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Issues and Opinions

A review of the accessibility of ACT COVID-19 information portals



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ABSTRACT

Accessibility of public health websites allows important information to reach as many audiences as possible. This is vital during a public health crisis such as the current COVID-19 pandemic. This paper reviews public health information portals provided by the Australian Capital Territory local government against the Web Content Accessibility Guidelines.

1. Introduction

During the ongoing COVID-19 pandemic, technology has played a vital role in allowing governments and health agencies to communicate with the public. Many websites have sprung up to track the impact of the disease and to disseminate containment strategies. The websites also serve to keep the general public informed of a constantly evolving set of lockdown conditions and restrictions. These websites are published by governments (e.g. the Australian Department of Health [1]), international non-government organisations (e.g. the World Health Organisation [2]) and medical centres (e.g. Johns Hopkins University of Medicine [3]).

To ensure the effectiveness of internet-based communication, barriers to accessibility must be removed. This allows these websites to serve those who rely on assistive technologies (such as screen readers or captioning services) to use the internet. In some cases, designing for accessibility is a legal obligation - Australian Federal government agencies are subject to the Digital Services Standard [4]. Other countries (including the USA [5] and Malaysia [6]) have similar requirements.

The World Wide Web Consortium has assembled a standard for accessible website design called the Web Content Accessibility Guidelines (WCAG) [7]. These guidelines aim to provide "a single shared standard for web content accessibility ... [by explaining] how to make web content more accessible to people with disabilities." [8]. The suggestions in the standard are categorised into three levels: level A (the basics), level AA (intermediate) and level AAA (the most rigorous).

This paper evaluates two local government COVID-19 websites against the WCAG standard. The websites are maintained by the local government of the Australian Capital Territory (ACT). The first case of COVID-19 in the ACT was confirmed on the March 12, 2020 and the

second case three days later [9,10]. The ACT Government then declared a public health emergency on the 16th of March [11]. In the early stages of the outbreak, information was provided through the main website of ACT Health (<https://health.act.gov.au>). In late March, the information was shifted to a dedicated COVID-19 information portal (<https://covid19.act.gov.au>). This dedicated portal contains information on topics including:

- current status of COVID-19 cases within the territory;
- how and when to get tested for COVID-19;
- whether schools and child care facilities are open;
- welfare options such as emergency food relief, tax relief and rent relief;
- the current restrictions affecting businesses in different industries.

2. Background

2.1. Related work

Several previous studies have used the Wave tool to perform automated analysis of public websites, including university websites in Malaysia [6] and Nigeria [12], and e-government sites across South America [13]. Other studies have looked at the dissemination of information during the COVID-19 pandemic. Studies have characterised the degree to which different media channels are used to consume information [14], as well as the different types of information that are in demand [15].

In this paper, both concepts are combined to study the accessibility of portals for the dissemination of COVID-19 information.

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2.2. Website accessibility

It is important that official websites are accessible for all, including people who have limited movement, photosensitivity, or cognitive/intellectual disabilities. Technologies such as screen readers exist to assist these users. However, these tools require appropriately structured websites with adequate metadata to allow construction of a detailed internal representation of the website. Using this representation, accessibility tools can then convey the website to the end-user via speech, braille or another medium.

One common metadata required is the *alt text* HTML tag. Consider a simple example where a website displays a picture of a house. A basic implementation of the website would contain code to include the image: ``. A typical user would see a picture of a house while a user with a screen reader would only be told there is an image here. An accessible implementation would extend the code slightly by including metadata: ``. The typical user would not see any difference with the extended code. However, a screen reader can provide an aural picture by saying *there is an image here: a large red-brick house*.

2.3. Target population

The two key COVID-19 websites examined in this paper are aimed at informing the population of the ACT. The ACT is a local government region within Australia, with a legislative assembly of 25 seats [16]. Responsibility for national health emergencies (such as COVID-19) is shared between the Australian Federal Government (also substantially based in the ACT) and the legislative assembly [17].

The ACT has a population of 427,400 in December 2019, which is 1.67% of Australia's total population [18]. The most recent Australian census (conducted in 2016) gives the following characteristics of the ACT population at the time [19]:

- 68% were between 15 and 65 years old;
- 26% were attending university or another tertiary education institution;
- 37.1% held at least a bachelor degree;
- 32% were born outside Australia;
- 24.2% speak a language other than English at home.

These figures paint the picture of a population that is well-educated, familiar with consuming information through online sources, and of a variety of cultural and linguistic backgrounds.

3. Method

Historical snapshots of the two websites were retrieved from the Internet Archive (<https://archive.org/web/>) and analysed by the *Wave Evaluation Tool*, a Firefox browser plugin produced by the non-profit group WebAIM (<https://wave.webaim.org/>).

The results were gathered using version 3.0.8 of the tool running in Firefox version 68.0.2esr. The snapshots chosen are summarised in Table 1.

Table 1
Characteristics of sites evaluated for accessibility.

Tag	Site	Snapshot	Reason
Health_1	https://health.act.gov.au	2020-03-16 21:44:46	Date of public health emergency declaration
Health_2	https://health.act.gov.au	2020-03-24 09:01:22	Just prior to switchover to dedicated site
COVID_1	https://covid19.act.gov.au	2020-03-30 23:19:45	First snapshot of dedicated site
COVID_2	https://covid19.act.gov.au	2020-06-21 16:23:19	Present state of dedicated site

4. Results

Analysis of the two sites detected violations of nine different WCAG guidelines, reported in Table 2. It is noted that some problems identified by the *Wave* tool are single issues that breach multiple guidelines – for example, a text input box with no label to indicate its purpose would breach rules 1.1.1, 1.3.1, 2.4.6 and 3.3.2.

Table 3 tracks the evolution of the dedicated COVID-19 portal over time, through analysis of snapshots captured by the Internet Archive.

In order to provide a broader context for these results, the *Wave* tool was used to analyse a range of Australian information portals maintained by government and commercial news sources, described in Tables 4–6.

In addition, Table 7 provides a comparison of other COVID-19 websites.

Table 2
Accessibility guidelines violated by the evaluated websites.

WCAG Reference		Number of violations			
Rule ID	Rule	Health_1	Health_2	COVID_1	COVID_2
1.1.1	All non-text content must have a text alternative, such as <i>alt text</i> (Level A)	1	1	2	10
1.3.1	Any visual effect used to indicate meaning (e.g. indentation) must have metadata to convey that meaning to accessibility tools (Level A)	2	2	1	1
1.4.3	Meaningful text must have a sufficiently high contrast with the background (Level AA)	11	12	6	3
2.1.1	The website must be navigable using only a keyboard (Level A)	0	0	1	1
2.4.1	It must be possible to bypass blocks of repeated text (Level A)	1	1	1	1
2.4.2	Every page must have a descriptive title (Level A)	1	1	1	1
2.4.4	A link's text must describe what it links to (Level AA)	137	138	10	11
2.4.6	Headings and labels must be descriptive (Level AA)	2	2	1	1
3.3.2	Any field that accepts user input must have a label to describe its purpose (Level A)	1	1	1	1

Table 3
Error counts (reported by Wave) over time for the site <https://www.covid19.act.gov.au>

Data Source	Snapshot date	Error count
[T3.1]	31 Mar 2020	11
[T3.2]	24 Apr 2020	16
[T3.3]	24 May 2020	12
[T3.4]	29 Jun 2020	12
[T3.5]	06 Jul 2020	13
[T3.6]	09 Jul 2020	13
[T3.7]	17 Jul 2020	12
[T3.8]	10 Aug 2020	12
[T3.9]	10 Sep 2020	12
[T3.10]	17 Oct 2020	12

Table 4
Wave-detected error counts for ACT government websites.

Website	Data Source	Entity	Errors
covid19.act.gov.au	[T3.10]	COVID-19 portal	12
www.act.gov.au	[T4.1]	ACT government homepage	13
www.cityservices.act.gov.au	[T4.2]	City Services	8
www.transport.act.gov.au	[T4.3]	Transport Canberra	6
www.accesscanberra.act.gov.au	[T4.4]	Access Canberra	2

Table 5
Wave-detected error counts for Australian Federal Government websites.

Website	Data Source	Entity	Errors
ndis.gov.au	[T5.1]	National Disability Insurance Scheme	2
dss.gov.au	[T5.2]	Department of Social Services	2
defence.gov.au	[T5.3]	Australian Defence Department	2
oaic.gov.au	[T5.4]	Office of the Australian Information Commissioner	5
abs.gov.au	[T5.5]	Australian Bureau of Statistics	6
ato.gov.au	[T5.6]	Australian Tax Office	123

Table 6
Wave-detected error counts for Australian commercial news outlets.

Website	Data Source	Entity	Errors
abc.net.au	[T6.1]	Australian Broadcasting Corporation	1
smh.com.au	[T6.2]	Sydney Morning Herald	15
theguardian.com/au	[T6.3]	The Guardian Australia	71
sbs.com.au	[T6.4]	Special Broadcasting Service	107
the-riotact.com	[T6.5]	The Riot Act	232

Table 7
Wave-detected error counts for other COVID-19 portals.

Website	Data source	Errors
coronavirus.jhu.edu/	[T7.1]	8
https://www.worldometers.info/coronavirus/	[T7.2]	377
www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert	[T7.3]	34
https://www.gov.uk/coronavirus	[T7.4]	5
https://www.gouvernement.fr/en/coronavirus-covid-19	[T7.5]	11

Note: The WHO site was not included as Wave was not able to analyse it.

5. Discussion

To begin with, it must be noted that the use of an automated tool like Wave will not present a picture as comprehensive as an expert report by an experienced human analyst. However, the tool can be used for comparative purposes to understand the evolution of a site over time, or how a site stacks up against other sites.

The detailed analysis in Table 2 shows how many WCAG guidelines were violated by the two different ACT Government health sites. Most of the issues in the original site remained unchanged when moving to the dedicated portal. However, there was a significant improvement in meeting rule 2.4.4. There was also a 75% reduction in violation of rule 1.4.3.

Table 3 shows the evolution of the COVID-19 portal over time, in terms of the number of reported accessibility errors. This remains fairly constant over a period of six months, which suggests the errors are not transient by-products of a compressed development schedule. The site's maintainers may be unaware of the errors, do not assign them much

importance, or it is also possible that the errors arise from structural problems in the framework or tooling employed.

The data in Table 4 through 7 can be used to examine the accessibility of the ACT COVID-19 portal relative to other websites serving a similar role. The first comparison (based on Table 4) is to place the COVID-19 portal in the context of other ACT government information portals. The COVID-19 portal has an error rate not dissimilar to those other sites.

The ACT government portals as a class exhibit more errors than websites of federal government agencies, as captured in Table 5 (excluding the ATO site as an outlier). This may show the influence of the Digital Services Standard (DSS), which mandates that federal government websites be accessible [4]. The DSS does not apply to local government websites [20].

Local government websites (and the COVID-19 portal in particular) compare favourably to the commercial news portals, as reported in Table 6. These sites had a wide range of error counts, but most of them exhibited an error rate far above government sites.

The ACT COVID-19 portal is also compared with other COVID-19 websites from around the world. The data from Table 7 shows that the ACT site is in the middle of this particular pack – better than some and worse than others.

Overall, there is still scope to improve the information technology of the government websites to disseminate COVID-19 related information. The accessibility of COVID-19 information plays a vital role for the health and safety of the public, in particular for policymakers and economists to provide further suggestions to the government and the community.

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