Not Overly Accessible: Accessibility Services at Universities Across Canada

Pas trop accessibles : les services d'accessibilité dans les universités canadiennes

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Abstract
People with disabilities face accessibility challenges in higher education. Consequently, universities generally provide accessibility services that provide support and information to those who need it. However, it is not clear what services and information Canadian universities provide, and whether their accessibility websites are themselves accessible. Whether information about accessibility services and resources (e.g., note taking, funding) was present on accessibility websites was assessed among 86 Canadian universities. In addition, the accessibility services websites themselves were assessed for meeting international standards of accessibility. Results suggest that larger universities generally provide more information about services and resources, but there is variability and a lack of consistency, with some services rarely mentioned. The websites themselves have more errors that would impact users with accessibility issues and less elements designed specifically for accessibility than the websites of common large companies and the Canadian Government. The accessibility websites of Canadian universities are generally not as accessible as they could be for those who are likely to need them most.

Résumé
Les personnes handicapées sont confrontées à des problèmes d'accessibilité au sein de l'enseignement supérieur. Par conséquent, les universités fournissent généralement des services de soutien et ainsi que de l'information aux personnes qui en ont besoin. Cependant, on connait peu les services et informations fournies par les universités canadiennes et le degré d'accessibilité de leur propre site Web. On a examiné l'information relative aux services et ressources en matière d'accessibilité (p. ex., prise de notes, financement) fournie à la section Accessibilité des sites Web de 86 universités canadiennes. De plus, les sites Web des services d'accessibilité eux-mêmes ont été évalués pour vérifier leur conformité aux normes internationales d'accessibilité. Les résultats suggèrent que les grandes universités fournissent généralement plus d'information sur les services et les ressources disponibles, mais on note néanmoins une variabilité et un manque de cohérence, p. ex., certains services sont rarement mentionnés. Les sites Web eux-mêmes comportent plus d'erreurs susceptibles d'avoir un impact sur la population étudiante ayant besoin d'accessibilité. On note aussi moins d'éléments conçus spécifiquement pour l'accessibilité que dans les sites Web des grandes entreprises et du gouvernement canadien. En général, la section Accessibilité des sites Web des universités

canadiennes devrait être plus accessible pour les personnes qui sont susceptibles d'en avoir le plus besoin.

Introduction

Out of the G7 industrialized countries, Canada has the highest proportion of people with a degree from college or university (Friesen, 2022). Such degrees are associated with several positive benefits for individuals who have them, such as better job prospects, higher income, and greater health, but also with greater benefits for society, such as increased tax revenue and less reliance on social support services (Ma et al., 2019). With such benefits, it is important to assess challenges in obtaining such an education.

One in five Canadians have a disability (Employment and Social Development Canada, 2022), and they are likely to face challenges in higher education. In fact, they are less likely to have a degree compared to those without disabilities (Bureau of Labor Statistics U.S. Department of Labor, 2015). In order to complete an education, those with disabilities might need to access accessibility services, which provide support like note takers, alternative format material, and recorded lectures. Demand for accessibility services seems to be rising, including in some parts of Canada (Glowacki, 2018). The number of students with disabilities has also been rising in different parts of the world, such as Australia (Universities Australia, 2019) and England (Hubble & Bolton, 2021). The Accessible Canada Act aims to remove barriers for those with disabilities by ensuring accessibility standards are met by 2040 (Employment and Social Development Canada, 2022). Thus, it is important to assess the extent to which Canadian universities are accessible to those with disabilities.

A hint about how well Canadian universities are addressing the issue comes from recent work. Less than half of the 42 universities in Canada that were assessed had a disability accommodation policy in place for faculty members—despite this being a legal requirement (Saltes, 2020). Other research focussed on students suggests that students with disabilities are

underrepresented in at least some academic fields, such as STEM (science, technology, engineering, and mathematics), because of the difficulties in accessing accommodations (Prema & Dhand, 2019). Analyses of documentation that are aimed at reducing barriers in accessibility at higher education institutions in Canada suggest that available formats are limited, and they are typically a large PDF document (which can lack the ability to change text format and use other accessibility tools such as page readers) that can pose challenges to some users with disabilities (Epstein et al., 2022). And more broadly, mental health services available in Canadian post-secondary institutions do not meet all the principles of providing high quality care (Read et al., 2023). This can include clinical assessments and providing counselling services to those in need. Although mental health services can sometimes be related to accessibility services, they need not be. For example, someone with an accessibility concern (e.g., vision disability) might have no pending mental health concerns and may still require some form of accommodation (e.g., technology-related aid). Together, this growing body of recent work suggests many Canadian universities are falling short on providing high quality care for their students.

Accessibility is defined in the current work as enabling those with disabilities to be able to fully participate in activities related to their studies. Accessibility services that enable accessibility (e.g., accommodations) can be quite varied, which can include note takers, voice recorded lectures, alternative formats for reading material, as well as exam and assessment accommodations. With growing reliance on the internet and web-based products, information and communication technology (ICT) concerns are gaining in importance for those with disabilities. In fact, of Canadians with disabilities who reported not using the internet, 18% said it was because of ICT issues (Choi, 2021). More specifically to Canadian students, nearly half (48%) of youths aged 15-24 with disabilities require ICT aids for their school courses. As

websites are the primary way (and often only way) that students learn about their university (Uniquest, 2019), it is important that ICT is taken into account among accessibility services at universities. Not only that, it is also important that the university websites themselves are accessible.

Website accessibility can be assessed according to established international standards, such as the Web Content Accessibility Guidelines (WCAG; Web Accessibility Initiative, 2023). These guidelines specifically describe how to make websites accessible for those with disabilities. It includes aspects such as providing captions for multimedia, text alternatives for visual content, making material accessible to various assisted technologies, and providing content unlikely to cause seizures. Automated tools now exist to assess websites that give scores based on these guidelines.

Some research has already made efforts to assess university website accessibility. For example, all American community college websites sampled scored poorly on accessibility using various methods, including an automated tool (Erickson et al., 2013). The existing research suggests universities are falling short in terms of accessibility, but what remains unclear is how accessible Canadian universities currently are. Addressing this gap in the literature was part of the goal of the current research.

Two related aims motivated the current research. The first was whether accessibility services and resources are clearly listed for students on university websites. That is, whether this information is accessible. This information is important for students to know so that they can make informed decisions, but also because students often lack knowledge about what services are available, which can act as a barrier to receiving help (Marshak et al., 2010). The other aim was how accessible the accessibility websites are themselves. If the accessibility services

websites cannot be reliably used by those with accessibility issues, it brings into question whether they are fit for purpose. Both of these issues are related to accessibility (i.e., enabling an individual with disabilities to fully participate), but the first is about availability of information about services and resources (e.g., accommodations) while the latter is about website design. We attempted to address these two aspects by collecting information available on university accessibility services websites and by running those websites through a tool that assesses their accessibility using established standards.

Method

Sample

A list of Canadian universities was compiled by two research assistants (RAs) working independently and blind to the nature of the research who conducted online searches. Each university was also searched for their accessibility websites, which typically provide students with information about available support services and academic accommodations for those with accessibility issues. The search was restricted to public universities (either English or French speaking) in Canada. There are considerably more public universities than private universities, so this represents a sample of most higher education institutions in Canada. Once the RAs completed their lists, they were combined for a final sample of 86 universities.

To act as a comparison group for website accessibility, we also collected data from 40 other websites, which included 39 large companies (e.g., Apple, Canada Post, Royal Bank of Canada, Safeway) and the Canadian Government website. All websites were ones meant for Canadian audiences (e.g., those with .ca domain). Lists of large or popular companies in Canada were compiled and then 39 were randomly selected. Our reasoning was that these companies are

likely to have websites that many people use along with resources and know-how on making their websites accessible, so they presumably have an interest (and are thus somewhat likely) in making their websites accessible. Similarly, the Canadian Government is likely to make efforts to ensure their website is highly accessible given they are responsible for legislation on accessibility (i.e., Accessible Canada Act), so it might serve as a kind of "gold standard" of comparison. See the Appendix for full list of companies and universities included in the sample.

Measures

General University Information

General information about the universities was collected: how often accessibility websites were updated (i.e., unknown, within 1 month, within a year, or greater than 1 year); the province the university is located; and the student population size, which was determined from university websites, and when conflicting information was provided, the mean of the estimates was used.

In the subsequent tables, results are broken down by university size. Small universities were classified as those with less than 10,000 students, which is consistent with previous work on Canadian universities (Read et al., 2023). Large universities were those with 10,000 or more students.

Accessibility Services and Resources Provided

A list of accessibility services and resources was compiled using existing research (Meleo-Erwin et al., 2021) and an earlier pilot study. The availability of the following services and resources were included: note taker (paid by university, unpaid, or unknown), voice recorded lectures, exam accommodations, captioning and ASL, alternative format materials, non-medical

accommodations, presence of counselling services, funding for accessibility services and devices, accessibility policy information, transportation information, a complaint system, an online appointment system, and whether clinical assessments are available. Although not a service provided, whether medical documentation is necessary for accommodations was also recorded.

Two undergraduate RAs assessed the availability of the services and resources for each university independently. Undergraduates were used because the websites are designed for an undergraduate audience. They were told not to spend longer than 5 minutes on any given item since searches could otherwise go on indefinitely if a service or resource wasn't available, and pilot testing suggested that 5 minutes was sufficient to find existing services. In addition, 5 minutes is also the average Median amount of time spent by users on highly visited websites (Danaher et al., 2006), while some university websites also average 5 minutes or less (Tavosi & Naghshineh, 2021). Because websites can be updated, data was collected over a two-week period starting in mid-March, 2024.

Accessibility of Websites

The accessibility services websites were run through the website accessibility evaluation tool (WAVE, https://wave.webaim.org/extension/). WAVE was developed by the Institute for Disability Research, Policy & Practice at Utah State University. It automatically assesses the accessibility of websites and provides a detailed summary of issues and other aspects to help make websites more accessible. Only the main accessibility website for each university was run through the tool, or in the case of the comparison groups, their main home page. Comparative studies suggest that it is similar in performance to other website evaluation tools (Abduganiev, 2017), has the benefit of being free to use, but can sometimes underreport certain types of errors

(Alsaeedi, 2020), which suggests it might be a somewhat conservative estimate of accessibility issues. The variables of interest from the WAVE summaries were contrast errors, errors, alerts, and ARIA.

Contrast errors and errors both occur when issues will impact certain users. They do not meet the guidelines of WCAG, which is an international standard to make websites more accessible to users. Contrast errors are when the contrast between foreground (text) and background are overly challenging to read for certain users. Errors are more general, and can include things like broken links, empty buttons, and missing alternative text. Given our interest in more general accessibility concerns, we combined these two measures into a single "error" variable by taking the sum. Values represent the number of errors identified. Ideally, the value will be zero, as any error suggests an accessibility issue.

Alerts are aspects that may or may not cause issues for users. They can include aspects such as redundant links, long alternative texts, and missing headings. The presence of alerts alone does not necessarily indicate an accessibility issue, but many such instances might suggest the need for website refinement. Whereas errors are more certain to be issues, there is some uncertainty whether alerts are or not. Values represent the number of alerts identified. Ideally, there will be no or few alerts.

ARIA stands for Accessible Rich Internet Applications. It is used alongside HTML code to make websites more accessible. It communicates with assistive technology when viewing a website (e.g., text-to-speech). ARIA values represent the number of ARIA elements identified in a website. Its presence suggests efforts to make websites more accessible. Generally speaking, higher values suggest more accessible websites.

Results

Frequency information about the sample, broken down by province/territory, can be found in Table 1. Total student enrollment across universities was 1,517,956, with the majority of universities located in Ontario, Quebec, then British Columbia. Universities generally updated their accessibility services websites within a year (41%), followed by within a month (17%), with a smaller number greater than a year (5%). Many websites did not indicate when they were last updated (37%). In other words, there was variability in the frequency that the websites were updated.

Table 1. Frequency information about sample by province/territory

	AB	BC	MB	NB	NL	NS	ON	PE	QC	SK	YT
Small universities	2	3	4	3	1	8	10	1	7	0	1
Large universities	5	9	1	1	1	1	16	0	9	3	0
All universities	7	12	5	4	2	9	26	1	16	3	1
Website updated											
Within a month	2	1	1	0	0	1	5	0	5	0	0
Within a year	4	3	1	2	1	6	12	0	5	1	0
Greater than a year	0	0	0	0	0	0	2	0	2	0	0
Unknown	1	8	3	2	1	2	7	1	4	2	1

Note. The table displays the frequency of universities sorted by province and size (e.g., small, large, and all universities), as well as how frequently the websites are updated. Column abbreviations represent Canadian provinces and territories present in the sample.

Accessibility Services and Resources Listed

Table 2. Frequencies of accessibility services and support between large and small universities

	Small universities with <10,000 students (*n* = 40)	Large universities (*n* = 46)	All universities (*N* = 86)
Online appointment	93%	100%	97%
Voice recorded lectures	90%	96%	93%
Exam accommodations	58%	93%	77%
Alternative formats	60%	89%	76%
Funding	65%	78%	72%
Counselling	63%	78%	71%
Note taking	68% (8% paid, 13% unpaid, 38% unknown)	67% (15% paid, 2% unpaid, 50% unknown)	67% (12% paid, 7% unpaid, 49% unknown)
Policy available	53%	72%	63%
Captioning and ASL	35%	50%	43%
Transportation	20%	63%	43%
Complaint system	18%	37%	28%
Non-medical accommodations	5%	22%	14%
Clinical assessment available	5%	4%	5%

Note. The table displays the percentages of how often accessibility services and resources are listed on their websites, which is sorted by university size (i.e., small, large, and all). ASL = American Sign Language; values represent percentage of whether service/resource is available.

Frequencies of accessibility services and resources listed on websites broken down by university size is displayed in Table 2. Values represent the percentage of whether the service/resource is available within the sub-sample or total sample (i.e., small universities, large universities, and all universities).

In almost all instances, larger universities list more services and available resources. The exceptions are having clinical assessments available (4% versus 5% for large and small universities, respectively), and availability of note takers (67% versus 68% for large and small universities, respectively). There is considerable variability between small and large universities for some services and resources. The largest difference between small and large universities was for transportation, with a 43% difference (20% for small versus 63% for large universities). The next largest difference was for exam accommodations with a 35% difference (58% for small versus 93% for large). These differences might reflect that larger universities have more resources available. Regardless, generally speaking, larger universities are providing more information about relevant services and resources available to their students.

The service listed most often was providing an online appointment system, with 97% of universities mentioning it. With roughly half of university students not having any guidance on who to contact in order to obtain accommodations when leaving high school and entering university (Cawthon & Cole, 2010), having an easy to find appointment system is likely crucial. Providing voice recorded lectures was the next most commonly mentioned (93%), which we speculate is because of the ease in providing such a service. The majority of services and resources listed fall within 63% to 77%: exam accommodations (77%), alternative formats (76%), funding (72%), counselling (71%), note taking (67%), and policy availability (63%). Although the majority of universities list these services and resources, there is still room for

improvement. On the other end, services and resources mentioned by the minority of universities were the availability of a clinical assessment (5%), non-medical accommodations (14%), a complaint system (28%), and captioning and ASL (43%). We expand on the first three in the discussion section, but captioning is beneficial for the majority of students, not just those with hearing difficulties (Linder, 2016), yet information on its availability is mostly lacking. In sum, some services and resources are quite common, while others are not.

Lastly, whether medical documentation was required for accommodations was quite high, with 90% of small universities listing that they required medical documentation and 98% requiring it at larger ones (94% total). Universities seem to be using medical documents to assess whether accommodations are warranted, which might be introducing barriers for some. We expand on this issue more fully in the discussion.

Accessibility of Websites

Table 3. Descriptive statistics of WAVE values of websites

	Small universities ($n = 40$)	Large universities ($n = 46$)	All universities ($N = 86$)	Companies ($N = 40$)	Canadian Government
Errors	19.18 (21.26)	11.00 (12.27)	14.80 (17.43)	10.38 (11.33)	0
Alerts	56.70 (142.11)	27.43 (55.65)	41.05 (105.46)	63.07 (125.44)	2
ARIA	118.27 (203.01)	133.74 (242.98)	126.55 (224.11)	261.95 (240.77)	966

Note. The table displays the number of errors, alerts, and ARIA elements that the WAVE tool found for universities (i.e., small, large, and all), companies, and the Canadian government. Values represent *Mean* with *SD* in brackets, except for Canadian Government values which are based on its values alone.

Descriptive statistics of website accessibility are provided in Table 3, which are broken down by the size of university, as well as the two comparisons (i.e., companies and the Canadian Government). All values represent scores on the accessibility websites themselves (i.e., the main accessibility website of a university), or in the case of the comparison groups, their main home page.

The mean values of errors are higher among accessibility websites at Canadian universities than the websites of companies, and substantially higher compared to the Canadian Government website. Errors represent an aspect that is not accessible, such as missing alternative text, so the presence of any errors at all is troubling as it suggests the websites are not accessible to some users, and there are more errors on university websites designed for those with accessibility concerns. In addition, ARIA elements are substantially lower among universities than companies, and even lower compared to the Canadian Government website. ARIA is specifically designed to communicate with assisted technology in order to make websites accessible, with values representing the number of ARIA elements present on the websites, so it appears like universities are not utilizing ARIA to the same extent as Canadian companies or the Canadian Government. In fact, the Canadian Government had over 800 *more* ARIA elements present than the average of all Canadian universities, so there is a wide gap in its use. This has the potential to decrease the functionality of websites for users who rely on ARIA to navigate websites. In terms of alerts, which might indicate more refinement is necessary rather than a serious issue, companies were worse than both small and large universities, but universities and companies had substantially more alerts than the Canadian Government website. Amongst universities, once again it was small universities that were worse off. In short, accessibility

websites at Canadian universities are falling short of having their websites as accessible as they could be, which is particularly true for small universities.

Discussion

The aim of the research was to assess a) the accessibility services and resources listed on accessibility websites of Canadian universities, and b) the accessibility of the websites themselves. For the first aim, we found that larger universities generally list more services and resources than smaller universities, but there is considerable variation. Some services and resources are widely listed, such as voice recorded lectures and the ability to make online appointments, where most universities both large and small explicitly state they provide them. On the other hand, very few universities of any size specifically mentioned whether clinical assessments or non-medical accommodations (which includes things such as services reserved for minorities facing hardship) were available. It is not clear whether these are not provided, not listed, or assumed under another category and potentially listed elsewhere. Regardless, the majority do not mention these relevant services and resources on their accessibility websites.

Of note is the high reliance on medical documentation. Among both small and large universities, 94% listed medical documentation requirements on their websites. This is consistent with the medicalization of disabilities (Saltes, 2020), where what is normal is someone without accessibility issues. Relying on medical documentation might also increase barriers for some students. For example, international students and others might not have easy access to medical professionals. Similarly, very few universities listed non-medical accommodations, which further suggests a medicalization of accessibility services. Considering that there was also a very low percentage of universities with clinical assessment information available (i.e., 5% across all

universities), it seems likely that the medicalization of disabilities can be a considerable barrier for some. However, universities also need to balance the fair allocation of resources with the increased number of students seeking accommodations. Medical documentation provides a seemingly reliable way of ensuring someone is entitled to accommodations, which might be why they are widely used—though they can be subject to falsification. Prominent examples occurred during the college admissions scandal in 2019, where students without disabilities obtained unwarranted medical documentation and subsequently received accommodations (Lombardo, 2019). Unfortunately, such examples might be reinforcing the view that those requesting accommodations because of their disabilities are faking it (Macfarlane, 2021; Nieminen & Eaton, 2023). Sometimes called the *disability con*, the extent to which students are faking disabilities is not clear, but it is likely occurring to some extent in Canadian universities, and there can be a fear of being accused of conning the system or gaining an unfair advantage among those requesting accommodations, which has led some to not seek otherwise warranted accommodations (Nieminen & Eaton, 2023; Pfeifer et al., 2021). Balancing academic integrity concerns with providing fair accommodations with increased demand is challenging, and Canadian universities seem to be relying on medical documentation to meet the challenge. There are clearly barriers in obtaining medical documentation for some, means of obtaining them illicitly, and also a need for universities to provide fair accommodations to a growing student population in need of them. This is a complicated situation that universities and other areas (e.g., workplace) are facing, with large differences in opinion on how to address it. Some have suggested eliminating medical documentation entirely and simply relying on people saying what accommodations they require (Macfarlane, 2021), while others have suggested eliminating accommodations entirely (Pardy, 2016).

A difference with previous research emerged. Providing counselling services was relatively high at 71% overall, but this value is somewhat lower than previous research on Canadian universities which had values at or near 100% depending on the sample (Read et al., 2023). This difference might have emerged because these services often have their own dedicated websites. Nonetheless, counselling services are often relied on by those with disabilities, so information about their availability is arguably relevant.

Only 28% of universities (most of them large) had information about a complaint system, which might be a concern when issues arise. An older study of Canadian students found that 9% took action (e.g., got a lawyer) when their accommodations were not applied to their satisfaction (Hill, 1996). It is likely reasonable to assume that this is an underrepresentation of valid complaints at the time, as students might feel dissuaded from complaining for various reasons (e.g., worry about repercussions, not wanting to cause issues, embarrassment, not knowing whom to lodge a complaint to, etc.). Indeed, the same sample reported that 12% of faculty were unwilling to make accessibility accommodations in general. However, this value masks the much higher values for certain accessibility concerns, such as 65% of students with disabilities reporting that faculty are unwilling to give an alternative form of an exam, nearly 60% being unwilling to allow a proctor to rephrase questions for clarity, and more than half unwilling to provide copies of lecture notes. An American study found that some instructors blatantly discourage accommodations, and although some students reported such incidents, others did not (Pfeifer et al., 2021). More recently, the COVID-19 pandemic likely had a significant effect on students with disabilities. One qualitative study found that receiving accommodations was easier before the pandemic shifted classes online, which included delays in the university informing instructors of their accommodations and generally poor communication between students and

instructors about their accommodations (Kourea et al., 2021). With such perceptions of a lack of accessibility, a need for an easy-to-use complaint system is arguably necessary, but information about such systems is lacking in most cases.

Information generally seems to be updated on the accessibility websites, as the most common updating pattern is for universities to update their websites within a year. Roughly 1 in 6 updated them within a month. That said, 5% of websites were not updated regularly (i.e., over a year since last update), and 37% did not provide information on frequency of updates. Updates can happen for a variety of reasons, but regular updates suggest the university is actively engaged with the content. The importance of updating was noted by Muhammad and colleagues (2021), as such updates ensure that websites continue to provide up-to-date information that students need. This is important given that needs can sometimes shift rapidly (e.g., COVID-19 response), but it can also act as a check that content is still fit for purpose.

In terms of the second aim of the research, the accessibility services websites of Canadian universities are not overly accessible overall. This is problematic given that those with accessibility issues are highly likely to be visiting these websites. In fact, they are the target audience. That said, there was variation among universities with some doing rather well in comparison. There were 10 universities that contained no accessibility errors at all, but the flip side is that the website with the most errors also came from a university with 93 errors. In comparison, the website with the highest number of errors in the comparison sample was 43 (which was the same value for two companies), and the Canadian Government website had none. These results build on research that assessed online courses with WAVE (Massengale & Vasquez, 2016). They found that there were several types of errors and alerts present within the courses' online learning environment that students rely on to complete their courses. Together with the

current research, this suggests that website accessibility concerns are not limited to accessing course content in online studies, but also in accessing information about accessibility services designed for the users that rely on them. In other words, the problem is likely to be widespread.

In terms of ARIA elements, 6 universities had none, while only one website from the control group contained no ARIA elements. The next lowest value among the control group was 18, while 33% of universities had a value under 18. The Canadian Government had 966. It appears that several Canadian universities are not utilizing existing technology to aid their students in navigating their accessibility websites, which has the potential to put these students at a disadvantage in terms of navigating these websites and requesting (and accessing) their services. If the Canadian Government website is the standard, then almost all universities (and companies for that matter) are behind. However, different website structures may affect these figures somewhat.

The lack of accessibility to these websites is likely to cause issues for affected users. If users cannot access the websites effectively, they might not be able to view or request accessibility services (Muhammad et al., 2021). To put it in context, although almost all universities provided online booking, many of their websites are not accessible to some of the users they are designed to help, so they might not be able to use the online booking systems. This might lead them to withdraw or rely on others to navigate the website on their behalf, which places an extra burden on themselves and others. In addition, unexpected stressors can make access more difficult for those with disabilities. Soria and colleagues (2020) found that students with disabilities were at a disadvantage compared to those without disabilities when the COVID-19 pandemic hit, which included an increase in spending on learning technology (e.g., software and hardware).

There are some limitations to the present work worth discussing. First, the values represent whether services were listed on websites, so in some cases, the services might exist despite not being mentioned on their websites. This means it is not always clear what services are offered. Nonetheless, that is part of the point, as students generally learn about the university from such resources. Not having clearly presented information might be enough to discourage students from using services (even if they are provided) if they can't find information about them.

Additionally, these values should be looked at as a snapshot in time, as websites can be updated regularly. Indeed, many of the values are somewhat different from an earlier pilot study—though largely similar. Consequently, there is a need for more long-term assessment of these websites to see how accessibility might change over time.

If roughly 1 in 5 people have a disability, the sample we collected could represent over 303,000 students with disabilities. Higher education in Canada might currently be falling short for these students both in terms of services and information provided online, but also in terms of having their websites accessible themselves. Larger universities tend to do a better job than smaller ones, but variation is widespread. There is a need for consistent information presented across Canadian universities in an accessible way. A need that most universities currently fail to meet.

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Appendix

Lists of Companies and Universities used in the Sample

Table A1. List of universities, student population, and province in the sample

Universities	Student population	Province
Alberta University of the Arts	1232	AB
University of Lethbridge	8263	AB
Mount Royal University	15235	AB
MacEwan University	18227	AB
University of Calgary	34000	AB
Athabasca University	39429	AB
University of Alberta	42535	AB
Emily Carr University of Art + Design	2950	BC
University of Northern British Columbia	3656	BC
Royal Roads University	5000	BC
University of British Columbia Okanagan	11989	BC
Capilano University	12700	BC
University of the Fraser Valley	14661	BC
Vancouver Island University	18000	BC
Kwantlen Polytechnic University	20000	BC
University of Victoria	22020	BC
Thompson Rivers University	26316	BC

Simon Fraser University	37335	BC
University of British Columbia	64763	BC
Université de Saint-Boniface	1500	MB
University College of the North	2400	MB
Brandon University	3468	MB
University of Winnipeg	8945	MB
University of Manitoba	30783	MB
St.Thomas University	1800	NB
Mount Allison University	2334	NB
Université de Moncton	5498	NB
University of New Brunswick	10000	NB
Marine Institute, Memorial University of Newfoundland	1112	NL
Memorial University of Newfoundland	19010	NL
Université Sainte-Anne	540	NS
Nova Scotia College of Art and Design University	984	NS
University of King's College	1000	NS
Acadia University	3574	NS
Mount Saint Vincent University	4982	NS
Saint Francis Xavier University	5000	NS
Saint Mary's University	6898	NS
Cape Breton University	7759	NS
Dalhousie University	21000	NS
Université de l'Ontario Français	200	ON

NOSM University	476	ON
Saint Paul University	1255	ON
Dominican University College	3200	ON
King's University College	3300	ON
Nipissing University	3500	ON
Ontario College of Art and Design University	4058	ON
Algoma University	5000	ON
Laurentian University	8000	ON
Lakehead University	9173	ON
Ontario Tech University	11000	ON
Trent University	11561	ON
University of Windsor	16321	ON
Brock University	19000	ON
Wilfrid Laurier University Waterloo Campus	19400	ON
University of Ottawa	25717	ON
Queen's University at Kingston	29349	ON
University of Guelph	29774	ON
Carleton University	30678	ON
McMaster University	34856	ON
Western University	38616	ON
Toronto Metropolitan University	39624	ON
University of Waterloo	42000	ON
Charles Sturt University	43679	ON

York University	54722	ON
University of Toronto	82459	ON
University of Prince Edward Island	5533	PE
Institut national de la recherche scientifique	1500	QC
Université du Québec à Rimouski	2679	QC
Bishop's University	2808	QC
École nationale d'administration publique	3000	QC
Université du Québec en Abitibi-Témiscamingue	5200	QC
Université du Québec en Outaouais	6360	QC
Université du Québec à Chicoutimi	6500	QC
Polytechnique Montréal	10000	QC
Université du Québec à Trois-Rivières	15200	QC
Télé-université (Téluq)	18000	QC
Université du Québec à Montréal	35212	QC
McGill University	39513	QC
Université de Sherbrooke	39604	QC
Concordia University	47702	QC
Laval University	51500	QC
Université de Montréal	66972	QC
Saskatchewan Polytechnic	13502	SK
Universitty of Regina	16000	SK
University of Saskatchewan	26078	SK
Yukon University	1285	YT

Note. The table lists all universities in the sample, their student population, and what province they are from. Various campuses of universities that are part of the same university system (e.g., Université du Québec) were included when their accessibility websites were different from each other.

Table A2. List of comparison sample

Aldo

Amazon

Apple

Aritzia

Banana Republic

Bentley Luggage

Bestbuy

Bombardier

Booster Juice

Burger King

Canada Post

Canadian Government

Canadian Tire

CIBC

Coca-cola

Colgate

Days Inn hotels

Dollorama

Enbridge

Fortis

GameStop

General Motors

H&M

HP

Husky gas

IMB

Mastercard

McDonalds

Microsoft

Nike

Petro-Canada

Rogers Communication

Royal Bank of Canada

Safeway

Sheraton hotels

Sport Check

Starbucks

Tesla

Volkswagen

Wendy's

Note. The table lists all companies used in the comparison group.