiza et al., 2019). To date, there is limited research estimating the economic benefits of accessible tourism. One study in Australia estimated that between 2003-2004, persons with disabilities spent between 12.27%-15.60% of total tourism gross value added and 11.02%-16.41% of total tourism gross domestic product. The authors also estimated that accessible tourism may have contributed between 51,820-77,495 directly sustained jobs in the tourism industry (11.6%-17.3% of direct tourism employment) (Darcy, 2006). Other studies conducted in the European Union (EU) estimated that tourists with disabilities contribute €80 billion to the economy using gross demand estimates (Buhalis et al., 2005; Domínguez et al., 2013).

Accessible tourism also could have significant implications for businesses. Literature highlights several benefits of making travel and tourism more accessible for persons with disabilities, including opportunities to tap into an underserved market, multiplier effects associated with the presence of carers who may accompany persons with disabilities on trips, positive impacts on corporate image, and an opportunity to build competitive advantage (Kastenholz et al., 2012; Morelli et al., 2018).

The European Commission investigated the economic impact of accessible tourism in Europe in 2012 (European Commission, 2014). They aimed to understand the demand for accessible tourism in order to guide policymaking in this field. They investigated the travel patterns, behaviours, and information provision for persons with access needs. They estimate the current and future economic contribution of accessible tourism and its impact on employment under three scenarios. Their scenario forecasting was undertaken based on people's responses to scenarios of accessibility improvements, i.e., minimum, medium and extensive levels of improvements. Under minimum improvements of accessibility scenario (scenario A), the economic contribution of the EU's accessible tourism demand would increase by 18.3%-19.7% across the three indicators (economic output, gross value added and employment). Under medium improvements of accessibility scenario (scenario B), the economic contribution would increase further, by 24.8%-26.6%. Under scenario C, with extensive improvements of accessibility, up to 39.4% of additional economic contribution could be achieved. Figure 9 presents the total gross value-added contribution estimated in the EU study under different scenarios for persons with access needs.

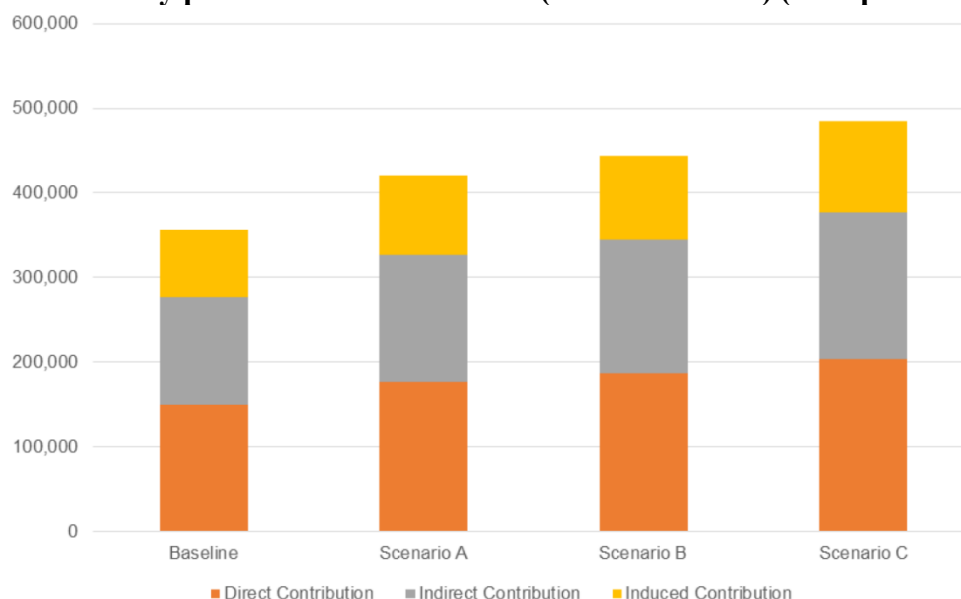
According to the EU study, the economic contribution of accessible tourism consists of the following three elements:

Direct: Generated by directly serving the accessible tourism market. The direct economic contribution is generally measured by gross turnover and net turnover. The gross turnover directly captures the final demand for goods and services by travellers and is equivalent to the direct economic contribution in terms of output.

Indirect: Changes in income and employment within the destination in supply chain-linked industries supplying goods and services to tourism businesses (e.g., the increased revenue of local farms resulting from supplying fruits and vegetables to hotels are an indirect effect of tourist spending).

Induced: Increased sales within a destination from household spending of the income earned from tourism and its supporting sectors. Such income is spent by tourism employees on other consumer goods and services or housing. This generates additional income and employment throughout the destination's economy.

Figure 9. Total gross value-added contribution of EU's accessible tourism under different scenarios by persons with access needs (unit: '000 000 €) (European Commission, 2014)



Estimation of the Impact on Tourism

Given that there are few studies available on accessible tourism in Canada on which to draw for precedence, we use *what if* scenarios to consider a range for sensitivity analysis. To estimate the potential benefits of accessible and inclusive tourism, we first extracted the gross domestic product of tourism in Canada as indicated in Table 21 (Destination Canada, 2017). It is important to note that, in order to avoid double counting with other domains (e.g., the domain of output and productivity), we only consider the economic contribution of international tourism to the total benefit.

Table 21. Tourism economic indicators in Canada

Indicators	Value
Tourism's contribution to GDP (2017 Canadian dollars) ^[1]	\$41.2 Billion
Foreign component of travel and tourism's contribution to GDP (in 2016) ^[2]	21%

[1] Destination Canada, national tourism indicators highlight. 2017. Available at: https://www.destinationcanada.com/sites/default/files/archive/691-national-tourism-indicators-q4-2017/national-tourism-indicators-highlights-2017_final.pdf

[2] Travel and tourism economic impact Canada. 2017. Available at: <https://zh.wttc.org/-/media/files/reports/economic-impact-research/archived/countries-2017/canada2017.pdf>

To estimate the current and future economic contribution of accessible tourism in Canada, we drew on the accessible tourism study from the EU, described above, specifically Table 22 (European Commission, 2014). This table compares the direct economic contribution of accessible tourism by persons with access needs in EU 27 countries and 11 key international inbound markets.¹ We assume that the international tourism sector in Canada could benefit from further contribution by persons with access needs under scenarios of minimum (14.5%), medium (28.9%), and extensive (57.8%) improvements compared to the current scenario. Medium improvements category, which serves as the baseline, is defined based on the minimum value of the EU 27 studies (Table 22). The minimum and extensive improvements categories, which are serving as the range for sensitivity analysis, are defined $\pm 50\%$ around of the baseline.

Table 22. Direct economic contribution of European Union’s accessible tourism under different scenarios by persons with access needs (European Commission, 2014)

Scenario	Gross value added by persons with access needs in the EU27 countries		Gross value added by persons with access needs from the 11 key international inbound markets	
	€ million	Percent	€ million	Percent
Baseline	149,947	-	6,897	-
A (minimum)	176,943	18.0%	8,888	28.9%
B (medium)	186,696	24.5%	10,574	53.3%
C (extensive)	204,073	36.1%	12,048	74.7%

Note. Gross value added is the value of output less the value of intermediate consumption; it is a measure of the contribution to GDP made by an individual producer, industry or sector.

In addition to the direct contribution of increased revenues associated with accessible and inclusive tourism, there are indirect and induced effects to the broader economy, that we estimate through a multiplier effect. This spillover benefit is estimated similarly to that described in the domain titled “Markets Multiplier Effects.”

Domain of General Productivity

Conceptualization of the Benefits to General Productivity

Studies indicate that an accessible and inclusive labour market can positively impacts the productivity of all workers. While few empirical studies exist, literature in the field of industrial and organizational psychology highlights the potential benefits of making accommodations available to all employees (Solovieva et al., 2013). For instance, an online survey of 194 small and large workplaces conducted by the US-based Job Accommodation Network examined the benefits of providing accommodations to employees with disabilities. Some of the more frequently cited benefits included staff retention, increased overall productivity, lower training costs, improved co-worker interaction, and increased morale (Schur, 2002; Solovieva et al., 2011; Solovieva et al., 2013). Another survey of 5,000 managers and employees indicated that the provision of accommodations to employees with disabilities can have a spillover effects that

¹ Given that we do not have data on key inbound markets for Canada and that there is a need for trans-Atlantic/Pacific travel for most international tourists looking to visit Canada, we use more conservative values for the impact of inclusive and accessible tourism in our study than in the EU study.

positively impacts the attitudes and behaviours of co-workers without disabilities and increases the likelihood those without disabilities will also request an accommodation (Schur et al., 2014).

Roughly half of all persons with disabilities experience a long-term disability, whereas for working-age Canadians many more experience a temporary disability at some time over their working lives, often as the result of an injury or illness from which they fully recover. These individuals also benefit from improved accessibility and inclusiveness. For example, improving access to buildings and transportation can benefit workers with short-term health deficits, pregnant women, and persons with young children. In general, more accessible and inclusive physical and social work environments can give rise to productivity enhancements for all workers.

Hiring persons with disabilities can contribute to the overall diversity, creativity and morale of the workplace, and enhance a company image and performance. Deloitte notes that “capturing and elevating the diverse perspectives, experiences, and potential of people is a precursor to enjoying the benefits of an accessible and inclusive organization (Deloitte, 2017). They note the performance benefit of diversity in labour markets, stating that “businesses that focus on maximizing the potential of each of their employees win in the market. From superior financial performance to improved talent retention and a greater capacity for innovation, when a firm brings together persons with different backgrounds, skillsets and mindsets, they can achieve more” (Deloitte, 2017).

In an inclusive growth and development report, Samans and colleagues noted that technological change can be an important driver of economic growth (Samans et al., 2015). There is ample evidence that technological advancement has a strong potential to foster inclusive growth and job creation, notably by empowering the self-employed and small enterprises (Raja, 2013). Online work offers opportunities for persons who face barriers to working outside the home, whether due to geographical remoteness, physical disability, or cultural barriers. The World Wide Web Foundation noted that in developing countries a 10% increase in high-speed internet connections is associated with an increase in growth by an average of 1.4% (World Wide Web Foundation, 2018). In addition to information technology infrastructure, technology also fosters more inclusive growth by democratizing access to education. Open educational resources—publicly-shared teaching, learning and research materials—are revolutionizing the management of education systems and the design of curriculums (Samans et al., 2015).

In this domain we consider how an accessible and inclusive society benefits all people in the labour market and makes everyone more productive (Walton, 2012). Labour productivity is defined as the real economic output per labour hour input. Growth in labour productivity is measured by the change in economic output per labour hour input over a defined period. One of the ways that governments and companies can improve labour productivity is an investment in infrastructure. Infrastructure is the term for the basic physical systems of a business or region, and can include infrastructure-related information technology, transportation, communication, sewage, water, and electric systems. This fact exemplifies the spillover effects that are central to our conceptual model.

Estimation of the Benefits to General Productivity

To estimate the benefits of increases in productivity and output of the broader labour market, we consider *what if* scenarios for sensitivity analysis, where the counterfactual is a percentage increase in output of the Canadian labour market, based on the national statistics on aggregate labour-market earnings. The baseline value is considered 0.75%, and 0.5% and 1% are considered as lower and higher bond. This counterfactual range is defined based on the Canadian labour productivity trend between 1980 to 2017, as indicated in Table 23 (Statistics Canada, 2019b).

Table 23. Labour productivity growth in the business sector in Canada (average annual basis) (Statistics Canada, 2019b)

Type	1980 to 2000	2000 to 2010	2010 to 2017	2017
Gross domestic product growth	3.2	1.5	2.4	3.7
Growth in hours worked	1.5	0.7	1.1	1.4
Labour productivity growth	1.7	0.7	1.3	2.2

Note. The growth rates represent annual compound growth rates. Numbers may not add up due to rounding.

Domain of Administration of Social Safety Net Programs

Conceptualization of the Impact on Administration of Social Safety Net Programs

In this domain we consider lower administration and service delivery costs of Social Assistance, Canada/Quebec Pension Plan-Disability (CPPD/QPPD), Employment Insurance (EI) and private insurance due to lower dependency and lower caseloads.

In 2007, OECD countries spent an average of 1.2 percent of GDP on contributory and non-contributory disability benefits, covering six percent of the working age population (World Health Organization, 2011). These social safety net programs provide persons with disabilities with a range of services, including income benefits, health and rehabilitation services, active labour-market supports, vocational education and training, provision of assistive devices, subsidized access to transport, subsidized housing and utilities, various support services including personal assistants, and sign language interpreters (Walton, 2012).

Estimation of the Impact on Administration of Social Safety Net Programs

Social safety net program administration/overhead costs incurred by the public sector and private insurers are estimated as a percentage of the costs of benefit expenditure for persons with disabilities. To estimate this cost, we draw on data retrieved from the annual accounts of national expenditure data on the major federal, provincial, and third sector programs that provide income support to persons with disabilities for calendar year 2013. The programs covered include social assistance, Canada/Quebec Pension Plans (CPPD and QPPD) disability benefits, Employment Insurance sickness benefits (EI Sickness), veterans' disability benefits and awards, workers' compensation benefits, private short and long-term disability benefits, and federal tax credits for persons with disabilities.¹ The percentage we use is different for the public and private sectors, as

¹ It is worth noting that eligibility requirements for this tax credit apply only to those with very severe disabilities and some who qualify may not bother applying because the application process is quite onerous and only benefits those who have sufficient income to offset.

identified in Table 24. Specifically, 15% is used for all programs except 20% for Veterans disability and pension awards and 25% for workers' compensation. These percentages are drawn from previous research that considered the administrative costs of private insurance and workers' compensation (Tompkins et al., 2009). Various levels of reduction in administrative costs are considered in the model for sensitivity analysis.

Table 24. Cost of income disability assistance in Canada, 2013 (Metcalf Foundation, 2015)

System ^[1]	Estimated benefit expenditure ^[2]	Estimated administration cost (%) ^[3]
CPPD (F)	\$4.0 B	15%
QPPD (P)	\$0.8 B	15%
EI sickness (F)	\$1.3 B	15%
Veterans disability pension and award (F)	\$2 B	20%
Private disability insurance (Pr)	\$6.7 B	15%
Workers compensation (E)	\$5.4 B	25%
Social assistance benefit for a person with disabilities (P)	\$9.0 B	15%
Disability tax measure (F)	\$2.5 B	15%
Total	\$31.7 B	

[1] F: Federal, P: Provincial, Pr: Private, E: Employer.

[2] Values are in 2013 Canadian dollars.

[3] Percentages proposed for administrative costs are preliminary and need to be substantiated with further research.

Income benefits are not considered in our model as they are simply transfers of purchasing power. Expenses incurred by programs to provide services to beneficiaries, such as administrative costs, would be saved in the counterfactual scenario, as many of these costs would not be incurred within an accessible and inclusive society, because persons with disabilities would not be dependent on transfer programs. As a baseline scenario, we assume 50% of administrative costs could be averted in an accessible and inclusive society. For sensitivity analysis, we also consider lower and upper bound scenarios of 20% and 80%, respectively.

Domain of Pensions

Conceptualization of the Impact on Pensions of Retirees with Disabilities

In this domain we consider persons with disabilities who are retired and the gap in their pension income compared to their peers. Pension income reflects lifetime contributions to private and public pension plans, as well as private retirement savings plans. To our knowledge, little research has examined the impact of a disability on contributions to pension plans over the life course.

A common type of private pension plan is the defined benefit plan. A combination of employee and employer contributions fund benefits, with employers paying the largest share. On retirement, employees receive a periodic payment equal to a percentage of the average salary that they received over the last few years of employment with their employer. The formula also includes consideration of the number of years the employee worked for the company. Another

common type of private pension plan is the defined contribution plan. This type provides an opportunity for savings accumulated in a plan to be converted to a periodic payment upon retirement. All workers retiring from the paid labour market can also receive Canada/Quebec Pension Benefits from age 60 onward, as well as draw on personal savings in Registered Retirement Saving Plans and other private saving.

A body of research indicates that, persons with disabilities tend to earn less income compared to their peers without disabilities (US Census Bureau, 2015; Ontario Human Rights Commission, 2015; Statistics Canada, 2018a). According to data from the Canadian Human Rights Commission, disabled men earn \$9,557 less than their non-disabled counterparts. Similarly, women with disabilities earn \$8,853 less than their non-disabled counterparts. What is more, the type of disability may also be associated with income generated. Data from the CSD (2012) indicates that persons with mental/psychological disabilities have a lower median income (\$18,610) compared to those with other types of disabilities (\$25,358) (Ontario Human Rights Commission, 2015). Using an after-tax low-income measure, Statistics Canada found that persons with disabilities are more likely to live below the poverty line (23.5%) compared to persons without disabilities (9%) (Wall, 2017).

Barriers to income generation can affect contributions to public pension programs. This relationship is underscored by findings from a recent report published by the Council for Canadians with Disabilities. According to the report, of the Canadians with disabilities living below the poverty line, two thirds of income come from social assistance and only one-third from private sources (i.e., income earned through wages) (Crawford, 2013). As a result, it is likely that less money is being contributed to and accumulated in pension plans.

For persons with disabilities who are retired in our reference year 2017, the phenomenon described above would suggest lower pension income in 2017 is due to lower levels of labour-market earnings and concomitant contributions to various retirement pension schemes over their working years. Pension income does not reflect value-added activity in the reference year, so the key element that is considered in this domain is the higher spending associated with higher pensions and its related multiplier effect.

Estimation of the Impact on Pension of Retirees with Disabilities

We begin with an estimate of the before-tax median total income of persons age 65+ with and without disabilities from the CSD (2017), as indicated in Table 25. This income estimate draws on data from the census-linked tax files (2015 reference year) and includes pension income.

We estimate the difference in total income of seniors with long-standing disabilities to that of their peers. We then consider two *what if* scenarios for sensitivity analysis, comprised of full and partial leveling-up of income between the two groups. In the full leveling-up scenario, it is assumed before-tax median total income of persons age 65+ with disabilities is the same as person without disabilities. In the partial leveling-up scenario, it is assumed that before-tax median total income of a person with severe disabilities will become equivalent to a persons with milder disabilities, and the income of those with milder disabilities will become equivalent to that of a person without disabilities. Note that in our model we only considered the multiplier

effects of increased pension income for persons with disabilities, and not the increased income itself, since that increase is realized in earlier years.

Table 25. Median before-tax income of persons (65 years and over) with and without disabilities (CSD, 2017)

Persons without disabilities		Persons with disabilities			
Men	Women	Men		Women	
		Milder	More severe	Milder	More severe
\$37,723	\$24,570	\$34,023	\$29,144	\$23,802	\$19,805

Domain of Market Multiplier Effects

Conceptualization of the Market Multiplier Effects

This domain is about the expansion of markets from increased expenditures. In this domain we consider the multiplier effects of incremental expenses associated with persons with disabilities and their families, as well as all individuals in society, having more disposable income. Powers (2008) argues that increasing employment levels among persons with disabilities increases both the amount of goods and services produced in the economy and the demand for goods and services. This expansion is sometimes described as a multiplier effects, wherein each extra monetary unit spent in the market results in a magnitude of expansion of the market that is a multiple of the extra monetary unit spent. The multiplier effects are an economic concept which refers to the increase in final income arising from any new injection of spending. Every time there is an injection of new demand into the circular flow of income there is likely to be a multiplier effects, as injection of extra income leads to more spending and consequently creates more income. This is the philosophical basis of fiscal policy and tax reduction policy, which are often called on to stimulate the economy. Multipliers have been discussed and estimated in various economic studies that consider different macro-economic contexts and policy levers, primarily in the context of government expenditure stimulus (e.g., Miyamoto et al., 2017; Ramey 2011; Ramey and Zubairy, 2015). A good summary is provided by Zubairy (2010). Estimates vary widely. For example, Ramey and Zubairy (2015) identify an estimate of 0.5. In contrast, Hussain and Liu (2016) identify estimates in the range of 4-6. Economic impact studies for regions across Ontario have also been conducted finding similarly impressive results (Harry, 2012). For example, in Temiskaming it was found that for every dollar of farm gate sales, \$2.80 to \$3.30 is generated in the wider local economy (Harry, 2009). Though the numbers seem small, the impact is extraordinary. For example, it is estimated that if every household in Ontario spent \$10 a week on local food, the province would have an additional \$2.4 billion in the local economy at the end of the year and create 10,000 new jobs (Ogryzlo, 2012).

In the current context, the initial expenditure arises from several sources: 1) increased employment, output, productivity and related earnings of persons with disabilities; 2) increased labour-market earnings due to increases in life expectancy of persons with learning disabilities; 3) increased tourism expenditures; 4) increased output and productivity and related earnings of all labour-force participants; and 5) increased pensions of retired persons with disabilities. Since the expenditure sources are not public sector, tax-financed stimuli, many of the issues discussed in the literature on multiplier effects of macroeconomic fiscal stimuli are less relevant (e.g., issues of crowding out).

Estimating the Market Multiplier Effects

The size of the multiplier depends on several factors. Key ones are a household's marginal propensity to consume (MPC), marginal propensity to save, and marginal tax rate.¹ Also relevant is the leakage to markets in other countries, identified as the marginal propensity to import (MPI). Marginal propensities show the proportion of extra income allocated to particular activities. For example, if 80% of all new income in a given period of time is spent in the market of goods and services, the marginal propensity to consume would be 80/100, which is 0.8. Any incremental income will be taxed at the prevailing marginal tax rate, and the government will realize incremental tax revenue. For simplicity, we assume that all incremental tax revenue is spent on the provision of goods and services, such that the incremental tax revenue is also subject to multiplier effects. We assume the tax revenue that is spent has the same multiplier impact as private expenditures. Therefore, we collapse it into multiplier estimate by simply not including the marginal propensity to tax in our multiplier calculations. The following general formula is used to calculate a multiplier:

$$\text{Multiplier} = \frac{1}{1 - MPC + MPI} \quad \text{Equation 1}$$

Statistics Canada indicated that 66.5% of household income earned by Canadians is spent on consumption (Destination Canada, 2018). We use a value of 0.3 for the MPI for Canadian consumption.² Hence, if consumers spend 0.665 and save 0.305 of every \$1 of extra income, the multiplier would be:

$$\text{Multiplier} = 1 / (1 - (0.665 - 0.3)) = 1.57 \quad \text{Equation 2}$$

The multiplier value of 1.57 means that every \$1.00 of new income generates \$1.57 in GDP. For sensitivity analysis we use $\pm 10\%$. Since the initial \$1 was counted in the other domains of our conceptual model, the increment from the multiplier effects is \$0.57 for every \$1.00, or 57%. This is the value used to estimate the magnitude of the multiplier effects.

The Public Sector Perspective

For the public sector perspective, we considered all domains in our conceptual model that could have impacts on government revenues. These revenues include: 1) income tax revenue from increases in output and productivity of persons with disabilities, 2) federal tax revenue on increases in payroll benefits, 3) income tax revenue from increases in general productivity, 3) various types of tax revenues (including sales tax, income tax, and corporate tax) from increases in tourism, 4) reductions in healthcare expenses, 5) reductions in social safety net program costs, and 6) reductions in human rights costs.

¹ The literature on multipliers associated with public sector fiscal stimuli note factors such as the unemployment rate, interest rate, state of the economy (i.e., business cycle), and the type of government spending.

² We were unable to find a reliable reference for this value, but an internet example suggested that 0.3 was a good approximation (alonso.stfx.ca/mgerriet/econ100/macro/multiplier.doc, accessed March 10, 2019).

Table 26 provides the values used to estimate the impacts on public sector revenues. To estimate income tax revenues, we begin with an income tax rate of 35.9% (OECD, 2019). We also consider lower and upper bounds scenarios of income taxes rates of 35% and 37.7%, respectively, based on the minimum and maximum income tax rates since 2007. To estimate the share of federal and provincial government revenues, we used the ratio of federal/provincial taxes (Statistics Canada, 2017c). We also considered 2.08% payroll tax for federal government revenues, with a lower and upper bound of 2.0% and 2.1% for sensitivity analysis purposes.

Figure 10 provides a schema of the approach taken to estimate the tax revenue from increased tourism and the market multiplier effects. We consider three types of tax: sales tax, income tax, and corporate tax. For sales taxes, we use a rate of 13% (11%-15% considered for sensitivity analysis). For income taxes, we use a rate of 35.9% (35%-37.7% considered for sensitivity analysis). To estimate the share of the federal and provincial tax revenues, we use the ratio described in the previous paragraph.

We assume 25% of the gross sales revenues (i.e., after-sales tax revenue) is payroll expenses. A company's payroll expense will vary by sector. For instance, service industries usually have higher payroll costs. For sensitivity analysis, we consider upper and lower bounds of 15% and 30% of the gross sales revenues, respectively. To estimate the revenue from corporate taxes we use a rate of 26.7% (comprised of 15% federal and 11.7% provincial tax), with upper and lower bound values of 25% and 31% for sensitivity analysis. These values are assumed an average of all industries (Department of Finance, 2018; Trading Economics, 2017). To estimate the average gross benefit at the corporate level, we divide aggregated net profit over operating revenue across all industrial sectors (Statistics Canada, 2017d). The average gross benefit is estimated at 8.9% in 2017. We consider an upper and lower bound of 7.8% and 9.6% for sensitivity analysis. To keep the estimates manageable, we do not consider tax revenues related to income and expenditure impacts in other domains.

Figure 10. Tax revenue estimation for tourism and market multiplier effects

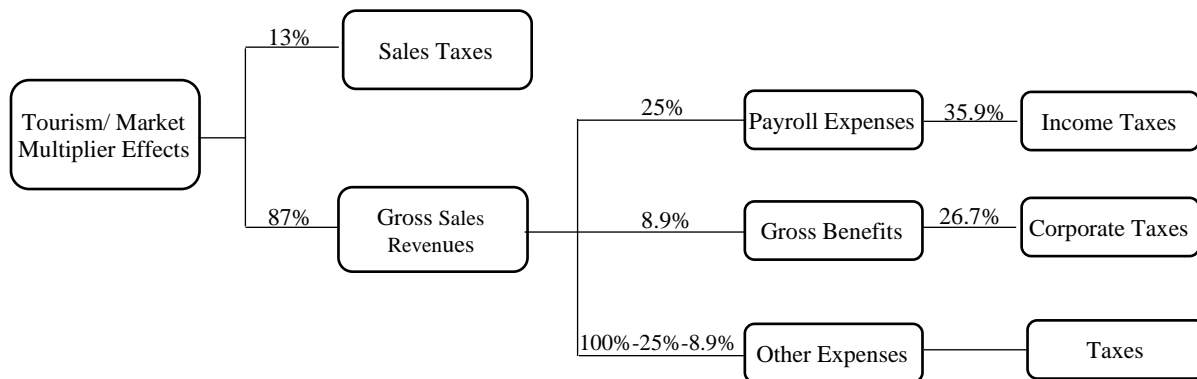


Table 26 also provides the values used to estimate the impacts on public healthcare expense at the federal and provincial/territorial levels. We assume that 5% of total healthcare expenses in 2017 come from the federal government, municipal governments and social security funds (CIHI, 2017). The bulk of healthcare expenses are assumed to be provincial/territorial government spending, at 65% of total healthcare expenses in 2017. The remaining 30% comes from private sources. We assume the federal and provincial/territorial government spending on

social safety net programs is 31% of total expenditures (Metcalf Foundation, 2015). The remainder is from other sources. Federal and provincial/territorial government spending on human rights discrimination complaints is estimated based on the number and cost of complaints as described in the domain title “Human Rights.”

Table 26. Estimation of economic benefits to the public sector

Domains	Federal	Provincial
<i>Tax revenue</i>		
Output and productivity of persons with disabilities (income tax)	$35.9\%^{[1]} \times (60\%)^{[2]}$	$35.9\%^{[1]} \times (40\%)^{[2]}$
Fringe/payroll benefit of persons with disabilities (payroll tax)	$2.08\%^{[3]}$	0
General productivity growth (income tax)	$35.9\%^{[1]} \times (60\%)^{[2]}$	$35.9\%^{[1]} \times (40\%)^{[2]}$
Tourism and market multiplier effects (sale tax)	$5\%^{[4]}$	$8\%^{[4]}$
Tourism and market multiplier effects (income tax)	$(100\% - 13\%)^{[4]} \times 25\%^{[5]} \times 35.9\%^{[1]} \times (60\%)^{[2]}$	$(100\% - 13\%)^{[4]} \times 25\%^{[5]} \times 35.9\%^{[1]} \times (40\%)^{[2]}$
Tourism and market multiplier effects (corporate tax)	$(1 - 13\%)^{[4]} \times 8.9\%^{[6]} \times 15\%^{[7]}$	$(1 - 13\%)^{[4]} \times 8.9\%^{[6]} \times 11.7\%^{[7]}$
<i>Averted expenses</i>		
Healthcare expenses	$5\%^{[8]}$	$65\%^{[8]}$
Social safety net programs	$31\%^{[9]}$	$31\%^{[9]}$
Human right complaint	Federal claim cases \times cost per case	Provincial claim cases \times cost per case

[1] OECD. 2017. Tax on personal income. Available at: <https://data.oecd.org/tax/tax-on-payroll.htm#indicator-chart>.

[2] This percentage is used to estimate share of federal and provincial governments and is estimated using aggregated ratios of the federal and provincial taxes. Statistics Canada, 2017c. Available at: <https://data.oecd.org/tax/tax-on-payroll.htm#indicator-chart>

[3] OECD. 2017. Tax on payroll. Available at: <https://data.oecd.org/tax/tax-on-payroll.htm#indicator-chart>

[4] Sales tax calculator GST / PST or HST. 2018. Available at: <http://www.calculconversion.com/sales-tax-calculator-hst-gst.html>

[5] Average payroll expenses estimated as 25% of the gross sales revenues (i.e., after-sales tax revenue). Available at: <https://yourbusiness.azcentral.com/typical-percentage-payroll-corporation-29466.html>

[6] Average profit across all industrial sectors estimated by dividing the aggregated net profit over operating revenue that we extracted from Table 33-10-0007-01 quarterly balance sheet and income statement. Statistics Canada, 2017d. Available at: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3310000701>

[7] Corporate Income Tax Rates. 2018. Available at: <https://www.cchwebsites.com/content/pdf/quickcharts/ca/en/business/269qb.pdf>; and trading economic. 2017. Available at: <https://tradingeconomics.com/canada/corporate-tax-rate>.

[8] CIHI. National Health Expenditure Trends, 1975 to 2017. Available at: https://secure.cihi.ca/free_products/nhex2017-trends-report-en.pdf

[9] Metcalf Foundation. 2015. Available at: <https://www.crwdp.ca/en/informing-roadmap-work-disability-policy-canada>. The federal and province shares do not add-up to 100% as the rest is the private sector share.

Results of the Execution of the Conceptual Model

Total Economic Benefits

The results of our estimate of the societal benefits of an accessible and inclusive Canada are presented in several permutations. We begin with the total economic benefits clustered into five high-level categories:

- 1) Averted Healthcare and Related Out-of-Pocket Expenses;
- 2) Increased Output and Productivity of Persons with Disabilities in the Labour Force;
- 3) Increased Quality of Life and Social Role Engagement of Persons with Disabilities;
- 4) Spillover Effects; and
- 5) Market Multiplier Effects.

The first three might be viewed as impacts directly associated with persons with disabilities, followed by spillover effects (comprised of informal caregiving impacts, expenses incurred by families with children with disabilities, averted human rights discrimination complaints, transportation related benefits, and general productivity growth), and market multiplier effects (from various source of market activity). We profile the findings of the total economic benefits below, followed by details on the five high-level categories.

Details on the total economic benefits clustered by the high-level categories described above and also stratified by sex are provided to this study in Table 27. The total benefits are estimated at \$337.7 billion (with a range of \$252.8 to \$422.7 billion), or 17.6% (with a range of 13.1% to 22.0%) of the GDP in 2017, estimated at \$1,922.8 billion in December. The largest portion of the benefits is from increases in QOL and social role engagement estimated at \$132.2 billion (6.9% of the GDP). This is followed by increases in output and productivity at \$62.2 billion (3.2% of the GDP), with a spillover effects at \$76.7 billion (4.0% of the GDP), market multiplier effects at \$47.3 billion (2.5% of the GDP), and averted healthcare expenses at \$19.4 billion (1.0% of the GDP). The per case benefit is estimated at \$54,066 (with a range of \$40,473 to \$67,675). In order of magnitude from largest to smallest, this is comprised of increases in QOL and social role engagement at \$21,156/case, increases in output and productivity at \$9,957/case, a spillover effects at \$12,273/case, a market multiplier effects at \$7,578/case, and averted healthcare expenses at \$3,100/case.

Total economic benefits by the 14 domains described in the methodology are provided in Figure 11, sorted by magnitude of benefit from smallest to largest. The largest benefit magnitude is from QOL and social role engagement, which comprises 39.1% of the total benefits. This is followed by output and productivity at 17.6% of the total benefits, then the informal caregiving at 17.5%, market multiplier effects at 14.0%, general productivity at 3.8%, out-of-pocket expenses at 3.7%, healthcare expenses at 2.0%, and lastly six other domains that each comprise less than 1% (tourism, administrative costs of social safety net programs, transportation, life expectancy, children with disabilities and human rights). Note that the domain of pensions is not considered separately, as the impact of this domain is included in the market multiplier effects.

Averted Healthcare and Related Out-of-Pocket Expenses

Table 28 details the impacts on healthcare expenses. Averted public sector healthcare expenses are estimated at \$19.4 billion, or 1.0% of GDP in 2017. The largest portion is averted out-of-

pocket expenses at \$12.6 billion, comprising 65% of the total. The second largest portion of these averted expenses is from the reduction in poverty and the related reduction in poor health. This amount is \$6.0 billion and comprises 31% of total averted healthcare expenses. The smallest portion is averted healthcare program administrative expenses at \$0.7 billion, comprising 4% of the total. On a per person with a disability basis, the averted healthcare expenses are \$3,100, comprised of averted out-of-pocket expenses (\$2,024), averted healthcare expenses associated with poor health (\$958), and averted healthcare program administrative expenses (\$119).

Increases in Output and Productivity of Persons with Disabilities in the Labour Force

Table 29 details the output and productivity impacts. These impacts are estimated at \$62.2 billion, or 3.2% of the GDP. The largest portion of the impacts is from output and productivity associated with increases in labour-force participation and related earnings of persons with disabilities. These increases are estimated to amount to \$52.0 billion and comprise 84% of total output and productivity impacts. The second largest portion is increases in fringe/payroll benefits at \$7.3 billion, comprising 12% of total output and productivity impacts. Averted costs in the administration of social safety net programs are \$2.9 billion, comprising 5% of total output and productivity impacts. Output and productivity impacts associated with longer life expectancies of persons with disabilities is the smallest portion at \$0.04 billion (< 0.1% of total output and productivity benefits). On a per person with a disability basis, output and productivity impacts are \$9,957, comprised of increases in labour-force participation of persons with disabilities (\$8,325), increases in fringe/payroll benefit (\$1,166), averted costs in the administration of social safety net programs (\$461), and output and productivity impacts associated with longer life expectancies (\$6).

Increases in Quality of Life and Social Role Engagement of Persons with Disabilities

Table 30 details the increases in QOL and social role engagement. The total number of QALYs gained is estimated at 1,321,565, equal to \$132.2 billion (6.9% of the GDP) based on a value of \$100K per QALY. The QALY benefits from increased QOL and social role engagement are estimated at 1,320,493 QALYs, equal to \$132.0 billion, which is almost 100% of the benefits from this category. The QALYs gained from longer life expectancy are estimated at 1,072 QALYs, equal to \$0.1 billion. On a per person with a disability basis, QALYs gained are 0.21, equivalent to \$21,156.

Spillover Effects

Table 31 details the spillover effects. These effects are estimated at \$76.7 billion, or 4.0% of the GDP. The largest portion is from benefits to informal caregivers at \$59.2 billion, or approximately 77% of the total spillover effects. This is followed by the impacts on general productivity at \$12.8 billion (17% of the total spillover effects), then tourism at \$2.5 billion (3%), transportation at \$1.9 billion (3%), reduction in expenses of parents with children with disabilities at \$0.12 billion (0.2%), and reduction in human rights cases at \$0.08 billion (0.1%). On a per person with a disability basis, the spillover effects are \$12,273, comprised of benefits to informal caregivers (\$9,484), impacts on general productivity (\$2,043), tourism (\$404), transportation (\$309), reduction in expenses of parents with children with disabilities (\$20) and averted human rights discrimination complaints (\$13).

Market Multiplier Effects

Table 32 details the market multiplier effects. Note that the net benefit of the market multiplier effects is estimated as the difference between the total market multiplier effects and the core impacts. The net market multiplier effects are estimated at \$47.3 billion, or 2.5% of the GDP. The largest portion is from the output and productivity impacts associated with increases in labour-market earnings of persons with disabilities at \$34.1 billion (72.0% of the net effects). This is followed by the general productivity impacts associated with increases in labour-market earnings at \$7.3 billion (15.5% of the net effects), increases in pensions of persons with disabilities at \$4.5 billion (9.4%), increases in international tourism at \$1.5 billion (3.1%), and increases in life expectancy of persons with disabilities and related labour-market earnings at \$0.01 billion (<1%).

Sensitivity Analysis

Table 33 details the range of parameters considered for sensitivity analysis. Given the number of data elements required for the model and variety of assumptions needed to proxy for the various components, it is important to consider the sensitivity of the findings to different possible values of key parameters. Therefore, we estimated the sensitivity of the total benefits magnitude to different point estimates of the key parameters.¹¹ The parameters and ranges to be considered were based on our knowledge of what data elements and assumptions were most at issue. We also turned to the literature to see what sensitivity analysis considerations were made in other studies.

Figure 12 presents a tornado diagram detailing how key parameters affect the total benefit in terms of percentage of GDP. The Figure has been sorted from the lowest to highest magnitude domain. The percentage ranges identified reflect changes from the baseline total benefits estimate of \$337.7 billion (17.6% of the GDP). The domain with the largest impact on the total benefit is QOL and social role engagement and the smallest is tourism. The percentage of GDP ranges from 13.1% to 22.0% around the baseline value for different values of QOL and social role engagement, whereas it ranges almost imperceptibly for tourism.

Public Sector Perspective

Table 34 details the public sector perspective. Total potential increased revenues for the public sector are estimated at \$61.0 billion. The largest proportion of increased total revenues is from the output and productivity impacts at \$34.9 billion, comprising 57% of total revenues (federal: \$17.0 billion, provincial \$18.0 billion). This is followed by revenues from tourism and the market multiplier effects at \$11.4 billion, comprising 19% of total revenues (federal: \$5.4 billion, provincial \$6.0 billion). The next is averted costs of social safety net program administration at \$10.5 billion (17% of total revenues) (federal: \$5.2 billion, provincial \$5.2 billion). Then it is averted healthcare expenses at \$4.2 billion (7% of total revenues) (federal: \$0.3 billion, provincial \$3.9 billion). Lastly, averted human rights discrimination complaints costs are \$0.04 billion (0.1% of total revenues) (federal: \$1 million, provincial \$4 million).

¹¹ Note that probabilistic sensitive analysis was not possible as distributional information on point estimates for much of the input data was not available. It is common practice in the peer-reviewed and high-end grey literature to undertake single variable sensitivity analysis in cost-of-illness/economic burden studies undertaken at the country level. This is the case with Leigh (2011) and Tompa et al. (2017), to name just two of many.

Table 35 presents the sensitivity analysis results for key parameters used to estimate government revenues. The lower and upper bound values are based on the minimum and maximum values over the last 10 years identified in the literature. Figure 13 presents the results of the sensitivity of public sector revenues to key parameters. Tax revenues from the output and productivity impacts can range from \$31 to \$40 billion, tax revenues from tourism and the market multiplier effects can range from \$6 to \$17 billion, averted healthcare expenses can range from \$4 to \$17 billion, averted costs of social safety net program administration can range from \$2 to \$9 billion, and averted costs associated with human rights discrimination complaints can range from \$0.04 to \$0.08 billion.

Summary and Conclusions

In summary, people with disabilities and all members of society have the potential to significantly benefit from an accessible and inclusive Canada. Drawing from international and domestic insights and published literature we build a complex and multidimensional model to estimate the cost of inclusion. We estimate that removing barriers to inclusion can contribute over \$337.7 billion (with a range of \$252.8 to \$422.7 billion) to Canada's GDP in our reference year of 2017. This is a sizeable portion of the GDP in that year (17.6%, with a range of 13.1% to 22.0%) and is likely a very conservative estimate of the potential benefits. Essentially, our study highlights the magnitude of the potential benefits to be supported through implementing the ACA and provides critical inputs needed for cost-benefit and impact analyses in this policy arena.

Data Gap Analysis

As noted in various places in this report, the search for appropriate data to estimate the contributions to the total benefit of each of the 14 domains of our model was quite a challenge at times. Although we were aware that for certain constructs there may not be good quality data available, at times we were surprised by the absence of some key values, e.g., the number of children less than 15 years of age with disabilities. When data were lacking, or the quality was poor, alternative methods had to be explored to produce estimates. In this section we provide a list of data elements for which we struggled to identify a source, and which might be considered for inclusion in future data gathering efforts by federal and provincial bodies.

Key Data Elements

1. *Prevalence of disability among children less than 15 years of age*

We encountered limitations and data gaps in relations to identifying the number of children with disabilities in Canada for our reference year 2017. The latest available data regarding the number of children with disabilities are from the PALS (2006). However, PALS does not use the same disability screening question as the CSD (2017). To this end, we need recent data on the number of children less than 15 years of age with disabilities stratified by sex, type and severity of disability.

2. *Life expectancy of persons with disabilities, by type of disability*

Global studies consistently indicate that a disability is related to a lower life expectancy when compared to those not reporting a disability. The impact of disability on life expectancy can be direct (i.e., associated directly with the health impairment), as well as through social pathways (e.g., poverty decreases the health status of persons with disabilities, and in turn impacts life expectancy). Within the Canadian context, a modest body of research and data has estimated the life expectancy of persons with disabilities. These studies indicate that current generations of persons living with disabilities report longer life expectancies when compared to previous generations. However, in this regard, we need more data on the relationship between disability and life expectancy stratified by sex, type and severity of disability (and possibly age of onset) and other socio-demographic characteristics.

3. *Quality of life and social role engagement of persons with disabilities*

QOL for persons with disabilities is affected by many factors that may often interact in subtle ways. A key factor is the level of engagement in various social roles. Other factors can include the type and degree of disability, the ability to accomplish everyday tasks or activities, satisfaction with social support, presence of a spouse or partner, attitude, coping skills, and level of self-esteem. Despite the body of evidence examining the association between disability and QOL, there is no consensus across various disciplines on how QOL can best be conceptualized or measured. Nonetheless, it would be of great value to have one or more QOL scales included in periodic surveys that also include the current disability screening questions.

4. *Healthcare expenses of persons with disabilities, by type of disability*

Persons with disabilities are more likely to report greater healthcare use compared to their peers without disabilities. In general, health status is disproportionately lower, and in turn, healthcare use is greater for persons with disabilities due to accessibility and poverty. The Canadian PALS (2001 and 2006) and the NPHS (1994 and 1998-1999) provide evidence on the relationship between poverty and poor health for persons with disabilities. Findings of the CSD (2017) highlight that those with more severe disabilities are more likely to live below the poverty line. However, we need more detailed data regarding the relationship between disability and healthcare expenses based on sex, type and severity of disability, and other socio-demographic characteristics.

5. *Out-of-pocket expenses of persons with disabilities, by type of disability*

Studies indicate that persons with disabilities and their households incur increased out-of-pocket expenses. Out-of-pocket expenses are influenced by the individual circumstances of a person and are determined by factors such as the nature and severity of impairment, resources available, and physical and social environment factors including the access to goods and services. Categories of out-of-pocket expenses include general household items (e.g., healthcare, food) in addition to disability-specific items (e.g., assistive devices, rehabilitation, personal assistance, and house adaptation). Some of these additional costs are borne by the individuals and their families, while others may be incurred by private and public service providers (e.g., private insurance plans, public healthcare systems). The CSD (2012) estimates out-of-pocket expense for assistance with activities of daily living under nine categories: preparing meals; everyday housework; heavy household chores; getting to appointments/errands; personal finances; personal care; basic medical care at home; moving around in the house; and childcare. However, we need current and more detailed data on the range of out of pocket expenses incurred by persons with disabilities stratified by sex, type and severity of disability, and other socio-demographic characteristics.

Other Data Elements

1. *Human rights discrimination complaints costs*

This item includes disability-related human rights complaints/litigation costs for the public and private sector. Although the Canadian Human Right Commission provides some data regarding the number of the cases, no data are available on the average cost of such cases, including claimant and appellant out of pocket costs. Additionally, complaints registered with the Canadian Human Right Commission are just the “tip of the iceberg” of human rights related issues that may arise in society. Even for cases that are registered, many get settled out of court so most of the costs incurred are by private entities rather than the public sector, so costs are not documented. Other federal and provincial bodies also adjudicate disability-related human rights complaints. Identifying counts of cases and related costs across the full range of relevant entities is not possible, as no one body has been tasked with collecting and aggregating this data.

2. *Caregiving for persons with disabilities*

Informal caregivers refers to those who offer ongoing care and assistance, without pay, for family members and friends in need of support due to physical, cognitive, or mental

conditions of persons with disabilities. Informal caregiving activities can include a wide array of assistance with activities of daily living (e.g., preparing meals, everyday housework, heavy household chores, personal care, etc.), instrumental activities of daily living (e.g., transportation, housekeeping), and service coordination (e.g., navigating healthcare system). Informal caregiving can have negative consequences on employment that can be both short- and long-term, possibly impacting the caregiver's career trajectories, earnings and benefits. Informal caregivers' responsibilities are also associated with significantly lower self-rated health and QOL. Although portrait of caregivers (2012) provided some basic evidence regarding the informal caregiving, we need more current and detailed data on number of the caregivers supporting persons with disabilities, caregivers' average time spent supporting persons with disabilities, caregivers' labour-market activity and earnings, as well as other socio-demographic characteristics of caregivers.

3. *Pension and other retirement income/savings of persons with disabilities*

Pension income reflects lifetime contributions to private and public pension plans, as well as private retirement savings plans. Barriers to income generation during their working age for persons with disabilities can affect contributions to public pension programs. This relationship is underscored by findings from a recent report published by the Council for Canadians with Disabilities. To our knowledge, little research has examined the impact of a disability on contributions to pension plans over the life course. Although the CSD (2017) provides data that allows one to estimated before-tax total income of persons age 65+ with and without disabilities, we need more details on pension, earnings and savings of persons with disabilities who are 65+ stratified by sex, type and severity of disability, and other socio-demographic characteristics.

4. *Domestic and international tourism expenditures of persons with disabilities and their travel companions*

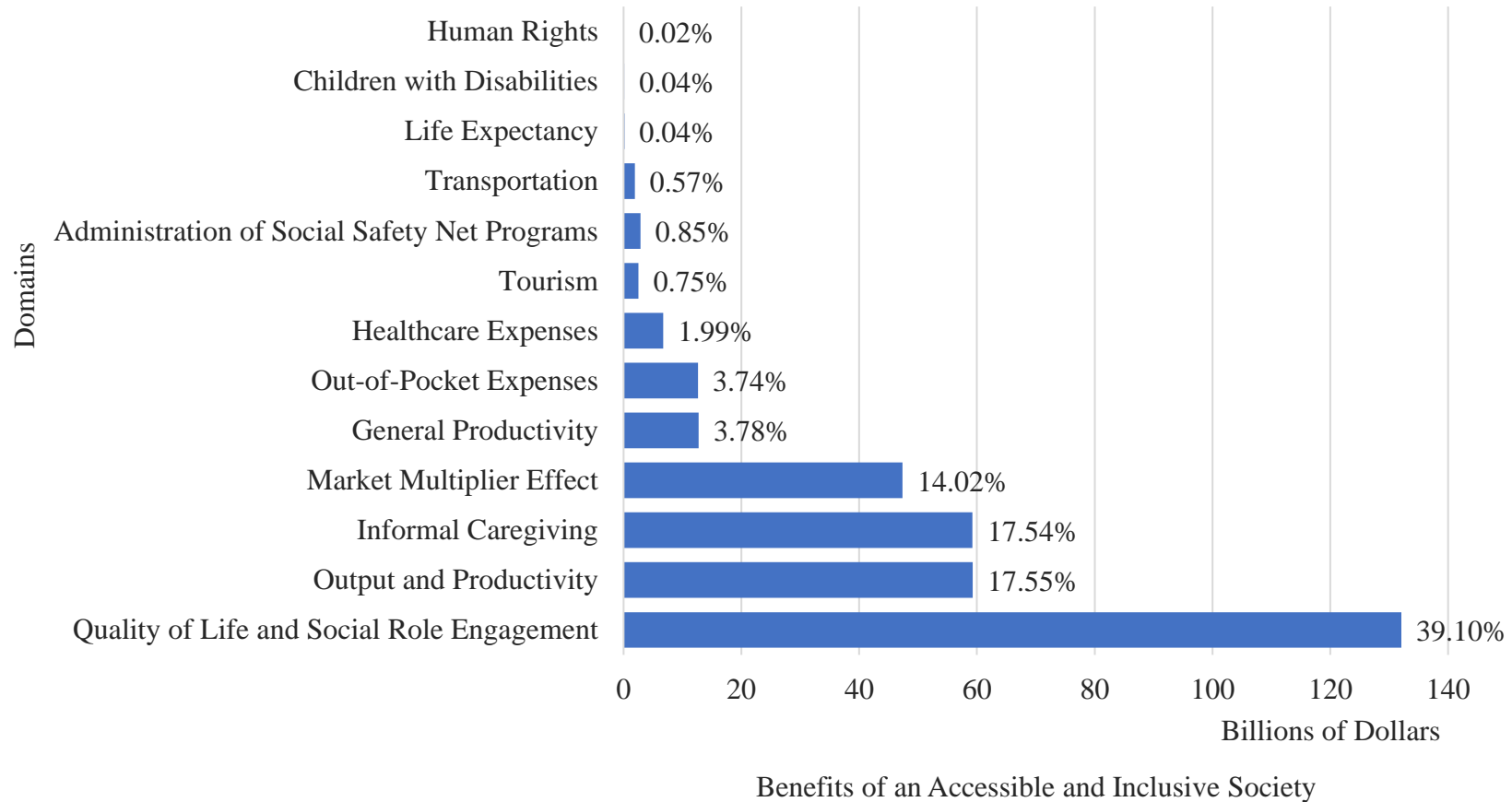
Persons with disabilities reported several reasons for not having traveled, such as expensive or unavailable accommodation or transportation. Literature highlights several benefits of making travel and tourism more accessible for persons with disabilities, including opportunities to tap into an underserved market, multiplier effects associated with the presence of carers who may accompany persons with disabilities on trips, positive impacts on corporate image, and an opportunity to build competitive advantage. To better understand the current situation and also the potential in this area, we need a better understanding of the national and international demand for accessible tourism in Canada, specifically the number of domestic and foreign tourists with disabilities and their companions, as well as their expenditure in different tourist activities.

Core Study Annex: Results Tables

Table 27. Total economic benefit of an accessible and inclusive society

Benefit type	Sex	Prevalence of disability	Healthcare expenses	Output and productivity	Quality of life and social role engagement	Spillover effects	Market multiplier effects	Total benefits
Total	Men	2,763,540	\$8.6 B	\$35.3 B	\$57.1 B	\$34.7 B	\$20.9 B	\$156.6 B
Percent			5%	23%	36%	22%	13%	100%
Per case			\$3,100	\$12,769	\$20,673	\$12,539	\$7,578	\$56,660
Total	Women	3,483,090	\$10.8 B	\$26.9 B	\$75.0 B	\$42.0 B	\$26.4 B	\$181.1 B
Percent			6%	15%	41%	23%	15%	100%
Per case			\$3,100	\$7,726	\$21,540	\$12,062	\$7,578	\$52,007
Total	Both	6,246,630	\$19.4 B	\$62.2 B	\$132.2 B	\$76.7 B	\$47.3 B	\$337.7 B
Percent			6%	18%	39%	23%	14%	100%
Per case			\$3,100	\$9,957	\$21,156	\$12,273	\$7,578	\$54,066
Percent of GDP			1.0%	3.2%	6.9%	4.0%	2.5%	17.6%

Figure 11. Economic benefit by domain of an accessible and inclusive society



**Note that in this figure, the benefit of domains of pension is not illustrated, as the impact of this domain is estimated only through market multiplier effects. For more detail in this regard reader are referred to domain of pension.*

Table 28. Averted healthcare expenses

Benefit type	Sex	Prevalence of disability	Healthcare expenses associated with poor health	Healthcare program administrative expenses	Out-of-pocket expenses	Total healthcare expenses
Total	Men	2,763,540	\$2.6 B	\$0.3 B	\$5.6 B	\$8.6 B
Percent			31%	4%	65%	100%
Per case			\$958	\$119	\$2,024	\$3,100
Total	Women	3,483,090	\$3.3 B	\$0.4 B	\$7.0 B	\$10.8 B
Percent			31%	4%	65%	100%
Per case			\$958	\$119	\$2,024	\$3,100
Total	Both	6,246,630	\$6.0 B	\$0.7 B	\$12.6 B	\$19.4 B
Percent			31%	4%	65%	100%
Per case			\$958	\$119	\$2,024	\$3,100
Percent of GDP			0.3%	0.0%	0.7%	1.0%

Table 29. Output and productivity impacts

Benefit type	Sex	Prevalence of disability	Output and productivity impacts from labour income	Fringe/ payroll benefit	Administration cost of social safety net Programs	Output and productivity impacts from longer life expectancy	Total output and productivity impact
Total	Men	2,763,540	\$29.8 B	\$4.2 B	\$1.3 B	\$0.0 B	\$35.3 B
Percent			84%	12%	4%	0.1%	100%
Per case			\$10,789	\$1,511	\$461	\$528,120	\$12,769
Total	Women	3,483,090	\$22.2 B	\$3.1 B	\$1.6 B	\$0.0 B	\$26.9 B
Percent			82%	12%	6%	0.1%	100%
Per case			\$6,370	\$892	\$461	\$343,980	\$7,726
Total	Both	6,246,630	\$52.0 B	\$7.3 B	\$2.9 B	\$0.04 B	\$62.2 B
Percent			84%	12%	5%	0.1%	100%
Per case			\$8,325	\$1,166	\$461	\$6	\$9,957
Percent of GDP			2.7%	0.4%	0.1%	0.002%	3.2%

Table 30. Quality of life and social role engagement impacts

Benefit type	Sex	Prevalence of disability	Quality of life and social role engagement	Monetary value of quality of life and social role engagement at \$100,000 per QALY	QALY benefit from longer life expectancy	Monetary value of QALY benefit from longer life expectancy at \$100,000 per QALY	Total quality of life and social role engagement improvements	Total monetary value of quality of life and social role engagement improvements
Total	Men	2,763,540	570,772	\$57.1 B	545	\$0.1 B	571,317	\$57.1 B
Percent				99.90%		0.10%		43%
Per case			0.21	\$20,654	0.0002	\$20	0.21	\$20,673
Total	Women	3,483,090	749,721	\$75.0 B	527	\$0.1 B	750,248	\$75.0 B
Percent				99.93%		0.07%		57%
Per case			0.22	\$21,525	0.0002	\$15	0.22	\$21,540
Total	Both	6,246,630	1,320,493	\$132.0 B	1,072	\$0.1 B	1,321,565	\$132.2 B
Percent				99.92%		0.08%		100%
Per case			0.21	\$21,139	0.0002	\$17	0.21	\$21,156
Percent of GDP				6.87%		0.01%		6.9%

Table 31. Spillover effects

Benefit type	Sex	Prevalence of disability	Informal caregiving	Children with disabilities	Human rights	Transportation	Tourism	General productivity	Total spillover effects
Total	Men	2,763,540	\$26.2 B	\$0.1 B	\$0.0 B	\$0.9 B	\$1.1 B	\$6.4 B	\$34.7 B
Percent			76%	0.2%	0.1%	2%	3%	18%	100%
Per case			\$9,484	\$20	\$13	\$309	\$404	\$2,309	\$12,539
Total	Women	3,483,090	\$33.0 B	\$0.1 B	\$0.0 B	\$1.1 B	\$1.4 B	\$6.4 B	\$42.0 B
Percent			79%	0.2%	0.1%	3%	3%	15%	100%
Per case			\$9,484	\$20	\$13	\$309	\$404	\$1,832	\$12,062
Total	Both	6,246,630	\$59.2 B	\$0.12 B	\$0.08 B	\$1.9 B	\$2.5 B	\$12.8 B	\$76.7 B
Percent			77%	0.2%	0.1%	3%	3%	17%	100%
Per case			\$9,484	\$20	\$13	\$309	\$404	\$2,043	\$12,273
Percent of GDP			3.1%	0.01%	0.00%	0.1%	0.13%	0.7%	4.0%

Table 32. Net market multiplier effects^[1]

Source of multiplier effects	Core impact	Market multiplier effects	Net effects
Increased labour-market earnings of persons with disabilities	\$59.3 B	\$93.4 B	\$34.1 B
Increased pensions of persons with disabilities	\$7.8 B	\$12.2 B	\$4.5 B
Increased labour-market earnings of the entire labour-force (general productivity)	\$12.8 B	\$20.1 B	\$7.3 B
Increased earnings of international tourism	\$2.5 B	\$4.0 B	\$1.5 B
Increased labour-market earnings due to increase of life expectancy of persons with learning disabilities	\$0.02 B	\$0.04 B	\$0.01 B
Sum/Net effects	\$82.4 B	\$129.7 B	\$47.3 B

[1] Net benefit of the market multiplier effects are estimated as the difference between market multiplier effects and the core impact.

Table 33. Range of parameters considered for sensitivity analysis

Domain	Descriptions of scenario	Input parameters range			Benefit range			
		Baseline value	Lower bound value	Upper bound value	% of the GDP		Dollars	
					Lower bound value	Upper bound value	Lower bound value	Upper bound value
Healthcare Expenses	Averted healthcare expenses	Baseline ^[1]	Lower ^[2]	Higher ^[3]	17.2%	17.9%	331 B	344 B
Out-of-Pocket Expenses	Averted out-of-pocket expenses	50%	20%	80%	17.2%	18.0%	330 B	345 B
Output and Productivity	Output and productivity impacts	Full leveling up ^[4]	Partial leveling up ^[5]	Full leveling up ^[4]	15.0%	17.6%	288 B	338 B
Quality of Life and Social Role Engagement	Monetary values of a QALY	\$100,000	\$50,000	\$150,000	13.1%	22.0%	253 B	423 B
Life Expectancy	Increased life expectancy (years)	14	10	18	17.6%	17.6%	338 B	338 B
Informal Caregiving	Informal caregiving impacts	Baseline ^[6]	Lower ^[7]	Upper ^[8]	16.5%	20.3%	316 B	391 B
Children with Disabilities	Averted out-of-pocket expenses of families with children with disabilities	50%	20%	80%	17.6%	17.6%	338 B	338 B
Pensions	Median before-tax income of persons with disabilities age 65+	Full leveling up ^[9]	Partial leveling up ^[10]	Full Leveling up ^[9]	17.5%	17.8%	336 B	338 B
Human Rights	Cost of disability-related discrimination complaints (per case)	\$4,623	\$2,312	\$11,559	17.5%	17.6%	338 B	338 B
Transportation	Reduction in economic and social costs of motor vehicle collisions	5%	1%	10%	17.5%	17.7%	337 B	339 B
Tourism	Growth in tourism	28.9%	14.5%	57.8%	17.6%	17.6%	336 B	342 B
General Productivity	Increase in general productivity	0.75%	0.5%	1%	16.9%	18.2%	335 B	366 B
Administration of Social Safety Net Programs	Averted costs in the administration of social safety net programs	50%	20%	80%	17.5%	17.6%	336 B	339 B
Market Multiplier Effects	Market multiplier values	1.57	1.42	1.73	17.4%	19.0%	325 B	351 B

[1] Baseline: Healthcare expenses for persons with disabilities that are associated with poverty are similar to healthcare expenses for person without disability.

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- [2] Lower bound: 5% of incremental healthcare expenses of persons with disabilities, relative to expenses of persons without disabilities, are averted.*
- [3] Upper bound: 20% of incremental healthcare expenses of persons with disabilities, relative to expenses of persons without disabilities, are averted.*
- [4] Full leveling up: Labour-market income of persons with disabilities is the same as the average of the society.*
- [5] Partial leveling up: Labour-market income of persons with severe disabilities will become equivalent to that of a persons with milder disabilities and that of a person with milder disabilities will become equivalent of person without disabilities.*
- [6] Baseline: Value of unpaid caregiving services are 50% lower, no output and productivity losses associated with caregiving, HRQOL losses for informal caregivers are 50% lower.*
- [7] Lower bound: Value of unpaid caregiving services is 30% lower, no output and productivity losses associated with caregiving, HRQOL losses for informal caregivers are 30% lower.*
- [8] Upper bound: No unpaid caregiving services, no output and productivity losses associated with caregiving, no HRQOL losses for informal caregivers.*
- [9] Full leveling up: Before-tax median total income of persons with disabilities is the same as person without disabilities.*
- [10] Partial leveling up: Before-tax median total income of persons with severe disabilities will become equivalent to a persons with milder disabilities, and the income of those with milder disabilities will become equivalent to that of a person without disabilities.*

Figure 12. Tornado diagram presentation of input parameter sensitivity analysis (% of the GDP)

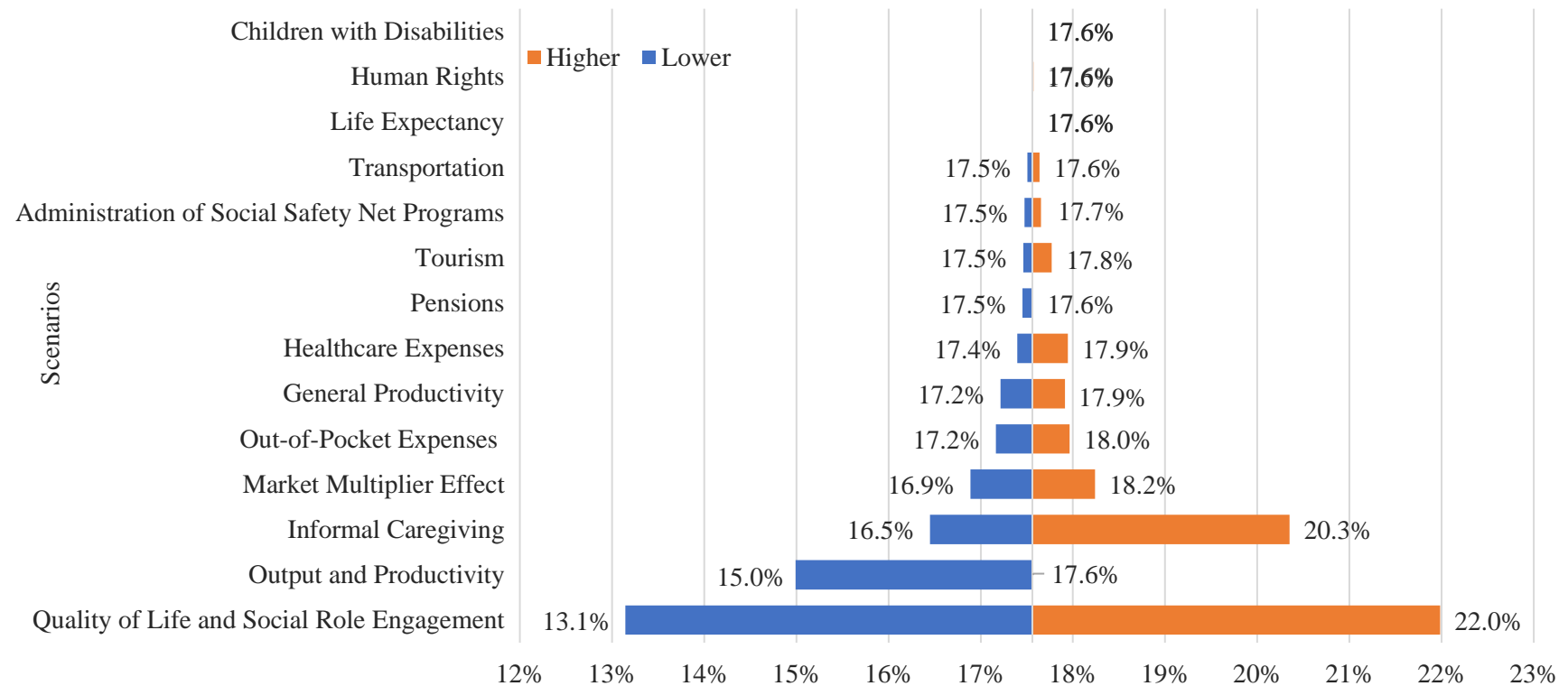


Table 34. Public sector revenues

Type of benefit	Federal	Provincial	Federal and provincial	
			Dollar	Percent
Tax revenue from output and productivity impacts	\$17.0 B	\$18.0 B	\$34.9 B	57%
Tax revenue from tourism and the market multiplier effects	\$5.4 B	\$6.0 B	\$11.4 B	19%
Averted healthcare expenses	\$0.3 B	\$3.9 B	\$4.2 B	7%
Averted social safety net programs expenses	\$5.2 B	\$5.2 B	\$10.5 B	17%
Averted human rights discrimination complaints costs	\$0.001 B	\$0.04 B	\$0.04 B	0.1%
Sum	\$27.9 B	\$33.1 B	\$61.0 B	100%

Table 35. Sensitivity analysis of public sector revenues

Parameter	Baseline value	Lower bound value	Upper bound value
Personal income tax ^[1]	35.9%	35.0%	37.7%
Sale tax (on goods and services) ^[2]	13.0%	11.1%	15.0%
Corporate tax ^[3,4]	26.7%	25.0%	31.0%
Percentage of payroll over gross benefit ^[5]	25.0%	15.0%	30.0%
Average gross benefit of industries ^[6]	8.8%	7.8%	9.6%

[1] OECD Data. 2019. Available at: <https://data.oecd.org/tax/tax-on-payroll.htm#indicator-chart>

[2] Harmonized sales tax calculator GST / PST or HST. Available at:

<http://www.calculconversion.com/sales-tax-calculator-hst-gst.html>

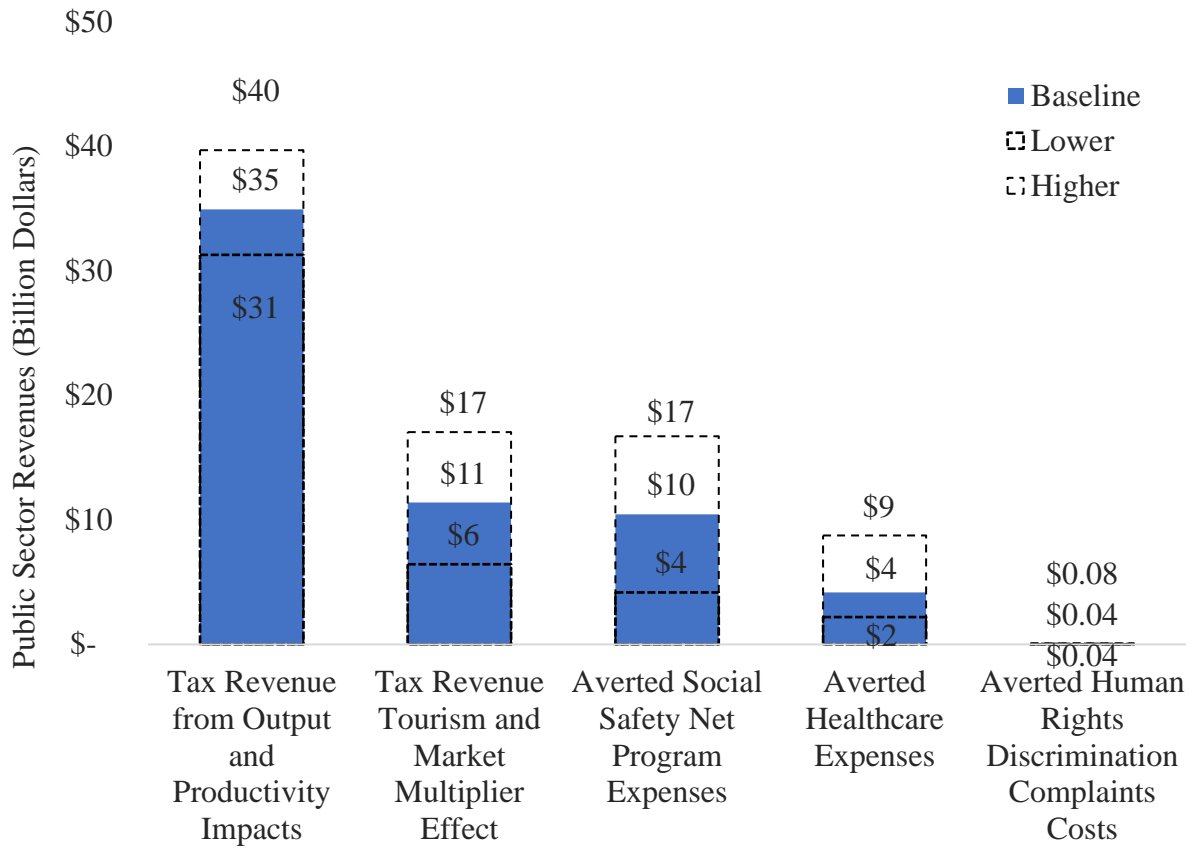
[3] https://www.fin.gc.ca/n17/data/17-097_3-eng.pdf; <https://tradingeconomics.com/canada/corporate-tax-rate>;

[4] <https://www.cchwebsites.com/content/pdf/quickcharts/ca/en/business/269qb.pdf>

[5] <https://yourbusiness.azcentral.com/typical-percentage-payroll-corporation-29466.html>

[6] Statistic Canada, Quarterly balance sheet and income statement, 2017. Available at: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3310000701>

Figure 13. Categories of public sector revenues



Sub-Study 1: Environmental Scan of the International Policy Arena

Summary

The United Nation's Convention on the Rights of Persons with Disabilities (CRPD), along with its Optional Protocol, was developed as a human rights instrument for persons with disabilities that reaffirms inclusion, eliminates societal barriers and encourages equal participation and QOL. The practical impact of the CRPD will depend on the extent to which it is implemented in domestic policies and court decisions. At the time of this report, the CRPD had been signed by 187 countries worldwide and ratified by 177 countries. Steps have been taken within different contexts to implement dimensions of the CRPD.

We conducted an environmental scan of the international policy landscape to examine approaches taken to remove barriers to inclusion for persons with disabilities and those approaches' potential benefits. As part of the approach, interviews with international knowledge leaders and a synthesis of evidence were conducted.

Findings indicated that while not all industrialized countries have implemented the CRPD, most have disability-specific legislation which aims to remove physical and psychosocial barriers, supporting social participation and addressing discrimination of persons with disabilities. No systems-level economic impact evaluations were identified that examine the impact (cost-benefit) of policies aimed at removing barriers to participation. Additionally, literature focusing on the benefits of inclusion for persons with disabilities has tended to devote its attention to individual impacts (e.g., employment, work productivity and income generation) and societal labour-market impacts (e.g., growth in GDP). Globally, less is known about the effects of removing barriers to inclusion in the areas of human rights, tourism, pensions and QOL. Only a few studies have been published that consider the costs of exclusion in certain domains to bring attention to both tangible and intangible impacts of policies aimed at addressing the social exclusion of persons with disabilities.

In summary, our environmental scan of the international policy arena indicated that little is known about the monetization and measurement of policies that aim at removing barriers to the inclusion of persons with disabilities in society.

Overview

The World Health Organization (WHO) estimates that, globally, one billion persons are living with a disability (WHO, 2011). Studies examining the international burden of disability indicate that a significant proportion of persons with disabilities are excluded from different domains of life including (but not exclusive to) education, employment, healthcare, leisure, and recreation (WHO & World Bank, 2011; Bickenbach 2009; UN, 2019; Bames and Mercer, 2005; Bickenbach et al., 1999). The landmark Convention on the Rights of Persons with Disabilities (CRPD), along with its Optional Protocol, was developed as a human rights instrument with an explicit, social development dimension (UN, 2019). As described in earlier sections of this report, the CRPD aligns with the WHO's International Classification of Functioning, Disability, and Health (ICF) and adopts a social categorization of persons with disabilities (WHO, 2001). The CRPD reaffirms that all persons with all types of disabilities must enjoy all human rights and fundamental freedoms. CRPD, states that all categories of rights should apply to persons with disabilities and identifies areas in which adaptations should be made for persons with disabilities to effectively exercise their rights. The CRPD also highlights domains of life in which the rights of persons with disabilities have been violated, and where protection of rights must be reinforced.

The CRPD was negotiated during eight sessions of an Ad Hoc Committee of the UN General Assembly from 2002 to 2006 and was the fastest-negotiated human rights treaty. The Convention was entered into force on May 3, 2008. At the time of this report, the CRPD has been signed by 187 countries worldwide and ratified (made legally binding) by 177 countries¹² (UN, 2019). Additionally, 92 countries have signed and ratified the Optional Protocol. Notably, the CRPD had the highest number of signatories to a UN Convention on its opening day. Indeed, the CRPD is considered by scholars and policymakers as one of the most important steps forward for persons with disabilities towards eliminating barriers in society and encouraging equal participation (Bickenbach et al., 2009).

Disability scholars also agree that the practical impact of the Convention will depend on the extent to which it is implemented in domestic policies and court decisions (Hoffman et al., 2016). Despite the large number of countries that have signed and ratified the CRPD, fewer countries have prioritized the changes that are needed for successful implementation. Countries that have implemented the CRPD are required to submit mandatory reports to the CRPD Committee for feedback. A recent study by Hoffman et al. (2016), examined 19 countries that have implemented the CRPD and analyzed the concerns raised by the Committee. The most frequently reported concerns raised by the Committee included the over-medicalization of disability in social policy development, insufficient participation of persons with disabilities in the design and implementation of legislation, inconsistent implementation of the CRPD as a framework across all social policies at local levels, and insufficient disability-related resources and services (Hoffman et al., 2016). Additionally, several scholars suggest that the CRPD member countries could face practical challenges implementing the Convention in practice including 1) lack of effective national cross-cutting disability policies that are needed to provide a foundation for CRPD implementation; 2) gulf between national policy and local community practice; 3) potential lack of political will among policymakers for full implementation; and 4)

¹² Signing of the treaty creates the obligation to not violate the object and purpose of it. State Parties are not bound to uphold the specific obligations of the CRPD until they ratify it.

the absence of economic models which examine the impact of legislation aimed at removing barriers for persons with disabilities in society (Hoffman et al., 2016; Lang et al., 2011).

It is important to highlight that although not all industrialized countries may have implemented the CRPD, most countries have disability-specific legislation which aims at removing physical and psychosocial barriers, supporting social participation, and addressing discrimination of persons with disabilities. Within the context of the CRPD and country-level disability legislation, it is unclear to what extent existing policies and programs have taken steps to evaluate the cost of exclusion and monetize and measure the impact of removing barriers to the inclusion of persons with disabilities in society.

Objective

As part of this sub-study, we conduct a comprehensive environmental scan of the international policy arena. The overall aim of our environmental scan is to determine how different jurisdictions have measured the cost of exclusion of persons with disabilities. Findings from this component will be integrated directly into our framework for the cost of exclusion. As part of the environmental scan, we conducted key informant interviews with international knowledge leaders and performed a comprehensive review of existing legislation to address several specific objectives:

1. To identify and describe existing legislation within different industrialized countries that have removed barriers to the inclusion of persons with disabilities and promote social participation;
2. To examine the extent to which different industrialized countries have conducted studies of the cost of exclusion to evaluate the benefits of legislation which aim at removing barriers to inclusion for persons with disabilities;
3. Among countries which have conducted economic evaluations of disability legislation, to synthesize available insights to determine the direct, indirect and intangible impacts that have been measured and monetized.

Methods

To address the objectives of this component, we conducted a comprehensive environmental scan. Environmental scans are a frequently utilized methodology that provides researchers and policymakers with an assessment of the landscape around an issue of interest (Shahid and Turin, 2018). To account for diverse types of knowledge, environmental scans include the collection of grey and peer-reviewed literature, and interviews with diverse knowledge leaders (Shahid and Turin, 2018). We describe our interview and literature search methods in greater details in the following paragraphs and describe the results of each methodological approach in concert. All insights collected from our environmental scan were consolidated and synthesized to develop a comprehensive picture of the international policy arena and the legislation which aims at removing barriers for persons with disabilities. Specifically, findings from the environmental scan will be utilized to identify specific impacts that will be included in our model of the cost of exclusion.

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Methods A: Interviews with International Knowledge Leaders

Over the period of January 1, 2019, to March 31, 2019, we conducted in-depth interviews with knowledge leaders in the topic of disability and inclusion. To be eligible to participate, knowledge leaders were required to be based within an OECD country and have specific experience working on the development and implementation of policies that remove barriers for persons with disabilities. Participants were recruited using a snowball recruitment procedure. Utilizing the contacts of the study team and email addresses identified online, we approached potential participants who met our eligibility criteria. Knowledge leaders who participated in the interviews were asked to identify other participants who would be willing to contribute to our environmental scan.

Interviews were held over the phone or online and lasted between 40 to 60 minutes. Interview questions asked about specific policy experiences related to the inclusion of persons with disabilities in different domains of life. Participants were also asked about specific impact analyses and economic evaluations of disability policies that were undertaken within their respective contexts. We probed participants to elaborate on impacts that were assessed and how they were measured (see Appendix for interview guide). We also probed participants to consider impacts related to improved inclusion in different domains of life including employment, the built environment, information and communication technologies, communication other than information and communication technologies, the procurement of goods, services and facilities, the design and delivery of programs and services, and transportation. All interviews were recorded (with participants' consent) for accuracy, and detailed written notes were taken by the interviewer. Key themes were extracted from the interview notes and recordings and directly integrated into our framework for the cost of exclusion.

Description of Knowledge Leaders

We completed nine key informant interviews. Key informants represented international policy experts who had experience with accessibility legislation within their respective jurisdictions. The participants recruited for consultations were from Canada and several OECD countries (e.g., Australia, Ireland). Additionally, we conducted interviews with policy experts from international organizations (e.g., the World Bank, the Centers for Disease Control and Prevention (USA) and the International Labour Organization). We provide a short description of the participants in this report. Additional participant details and contact information are provided in the Appendix.

MS: An independent consultant from Australia who has collaborated with ESDC on policy development related to the inclusion of persons with disabilities. MS previously worked for the Australia Human Rights Commission, and has led initiatives related to the built environment, access to programs and services, and public transportation. He has also participated in the development of local government service and action plans.

JF: An Australian economist with expertise working on disability inclusion. He has worked on policies which have aimed at improving the accessibility for people within transportation (e.g., taxis and public transport), employment, and the National Disability Insurance Scheme.

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RS: A Canadian economist and statistician who has worked on economic studies which have estimated the costs associated with income support for persons with disabilities and other marginalized populations.

CMN: Is the global disability advisor at the World Bank. In her role, she ensures World Bank policies, programs and projects take persons with disabilities into consideration. She previously served as USAID's coordinator for disability and inclusive development.

GC: Is the Chief Officer in the Centre for Excellence in Universal Design in Dublin, Ireland. He leads the development of standards on universal design in various domains of life including education, information, and communication technology, and employment.

ML: Is a statistician with the Centres for Disease Control and Prevention (USA) and a member of the Washington Group. In his role within the Washington Group, ML aims at developing harmonized data regarding persons with disabilities among countries which have ratified the CRPD.

DM: Is an economist and independent consultant with the Center of Inclusive Policy in the United States. He specializes in the economic analysis of disability policies within the middle- and low-income countries. DM previously worked for the World Bank in their disability portfolios.

ET: Is an economist and senior disability policy advisor with the International Labour Organization (ILO). His work focuses on the incorporation of disability-related insights into the labour-market activities of ILO member countries. He previously worked for the Spanish government on disability policy.

JG/KH: Are two policy advisors for the Department of Social Affairs in the Netherlands. Both work on income support and employment activation policies that aim to improve the employment participation for persons with disabilities. Much of their insights focused on the labour-market impacts of an accessible and inclusive society.

Methods B: Literature Search

To complement interviews with international knowledge leaders, we conducted a review of existing legislation and policies aimed at removing barriers for persons with disability in different domains of life including employment, the built environment, information and communication technologies, communication other than information and communication technologies, the procurement of goods, services and facilities, the design and delivery of programs and services, and transportation. To identify available literature, we utilized search engines and scientific databases. We also utilized the WHO MiNDBank which provides country-specific details on available disability legislation (WHO, 2019). Our review focused specifically on OECD countries and paid specific attention to the economic evaluations of the cost of exclusion within each context. Similar to our knowledge leader interviews, findings from the literature review were directly integrated into our framework for the cost of exclusion.

From Table 36, we have selected five countries which have a similar context to Canada and have specific disability legislation which aims at removing barriers to exclusion for persons with disabilities. Based on available English language policy documentation, we provide a summary of country-specific disability legislation and approaches to assess impact. At the time of this report, no system-level economic impact evaluations were identified to our knowledge. However, in certain contexts (e.g., Australia), the impact of several specific policy changes was examined (Commonwealth of Australia, 2018).

Table 36. Summary of OECD country scan of national disability policies and available economic impact analyses of the cost of exclusion

Country	Ratified CRPD	National Disability Policy	Available Impact Analysis
Australia	Y	National Disability Strategy	N
Austria	Y	National Action Plan on Disability	N
Belgium	Y	<u>Loi réformant les régimes d'incapacité et instaurant un nouveau statut de protection conforme à la dignité humaine</u>	N
Chile	Y	National Policy for the Social Inclusion of Persons with Disabilities	N
Czech Republic	Y	National Plan for the Promotion of Equal Opportunities for Persons with Disabilities 2015–2020	N
Denmark	Y	Danish Disability Policy	N
Estonia	Y	-	N
Finland	Y	Disability Policy Programme 2010–2015	N
France	Y	Participation et citoyenneté des personnes handicapées	N
Germany	Y	National Action plan on the Implementation of the CRPD	
Greece	Y	-	N
Hungary	Y	Act on the Rights and Equal Opportunities for Persons with Disabilities	N
Iceland	Y	-	N
Israel	Y	Equal Rights of Persons with Disability Law	N
Italy	Y	Del principio di parità di trattamento e delle pari opportunità nei confronti delle persone con disabilità di cui all'articolo 3 della legge 5 febbraio 1992	N
Japan	Y	Services and Supports for Persons with Disabilities Act	N
Korea	Y	Act on the Prohibition of Discrimination against Persons with Disabilities	N
Latvia	Y	<u>Invaliditātes likums</u>	N
Lithuania	Y	National Program on Social Integration of Persons with Disabilities	N
Luxembourg	Y	Droits des personnes handicapées	N
Mexico	Y	<u>Ley General Para La Inclusión de las Personas con Discapacidad</u>	N

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Country	Ratified CRPD	National Disability Policy	Available Impact Analysis
Netherlands	Y	Equal Treatment (Disability and Chronic Illness)	N
New Zealand	Y	Health and Disability Services Safety Act/New Zealand Public Health and Disability Act 2000	N
Norway	Y	Anti-Discrimination and Accessibility Act	N
Poland	Y	Vocational and Social Rehabilitation and Employment of Persons with Disabilities	N
Portugal	Y	Adopting the Disability Special Protection Regime	N
Slovak Republic	Y	-	N
Slovenia	Y	Law of Equal Opportunities of Persons with Disabilities	N
Spain	Y	General Law on the Rights of Persons with disability and Social Inclusion	N
Sweden	Y	Swedish Disability Policy: Service and Care for Persons with Functional Impairments	N
Switzerland	Y	Federal Act on Institutions to Promote the Integration of Persons with Disabilities	N
Turkey	Y	Turkish Disability Act	N
United Kingdom	Y	Equality Act	N
United States	N	Americans with Disability Act (ADA)/ADAA	N

Notes: At the time of this report, the specific disability legislation was not identified; To our knowledge, when reviewing the literature, no publicly available impact analyses existed

Australia

The National Disability Strategy (NDS) stemmed directly from the ratification of the CRPD (Council of Australian Governments, 2010). The NDS is a 10-year plan for improving the lives of Australians with disability, their families and their carers. The overall goal is to establish a high-level policy framework to guide government activity across mainstream and disability-specific public policy. The Strategy also aims at providing national leadership towards greater societal inclusion of persons with disability. Specific domains which the NDS addresses include:

- **Accessible and inclusive communities:** Physical environment, transportation, building and housing, digital information and communication technology and civic life.
- **Rights protection:** Anti-discrimination measures, complaints mechanisms, electoral and justice systems.
- **Economic security:** Jobs, business opportunities, financial independence, adequate income support.
- **Personal and community support:** Inclusion and participation in the community, person-centered support.

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- **Learning and skills:** Early childhood education, schools, further education, vocational education, school-to-work transitions.
- **Health and well-being:** Health services, health promotion and the interaction between health and disability systems, QOL.

Several indicators have been identified by the Australian government to assess the effectiveness of policies and programs within each domain. However, no studies to our knowledge have integrated these indicators into a comprehensive cost of exclusion study. These indicators include:

- Proportion of persons with a disability reporting difficulty with the use of public transport.
- Proportion of persons with a disability participating in common cultural and recreational activities.
- Feelings of safety.
- Proportion of persons with a disability participating in civic life.
- Proportion of complaints under the Disability Discrimination Act, by sub-category (e.g., employment, education).
- Proportion of persons with a disability participating in the labour force.
- Proportion of persons with a disability in both private and public sector employment.
- Difference between the average income of persons with disability and the average income for all Australians.
- Proportion of persons with a disability experiencing housing stress.

Netherlands

The Netherlands ratified the CRPD in 2016 (Federal Government of The Netherlands, 2013). As of 2018, the Netherlands has yet to sign the Optional Protocol to the Convention, which provides the individual right to file a complaint to the Committee. Prior to CRPD ratification, the Dutch Act on Equal Treatment on the Grounds of Disability or Chronic Illness was the primary legislation which aimed at addressing direct or indirect discrimination towards persons with disabilities and offering legal protections. The Dutch Act on Equal Treatment on the Grounds of Disability or Chronic Illness applied to a range of different domains of life including employment, education, living, and public transport. Within these domains of life, there was a mandate to implement effective adjustments that would not impose a disproportionate burden (e.g., provision of reasonable accommodation). Following CRPD ratification, the Act on Equal Treatment on the Grounds of Disability or Chronic Illness was updated to cover the complete “goods and services” field. Goods and services included retail trade, hospitality, culture, sport, leisure, commercial services, care, and Internet services. Currently, steps are being taken by the Dutch government to implement policies that better align with the CRPD and create a society which is inclusive for everyone, irrespective of their talents or disabilities.

The 2017 annual report of the Netherlands Institute for Human Rights highlighted several important goals for the implementation of the CRPD. These goals include:

- **Building and living:** Improving accessibility of buildings, and arranging the availability of sufficient, suitable homes and accommodation.
- **Work:** More opportunities for a regular job to contribute to an inclusive labour market.

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- **Education:** All children have access to education which is suitable for their needs, and where support and supervision needs are more easily met.
- **Transport:** Independent use of public transport.
- **Participation and accessibility:** More opportunities to participate in sport, culture, libraries, media, and the elections. Additionally, information provided by government bodies and other parties should be more accessible and understandable to persons with disabilities through the development of accessible websites, applications and other strategies.
- **Care and support:** Safeguarding good accessibility and quality of care and support.
- **State as an organization:** The national government should strive to be an accessible organization.

United States

The United States has yet to ratify the CRPD (Americans with Disability Act National Network, 2019; US Department of Justice, 2005). At the same time, the US has civil rights laws that prohibit discrimination against persons with disabilities in all public life domains (e.g., employment, education, transportation, public and private places that are open to the public).

The Americans with Disabilities Act (ADA) became law in 1990 to ensure that persons with disabilities have the same rights as all Americans and guarantees equal opportunities for individuals with disabilities in public accommodations, employment, transportation, state, and local government and telecommunications. Between 2008 and 2009, amendments to the ADA were made (ADAA) to expand the definition of disability so that all individuals with disabling health conditions could be protected by the laws. In particular the concept of substantial limitations was expanded so that an impairment did not have to outright restrict major life activity, and an accommodation could be made without considering the use of assistive devices.

The ADA applies to several domains of life including:

- **Employment (Title 1):** Assist persons with disabilities access the same employment opportunities and benefits available to persons without disabilities. Also, employers must provide reasonable accommodations to qualified applicants or employees. Employers with 15 or more employees must comply with this law.
- **State and local government services (Title 2):** Prohibits discrimination against qualified individuals with disabilities in all programs, activities, and services of state and local governments, and is extended to the public transportation system. Title mandates administrative process including requirements for self-evaluation and planning; requirement for making reasonable modifications to policies, practices and procedures; identification of architectural barriers; and need for effective communication.
- **Public accommodations (Title 3):** Prohibits discrimination against persons within private places and mandates reasonable accommodation. Applies to privately owned facilities like hotels, restaurants, retail merchants, doctor's offices, golf courses, private schools, and stadiums. Title 3 sets a minimum standard for accessibility in alterations and new constructions.
- **Telecommunications (Title 4):** Mandates telephone and Internet companies to provide services that are accessible.

- **Miscellaneous provisions (Title 5):** Provisions related to the ADA as a whole, and its relationships with laws, its impact on insurance providers, prohibition against retaliation and coercion, and dispute resolution

The ADA is comprehensive, covering public and private sectors, and various levels of government. Accordingly, few ADA research endeavors have taken a system-wide approach to examining the impact of the legislation. Gould (2004) noted several challenges to examining the impact. First, responsibility for administering ADA is dispersed among federal executive departments and agencies as well as certain units in Congress and other legislative branch entities. Second, definitional ambiguity still exists with regards to the definition of disability, reasonable accommodation, and undue hardship. Some researchers have examined the impact of the ADA on employment participation of persons with disabilities. These studies find that despite the implementation of the ADA, there has been a decline in employment of persons with disabilities since the implementation of the Act (Hastings, 2019).

United Kingdom

In the United Kingdom (UK), the Equality Act (2010) is the primary legislation which protects against discrimination in education, work and services for persons with physical or mental impairment that impacts a person's ability to carry out normal day-to-day activities (United Kingdom, 2019; Disability Rights U.K., 2019; Harwood, 2016). The legislation is nested within a broader legal framework that aims at reducing discrimination among a number of protected characteristics (e.g., racial minorities, gender). The Equality Act supports the rights of persons with disabilities by offering greater legal protections against direct and indirect discrimination, harassment, victimization, and promotes reasonable adjustments (i.e., reasonable accommodation). The Equality Act applies to the provision, criterion or practice, or physical premises within education, employment, and public services. Within education and employment domains, the Equality Act can be applied to persons with disabilities in the following ways:

- **Education:** Publicly funded education providers have a duty to not to discriminate against potential, current or former students with disabilities. The Act applies to course admissions, provision of education, and access any benefit, facility or service.
- **Employment:** Employers have a duty not to discriminate against job applicants or employees (e.g., apprentices and all paid staff) based on disability. Within this domain, the Equality Act applies to recruitment and advertising, employment contracts, pay and benefits, promotion and training, and dismissal and redundancy.

Since 2016, the UN Committee on the CRPD has evaluated the UK's provisions for persons with disabilities and expressed concerns that the level of protection and support provided to persons with disabilities was not adequate (Haves, 2018). In particular, the Committee indicated that combining disability with the other protected characteristics in one act did not, in practice, benefit persons with disabilities.

Sweden

Swedish Disability Policy spans multiple departments within the national government and aims at incorporating the issues of persons with disabilities into all areas of society (Independent Living Institute, 2019; Socialstyrelsen, 2009). Specific goals of disability policy in Sweden

include the identification and dismantling of obstacles for full participation in society, prevention and minimization of discrimination, and provision of tools for independence and self-determination. According to the Swedish government, through increased accessibility, persons with disabilities are given opportunities to better take part in society, which is a necessary prerequisite for reaching the goal of equal living conditions. Several laws, such as the Social Services Act (SoL), the Health- and Medical Services Act (HSL) and the Education Act (Skoll) offer legislation for removing barriers to exclusion for persons with disabilities in medical care, service and social service, and education. Through these various laws, the Swedish government asserts that society should reinforce the opportunities of individuals with disabilities to live an independent and self-governing life. Supplementing other laws, the Act Concerning Support and Service for Persons with Certain Functional Impairments (LSS) sets out rights for persons with considerable and permanent functional impairments, and entitles persons to the special support, and special services, that they may need over and above what they can obtain under other legislation.

Through 2016, the Swedish government has proposed a five-year strategy with the following objectives:

- **Physical accessibility:** Improve premises used for education, care, and culture, public transportation, sports centres, among others.
- **Staff awareness:** Staff of public agencies and business should be prepared to understand disabilities and improve accessibility
- **Information:** Make various kinds of information accessible for persons with disabilities, improve the effectiveness of public web interfaces, radio, television.
- **Public support for sports:** Restructuring of sports for persons with disabilities including sports centers, clubs, and activities.

The Swedish Agency for Disability Policy Coordination, Handisam, has been commissioned by the government to monitor and assess the development of accessibility. In a report published in 2013, Handisam officials indicated that minimal progress towards meeting the goals of the strategy has been achieved.

Results of Knowledge Leader Interviews and Literature Search

Paucity of Impact Analyses/Economic Evaluations

Of significance, knowledge leaders within the international arena that we interviewed had very little experience examining the economic impacts associated with policies aimed at removing barriers for persons with disabilities. *All* participants highlighted the absence of economic measures related to the cost of exclusion. The absence of a framework for the cost of exclusion created a barrier to their respective governments and organizations more readily developing and implementing policies which would create a more inclusive society. **JG/KH**, from the Department of Social Affairs in the Netherlands, highlighted a recent policy called the Jobs Agreement which was developed in consultation with unions and employers. While monitoring was built into their evaluation plan, it was not completed at the time of our interview.

Participants attributed the absence of economic evaluations to several key factors. One participant (**CMN**), highlighted that in many countries, adequate data does not exist with respect

to persons with disabilities and the potential impact of inclusion within different domains of life. **CMN** also indicated that the lack of impact analysis/economic evaluation evidence represented a significant barrier for her organization to evaluate the effectiveness of disability-related initiatives. According to **DM**, one reason for limited economic analyses in developed countries was the sophisticated human rights legislation that protects persons with disabilities. These human rights legislations can be used to justify policies that remove barriers to exclusion. In comparison, in low- and middle-income countries where more financial constraints exist, economic models are required to justify policy change.

Interestingly, **ML** indicated that the CRPD may be limited in relation to its enforcement of the measurement and evaluation of outcomes. **ML** also suggested that many countries may be apprehensive to quantify the long-term benefits of inclusion because of the potentially high short-term costs associated with removing barriers for persons with disabilities from various domains of life. Within the Australian context, **JF** indicated that policymakers often faced challenges operationalizing the range of benefits associated with accessibility-related policies and programs. These challenges were compounded by the limited time available for policymakers to perform robust economic analyses. Of significance, most participants agreed that our initiative was novel, and would provide important insights for policymakers, researchers and advocates on the strategies that can be utilized to quantify the impact of policies that improve inclusion of persons with disabilities in society.

Findings from our key informant interviews were supported by our comprehensive literature review. Our literature search revealed minimal research or grey literature which focused on the cost of exclusion. Economic analyses that we did identify tended to focus on the costs associated with implementing policies and programs for persons with disabilities, and very few offered insights into the measurement of impacts (Mitra et al., 2017).

Although the knowledge leaders we interviewed had little experience conducting cost of exclusion studies for persons with disabilities, we probed participants to consider the various ways in which they would measure the impacts of an accessible and inclusive society. We highlight key impacts noted by knowledge leaders in the paragraphs below.

Labour-Market Output Losses Due to Barriers to Participation

Most participants agreed that policies that removed barriers to participation would be significantly beneficial to labour-market activity. In particular, knowledge leaders indicated that greater inclusion of persons with disabilities would improve the likelihood of participating in employment and contribute to increased work productivity and income generation. **ET**, a senior disability specialist at ILO, indicated a number of economic benefits including employment participation and less absenteeism associated with a more inclusive workplace. He also mentioned that more accommodating workplaces could increase the speed at which a person with a disability returns to work following sickness absence. **JG/KH** described the qualitative benefits of persons with disabilities having a barrier-free work environment, including greater meaningfulness and happiness. Additionally, **ET** noted that removing barriers to inclusion in the labour market would mean that persons with disabilities will be less likely to participate in the informal economy or precarious working situation. **GC**, an expert in universal design, noted that policies that contribute to more inclusive workplaces could have a positive impact on a number

of additional labour-market subgroups such as the elderly and pregnant women. Similarly, findings from our literature review also indicate that increased involvement of persons with disabilities within the workplace could also have benefits for business, improve staff retention, and contribute to higher attendance (Banks and Polack, 2014).

Participants (**CMN**, **ET** and **JG/KH**) also suggested that the increased participation of persons with disabilities in the labour market could have broader economic benefits, which could include meeting labour shortages, increasing employment rates, raising the GDP and increasing tax revenues. **CMN** estimated that the inclusion of persons with disabilities within the labour market could contribute between 7-10% to a country's GDP. Similarly, economic benefits associated with the inclusion of persons with disabilities was highlighted in literature (Banks and Polack, 2014; Buckup, 2009).

Labour-Market Output Losses for Caregivers of Persons with Disabilities

Participants also indicated that the economic benefits associated with greater inclusion of persons with disabilities could be extended to those who care for persons with disabilities. For instance, **JF** suggested that when a person with a disability participates in different social domains (e.g., education and employment) families and friends may have fewer care responsibilities and may be more likely to participate in the labour market and have fewer job disruptions. **DM** indicated that carers may be more likely to report underemployment as a result of their care responsibilities or their need to work flexible schedules or in closer proximity to home. **ET** indicated that the labour-market benefits associated with an accessible and inclusive society would disproportionately impact females, who may be more likely to care for persons with disabilities. To note, **JF** had a daughter with a disability and had to reduce his work responsibilities to provide care. Literature also indicated that carers and households may experience benefits associated with greater inclusion of persons with disabilities (Banks and Polack, 2014).

Educational Attainment

Several knowledge leaders highlighted that removing barriers to inclusion of persons with disabilities could benefit educational attainment. **RS**, an economist with experience working on income support projects, suggested that if a person is able to obtain a university education, they will be more likely to find a higher quality job with greater flexibility, access to job accommodations, and health benefits. The results will be sustained employment and greater tax revenue over the lifetime of a person with a disability. According to **ET**, those with better quality jobs will also be less likely to work precariously, live below the poverty line and access social assistance. **RS** also noted that increased enrollment of persons with disabilities in post-secondary education and vocational schools can be a source of revenue generation for academic institutions. According to **DM**, a society with fewer barriers to inclusion within the educational sector will have fewer requirements for specialized schools or classes that are tailored to the needs of persons with disabilities. At the same time, within a global context, **CMN** noted that her colleagues are often struggling to access appropriate datasets to measure the long-term benefits of accessible education. **DM** suggested that challenges related to educational attainment can extend to children of persons with disabilities, who may have to forgo secondary education to take on additional responsibilities within the home.

Tourism/Patronage

This spillover effects were echoed by multiple interview participants. Several of them indicated that cities and business which have addressed barriers to inclusion for persons with disabilities could positively impact tourism and patronage. **GC** pointed to steps taken in Ireland to implement universal design principles to the built environment and public transportation. **GC** noted the improvement in universal design have increased tourism and attracted more large-scale international events (e.g., conferences, concerts, sporting events). **RS** noted that persons with disabilities are less likely to spend money at businesses where physical barriers exist. **RS** noted a Toronto-based initiative which aims at supplying ramps for businesses to improve the accessibility of their entrances. Accordingly, businesses in Toronto who participate in the program have reported greater patronage from persons with disabilities and a more positive corporate image. The impact of inclusion can be extended to other populations including the elderly, children and pregnant women. Within the Dutch context, **JG/KH** suggested that a barrier-free workplace could enable the workplace to meet their social responsibilities towards persons with disabilities and also the broader public.

Healthcare Expenses

Some participants indicated that improvements to the inclusiveness of workplace, homes, schools, public spaces, and recreational facilities could also impact health. **JF** suggested that more accessible spaces could reduce injury risks and hospitalizations which could have significant long-term benefits to minimize healthcare expenses. Similarly, participants suggested that improvements in the built environment could contribute to greater physical activity and, as a result, contribute to the cardiovascular and mental health of persons with disabilities. **JG/KH** noted that by promoting participation in the labour market, persons with disabilities would report fewer mental and physical health impairments, and, as a result, require less healthcare.

The impact of accessibility on healthcare expenses were also echoed in the literature. In a recent, literature review of economic studies of persons with disabilities, Mitra et al. (2017) indicated that persons with disabilities were more likely to report higher out-of-pocket health expenses, and a greater requirement for drug benefits, specialized aid services, or allied health benefits when compared to those without a disability (Mitra et al., 2017). According to this study, healthcare expenses can range from \$137 US to \$2,614 US. Those with greater disability severity and of an older age are more likely to face higher healthcare expenses. Policies which remove barriers to inclusion for persons with disabilities have the potential to minimize some of these added healthcare expenses.

Out-of-Pocket Expenses

Few knowledge leaders described out-of-pocket expenses associated with the exclusion of persons with disabilities. However, using a standard of living approach to the economic analysis of costs associated with disability, one study indicated that a disability can be associated with greater costs of living (e.g., fuel, clothing, food, and child care) when compared to those without a disability (Banks and Polack, 2014; Mitra et al., 2017). Out-of-pocket expenses can vary significantly according to the composition of the household in which a person lives.

Quality of Life and Social Engagement

All knowledge leaders indicated that removing barriers to social participation for persons with disabilities can have a significant impact on the QOL (e.g., happiness, dignity, subjective well-being, connectedness, independence, and empowerment). For instance, **JF** talked about initiatives implementing adult change facilities within large public spaces (e.g., stadiums, airports, malls) in Australia. He indicated that one of the intangible benefits with the improvement to public spaces could be greater dignity. Interestingly, **DM** noted the impact of disability on familial engagement. Based on his work in middle-income countries, persons with disabilities may be more likely to report higher divorce rates which could impact familial cohesion and perceptions of one's QOL.

GC indicated that within the framework of a universal design perspective, increased inclusion of persons with disabilities within community spaces and workplaces could have societal benefits. These societal benefits contribute to greater awareness of the capability of persons with disabilities, decreased fear of interaction with persons with disabilities, increased social cohesion and diversity, and reduced discrimination. **MS** noted that within the Australian context, many of the most significant impacts associated with greater inclusions are intangible. Notably, the impact of policies which improve the accessibility of persons with disabilities on QOL is also reflected in the literature (Commonwealth of Australia, 2018). As noted by key informants and in the literature, greater inclusion of persons with disabilities in society could also impact the QOL of the caregivers of persons with disabilities (Commonwealth of Australia, 2018).

Human Rights Costs

Several participants indicated that the exclusion of persons with disabilities in the workplace and other domains of life (e.g., public spaces) can be associated with a greater frequency of human rights claims, requests for accommodations and discrimination complaints. These human rights claims could be associated with high time loss to civil servants and workers who are tasked with addressing human rights claims.

Poverty

All knowledge leaders acknowledged that persons living with disabilities are more likely to live below the poverty line. Policies which address inclusion in education and employment could result in persons with disabilities obtaining better quality jobs, earning more income and being less likely to rely on income supports. Alternatively, participants highlight an unanticipated negative impact of policies which improve the accessibility of persons with disabilities within the labour market. Those who have better quality jobs could lose needed social assistance and healthcare supports. For instance, **RS** noted that, within a Canadian context, increased labour-market activity could result in the loss of disability benefits such as extended drug benefits, which are costly and often required by persons living with complex health conditions. **JG/KH**, indicated that income generated from employment could help persons with disabilities reduce debt. Poverty and social exclusion could impact civil society. For instance, **ML** noted that in middle-income countries the economic exclusion of persons with disabilities and greater levels of poverty has the potential to contribute to an increase in crime. According to a report by the ILO, a greater proportion of people may be categorized as working poor and be less likely to earn the wages necessary to live above the poverty line (Buckup, 2009).

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Built Environment and Transportation

Many of the knowledge leaders emphasized the importance of improving the built environment and enhancing public and private transportation sectors as a strategy to remove barriers to inclusion for persons with disabilities. Interestingly, several participants highlighted the importance of considering persons with disabilities at the front-end design of the built environment and transportation. **ML** indicated that the costs of retrofitting infrastructure far outweigh the initial cost associated with constructing buildings and public spaces that are accessible. **CMN** estimates that the front-end inclusion of persons with disabilities in the design of policies and programs costs only 1-3% of total project costs. Of significance, improvements to the design of the built environment and transportation would extend beyond persons with disabilities and have a positive impact on other subpopulations (e.g., elderly, children, pregnant women). Similarly, literature indicates that persons with disabilities face higher transportation costs.

According to Mitra et al. (2017), persons with disabilities may incur between \$577 US to \$1,822 US of additional transportation costs when compared to those without a disability (Mitra et al., 2017). The additional costs for persons with disabilities associated with transportation could be significantly reduced with greater inclusion in public and private transportation. Similarly, a recent Australian report examined the economic impact of installing adult change facilities in public spaces. In their economic impact analysis, the utilization of specific public spaces was assigned an intrinsic value (i.e., utility gained from utilizing the public space). The authors calculated a break-even value of the utility (i.e., the point at which estimated use values are just enough to cover the estimated capital and operating costs of the adult change facility) (Commonwealth of Australia, 2018).

Table 37. Summary of impacts identified from the environmental scan including knowledge leader interviews and review of literature

Indicator	Quantifiable and monetizable	Quantifiable and not monetizable	Qualitative
Additional Costs of Living with Disability			
Reliance on assistive devices	*		
Home adaptations	*		
Food security	*		
Cost of utilities (e.g., electricity, hydro)	*		
Child care costs	*		
Healthcare			
Number of hospital visits	*		
Number of ambulatory visits	*		
Number of primary care visits	*		
Allied health professional visits	*		
Pharmaceutical costs	*		
Specialized care costs	*		
Mental healthcare expenses (secondary to disability and includes addiction services)	*		
Treatment of comorbidities	*		
Quality of care		*	
Labour Market: Persons with Disabilities			
Employment participation	*		
Income	*		
Reduced underemployment (better quality employment)	*		
Return-to-work following sickness absence	*		
Job tenure		*	
Job satisfaction		*	
Underemployment		*	

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Indicator	Quantifiable and monetizable	Quantifiable and not monetizable	Qualitative
Presenteeism	*		
Absenteeism	*		
Job disruptions		*	
Connectedness to the labour market			*
Labour Market: Caregivers			
Employment participation	*		
Income	*		
Reduced underemployment (better quality employment)	*		
Return-to-work following sickness absence	*		
Job tenure		*	
Job satisfaction		*	
Underemployment		*	
Presenteeism	*		
Absenteeism	*		
Job disruptions		*	
Connectedness to the labour market			*
Economic: Businesses			
Business revenue	*		
Corporate image		*	
Workplace culture		*	
Staff retention		*	
Workplace attendance		*	
Injury and workers' compensation costs	*		
Employee satisfaction		*	

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Indicator	Quantifiable and monetizable	Quantifiable and not monetizable	Qualitative
Economic: Societal			
GDP	*		
Income support	*		
Pharmacare			
Social assistance costs	*		
Tax revenue	*		
Revenue generated from greater participation in public education (e.g., post-secondary enrollment) and cultural life (e.g., museum attendance), and transportation (e.g., use of public transit)	*		
Quality of life and social role engagement losses: Persons with disabilities			
Increased quality of life		*	
Social engagement		*	
Happiness		*	
Perceived stigma		*	
Belongingness			*
Use of public spaces, cultural and recreational facilities		*	
Perceived safety			*
Perceived stress		*	
Diversity			*
Family cohesion			*
Divorce rates		*	
Quality of life and social role engagement losses: Community			
Increased social cohesion			*
Greater diversity within public space			*
Perceived safety			*
Acceptance of diversity			*

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Indicator	Quantifiable and monetizable	Quantifiable and not monetizable	Qualitative
Tourism			
Number of tourists		*	
Business revenue generated	*		
Spending	*		
Disability-friendly image			*
Number of international events hosted	*		
Education			
Educational attainment		*	
Special education usage	*		
Teacher training	*		
Classroom diversity			*
Acceptance of persons with disabilities in educational domain			*
Student empathy towards persons with disabilities			*
Communication and teaching practices			*
Transportation			
Number of people using public transportation		*	
Utilization of specialized transportation	*		
Utilization of private transportation (e.g., taxi)	*		
Poverty			
Number of people living below poverty line		*	
Use of food banks		*	
Homelessness		*	
Human Rights Administrative Costs			
Administering human rights complaints	*		
Lost productivity associated with workplace management of accommodations	*		

Sub-Study 2: Synthesis of Bill C-81 Consultations

Summary

Recent estimates indicate that over six million Canadians live with a disabling health condition. Studies consistently indicate that persons with disabilities experience barriers to participation in all areas of life ranging from employment to sport and leisure. In June 2019, the Government of Canada passed into law Bill C-81, the Accessible Canada Act (ACA), to increase accessibility among persons with disabilities, and to identify, remove and prevent barriers to inclusion within seven priority areas – employment, built environment, information and communication technologies, communication, procurement of goods and services, the design and delivery of programs and services, and transportation. A comprehensive grey literature synthesis of Bill C-81 consultations and other accessibility related documents was conducted to examine the social, economic and/or environmental changes that the ACA could create or effect over time.

Within the literature that was identified, findings indicated that the implementation of the ACA could encourage a constructive discourse about people with disabilities and the barriers they face. Additionally, the human rights framework that underpins the ACA could help promote full citizenship and equal participation for persons with disabilities. These macro-level benefits could have significant trickle-down effects across all levels of government and society. In particular, reports uncovered in the review identify more specific monetizable benefits in the seven priority areas which the ACA aims at addressing including enhanced collaboration and coordination between governmental agencies involved in the implementation and enforcement of the ACA, greater accessibility in the built environment, representation of people with disabilities in legislative decision-making processes, consistency in service provision for people with disabilities between provinces, growth in labour-force participation and consumer spending, increased availability of accessible transportation, and greater compliance of businesses to inclusion policy. The reports reviewed indicate that for the ACA to be effectively implemented, persons with disabilities need to be included in all steps of its execution.

Of note, the implementation of the ACA can be measured in accordance with the concept of progressive realization. Progressive realization is a monitoring concept described in the CRPD that provides steps for member countries to fully realize specific benchmarks that are put forward in the implementation of legislation aimed at removing barriers to inclusion.

Overview

Extensive literature highlights the exclusion of persons with disabilities from participating in society (e.g., Barnes & Mercer, 2010; Bickenbach, 2011; Buettgen et al., 2012; Prince, 2009). According to Canadian public policy scholar, Michael Prince “many Canadians with disabilities are effectively absent, lacking full enjoyment of liberty of the person, or freedom of expression and communication” (p.4, 2009). Institutional, environmental, and attitudinal dimensions of discrimination have the potential to exclude persons with disabilities through institutions’ day-to-day interactions, lack of accessibility, and prevailing attitudes (e.g., Yeo, 2001; Yeo & Moore, 2003).

Accessibility can impact all areas of lives for persons with disabilities including, but not exclusive to, social and economic inclusion, engagement in community activities, health and safety. According to the 2017 Canadian Survey on Disability, at least one in five Canadians (or 6.2 million) aged 15 years and over had one or more disabilities (Morris et al., 2018). This number is expected to rise as the population ages.

The Government of Canada recently adopted Bill C-81, the Accessible Canada Act (ACA), to address the need for increased accessibility. Specifically, the legislation will focus on identifying, removing, and preventing accessibility barriers in the priority areas of employment, the built environment, information and communication technologies, communication other than information and communication technologies, the procurement of goods, services and facilities, the design and delivery of programs and services, and transportation. These priority areas represent key barriers to inclusion for persons with disabilities in Canada.

There is no commonly understood definition of Accessibility. Accordingly, some experts have suggested that instead of a lofty goal that specific measurable outcomes to achieve advancement in specific areas be considered (Onley, 2019). Indeed, The ACA is seen as a foundational stone in our Country’s commitment to make Canada more accessible. Minister Qualtrough (Public Services and Procurement and Accessibility) described the bill as "enabling legislation" that would provide flexibility to strive toward accessibility (The Citizen, Dec. 19, 2018). In anticipation of this legislation, this project focuses on the development and execution of a conceptual model of the economic burden/cost of exclusion of persons with disabilities from full participation in society. We identify the impacts of barriers to Canadians with disabilities.

Objective and Methods

The goal of this literature review is to assess the potential impacts/benefits of Bill C-81 and an accessible and inclusive Canada. This review focuses mostly on Canadian literature and complements findings from the sub-study. In this project we seek to identify and assess the impacts of addressing barriers to inclusion for persons with disabilities through the implementation of Bill C-81 and accessibility in employment, the built environment, information and communication technologies, communication other than information and communication technologies, the procurement of goods, services and facilities, the design and delivery of programs and services, and transportation.

We gather information about social, economic and/or environmental changes that Bill C-81 can create or effect over time. Our methods involved a grey literature search and synthesis of Bill C-

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81 consultations and other accessibility related documents (e.g., consultation reports, media articles, videos, position statements, legal reviews). Our approach to identifying relevant grey literature has involved an iterative process that utilizes several sources including:

- Personal communication (i.e., telephone, email, etc.) with contacts from the environmental scan and resources provided by informant interviews;
- Mining reference lists and bibliographies ('snowballing');
- Search engines (e.g., Google, Google Scholar, Yahoo, Bing) and social media tools (e.g., Twitter, LinkedIn);
- Blogs, podcasts or videos on the web to identify experts to identify the types of recommendations and discussions that are currently happening online.

We extracted data related to the potential impact associated with a fully implemented Bill C-81 and/or an accessible and inclusive Canada, then synthesized this information according to the impacts and domains identified in the literature and the Bill.

Synthesis of Bill C-81 Consultation Documents

To date, little research has been conducted regarding the potential impact of a fully implemented Bill C-81. Studies that did exist highlighted many positive benefits that were both broad and more specific within different domains of life. The following summarizes findings from the literature review. We start by describing the broader benefits of a fully implemented Bill C-81. We also present suggestions for realization of full accessibility and opportunities for measurement. Lastly, we overview benefits of Bill C-81 in terms of specific priority areas for accessibility.

Broad Benefits and Conditions for Success

Our literature review has revealed that a fully implemented Bill C-81 can have wide-reaching benefits, which include a positive discourse on disability and accessibility that can trickle down from the various levels of government and across society. When describing the potential benefits for Bill C-81, the Chair and CEO of the Canadian Transportation Agency (2018) noted that the Bill can result in:

Enhanced outreach, education, and compliance monitoring activities, while working with other implementation bodies to ensure consistent approaches and a smooth experience for any person who wants to bring forward an accessibility-related complaint.

In 2018 Canadian Radio-television and Telecommunications Commission (CRTC) told the Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities that the Bill can lead to a flexible and rigorous regulatory framework in Canada that is able to make the most of new opportunities and avoid rigidity that can stifle innovation. The Commission also commented that "Advances in communications technologies have opened the door to an unprecedented wealth of content and interactivity. The CRTC's position is that it is the right of all Canadians to be able to access this wealth regardless of their ability and it is committed to working to ensure all Canadians can benefit from it." This means that persons with and without disabilities can benefit from full accessibility in Canada.

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Lynn Brown, a journalist from Sault St. Marie noted that:

If passed, Bill C-81 will help to change the way that the Government of Canada and organizations in the federal jurisdiction interact with Canadians. It defines a proposal for standards development, regulations, compliance and enforcement measures, the complaints process, and roles and responsibilities for implementation.

Similarly, the Council of Canadians with Disabilities noted that the Bill is:

A welcome national conversation on the barriers that limit people with disabilities. For many Canadians, Bill C-81 will introduce them to the goal of a barrier-free Canada and what is needed to achieve access for persons with various disabilities.

The literature we have reviewed indicates that the human rights approach to disability is seen as a potential benefit of Bill C-81 that aligns directly with the Canada's obligations under the Canadian Human Rights Act and its commitments as a State Party to the CRPD.

According to the Canadian Human Rights Commission (2018), an accessible and inclusive Canada would reduce the currently disproportionately high number of human rights complaints from persons with disabilities about accessibility. This would lower costs for investigations and administrative processes associated with complaints, as well as the costs to complainants and respondents.

According to the CRPD Article 9 on Accessibility, Canada is expected to:

Enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas...

The Council of Canadians with Disabilities described Bill C-81's human rights approach as:

A victory for the disability community... The Bill's Preamble, which contains elements called for by community members, establishes the Act on a solid human rights foundation, referencing the Charter of Rights and Freedoms, the Canadian Human Rights Act and the UN Convention on the Rights of Persons with Disabilities (CRPD) and throughout Bill C-81 we see the CRPD's influence. A human rights approach to disability issues means a move away from the traditional view of people with disabilities being objects of charity, to a new understanding where we are subjects of human rights, just like everyone else.

In this way, a fully implemented Bill C-81 can promote full citizenship for persons with disabilities by creating a barrier-free Canada. The Canadian Access and Inclusion Project

lawyers' panel (2017) found that full citizenship and justice is a profound benefit/impact of an accessible and inclusive Canada. The lawyers' panel described full citizenship and justice as, "opportunities for full participation in Canadian society and for having a voice" (p. 16). Several conditions were described that could dictate opportunities for full participation, including:

- Consistency across the accessibility policy landscape from local to provincial to federal level.
- Strict enforcement of compliance with existing and new legislation.
- Enhanced involvement of persons with disabilities in politics and accessibility planning;
- Mandatory disability awareness education.
- Standardized definitions and terminology are enacted, while at the same time avoiding a medical approach.
- Prioritization of First Nations-specific concerns, such as streamlined and enhanced funding as well as an enhanced public voice for Indigenous persons with disabilities.
- Increased societal participation of persons with disabilities in recreational and community life through funding for social, cultural, and recreational participation.

The literature suggests that a fully implemented Bill C-81 would contribute to enhanced collaboration and coordination between all the agencies involved in the implementation and enforcement of the ACA (ARCH, 2018). This means the development and implementation of complementary policies and practices in relation to accessibility-related matters across jurisdictions and sectors. According to the ARCH Disability Law Centre (2018), the advantage of multiple accessibility regulations in a given area:

Allows agencies with subject matter expertise (the CTA and CRTC) to create accessibility regulations in those areas. There is an opportunity for these agencies to create accessibility regulations that are specific, technical and targeted to the particular subject matter. (p. 37)

At the same time, to promote effective regulations, several reports indicate that full accessibility means that persons with disabilities are meaningfully included and have representation in legislative decision-making processes (e.g., ARCH, 2018; Canadian Access and Inclusion Project, 2017; Council of Canadians with Disabilities, 2018). For instance, the Canadian Access and Inclusion Project 2017 Progress Report specified conditions for full participation as follows:

- Legislation assures an inclusive environment for persons with a broad range of disabilities and is consistent and enforced across all three levels of government (Includes: penalties and fines to ensure compliance across different sectors such as employment, building codes, transportation).
- Nationwide legislation addresses all issues of accessibility and inclusiveness across all sectors; standards are uniform and coordinated across the country.

In addition, according to the Canadian Access and Inclusion Project, full accessibility means political will and government knowledge of the needs of persons with disabilities, and the prioritization of solutions to overcome barriers. Often these benefits were associated with funding for enough access to recreation and sport programs, civic participation. These benefits were described as:

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- Ample funding for research including correlates of disabilities and statistics, barriers to accessibility and inclusion and funding to develop plans to overcome them.
- Recreation and sport programs, services and equipment are affordable and accessible for persons with disabilities.
- Full and easy access to civic participation including easy access for voting.

If all these conditions are satisfied then Bill C-81 can “pave the path toward a more inclusive Canada” (Federal Accessibility Legislation Alliance, 2018).

Specific Benefits

Findings from the review of Canadian-specific literature identified domains of life that would benefit from an accessible and inclusive Canada.

Built Environment

According to the Conference Board of Canada (2018):

Accessibility is often thought of as structural changes to bricks and mortar. However, there are many ways for organizations to make their work environment more comfortable, more user-friendly, and easier to navigate. Simple, low-cost modifications can improve access without expensive renovations or new building. Undoubtedly, costs are lower and benefits more sustainable when accessibility is embedded into design considerations, but even structural renovations can return their investment over time. In practice, however, accessibility encompasses more than renovations. Accessibility is about good planning and design to create an environment that considers human diversity and inclusion. (p. iv)

Research by the Canadian Centre on Disability Studies indicated that it is less expensive to integrate accessibility into new projects than to renovate and include after a building has been built (Mankewich, 2016). In addition to the financial cost savings, increased accessibility in the built environment promotes access to builds, convenience within building; reduced risks of fall or injuries; increased resale value, and a welcoming environment for all persons. This is of particular consideration for the effective development of Canada’s National Housing Strategy and promoting aging in place for seniors as emphasized by the Canada Mortgage and Housing Corporation (a crown corporation directly impacted by the proposed ACA).

Some concrete examples of the benefits of full accessibility in the built environment were identified in the Canadian Access and Inclusion Project. These benefits include:

- Persons with disabilities can manage independently in all buildings (e.g., no heavy doors and accessible washrooms); and
- All old infrastructure is updated, and universal design principles are enacted in new construction.
- Financial incentives such as funding and tax relief is provided to encourage building and business owners to make their structures and grounds accessible.

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- Existing building standards are accessible to all; consistent building codes across provinces with regulation and enforcement of these standards (for old and new buildings).
- Regular maintenance of public sidewalks (snow removal), curb cuts, street lighting, accessible parks.

According to the project reports, the realization of these benefits hinges on the meaningful involvement of persons with disabilities in every step of the design and planning process including working in collaboration with engineers, architects, and design experts.

Universal design was often referred to in the literature as a real benefit of an accessible built environment. Article 2 of the CRPD defines universal design as the design of physical and virtual environments and products to make them accessible to *all* people, regardless of age, ability or other factors. The design is intended to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. and can be applied to use of various spaces and places including the built environment, virtual environment, workplaces, products, and schools. Universal design promotes simple and intuitive use of a space or place regardless of the user's experience, knowledge, language skills, or current concentration level (Follette Story, 1998). The design also provides perceptible information, allows for tolerance for error, requires low physical effort and offers appropriate size and space for approach and use.

Design and Delivery of Programs and Services

In terms of the design and delivery of programs and services, the literature indicates that an accessible and inclusive Canada would include *centralized service coordination*. This was often referred to as consistency in service provision between provinces to provide easy system navigation with more centralized services and resources. This means service and funding coordination is streamlined to eliminate bureaucratic issues and provide a “one-stop shop” for consumers. This was also described as “consistent approaches to the provision of social supports and services for persons with disabilities that encourages and supports their inclusion” (Canadian Access and Inclusion Project, 2017).

An important, though less understood benefit of increased funding is that more disability groups will be served, instead of relegated to spaces below the poverty line. While increased funding for mental health services is frequently advocated (Mental Health Commission of Canada, n.d.); funding other services, such as attendant care and costs of communication aids would allow less visible disabilities (such as those who are non-verbal) to engage in their community and contribute to the labour market (Disability Awareness, n.d.). According to the literature, the delivery of programs and services that address the needs of disabilities must include education and training components on how to serve persons with a wide variety of disabilities that affect mobility, as well as oral and written communication.

Employment

Recently, the Conference Board of Canada (2018) calculated the effect that improvements in accessibility would have on labour-force participation and consumer spending. Their research found that making facilities and workspaces accessible allows more persons with disabilities to work such that:

By 2030, the lift to the economy's productive capacity due to improved workplace accessibility would result in a permanent increase in real GDP of over \$16.8 billion. The boost to labour income would lift real personal disposable income by \$10.6 billion, facilitating a \$10-billion increase in consumer spending. These real GDP and income gains would also generate real revenue gains of \$2.5 billion for the federal government and \$1.9 billion for provincial governments. (p. 17)

Similarly, the active recruitment of persons with disabilities can promote innovation and productivity. Also, by keeping persons with disabilities engaged in the labour market, employers can address limitations associated with a tightening labour supply (Donovan, 2017).

Often, literature highlighted that the benefits of accessible and inclusive employment were also linked to accessible and inclusive education. For example, upon consideration of full implementation of the AODA, the Inclusive Design Research Centre (2018) suggested that in Ontario:

Enabling increased workforce participation among persons with disabilities will not only increase their individual and family income, but it could also increase the GDP per capita in Ontario by up to \$600 per annum. As new standards are implemented to enable people with disabilities to achieve parity with average educational achievement in Ontario, there could be an additional boost to Ontario's GDP per capita of up to \$200.

At the national level, the Canadian Access and Inclusion Project Lawyers' Panel (2017) argued that accessible and inclusive education for diverse persons with disabilities can lead to entry into the labour market. Accessible and inclusive education was described as “extra learning support for persons with disabilities, enhanced vocational skills offerings, and funding for every level of education (including for educational staff)... [As well as] provision of educational assistance, adult education opportunities, and alternative learning options for First Nations children with learning and behavioural issues.” (p. 9)

Higher employment rates of persons with disabilities means higher levels of income and reduced dependence on social assistance. This also leads to greater contributions to the economy; higher income levels among diverse persons with disabilities and greater tax revenue from a significant portion of the Canadian population. Thus, literature indicates that promoting access to employment for persons with disabilities is a positive economic decision and potentially reduces the burden on the social assistance system (Stapleton, 2013).

Transportation

Our literature review revealed many clear and concrete benefits of accessible transportation. Many of these benefits have been identified through previous research by the Canadian Urban Transit Association (2013). The Association found that the benefits of accessible transit in Canada proactively meets the accessibility needs of an aging population by supporting “their ability to reach work, volunteering, education, healthcare, shopping and recreation opportunities...It is in the public interest to keep these citizens active and engaged” (p. 1).

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Furthermore, the Association suggested that persons with disabilities could also benefit from accessible transit:

Accessible transit allows seniors and other Canadians with mobility disabilities to volunteer, visit friends and relatives, reach healthcare and social services, and participate in recreational and cultural activities. Transit is also more affordable than owning and operating a private car or taking taxis for daily trips, and leaves seniors with more disposable income to spend on other needs...[Moreover], more accessible transit offers direct support for government policy on climate change and air quality. It also encourages physical activity, enables the efficient concentration of healthcare and social services, and supports land use policies that help seniors remain in their communities as they age. (p. 4)

In addition to promoting enhanced social inclusion and integration with other policy objectives by providing accessible transit, the Canadian Urban Transit Association also identified the following economic benefits of accessible transportation including:

- **Operating cost reductions:** “The annual operating cost of specialized transit services in Canada is about \$450 million. The average cost of a passenger trip on specialized transit is almost eight times greater than carrying the same passenger on conventional transit (\$25.75 versus \$3.31).” (p. 1).
- **Better access to employment and education:** “More accessible transit could lessen the estimated \$3.6 billion gap in annual income for mobility restricted individuals due to their lower participation in the workforce, and the estimated \$2.5 billion gap in annual income due to their lower rates of educational achievement because or caused by mobility barriers.” (p. 1).
- **Greater road safety:** “More accessible transit could reduce the estimated \$800 million annual economic cost of collisions involving senior drivers with mobility disabilities, and the estimated \$390 million annual public cost of home care for seniors with mobility restrictions.” (p. 1).
- **Reduced home care costs:** such that “Investment in accessible transit can help to reduce the need for home care services for mobility restricted individuals who would be physically capable of riding specialized or accessible transit vehicles. Accounting for a conservative 1% decrease in home health needs, this could result in \$3.9 million in annual home healthcare expenses savings.” (Canadian Urban Transit Association, 2013, p. 25).

The Association further commented that accessible features are not necessarily enough to attract new users. Indeed, promotions and fare incentives prove useful in encouraging customers to try conventional transit rather than specialized transit, especially for the first time.

The Canadian Transportation Agency (2018) also explored the subject of accessible transportation through a series of consultations with Canadians. Benefits of accessible transportation included the development of a single comprehensive set of accessible transportation regulations that apply across the national transportation system. The Agency found unanimous recognition of the importance of staff training and education on how to better serve and interact with persons with disabilities. After consultations with transportation industry

representatives, the Agency found that industry objects to a pre-approval process for equipment acquisitions, construction of new facilities, and major retrofits/ renovations. Rather, industry voiced concerns that overly prescriptive regulations could stifle innovation. In addition, Canadians and disability rights organizations generally felt that multi-year accessibility plans, accessibility audits, and industry self-reporting will help ensure regulations are being followed.

Communications

The Canadian Access and Inclusion Project Lawyers' Panel (2017) identified several benefits of accessible communications. The panel noted these benefits as:

- Prioritization of positive media portrayals of persons with disabilities and their families.
- All forms of information are in a format accessible to all citizens.
- All CRTC programming is close-captioned.
- Severe consequences are applied for open bigotry against disabilities in the media, whether in fictional representations or in newscaster commentary.

As a leading national agency on communications, the CRTC recently implied several benefits of a fully implemented Bill C-81. Specifically, Scott Shortliffe of the Commission said:

To achieve the larger goal of barrier-free access, the CRTC recognizes that it must engage with other administrative tribunals. To this end, the CRTC participates in working groups alongside the Canadian Human Rights Commission and other administrative tribunals in order to leverage accessibility expertise and to increase efficiency. As a federal regulatory tribunal, the CRTC must pursue the policy goals set by the Broadcasting Act and the Telecommunications Act while acting fairly and abiding by the Canadian Charter of Rights and Freedoms. This requires the CRTC to balance competing objectives in rendering decisions that ultimately serve the public interest.

Like the benefits of accessibility and inclusiveness in other domains, the literature on accessible and inclusive communication indicates that a fully implemented Bill C-81 would result in increased engagement and collaboration between administrative tribunals to leverage accessibility expertise which leads to increased efficiency in accessibility and the realization of human rights.

Procurement of goods, services, and facilities

There is limited research or documentation on accessibility as it relates to the procurement of goods, services and facilities, outside of recommendations for strengthening C-81. According to the Canadian Access and Inclusion Project Lawyers' Panel (2017) procurement contracts should be awarded to businesses that have a stated inclusion policy in their mandate, and further that compliance to accessibility regulations is a condition of federal funding.

When procurement is discussed more broadly, it is to expound the importance of accessible and inclusive procurement practices (National Centre on Disability and Education) and identify the requirements for adhering to government standards on accessibility. There is a small body of literature on the responsibilities of both the private and public sectors to ensure that they consider

accessibility criteria and features in every acquisition of goods and services. For example, Queen's University in Kingston, Ontario has a Strategic Procurement Services Department that sets out their accountability to follow the Accessibility for Ontarians with Disability Act (AODA), such that they are to consider the accessibility of any new good, service, or facility, citing that it is more economical to purchase accessible and inclusive products than restructure for accessibility after the fact. It is this economic argument that forms the accessibility messaging globally. A 2016 annual report from the Return of Disability Group tracking economic impacts of accessibility states that new construction of facilities such as hotels, retail outlets and transportation must ensure "equal enjoyment" of goods and services by persons with disabilities (p. 17).

While, the requirements for businesses are clearly highlighted in the literature uncovered in this review, there is very limited information on the impacts to business, persons with disabilities, and the general population when persons with disabilities are unable to access goods and services. This absence of information is prevalent even in the face of the collective purchasing power of persons with disabilities addressed in the literature. Estimates suggest that a total of 1.3 billion persons with disabilities control \$8 trillion in annual disposable income worldwide (Lawson, 2015). Further, a 2018 report from the Canadian Office of Disability Issues states that "households with at least one adult person with a disability could have spent more than \$210 billion in consumer goods and services in 2011/2012." Despite the potential loss of revenue resulting from inaccessible good and services, and government directives to incorporate accessibility into all purchasing practices, the economic benefits of making goods and services accessible and inclusive is largely absent in the literature. Moreover, while there is some microeconomic data on the return on investment for ensuring accessible and inclusive goods and services, there is little macroeconomic data that illustrates that making goods, services, and facilities accessible and inclusive increases revenue for the public and private sector (Lawson, 2015). Moreover, the benefits that are addressed speak to intangible benefits, such as the social value of creating access in this realm.

There is some literature on the accessibility of goods and services from the consumer's perspective. Accessibility in this sense speaks more to the economic barriers of purchasing the goods and services that are related to their disability. For example, the CSD (2017) states that four in ten (38%) persons with disabilities aged 15 years and over who were living below Canada's official poverty line reported an unmet need. Poverty is a significant barrier in the ability of persons with disabilities to meet their daily needs, including their disability specific needs.

Measures of success

The literature indicates that a more inclusive Canada can be measured in accordance with the concept of progressive realization.¹³ Progressive realization is a monitoring concept embedded in Bill C-81 and CRPD. The literature we uncovered in our review indicates that members of the Canadian disability community and its allies believe that the human rights approach is a beneficial aspect of Bill C-81. According to the CRPD, progressive realizations is described as,

¹³ Note that Bill C-81 (Accessible Canada Act) as amended in the House of Commons on November 27, 2018 only uses the term "realization" not "progressive realization."

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“Each State Party undertakes to take measures to the maximum of its available resources and, where needed, within the framework of international cooperation, with a view to achieving progressively the full realization of these rights” (art. 4 (2), cited in Disability Rights Promotion International, 2017).

Disability Rights Promotion International (2017) developed a set of indicators to measure progressive realization of full accessibility based on evidence gathered in Canada and internationally over the past 12 years. These measures are based on the experiences of diverse persons with disabilities in relation to relevant national and international laws, policies and programs. These measures include:

- Evidence of public policies and/or legal regulations that implement accessibility standards. Evidence submitted should be disaggregated by jurisdictions and date of entry into force as well as state the penalty for non-compliance.
- Evidence of budget allocated for all types of interventions on accessibility by jurisdiction;
- Estimate of proportion of public buildings that have been made accessible in the last 4 years and by type of building.
- Number of complaints on accessibility issues submitted, disaggregated by disability and by solved and unfounded cases including legal cases against a company or the government.
- Number of universal design and accessibility courses provided at higher level education institutions (universities or continuing education programs).
- Mechanisms in place for an accessibility audit of public buildings and the existence of a general database of public buildings’ accessibility at all levels of governance.
- Evidence of regulations in place governing the accessibility of information and communication systems including on broadcast TV.
- Evidence of pedestrian infrastructure accessibility and transport system accessibility.

Sub-Study 3: Interviews with Key Informants in Canada

Summary

The ACA aims to remove barriers to inclusion for persons with disabilities (PWD) and can benefit participation in a number of social domains. In this study, we conducted interviews with key informants from across the country, including PWD, policymakers, industry representatives and service providers, to obtain insights on their vision of an inclusive Canada. It is important to note, that PWD are not defined by their disability; for this reason, the experience of living with a disability is shared by the key informants across all categories. In these interviews, participants were also asked about benefits of an accessible and inclusive country and strategies to measure impacts.

Study participants indicated that the ACA will facilitate the development of policies and procedures in many areas of life that improve inclusion of persons with disabilities. Few respondents knew of specific legislation, policies or evaluations from other countries. Accordingly, the ACA has the potential to make Canada a world leader in this area of accessibility and inclusion.

Participants described a number of direct benefits of the ACA to PWD including increased employment and productivity, expanded access to transportation and the built environment, improved health and QOL, and enhanced ability to access services. Also, participants noted that the direct benefits could have spillover effects across all levels of society; an accessible Canada would benefit all members of society, not just persons with disabilities. Participants indicated that a number of measures and indices could be used to assess and monetize benefits of the ACA, including employment and graduation rates, employee turnover and related expenses, work productivity, injury rates and compensation claim rates, public healthcare expenses, tax revenues, cost of human rights complaints, QOL of persons with disabilities, spillover effects such as tourism revenues, and decreased use of social services and social assistance. Intangible benefits, such as satisfaction and happiness, could also be used to assess effectiveness.

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Interview Process

Interviews were conducted with key informants in Canada to complement findings from the literature review conducted as part of sub-study #2. The interview matrix below (Table 38) represents findings from nineteen interviews: 18 one-hour phone interview and one face-to-face interview, with a cross section of stakeholder representatives, including persons with disability, policymakers, industry and service providers. An initial list of key informants was identified by researchers on the project team, and then snowball sampling was conducted to expand the stakeholder list of potential participants.

Participants were asked a series of semi-structured interview questions to obtain insights on what a fully accessible and inclusive Canada would look like. Participants were also asked about benefits of an accessible and inclusive country and strategies for the measurement of benefits.

A Word on the Matrix

Finding are summarized on a matrix that is presented below. The interview matrix is comprised of five columns that capture interview data on several information points: 1) The first column lists general feedback and is followed by qualitative data on the priority areas identified within Bill C-81; 2) The second column lists benefits of an accessible and inclusive Canada identified by participants; 3) The third column provides context around the benefits and examples provided by the participants; 4) The fourth column lists the initials of the participants to provide readers with an understanding of how many participants raised the same idea/issue 5) The fifth column identifies who benefits and how.

The matrix is followed by summaries of the key benefits and measurable components to include in a conceptual model for an accessible and inclusive Canada. The interview tracking table in the Appendix identifies complete interviews and those still to be completed (Appendix 1).

Summary of Key Messages

Bill C-81 was described by participants as a facilitatory piece of legislation that would begin a process of policies and procedures that could be implemented in all areas of life to improve inclusion of persons with disabilities. All participants expressed the belief that an accessible and inclusive Canada would benefit all members of society, not just persons with disabilities. The direct benefits identified had many spillover effects for society at large. One participant suggested we consider that the legislation was designed by the “abled” policy makers. The word “access” may be problematic as it implies privilege. Who is giving access to whom? In a fully accessible Canada, there is no difference between the abled body/mind and the disabled. But this vision is a long-term outcome and we need to devise instruments that can measure progress along the way.

There is little knowledge of work being done in this area and many participants expressed the view that Canada could be a leader on accessibility. At the same time, participant groups indicated that accessibility should be part of a larger inclusionary mandate. For example, one participant felt that accessibility, as defined in Bill C-81, is more narrowly focused on persons with disabilities whereas, inclusion is a broader term that takes into consideration intersectionality, recognizing the people are more than their gender, their race and sexual identity

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(among other personal factors). Accessibility is the vehicle by which the goal of full inclusion can be realized.

All participants believed that becoming accessible and inclusive would mean that there was a culture of inclusivity. Indeed, this concept of inclusiveness is necessary for a society based on equitable sharing of resources. One participant with an invisible disability suggested that resource sharing start with housing the homeless, giving them a share of the land; that sharing of resources be extended to employment in the form of co-ops; that the shared decision making embedded in co-ops be incorporated into broader public policy, so that persons with disabilities have a place in decision making across all domains that affects their lives. Resource sharing will not only provide equality and increased civic engagement, but it will reduce poverty, and evaporate the artificial divide between those who are disabled and those who are not, so that everyone regardless of how they present are able to live their lives with dignity.

Several participants noted that easy to measure targets include the number of persons with disability should be employed in meaningful jobs. This does not mean that people should have to work full-time to be considered valuable. Instead for Canada to be fully accessible, employers should be required to understand and account for the limits of others. Participants indicated that there is a need restructure our society to provide universal benefits. Income also needs to be considered under a universal design. Access to an adequate income means providing income benefits to those without the ability to work full time. A Basic Income was cited by many as an approach to this universal delivery of programs. The universal approach to provision of programs and services, employment, communication, and other priority areas in C-81 would mean changing the competitive nature of our society. The strive for resource sharing also means that we should consider adapting an indigenous understanding of our world.

Participants agreed Bill C-81 could contribute to a culture change where disability and accessibility are normalized. However, should this be achieved, participants believed that accessibility could increase empathy and levels of respect across society.

Table 38. Interview matrix

Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
Quantifiable and/or monetizable impacts/benefits				
General	Increased productivity of the business	<ul style="list-style-type: none"> Complying by filling out annual progress reports makes the company more mindful because they must think of all the ways they changed their business to ensure full accessibility, which leads them to identify weaknesses and ultimately be more productive and innovative. Example of construction company, and person with a muscular weakness who can now operate a torque because a universal design was created. 	JB, DB, MM, MB, KS, CP, JS	Businesses: More innovative, increased production, increased bottom line, can be measured in reduced time to return to modified duties, can measure the money saved on employee turnover

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
		<p>The change benefited everyone.</p> <ul style="list-style-type: none"> The spillover effects of universal are production increases (which can be measured in the number of units that are being produced). There is also a decrease in employee turnover, less spent on recruitment, onboarding. 		PWD: Increased access to workspaces
	Decreased human rights complaints (and associated costs)	<ul style="list-style-type: none"> The largest number of human rights complaints come from PWD If an accessible and inclusive Canada is realized, the costs on human rights complaints could be dramatically reduced 	JB, SM, SK	PWD: Access to equitable resources Government: Reduction in complaints, increased costs savings
	Reduced healthcare expenses	<ul style="list-style-type: none"> Accessible transportation means people can get to their medical appointments. A bus that takes into consideration mobility issues will be more accessible to everyone People will be more likely to get around freely, which will lower stress and increase health 	JB, CG, MM, SM	Government: Improved global standing PWD: Healthier society decreases costs across health and social services.
	Early win	<ul style="list-style-type: none"> Accessible transportation can be changed more quickly and could motivate changes in other domains; Canada can become leaders in accessibility, and this brings more people into our communities (e.g., working, shopping, and living). 	JB, CG, MM, MB, CP, CW, JS	Government: Increased tax base Businesses: Increased sale
Employment	Increase in number of people employed	<ul style="list-style-type: none"> Workers will be hired for their abilities and be able to fully participate in the labour market in ways that fit their needs and desires PWD's skills will be accepted and their desire to adapt their work to meet the needs will be the norm. 	JB, LB, DB, MM, MB, MH, KS, SM, SK, CP, CW, JS	PWD: Increased employment, increased income, decreased poverty Businesses: Addresses labour shortage
	Increased disability awareness	<ul style="list-style-type: none"> Accessible and inclusive spaces mean employers have been provided with education 	MH, KS, SM, SK, CP, JS	PWD: More being hired

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
		<ul style="list-style-type: none"> and have increased disability awareness Can measure awareness by examining pre- and post-awareness behaviours 		Businesses: Job shortages are addressed
	Decreased long-term disability claims	<ul style="list-style-type: none"> Increased accommodation will mean that PWD are less likely to exit the workforce for long-term sick leave 	KS, SK	PWD: Increased health Businesses: Decreased expenditures
	Institutional knowledge is sustained	<ul style="list-style-type: none"> When employees are accommodated, business can retain experiences staff with knowledge and skills 	KS	PWD: Retain employment Businesses: Less lost time due to retainment of knowledge
	Reduction in poverty	<ul style="list-style-type: none"> Increased income will make the community stronger, not just the person earning the income. The reduced costs of keeping someone in poverty will have spillover effects in other domains; increased income means PWD can hire others (e.g., clean house), go on trips, mental health improves, and less reliance on social assistance. 	JB; MM, LA, MB, MH, KS, SM, SK, CW	Businesses: More money is spent locally when wages are increased PWD: Increased quality of life, increased income, less welfare usage
	Increased tax revenue	<ul style="list-style-type: none"> Accessible and inclusive employment means an increased number of people in workforce and increased tax revenue 	MH, MB	Government: Increased tax revenues
	Increase in loyalty	<ul style="list-style-type: none"> An increase in loyalty can be quantified by reductions in staff turnover 	MM	Businesses: Decrease in staff turnover will increase financial bottom line
	Increased job accommodation	<ul style="list-style-type: none"> An accessible and inclusive workplace will provide the space for matching job tasks to abilities (e.g., a person with Asperger's may not be suited to a job dealing with the public but is great at writing everything down and so found a job as a transcriptionist 	LA, LB, JB, MM, MH, SM, SK, CW	PWD: Increased employment Business: Increase productivity (leads to increase in bottom line)

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
		<ul style="list-style-type: none"> Increased accommodations could lead to new ways of working: tiered work arrangements; job sharing; job carving 		
	Progression in jobs	<ul style="list-style-type: none"> Accessible and inclusive workplaces mean PWD will advance in jobs Establish careers as the barrier advancements will be removed. Can be measured in number of promotions and wage increases 	LA, SM, JB	PWD: Are not forced to stay in undesirable jobs Businesses: Skills to meet labour demands
	Need for skills specialization	<ul style="list-style-type: none"> As Canada becomes accessible and inclusive workforce will diversifies 	MM, LA	
	Decreased unpaid overtime	<ul style="list-style-type: none"> Full employment access will increase job security, decrease unpaid overtime 	LA, KS, SK	PWD: Improved mental health Government: Saves money in costs related to work accidents Unions: decrease in grievances
	Access to health benefits/lower healthcare expenses	<ul style="list-style-type: none"> Better quality jobs will mean decreased healthcare expenses as PWD will have access to the medication they need; this will in turn decrease poverty Better quality jobs mean more income and better quality of housing; <p>Decreased injuries at work/improved health</p>	LA, MM, JB, MH, SM	Government: Decrease cost to social services as medical costs are moved to the world of work
	Increased innovation	<ul style="list-style-type: none"> PWD have the potential to think outside the box and may anticipate solutions others cannot see 	LA, MM, MH, SM	Businesses: Increased employee resources, increased business generation
Built environment	Increase in universal design	<ul style="list-style-type: none"> Business built environment meets the needs of diverse workers and enhances productivity More accessible and inclusive space for employees and customers 	LA, JB, DB, CG, KS, SM, SK, CW, JS	Businesses: Increased business from PWD

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
		<ul style="list-style-type: none"> Equitable access to space and resources (e.g., an employee with a disability cannot get to the second floor where the showers are to clean up after work) All washrooms would be accessible; all public spaces would also be accessible so that PWD are not segregated 		
Information and Communication Technologies	See Employment			
Communication (other than information and communication technologies)	Increased engagement in social activities and employment, decreased isolation	<ul style="list-style-type: none"> Simplification of processes in the virtual world allows for telecommuting, simpler user interfaces, also increases ease of access to personal banking (ATM example). Virtual meetings also free up resources e.g., board rooms, tech support, transportation Literacy programs could help employees increase productivity at work (e.g., Dofasco's employee who could not read was now able to understand work instructions; signs are accessible for those who can't read or see them) A central online portal to flag where there issues of accessibility still exist Education for communication aids 	DB, LA, JB, KS, SM, SK, CP, CW, JS	<p>PWD: increased social inclusion</p> <p>Businesses: Increased safety record; decrease in workplace accidents</p>
	Inclusive learning environment	<ul style="list-style-type: none"> Every classroom will be universally designed, and less money spent on special education expenses. Increased graduation Lower tuition costs as the need to redo classes due to barriers are no longer present Increasing number of instructors and teachers with disabilities. 	LA, SM, SK	<p>PWD: New ways to learn and grow; increase in PWD going into post-secondary</p> <p>Government: Decreased costs to invest in students with disabilities</p> <p>Business: Education sector would see an increase in graduation rates</p>

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
Procurement of Goods, Services, and Facilities	Contracts will be provided to businesses who follow government's example and principles of inclusion	<ul style="list-style-type: none"> Accessibility will lead to responsible consumption and set the economic standard Changes to the way government awards business contracts. Contracts will go to businesses that follow inclusion principles, and in turn, more businesses will follow this model. Procurement should also be awarded to businesses that can respond to the needs of a wide range of persons with disabilities. 	JB, MM, CP, CW, JS	Businesses: Champion of accessible and inclusive services and products will increase the revenue of other accessible and inclusive businesses
	An accessible and inclusive Canada means we become an attractive destination for travel	<ul style="list-style-type: none"> Tourism industry grows Increased expenditure of foreign currency as tourists travel, shop, and stay longer in our country 	MM, MB	Businesses: Increased revenues Government: Increased revenues PWD and others: More jobs
	Access to healthier food	<ul style="list-style-type: none"> Increased employment in better quality jobs will allow PWD to eat more nutritiously and rely less on food banks Increase investment in local food stores because PWD (those previously in poverty) will now have the money to shop for higher end food products. 	LA, MH, SK	
The Design and Delivery of Programs and Services	Proactive response	<ul style="list-style-type: none"> Getting to "accessible" means that new innovative approaches/products will have to be developed that will not only benefit PWD but all people, i.e., closed caption; not just for deaf but for those in a crowded room that want to see the news but cannot hear it 	JB, RD, MM, MH, KS, SM, SK, CW	PWD: Reduction of social service usage Government: Saved money in social service delivery Business: Increase business in food retail, employee productivity increases, less safety issues
	Decreased incarceration rates	<ul style="list-style-type: none"> As people's health improves due to accessibility in every facet of society, there will be increased mental wellbeing 	LA	Government: Decreased crime rates, less expenditures in

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
		and thus less people caught up in the justice system		the justice system
	Services in family matters decrease	<ul style="list-style-type: none"> Increased employment, and decreased poverty results in healthier family lives, which in turn, lowers costs associated with divorce domestic violence, custody battles, etc. 	LA	Government: Decrease in numbers accessing family matters services
	Decreased medical and social service costs	<ul style="list-style-type: none"> Full accessibility will mean decreased need for wrap around services Spillover effects of decreased use of emergency room because PWDs are receiving adequate care in the community 	MH, SM, JB	Government: Decreased hospital expenditures PWD: Better care as they turn to their social network for support, instead of emergency room
Transportation	Increased efficiency of service delivery	<ul style="list-style-type: none"> Full access means employment insurance, disability income supports, and other income security programs can be co-located 	MH, SK, JS	Government: Decreased expenses in back office functions PWD: Increased access to needed services
	Increased social inclusion	<ul style="list-style-type: none"> If all carriages on a train were accessible there would be more time for socializing, networking as PWD would be able to sit next to their nondisabled friend rather than in a separate accessibility carriage 	DB, LB, MM, SM, CW, JS	All Canadians: Social inclusion and number of people being served are directly related
Qualitative Impacts/benefits				
General	Increased accountability and enforcement of accessibility standards	<ul style="list-style-type: none"> Adequately funded comprehensive accessibility commissioner's officer with enough staffing, high public visibility (e.g., strong public and media relations) Detailed monitoring and evaluation officer to track and report on impacts of meeting accessibility requirements and/or violations of accessibility standards; self-reporting tools are not useful in this context 	CG, RD, JB, LB, SM, JS	

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
	Less need for punitive measures and surveillance	<ul style="list-style-type: none"> Accessible and inclusive organizations will require less enforcement attention 	CG, RD, JB, LB, SM	
	Higher standard of living		LA, SM, SK	
	Culture shift towards more compassion; PWD will be treated no differently than others.	<ul style="list-style-type: none"> An accessible and inclusive Canada means a societal shift towards a culture of compassion and equality in treatment, service delivery, increased empathy No need to hide people behind a curtain because disability is normalized in an accessible and inclusive Canada 	CG LB, MM, RD, JB, MH, KS, SM, LA, SK, CW, JS	All Canadians: “Accessibility builds empathy into everything we do.”
	Equity of treatment, products, services	<ul style="list-style-type: none"> In an accessible and inclusive Canada everyone would be taking the same “journey”; make equal contributions to society 	DB, RD, MM, SM, SK, CW, JS	
	Social impact on families, employees, community	<ul style="list-style-type: none"> Full accessibility in school and workplace means PWD can navigate these spaces on their own improving family dynamics. Employees’ faith in company is ensured when others are accommodated and increased solidarity between co-workers. Civic involvement would increase as places like City Hall are built with accessibility in mind. PWD would be engaged in all societal processes. 	KS, MH, LA, SM	PWD: More autonomy for youth as they transition into the workplace Families: Frees up their time to do things other than navigate services for their child Employees: Increased social engagement
	More social cohesion	When disability is normalized, the fear of it is removed, allowing for everyone to interact on the same level of respect and awareness	CW, DB, RD, MM, SM, SK	
Employment	Increased self-esteem		LA, LB, MB, SK	
		<ul style="list-style-type: none"> Accessibility will mean better jobs and less precarious work PWD will be able to take days off from work to recover their health or be able to take vacation; Where possible, all employees will be able to work from home 	LA, SM, SK	PWD: Healthier, less money and time invested in emergency room, sick at home Government: Decrease

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
				healthcare expenses
	Inclusive, and more respectful, workplaces; PWD are treated the same as their peers without disabilities	<ul style="list-style-type: none"> Shape work so everyone can do what they can and still be considered fully contributing employees Fear of disclosure is eliminated because there will no longer be a need to disclose disability 	SM, SK, CW, JS	
The Built Environment	Increase in use of built environment	<ul style="list-style-type: none"> More people access public spaces Issues as simple as the type of doorknob in public buildings would make a significant difference in terms of navigating the built environment. 	JB, SK, MB, CW, JS	
Information and Communication Technologies	See Employment			
Communication (other than information and communication technologies)	Creates a knowledge approach to learning	<ul style="list-style-type: none"> Classroom barriers will be removed. Lecture notes are provided so all students can access them Potential spillover effects such as reduced incidence of campus mental health issues and increased coping skills. 	LA, SM, SK, JS	
The Procurement of Goods, Services, and Facilities	Businesses will lead by example	<ul style="list-style-type: none"> Business that are leaders will start a ripple effect and more PWD will be hired; procurement of services will take into account the needs of PWD, because businesses operated by PWD will be included in the process. 	MH, MM, CW, JS	
The Design and Delivery of Programs and Services				
Transportation	More accessible and comfortable mode of transportation	<ul style="list-style-type: none"> Inclusive and accessible transportation decreases stress levels and increase productivity at work. People can get and keep employment (e.g., Niagara businesses pick up PWD at central 	LA, RD, MH, KS, SM, SK, JB, JS, CG, CW	Businesses: Increased hiring of PWD, good for business PWD: Increased

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Domain	Benefit	Description (What does this look like?)	Participant (s) /Source	Who benefits and how
		location and bring them to work). Accessible transportation is an area that can see the change more quickly and it will propel us forward as a nation to seek changes in other domains.		employment, increase income

Benefits of a Fully Implemented Bill C-81/An Accessible and inclusive Canada

The following quote illustrates the insights from many of the interviews: “Everyone benefits. It’s a win-win-win.” The person with the disability wins, businesses win, and society at large wins.

Attitudes toward persons with disabilities were cited by participants as the most significant and most challenging barrier to address. As many participants noted, you can not legislate your way to changed attitudes.

When discussing the importance of Bill C-81, most participants talked about the labour-market benefits and potential reduction in poverty for persons with disabilities. Also, participants described an increase in job accommodations as another significant benefit to realizing an accessible and inclusive Canada. There was a substantial discussion on benefits and impacts outside of Bill C-81’s priority areas. Many participants talked about a culture shift towards persons with disabilities where disability could be normalized within the broader society. Additionally, an accessible and inclusive Canada would reduce isolation, improve access to legal resources, decrease healthcare expenses, increase the health and QOL of persons with disabilities.

Participants noted that a reduction in poverty would most effectively be measured by the LIM (Low Income Measure), as it allows for comparisons globally. Other participants, however, suggested that economic indicators are not the best way to measure the health of a country and that other non-economic measures, such as inclusion and role participation across society. Another participant echoed these sentiments and noted that the GDP is not the best indicator of a country’s economic health and that a better indicator is used in Bhutan, National Happiness Index. Another participant suggested measures that capture perceptions of stress could be a useful tool.

In fact, an increase in the employment rate will have benefits far beyond the accommodated individual. Increased employment will also mean an increased tax base for municipalities. Local economies would also benefit as increased income in the hands of persons with disabilities would be spent in their local communities. There are also many benefits, and thus savings, to be realized in an accessible and inclusive education system, which becomes the foundation for a more successful transition into the workforce. With an accessible and inclusive education system, persons with disabilities will have enhanced human capital, will progress in their jobs, and will experience promotions and better pay.

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Also, participants indicated that businesses will become more productive and innovative as new ways of thinking about accommodating the needs of a range of disabilities spurs new ideas. Hiring persons with disabilities will also address labour shortages. In addition, businesses may see a declining in injury rates as they create better, safer, more efficient processes in their effort to become accessible and inclusive. Businesses will also see the spillover effects of being an inclusive employer because they will serve a larger portion of the public (those with disabilities, their family and friends).

For instance, the City of Kingston has 300 staff ready to retire over the next three years. This reality requires HR to tap into new talent. Persons with are part of that untapped labour pool. In response, employers are required to conceive of new ways of accommodating persons with disabilities. One accommodation that was mentioned frequently was telecommuting. This way of doing business builds in flexibility for the workforce and persons with disabilities but also lowers overhead costs for businesses creating a win-win scenario. Kingston is attempting to gauge the needs of workers with disabilities by adding a question to their exit interviews: did you experience any barriers on the job?

From a transportation and built environment perspective, an accessible and inclusive Canada would mean the universal design principles are integrated into infrastructure development and building projects at the outset. Participants noted that changes to the built environment means that persons with disabilities can be better included in society in general. Universal design would also benefit participation in the labour market, education and sport and leisure. Participants talked about the role universal design could play in employment. For example, JS noted that persons with disabilities are often excluded from employment right from the application stage. What is needed, JS explains, is a revamping of job applications so that requirements not needed to do that job are not included on the application. For example, for many jobs in her region, having a driver's licence, is not necessary to do the job for which a person is applying.

Participants noted that there were many employment benefits to be gained by persons with disabilities in an accessible and inclusive country. There would be an increase employment rates and opportunities to advance within the labour market for persons with disabilities. A more inclusive society would also mean that persons with disabilities may be less likely to be forced into precarious working contracts.

If transportation systems are accessible and inclusive, they will increase tourism. Participants noted that this boost in tourism, and to tourist-dependent businesses, will generate an increased tax revenue. This spillover effects have been documented by Inclusive Design Research Centre at OCAD university, who estimated Ontario could, within five years, potentially see an increase in tourism expenditures from anywhere between \$400 million (low impact scenario) and \$1.6 billion (high impact scenario) due to the combined direct and indirect effects of the Accessibility for Ontarians with Disabilities Act. Indeed, many of the participants noted the increased revenue their cities are positioned to gain if their city was more accessible.

There are many spillover effects when people have access to all the resources they need to participate fully in society. The spillover effects would be an overall increase in QOL, access to

nutritious food, opportunities to take paid leave when needed and access to safe housing. These spillover effects have the potential to increase health and QOL for persons with disabilities.

Other participants talked about the importance of access to legal resources. Having access to legal recourse through a publicly funding legal aid system saves provinces. For example, \$1.00 spent on legal aid saves about \$6.00 on other government services, because it protects against evictions, homelessness, illnesses and poverty, and makes civil and criminal courts more efficient, according to a Canadian Bar Association open letter to the Prime Minister of Canada (Adlington, 2019).

The increased revenue generated from increased tourism could be used to add more resources to the community, such as accessible parks for children, accessibility features in city hall, improving social and civic engagement of all residents; in one large Ontario city this would mean more residents could enjoy movie nights in the public square because their would be designated spaces for persons with disabilities to enjoy outdoor spaces.

Suggestions for Measuring the Benefits/Impacts

Participants noted several suggestions for measuring benefits and impacts of removing barriers to inclusion. Potential measures include:

- QOL and a new measures of economic and societal health (e.g., happiness indices).
- Graduation rates (i.e., as educational settings become more accessible and inclusive, student success increases).
- Disability-related educational expenses (i.e., accessible and inclusive spaces could result in less need for special resources or wrap-around supports).
- Employment rates (e.g., comparing pre-accessibility employment rates with post-accessibility employment rates).
- Employer turnover and expenses in recruitment and onboarding.
- Numerous spillover effects of increased employment, e.g., decreased incarceration rates, decreased use of food banks, etc.
- Productivity including absenteeism (i.e., missed workdays due to health) and presenteeism (i.e., working while unwell).
- Injury rates and compensation claims
- Accessible transportation can be measured in numerous ways (e.g., increase in tourism to accessible and inclusive locals; increased commuter traffic as train carriages become retrofitted or built with accessibility in mind).
- Medical expenditures (e.g., decrease in ER visits as persons with disabilities have a wider social network and alternatives to visiting the ER).
- Tax revenue at all levels of government
- Expenses in back office functions for government in certain areas of service delivery (
- Social assistance access and expenditures.
- Poverty levels.
- Cost associated with human rights complaints.

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Appendix 1: International Stakeholder Interview List

Name, Role and Affiliation	NOTES/COMMENTS
Consultant	Independent consultant. Has worked in the disability accessibility space in Australia for over 20 year. Previously worked at Australia Human Rights Commission. Interview Date: February 5, 2019 EST
Consultant	Economist working on disability inclusion in Australia including NDIS. Interview Date: February 14, 2019 EST
Consultant	Worked on the economic analyses for various social policies including disability income support. Interview Date: February 15, 2019 EST
World Bank	Disability Advisor to World Bank. Provides input into the inclusion of disability in World Bank initiatives. Interview Date: February 22, 2019 EST
University College Dublin and National Disability Authority	Leads programs and standards on universal design in various domains of life (e.g., education, information and communication, production) Interview Date: February 28, 2019 EST
National Department of Health Statistics (US)/CDC and the Washington Group	Leads harmonization of data across countries that have signed onto the UN Convention for the Rights of PWD. Little insight into economic measurement. Interview Date: March 1, 2019 EST
Washington Group and World Bank	Economist and consultant with the Center of Inclusive Policy in the United States. Specializes in the economic analysis of disability policies within middle- and low-income countries. Interview Date: March 8, 2019 EST
International Labour Organization	Economist and senior disability policy advisor with the International Labour Organization (ILO). Interview Date: Scheduled for March 11, 2019 EST
Public Sector Policymaker from the Netherland	Representatives from the Department of Social Affairs in Netherlands. Conduct policy work on the employment of persons with disabilities. Interview Date: March 15, 2019 EST

Appendix 2: Interview Guide for International Stakeholder Interviews

Semi-structured key information interviews: International context

Introduction

I am a researcher working on a project for Employment and Social Development Canada (ESDC), a department of the Federal Government of Canada, to assess the potential impacts/benefits of a new legislation (called Bill C-81 Accessible Canada Act) and an accessible and inclusive Canada. This project is designed to inform the development of an Impact Analysis required for federal accessibility regulations. In the project we are seeking to identify and assess the positive impacts of reducing or eliminating barriers to participation for persons with disabilities through the implementation of Bill C-81 and accessibility in employment, the built environment, information and communication technologies, communication other than information and communication technologies, the procurement of goods, services and facilities, the design and delivery of programs and services, and transportation.

We have contacted you because, within your context, you have implemented a legislation/policy aimed removing barriers for persons with disabilities. The purpose of this interview is to gather information on the impact/benefits of your accessibility legislation/policy.

Your participation is confidential and voluntary. There are no right or wrong answers to any of my questions. You can feel free not to answer any of my questions you are not comfortable answering.

Do you have any questions before we begin?

Would you mind if I recorded our conversation to facilitate my note taking? I assure you the recording will be used solely for this project and shared with others outside of this project.

Researcher note: Interviewees will be purposively selected. Participants will be policymakers (or representatives from a relevant governmental authority) based in a country similar to Canada (e.g., OECD country) and having knowledge of specific legislation that addresses accessibility for persons with disabilities, social exclusions and/or the removal barriers for participation.

Interview guide for legislation

Researcher note: Prior to undertaking an interview we will collect details on each participant's profile, such as:

- Country;
- Job title and responsibilities; and
- Governmental department in which the person is based.

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1. Describe the specific policy/legislation your branch of government has implemented to eliminate barriers, improve accessibility, and eliminate social exclusion of persons with disabilities within your jurisdictional context?
2. Within the policy/legislation context, how would you define the following terms:
 - a. Barriers
 - b. Accessibility
 - c. Social exclusion
3. What existing policy tools/approaches has your branch of government used to address accessibility/social exclusion of persons with disabilities?
 - a. incentives/disincentives
 - b. legislation
 - c. regulations
 - d. informational approaches
 - e. other types, please specify
4. Describe the scope of the policy/legislation
[**Research note:** these details may have been ascertained prior to the interview]
 - a. Levels of government involved (e.g., community, province/state, federal/national level)
 - b. To what extent does your policy/legislation affect the following public sector/societal domains –
 - i. Built environment
 - ii. Service provision
 - iii. Employment
 - iv. Transportation
 - v. Communication
 - vi. Information and communication technologies
 - vii. Procurement
5. Were the costs of exclusion considered in the design of your policy?
 - a. What were the direct costs considered within your context?
 - b. What were the indirect costs considered within your context?
 - c. What were the intangible costs considered within your context?
6. Have you conducted an *impact analysis or other form of evaluation* of the policy/legislation which has aimed at removing barriers for persons with disabilities?
[**Researcher note:** If **yes**, ask the following questions; if **unsure**, ask if there is another individual who may be able to answer following questions]
7. Was the *impact analysis or other form of evaluation* qualitative or quantitative?
[**Researcher note:** Probe if the nature of the impact analysis differed across the domains mentioned above]

8. Can you describe the *impact analysis or other form of evaluation* of the policy/legislation? Provide as much detail as possible with regards to the analysis/evaluation in terms of how it was undertaken.
[Researcher note: Probe if analysis/evaluation differed across the different aspects of the policy/legislation]
9. What specific measures were used for the *impact analysis or other form of evaluation* of the policy/legislation?
[Researcher note: Probe if measures differed across the different aspects of the policy/legislation]
10. To what extent was the *impact analysis or other form of evaluation* of the policy/legislation quantified? If relevant, describe other quantifiable measures utilized.
[Researcher note: Probe if quantification differed across the different aspects of the policy/legislation]
11. To what extent was the *impact analysis or other form of evaluation* of the policy/legislation monetized? If relevant, describe which outcomes were monetized.
[Researcher note: Probe if monetization differed across the different aspects of the policy/legislation]
12. To what extent were qualitative measures of the policy/legislation used for the *impact analysis or other form of evaluation*? Can you provide details on the qualitative measure?
[Researcher note: Probe if qualitative assessment of impact differed across the different aspects of the policy/legislation]
13. What were the outcomes of the *impact analysis or other form of evaluation* of the policy/legislation?
[Researcher note: Probe if outcomes differed across the different aspects of the policy/legislation]
14. Is there documentation from the impact analysis or other form of evaluation that you can share with us?

Appendix 3: Canadian Stakeholder Interview List

Interviews*	Interview time and date
Disability Advocates	
RD	Feb. 8, 2019 11 am EST
KH	Mar. 14, 2019 9 am EST
Academics/Educational	
LA	Feb. 22, 2019 10 am EST
PC	Mar. 5, 2019 11 am EST
Persons with Disabilities	
SM	March 7, 2019 12 pm EST
SK	March 11, 2019 12 pm EST
KA	April 7 th , 2019, 11am EST
AR	April 7 th , 2019, 3 pm EST
AB	April 22, 2019, 3pm EST
Business	
LB	Feb. 8, 2019 1 pm EST
CG	Feb. 11, 2019 12:30 pm EST
DB	Feb. 13, 2019 10:30 am EST
JB	Feb. 14, 2019 9:30 am EST
MM	Feb. 21, 2019 1 pm EST
KS	Mar. 4, 2019 10 am EST
Municipalities	
MB	Feb. 15, 2019 1 pm EST
JS	March 27, 2018, 10 am EST
Service Providers	
MH	Feb. 25, 2019 1 pm EST
*Informants fit into more than one category e.g., academic and PWD	

Appendix 4: Interview Guide for Canadian Stakeholder Interviews

Thank you for agreeing to take part in an interview with me. I am working on a project for Employment and Social Development Canada (ESDC) to assess the potential impacts/benefits of Bill C-81 (Accessible Canada Act) and an accessible and inclusive Canada. This project is designed to inform the development of an Impact Analysis required for federal accessibility regulations. In the project we are seeking to identify and assess the positive impacts of reducing or eliminating barriers to participation for persons with disabilities through the implementation of Bill C-81 and accessibility in employment, the built environment, information and communication technologies, communication other than information and communication technologies, the procurement of goods, services and facilities, the design and delivery of programs and services, and transportation.

The purpose of this interview is to gather information about the positive change that Bill C-81/an accessible and inclusive Canada can create or effect over time. This change could be social, economic and/or environmental. I am interested in learning your thoughts and ideas about the impacts/benefits the Bill might create by identifying, understanding and capturing the nature and value of the potential impacts/benefits of the proposed legislation.

Your participation is confidential and voluntary. There are no right or wrong answers to any of my questions. You can feel free not to answer any of my questions you are not comfortable answering.

Do you have any questions before we begin?

Interview Questions

1. Please tell me a little about your work / your organization in relation to accessibility in Canada.
2. Are you familiar with Bill C-81?
 - a. *If yes:* Have you reviewed the Bill? Have you shared your thoughts in any public forums or reports/blogs/op-eds, etc.? *If yes*, would you mind sharing a link to those comments?
 - b. *If no:* Are you familiar with accessibility and inclusion issues for persons with disabilities in Canada?
3. What are some of the key accessibility issues or challenges faced by persons with disabilities in Canada?
 - a. *If they are familiar with the Bill:* How are these issues addressed by the Bill?
4. What would be the greatest direct, indirect, and intangible social and/or economic impacts/benefits of an accessible and inclusive Canada and/or a fully implemented Bill C-81?
5. Do you have any thoughts on how those impacts might be measured/captured?

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6. What would be the direct, indirect and intangible impacts/benefits of an accessible and inclusive Canada/a fully implemented Bill C-81 for:
 - a. employment
 - b. the built environment
 - c. information and communication technologies
 - d. communication, other than information and communication technologies
 - e. the procurement of goods, services and facilities
 - f. the design and delivery of programs and services
 - g. transportation

For each of the above:

- Who would be the primary beneficiaries?
 - Are there others who would also benefit?
 - Can you elaborate on the nature of the impacts/benefits and their magnitudes?
 - How can these impacts/benefits be measured and monitored for persons with disabilities and others effected?
 - How would greater accessibility increase inclusion of persons with disabilities?
7. How would an accessible and inclusive Canada affect persons with different types of disabilities (e.g., physical, mental health/psycho-social, intellectual, sensory, Deaf and hard of hearing, cognitive, vision loss, blind, etc.)?
 8. How would an accessible and inclusive Canada affect other diverse persons with disabilities (i.e., Indigenous, racialized, LGBTQ+, women, youth and seniors with disabilities)?
 9. How would an accessible and inclusive Canada benefit persons without disabilities?
 10. What do you reasonably expect the impacts/benefits will be if Bill C-81 is fully implemented?
 11. Are you aware of other legislation in other countries that address the accessibility issues you have mentioned? If yes can you provide details on where we can get more information about it?
 - a. Do you know if the legislation's impact was evaluated and where we might find information?
 - b. Do you know who we could contact to find out more about this legislation?
 12. Is there anyone else we should be speaking with in relation to the impacts/benefits of Bill C-81 and an accessible and inclusive Canada?

Thank you for your participation!

Appendix 5: Review of Quality of Life Constructs

Background

Improving quality of life (QOL) for persons with disabilities represents a significant target for policies and programs that aim at removing barriers to inclusion for persons with disabilities. To date, little consensus has been reached in terms of the definition, conceptualization, application and measurement of QOL for persons with disabilities. Part of the challenge has been that the concept of QOL tends to encompass several dimensions including objective indicators, health, subjective perceptions of one's life, and social role participation.

Underlying all these dimensions of QOL are several key principles. The first key principle is the expanded definition of health. The WHO defines health as more than the absence of disease. Rather, it encompasses physical, social and psychological dimensions of health (World Health Organization, 2019a; CanChild, 2019). Importantly, this definition has highlighted the role of examining QOL in studies of persons with disabilities, especially within the fields of medicine and population health. Within these fields, different QOL measures have been used to assess the impact of interventions that have aimed at improving the service quality, providing access to healthcare, and increasing the effectiveness of interventions, to name a few. In certain cases, QOL can be integrated into economic analysis to calculate quality-adjusted life years (QALY) (Carr et al., 2001; Kahneman et al., 2006). Scholars indicate that the utilization of QOL measures complements the assessment of biological and disease outcomes and elaborates on perceptions and feelings that persons with disabilities hold towards their lives.

The second key principle underlying the importance of the concept of QOL for persons with disabilities is a human rights framework. The human rights framework and related CRPD offer sufficient standards of protection for the civil, cultural, economic, political and social rights of persons with disabilities on the basis of inclusion, equality and non-discrimination (United Nations Human Rights, 2019). Accordingly, a society free from barriers to inclusion within various domains of life (e.g., employment, education, healthcare, transportation, built environment, communication, and information and communication technology) has the potential to protect human rights and enable persons with disabilities to achieve personal goals, participate in social roles and obtain a high QOL that matches their counterparts not living with a disability (Townsend-White et al., 2012).

The third key principle is the WHO's biopsychosocial model - International Classification of Functioning Disability and Health (ICF) (Bickenbach, 1999; World Health Organization, 2001; Badley, 2008). The ICF provides a framework to conceptualize the impact of personal, health and contextual factors, and evaluate their impact on social role participation and QOL. According to the ICF model, the concept of social role participation considers involvement in all areas of life including employment, leisure, social life, self-care and personal roles (e.g., being spouse or parent). In contrast, a participation restriction refers to a situation in which a person is unable to be involved in the valued domains of life. The ICF model suggests that participation restrictions may stem from impairments to body function and structures, the inability to perform acts and tasks, personal and contextual factors that pose barriers and facilitators to social role involvement. Various subjective assessments of QOL have grown from the ICF model and have sought to determine the areas of life that matter most to persons with disabling health conditions.

It is important to acknowledge that decades of research within various disciplines has examined the concept of QOL as it relates to persons with and without a disability. Accordingly, a number of frameworks and measurement tools exist within the peer-reviewed and gray literature. Across studies of persons with and without disabilities, QOL can have various meanings including productive and material well-being, interpersonal relationships, personal development, self-determination, social inclusion, and individual rights (Felce, 1995; Schalock, 2002). Despite the diversity of literature, scholars agree that QOL should be measured in studies of persons with disabilities to promote evidence-based policy and service development that is planned and delivered in ways which specifically benefit health and well-being and enhance social role participation (Townsend-White et al., 2012).

To enhance our cost of exclusion study, greater insight into the concept of QOL is required to enable a quantification and monetization of the impact of an accessible and inclusive society. The following sections will examine and synthesize research on QOL as it relates to the cost of exclusion for persons with disabilities.

Aims and Objectives

We take a comprehensive literature review approach to unpack the body of literature on QOL. Our overarching research aim in this section is to inform the measurement of QOL within our cost of exclusion study. Findings from our review will be integrated directly into our conceptual framework and model for the cost of exclusion. Specific objectives of our literature review include to:

1. Examine the concept of QOL as it relates to persons with disabilities and barriers to inclusion they face in different domains of life.
2. Uncover specific conceptualizations and paradigms with regards to QOL and persons with disabilities.
3. Identify potential measurement tools that can be utilized to quantify QOL and stem directly from the different conceptualizations identified in Objective 2.
4. Provide recommendations for the integration of QOL into economic models which examine the cost of exclusion.

Methods

To address study objectives, we conducted a comprehensive literature review. Given the breadth of research that has been conducted on QOL, our review focused on academic peer-reviewed research and gray literature published by reputable national and international organizations (e.g., World Bank, International Labour Organization, Organisation for Economic Cooperation and Development [OECD]).

The literature search was conducted in March 2019 by the research team. Scholarly portals including PubMed, PsychInfo, Scopus and Google Scholar were searched. A range of keywords were utilized such as ‘quality of life’, ‘health-related quality of life’, ‘subjective well-being’, ‘happiness’, ‘social role participation’ and ‘social engagement’. To address our study objectives, our literature review aimed at identifying both conceptual literature and measurement studies specific to persons with disabilities. Of note, our search was constrained to English-language

studies conducted within developed economies (e.g., Canada, United States, Australia, Netherlands). Also, given the body of literature on the topic of QOL, we paid special attention to existing systematic reviews and meta-analyses within our search to provide a summary of QOL frameworks and measures, and to offer an assessment of methodological quality. The literature uncovered from our review is cited and synthesized in the following sections.

Findings

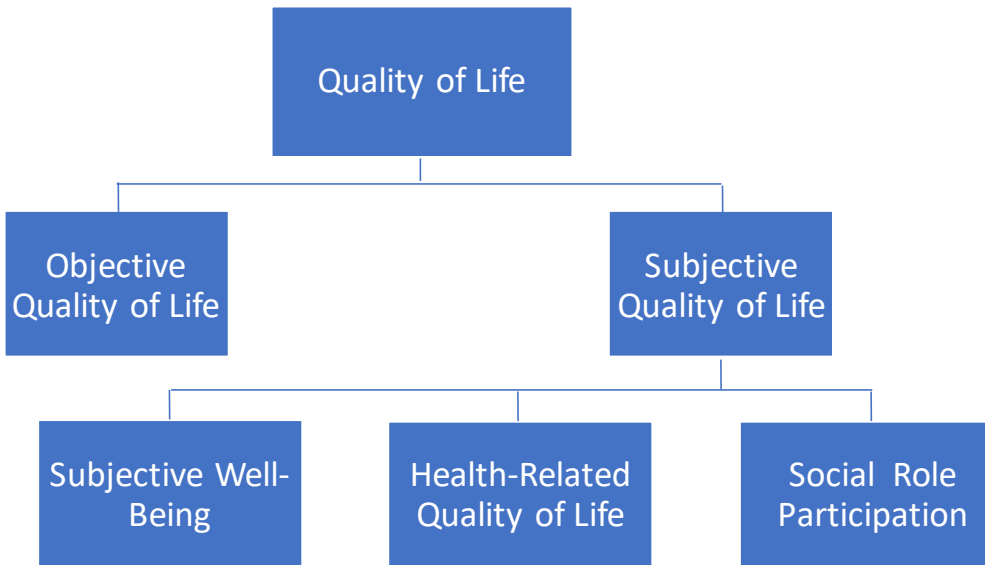
Our literature review uncovered numerous papers which examined QOL among persons with disabilities. Studies spanned diverse fields including health sciences, economics, public health, psychology, sociology and law. Each discipline had multiple and unique definitions of QOL. Despite the body of evidence examining the association between disability and QOL, there was no consensus on how QOL is conceptualized or measured across the various disciplines. In this section we have summarized overarching key themes regarding the conceptualization of QOL that are consistent across disciplines in which the concept is studied.

First, QOL is an umbrella term that captures multiple dimensions related to *physical*, *mental*, *emotional*, and *social* functioning within one's life. These key dimensions align directly with the WHO's definition of health and represent key domains of the QOL measures that were identified in our review (World Health Organization, 2019a). Studies examining the cost of exclusion should measure each of these dimensions individually or as a whole in order to fully understand the impact of removing barriers to inclusion for persons with disabilities.

Within the umbrella two specific domains of QOL existed. The first is the objective domain of QOL which included direct assessments of physical, mental, emotional and social functioning. The second is the subjective domain of QOL, which examined a person's perceptions regarding their lives including health-related quality of life (HRQOL), subjective well-being, and social role participation (Wallander et al., 2001). Within each domain, a series of specific quantifiable measures exist to examine perception of QOL (See Figure 14) (OECD, 2019).

Both subjective and objective measures are important domains that make-up QOL. Studies indicate that these domains are typically not highly correlated to one another. Other research suggests that persons with disabilities may report lower levels of QOL in the objective domains when compared to those without disabilities. At the same time, there are fewer differences between those with and without disabilities on subjective measures of QOL (e.g., subjective well-being) (Verdugo et al., 2005; McDowell, 2006; Van Campen et al., 2007; Beadle-Brown et al., 2009). Both objective and subjective domains should be considered separately in comprehensive cost of exclusion studies to offer important insights regarding QOL and to determine the impact of policies and programs that remove barriers to inclusion.

Given that objective and subjective domains of QOL exist, our literature review found that the comprehensive measurement of QOL tends to require separate tools to capture physical, mental, emotional, and social dimensions. Also, the choice of a particular QOL measurement tool may vary based on a respondent's personal and health characteristics (e.g., disability type, age, gender) and questionnaire type in which the QOL is being assessed (e.g., short form, self-assessment, interview, clinic-based survey, telephone survey, or mail survey) (Testa et al, 1996; Badley, 2008; CanChild, 2019).

Figure 14. Quality of life domains identified in the literature review

Another commonly reported theme in our review of QOL is that the concept should be nested within a person's respective context. QOL may differ based on culture norms, historical position and geography (World Health Organization, 2001). What is more, context provides a set of social norms and standards with which researchers and policymakers can judge QOL. In studies of persons with disabilities, context enables us to examine how QOL and personal experiences may differ from those not living with a disability.

The following sections provide more specific details of the objective and subjective QOL domains that can be considered in cost of exclusion studies.

Domain 1: Objective QOL Measures

Objective measures of QOL are directly observed and/or recorded and reflect one's physical, mental, emotional, and social status. Objective measures are often prioritized in the policymaking process as they provide an explicit depiction of whether changes in a marker have occurred in relation to a commonly held standard. It is important to remind the reader that while objective measures are collected through direct assessment they are still nested within a person's context. In the literature, various objective QOL constructs are discussed, including:

- **Income:** Ability to afford market rent in one's community, capacity to pay for the cost of medications and medical expenses, and having resources for community socialization (e.g., dining out, attending the theatre) (Hammell et al., 2004; Hammell et al., 2007; McGillivray et al., 2009). Income can be compared to commonly held standards including income-to-poverty ratio or poverty line.
- **Disease/impairment:** The absence or presence of physical or mental health disease or impairment. Direct measures of disease/impairment include disease activity, presence of side

effects, observed changes in functional capacity, remission of symptoms, or absence of health condition or impairment.

- **Health status:** Various objective measures of health exist within clinical and non-clinical settings including body composition (e.g., body mass index), aerobic capacity, blood pressure, heart rate, brain activity, among many others.
- **Participation in specific roles:** Whether or not an individual participates in usual activities including participation in family activities, leisure, education, work, sport, community life and political life.

Each of these direct measures, when taken together, make up the objective QOL domain. Policies and programs which aim to remove barriers to inclusion for persons with disabilities has the potential to improve outcomes in each of these directly observed categories and can reflect societal inclusion. Studies within developing contexts aiming to quantify social exclusion have utilized a combination of these objectives measures as indicators to identify those who are impoverished, face labour-market exclusion and experience service gaps (Burchardt, 2000; Taylor et al., 2004).

Although many of these objective categories can be measured directly, researchers caution that they may not always be reliable and valid tools (Williams et al., 1989). Additional research is needed to determine objective QOL measures which have sound measurement properties. Also, studies of persons with disabilities highlight that objective measures are limited. Mainly, they neglect to consider the thoughts and feelings of people living with disabling health conditions with regards to their physical, mental, emotional and social functioning. Accordingly, a consistent theme emerging from our literature review was the importance of subjective QOL measures as an important complement to objective measures.

Domain 2: Subjective QOL Measures

Our literature review indicated that subjective measures of QOL make up a predominant proportion of the literature, especially with regards to persons with disabilities. The subjective measures we identified tended to be self-reported. Within the framework of subjective perceptions of QOL, one study highlighted the several varying definitions of QOL that exist in the peer-reviewed literature (Carr et al., 2001; Kahneman et al., 2006; Layard et al., 2010): These include:

- The extent to which hopes and ambitions are matched by experience (Calman, 1984)
- Individuals' perceptions of their position in life taken in the context of the culture and value systems in which they live in relation to their goals, expectations, standards, and concerns (WHOQOL Group, 1994)
- Appraisal of one's current state against some ideal (Cella et al., 1990)
- The things people regard as important in their lives (Bowling et al. 1995)
- The degree to which a person enjoys the important possibilities of his or her life (Renwick et al., 1996; Cummins, 2005; Schalock et al., 2005; Schalock et al., 2010)

Based on these various dimensions, subjective measures of QOL can focus on various concepts including functional ability, happiness and satisfaction. At the same time, other subjective QOL measures provide insight into a person's perceptions of their goal achievement and social utility/capabilities (Ferrans et al., 1990). In a review, Cummins identified 32 scientific papers and 351 different domain names that made up the concept of QOL. Over 80% of the domain names were reclassified into seven categories that included: material well-being, health, productivity, intimacy, safety, community and emotional well-being (Gill et al., 1994; Albrecht et al., 1999; Dupuis et al., 2000).

In studies examining barriers to inclusion faced by persons with disabilities, tapping into subjective measures can situate the experiences of a person with a disability within their specific context and can capture their specific perceptions regarding QOL. A recent qualitative study of 153 persons with moderate to severe disabilities found that over half (54%) reported having excellent or good QOL. Participants revealed that their social context and external environment were related to their perceptions of QOL (Albrecht et al., 1999).

Our literature highlighted that under the domain of subjective QOL measures, three main categories existed (Figure 14). The three categories included: A) HRQOL; B) subjective well-being; c) well-being/happiness; and C) social role participation restrictions. The following sections will describe each of these domains in greater depth. We have also selected several commonly used subjective QOL measures within each category.

Health-Related Quality of Life

Within medicine and clinical research, subjective QOL has been examined relative to one's health status, disease or impairment as HRQOL. HRQOL goes beyond direct measures of health to provide a specific focus on QOL consequences of health status. HRQOL tends to be conceptualized as dynamic and subjective and incorporating multiple dimensions of one's life (e.g., physical, mental, emotional, and social functioning) (Haas, 1999; Taillefer et al., 2003; Bakas et al., 2012).

Some models of HRQOL draw from the functioning category (i.e., functioning at the level of the body) of WHO ICF model as a measurement framework (Miller et al., 2010; Bakas et al., 2012). Other research examining the key domains of HRQOL provides emphasis on specific biology, symptoms, function, general health perceptions as well as individual and environmental characteristics (Wilson et al., 1995). Notably, our literature review highlights several widely utilized measures of HRQOL that were generic in nature and assessed universal aspects of health. Commonly utilized generic measures include:

- **Short-form 36-item (SF-36):** The SF-36 is a patient-reported survey of QOL that is made up of eight scaled scores (Instrument Ware et al., 1992; Ware et al., 2000). Eight sections are included in the SF-36: vitality/fatigue, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning and mental health. The EQ-6D (a short-form version of the SF-36) is often utilized in health economics studies to calculate quality-adjusted life years (QALYS) (Hays et al., 2002).

- **The Patient Reported Outcomes Measurement Information System (PROMIS) global health measure:** The PROMIS global health measure assesses global physical, mental, and social HRQOL using a 10-item tool (Cella et al., 2007). Questions ask about self-rated health, physical and mental HRQOL. Individual questions on fatigue, pain, emotional distress, social activities, and roles are also included. Recently, the tool has been administered as part of the representative population-level United States National Health Interview Survey.
- **EQ-5D:** Is a standardized instrument developed by the organization EuroQOL as a tool to assess HRQOL (Brooks et al., 1999; EuroQoL, 2019). The EQ-5D has been administered to a wide range of health conditions, and consists of five dimensions including mobility, self-care, usual activities, pain/discomfort and anxiety/depression. To complement these dimensions, the EQ visual analogue scale records a respondent's self-rated health. This can be used as a quantitative measure of health outcome that reflects the participant's own judgement.
- **Health Assessment Questionnaire (HAQ):** The HAQ measures self-reported functional status and disability with everyday activities (e.g., walking, standing, climbing stairs, lifting) and QOL in the past month. Each item also asks whether the respondent uses an assistive device to manage limitations within each activity. Pain and overall appraisals of health are also collected as part of the HAQ (Bruce et al., 2003a, 2003b).
- **WHO Quality of Life-BREF (WHOQOL):** WHOQOL is an international cross-culturally comparable QOL assessment instrument. It assesses the individual's perceptions in the context of their culture and value systems, and their personal goals, standards and concerns. Domains captured in the WHOQOL include physical health, psychological health, social relationships and environment (World Health Organization, 1996).

Many of the measures mentioned above have been designed to assess HRQOL among people living with different disabling health conditions. Notably, they have been widely used in clinical and non-clinical settings to examine how interventions, policies and programs may impact QOL with regards to one's health. It is important to acknowledge that, in addition to these generic HRQOL measures, our literature review identified a number of disease specific HRQOL measures. Disease-specific measures were adaptations to the measures mentioned above, as well as those designed with the specific clinical characteristics of an illness in mind. Condition-specific HRQOL measures were designed for a broad range of physical health (e.g., rheumatic disease (Hurst et al., 1997; Maskala et al., 2011), stroke (Geyh et al., 2007), spinal cord injury (Andresen et al., 1996)) and mental health conditions (e.g., depression (Gaynes et al., 2002), bipolar disorder (Leidy et al., 1998)). Presenting disease-specific measures is beyond the scope of this specific literature review.

Subjective Well-Being

Our literature review highlights a number of measures, especially within the social sciences (e.g., social psychology, disability studies, sociology) where QOL was associated with one's perceptions regarding their well-being, satisfaction and happiness (Cummins, 1991; Schalock et al., 2005; Brown et al., 2009; Schalock et al., 2010; Ontario Ministry for Seniors and

Accessibility, 2012). Studies utilizing a subjective well-being framework of QOL also highlight that one's satisfaction with their life may be evaluated with regards to goal attainment (i.e., gap between a person's goals and their ability to meet them). When compared to HRQOL measures, subjective measures of QOL that assess well-being and happiness with regards to a person's values rather than within the context of their health or disability.

Our literature review found that many subjective well-being measures are administered to samples of persons with disabilities to examine individual differences. Increasingly, governments and international organizations (e.g., OECD) are assessing subjective well-being, satisfaction and happiness at the population levels. A recent OECD framework of subjective well-being includes three levels of measurement: 1) life evaluations (i.e., assessment of a person's life or some aspect of it, such as life satisfaction); 2) affect (i.e., a person's feelings or emotional states); and 3) eudaimonia (good psychological functioning) (OECD, 2013).

One conceptualization of QOL developed based on research conducted with people living with developmental disabilities examined the degree to which a person enjoys the possibilities of his/her life that they value most. Possibilities result from the opportunities and limitations and are based on a person's interaction with their environment (Raphael et al., 1996). Within this framework, the authors indicate that QOL is based on being, belonging and becoming:

- **Being:** Being refers to who one is related to their physical health (nutrition, hygiene, exercise), psychology (e.g., psychological health and adjustment, self-esteem) and spirituality (e.g., personal values, personal standards).
- **Belonging:** Belonging refers to one's connections within their environment including physical (e.g., home, workplace, neighbourhood), psychological (e.g., family, friends) and community (e.g., income, employment, community services).
- **Becoming:** Becoming relates to achieving personal goals, hopes and aspirations including practical (e.g., domestic activities, paid work), leisure (e.g., activities that promote relation) and growth g (e.g., activities that promote the maintenance or improvement of skills).
- **Quality of Life Profile (QOL-P):** Developed based on the framework mentioned above to measure dimensions of being, belonging and becoming. The measure was based on data collection conducted in studies of persons with HIV/AIDS. In particular, the QOL-P measures the importance and satisfaction of 54 aspects of life (Raphael et al., 1996; Raphael et al., 2001).

Elsewhere Townsend and colleagues conducted a systematic review of QOL measures and their application to persons with intellectual disabilities. Twenty-four QOL instruments were identified and each instrument was evaluated against a set of psychometric and measurement criteria. Of the 24, six psychometrically sound measures of QOL were identified. Measures were examined with respect to their ability to address eight core QOL domains identified by the author as being important: emotional wellbeing, interpersonal relationships, material well-being, personal development, physical well-being, self-determination, social inclusion and rights (Schalock et al., 2000; Beadle-Brown et al., 2009). Below, we describe several of the measures

that are endorsed by Townsend and colleagues. We have also included several additional measures that were highlighted in our literature review and are commonly utilized in studies of persons with disabilities.

- **Personal Wellbeing Index (PWI):** The PWI consists of seven satisfaction items that correspond directly to the QOL domains: standard of living, health, achieving in life, relationships, safety, community-connectedness, and future security. The PWI has been adapted and validated with adults, children, and persons with intellectual or cognitive disabilities (Cummins, 2005).
- **Quality of Life Questionnaire (QOL-Q):** QOL-Q is a 40-item scale to measure overall QOL (Schalock et al., 1993). The scale is administered in interview formats and yields data regarding overall QOL, consisting of scores from four sub-scales: satisfaction, competence/productivity, empowerment/independence, and social belonging. Of note, the scale was designed specifically for persons with intellectual disability.
- **Quality of Life Interview Schedule (QUOLIS):** QUOLIS is a structured interview designed to measure the QOL of adults without verbal communication skills (Ouellette-Kuntz et al., 1994). Data is provided by proxy respondents. While the QUOLIS has sub-optimal measurement properties, studies indicate it provides a reasonable indicator of a respondent's perspectives on QOL.
- **Evaluation of Quality of Life Instrument (EQLI):** Within clinical settings EQLI elicits clinical staff's evaluation of a person's satisfaction and availability of social support (Nota et al., 2006). Research regarding the EQLI suggest that it is an effective tool for gaining staff perceptions of individuals who may be at risk of dissatisfaction with various QOL domains.
- **Quality of Life Survey QOLS:** A 15-item instrument that measures five domains of QOL including material and physical well-being, personal relationships, social, community and civic activities, personal development/fulfillment, and recreation). Independence (i.e., ability to do for yourself) was added to the survey after pilot testing QOLS among people living with disabilities (Burckhardt et al., 2003).

Despite the number of QOL measures that examine subjective well-being that were identified in the literature review, research suggests that more instruments are needed to be developed and rigorously validated, especially for persons with severe disabling health conditions.

In our literature review of measures focusing on subjective QOL, we also identified measures which examined happiness and satisfaction as a method to assess a person's thoughts and feelings regarding the goodness of their life. These measures tend to arise from the field of positive psychology and provide focus on human strengths (Diener et al., 2002).

Notably, our review suggests that life satisfaction measures are more often administered in studies of persons with disabilities. Some of the most cited satisfaction surveys included:

- **Life satisfaction indices:** Satisfaction indices were utilized in social surveys to rate levels of satisfaction with three aspects of life including **daily activities** (job, caring for children, looking after the home, education); **relationships** (e.g., family, friends) and **health**. Life satisfaction indices have been administered within population-level surveys such as **Statistics Canada's Social Survey** (Crompton, 2010).
- **Satisfaction with Life Scale (SWLS):** SWLS is a commonly utilized five-item tool that collects global assessments of satisfaction within one's life (e.g., "I am satisfied with my life). SWLS does not tap related constructs such as positive affect or loneliness (Diener et al., 1985).
- **Life satisfaction Multifaceted Life Satisfaction Scale (MLSS):** The MLSS examines satisfaction with living arrangements/communities, personal relationships, recreation and leisure, employment, and degree of self-direction (Harner et al., 1993). The MLSS was been designed based on research conducted with people living with development disabilities.

The measures described above provide a general sense of satisfaction that persons with disabilities may report in their lives. It is also important to acknowledge that domain-specific measures assess satisfaction with one's career, physical activity, family life and leisure. Many domain-specific satisfaction measures were not designed and piloted in studies of persons with disabilities.

In contrast to life satisfaction, the concept of happiness has been less developed from a measurement perspective. However, a number of studies at the individual and population-level have measured happiness, especially among non-disabled population. Our literature revealed that some studies ask generalized questions about happiness. For instance, the US General Social Survey (GSS) asks Americans simple and direct questions regarding personal happiness, including: - "Taken all together, how would you say things are these days? Would you say that you are very happy, pretty happy, or not too happy?"(General Social Survey, 2019). Other commonly utilized happiness indices include:

- **Oxford Happiness Questionnaire (OHQ):** OHQ is a 29-item measure of personal happiness designed to assess individual differences. Items are broad and can include "I feel that life is very rewarding" (Hills et al., 2002).
- **Pemberton Happiness Index (PHI):** PHI is a comprehensive measure of well-being, and includes several components of hedonic, eudaimonic, social, and experienced well-being. The PHI consists of two specific domains of well-being remembered (i.e., general, hedonic, eudaimonic, and social well-being) and experienced (i.e., positive and negative events that occurred the day before) (Hervás et al., 2013).

Our literature review identified a vast range of measures that examine QOL within the framework of well-being. Incorporating subjective well-being measures into a cost of exclusion study will enable research to quantify the impact of policies and programs that remove barriers to inclusion on one's feelings and evaluations regarding their lives.

Social Role Participation

One last dimension of subjective QOL measures are those that ask about participation in social roles. In examining measures of social role participation, we turn back to the WHO's ICF model which highlights the interaction between health, personal, and contextual factors and participation in diverse meaningful life situations. According to the literature identified social role participation can include family life, friendship, home roles, political and religious life, work, education, sexual life, hobbies and travel, among many others. The items and measures that we uncovered in our literature tended to examine both the extent to which a person participates in roles, and the level of importance they place upon role participation.

It is also important to highlight that the measurement of social role participation has been developed directly from studies of persons with disabilities. To date, there is no consensus on the measure of social role participation that should be used in studies of persons with disabilities. We highlight several commonly utilized social role participation measures in the sections below.

- **Social Role Participation Questionnaire (SRPQ):** The SRPQ assesses the influence of health on 11 specific social roles and one “general participation” item across three participation dimensions: “role importance”, “satisfaction with time spent in roles” and “satisfaction with the role performance”. Roles assessed in the SRPQ include intimate relationships, relationships with children, employment, social engagement, leisure activities, hobbies, relationships with others, travelling/vacationing, community/culture religion, causal contact and education. Notably, the SRPQ has been designed and validated among persons with disabling conditions including arthritis (Gignac et al., 2003).
- **Impact on Autonomy and Participation Questionnaire (IPAQ):** Is a 39-item measure that examines autonomy and participation reported by the respondent. The item focuses on two dimensions of participation: a) perceived participation and b) problems for each aspect of participation. The participation domains include autonomy outdoors (e.g., visiting friends, leisure time); autonomy indoors (e.g., self-care); family role (e.g., housework); social relations; paid work and education. The IPAQ was tested in 5 diagnostic groups (i.e., neuromuscular disease, stroke, spinal cord injury, rheumatoid arthritis, or fibromyalgia) (Cardol et al., 2001).
- **Assessments of Life Habits Scale (Life-H):** Life-H is utilized to collect information on all life habits within the home, workplace or school and neighborhood to ensure their survival and development. The measure assess participation in 12 daily activities and roles and accounts for the fact that persons with disabilities may require adaptation or devices to carry out activities or to fulfil social roles to the same degree as someone without a disability (Noreau et al., 2002; Noreau et al., 2004).
- **Community Integration Question (CIQ):** The CIQ is a 15-item inventory designed to measure levels of community integration. Integration includes one's home, social networks, and other productive outlets such as employment, school, or volunteer work. The measure was designed among those who have suffered traumatic brain injuries (TBI) (Sander et al., 1999).

- **Craig Handicap Assessment and Reporting Technique (CHART):** CHART utilizes 32 questions to examine participation restrictions related to physical independence, cognitive independence, mobility, occupation, social integration and economic self-sufficiency. Of note, the CHART was built prior to the development of the ICF, and follows the earlier International Classification of Impairments, Disabilities, and Handicaps (ICIDH).

The inclusion of measures which assess social role participation and participation restrictions provide important insights into the impact that policies and programs which aim at removing barriers to inclusion will have on a person with a disability and their ability to engage more fully in the valued domains of life.

Conclusions and Recommendations

This section provides a summary of the research which conceptualizes and measures QOL in studies of persons with disabilities. We introduce both objective and subjective QOL measures that can be implemented in studies of persons with disabilities to examine the effectiveness of policies and programs on life. More importantly, within the subjective domain, QOL can have various meanings including subjective well-being, satisfaction and happiness. Each definition of QOL is coupled with a set of specific measurement tools. In this section we present some of the most commonly utilized subjective and objective measurement tools described in the literature and may be integrated into economic models which examine the cost of exclusion.

Within the QOL framework we present in this section, there are several recommendations that can be made for economic models which aim to examine the cost of exclusion for persons with disabilities and to quantify potential impacts of an accessible and inclusive.

- It is clear that the literature on QOL is very broad and spans multiple disciplines and perspectives. Accordingly, there is no consensus on how QOL should be measured in studies of persons with disabilities. Additional research is required to examine the landscape of QOL measures and identify those which are best able to reflect life experiences and values. Indeed, persons with disabilities should be included in this process.
- Cost of exclusion studies should include both objective and subjective measures of QOL to fully reflect whether a person with a disability is facing social exclusion, and their thoughts and feelings regarding their lives.
- With regards to persons with disabilities, cost of exclusion studies should incorporate one or more subjective measures of QOL. It is certainly important to examine and quantify QOL with regards to one's health (HRQOL). Health-related measures should be coupled with indicators that also examine subjective well-being, satisfaction and social role participation. The inclusion of all these measures will provide a complete picture of one's feelings regarding their QOL.
- Of note, happiness has shown to be an important concept in studies of persons with disabilities and may provide important insights in studies quantifying the impact of policies which remove barriers to inclusion. At the same time, the measurement of this concept in studies of persons with disabilities has been underdeveloped.

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- The inclusion of social role participation questions in a cost of exclusion study can help identify how removing barriers to inclusion can have an impact on one's perceptions regarding involvement in different domains of life. Role participation questions ask about whether a person participates in a certain role and the extent to which they value involvement in that role. To date, there is no consensus on the most valid and reliable subjective QOL measures that assess role participation.