

My Anh Nguyen. University student health websites: navigating information during COVID-19 and the start of a new semester. A Master's Paper for the M.S. in I.S degree. November, 2020. 45 pages. Advisor: Amelia Gibson.

I conducted a content analysis of ten university student health websites, one of which was the University of North Carolina at Chapel Hill's (UNC) Campus Health website (<https://campushealth.unc.edu/>). All schools selected for this paper, including UNC, were from the top ten states with the highest number of total COVID-19 cases as of 12:15pm on August 13, 2020 according to the Centers for Disease Control and Prevention (CDC)'s COVID Data Tracker (CDC, 2020). These schools are flagship state universities, and I looked at how they organized COVID-19 information on their student health websites (information architecture). Based on the content analysis, there were a few suggestions for changes to the UNC Campus Health website and other university student health websites pertaining to this information.

Research questions focused on the following:

- (1) How do university student health websites organize their information about COVID-19 (information architecture)?
- (2) Is there a pattern these sites seem to follow in this information architecture regarding COVID-19?
- (3) Is the information architecture effective in finding the information needed?
- (4) Are there changes that could be made to increase the user experience and information behaviors of those seeking information?

Headings:

Content analysis

Information needs

User interfaces (Computer Systems)

Web design

UNIVERSITY STUDENT HEALTH WEBSITES: NAVIGATING INFORMATION DURING
COVID-19 AND THE START OF A NEW SEMESTER

by
My Anh Nguyen

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Approved by

Amelia Gibson

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Introduction

For students living through the COVID-19 pandemic, it has become increasingly important to have an organized and easy-to-navigate student health website. When I wrote a proposal for this paper back in February and March of 2020, I initially chose to do a content analysis and user testing of UNC's Campus Health website. However, in the weeks before submitting the proposal, the Campus Health website rolled out with a new user interface that replicated other UNC websites like Student Wellness and CAPS.

At the time, COVID-19 had just started but since then, COVID-19 rates have increased even just within the fall 2020 semester at universities (Harlan, 2020). Institutions across the United States (and the world) have been called upon to mount more robust responses and provide more organized information related to COVID-19 and health services. After much thought and guidance, this paper evolved into a content analysis focusing on university student health websites in the ten states with highest number of total COVID-19 cases as 12:15pm on August 13, 2020 according to the CDC's COVID Data Tracker (2020). The flagship state (public) university from each of those states is used as most have large residential programs and high numbers of on-campus students, and fulfill the public mission of educating the undergraduate and graduate students of their respective states. State colleges and universities also provide some form of healthcare to students.

The current research surrounding student health websites has varied from looking at the information provided to students on sexual health (Stanley et. al, 2019) to a lack of guidelines for these websites (Childs, 2004), but there does not appear to be any

pertaining to COVID-19 information on student health websites. Based on the content analysis, this paper includes suggestions for changes to the UNC Campus Health website and other university student health websites pertaining to this information.

Literature Review

Introduction

As there continues to be an increasing use of the Internet for information-seeking in general, there has also been an increase in people using the Internet to seek health-related information, which can range from provider information, general health information, contact information, directions to facilities, and more. Two benefits of doing so include convenience and anonymity (Hanauer et al., 2004). With all of that in mind, there appears to be a common theme in what people expect, or at least how researchers analyze, health websites. Randeree & Rao (2004) examined hospital and health systems' websites and focused on various web assurance strategies, including standards of authority, accuracy, privacy, timeliness, content verification, accessibility, and content-specificity. They proposed that for hospital and health systems, health information on their websites needs to be integrated into the operating practices of the organization since generally there is not health information to be found on the websites (Randeree & Rao, 2004). They only talked about hospital and health systems websites, but based on further findings in this literature review, the same findings can be applied to student health center (SHC) websites.

First, there will be an overview of health websites and the different populations and uses for them, with a focus on the general public, hospitals and health systems, and SHCs. Then, there will be a breakdown of content and analysis of these different health websites based on the different populations.

Health Websites

General Public

Consumer health websites for the general public can include information meant for parents and caretakers. Childs (2004) looked at parents and caregivers of children with rare diseases, as well as support group members and workers who might provide information to the former given the amount of use for health information-seeking needs. The type of information this population might search for is related to care-taking, the quality of which can be difficult to assess on the Internet. Furthermore, support group members and workers have information that is not necessarily shared on the Internet but rather in-person. In general, Childs (2004) noted that the type of information organizations might have on their websites include medical information, factual information, qualitative and descriptive, directory, contact information, and more.

Hospitals and Health Systems

Similar to what Childs (2004) observed, Ford et al. (2012) sought to understand hospitals and health systems specifically. They found that individuals will generally use the home page of a hospital or health system when looking for information about services and quality. Based on this finding, they emphasized the importance of the home page for marketing purposes. Furthermore, they cited that in 2011, more than 80% of adults reported using the Internet for making a health care decision but had difficulty understanding the information found.

Student Health Centers

There has been some research about SHC websites and the information they provide. The studies found in this literature review focused on different topics, such as

sexual assault information (Lund & Thomas, 2015), mental health information and resources (Laws & Fiedler, 2013), HPV and HPV vaccine information (Stanley et al., 2019), information about providers (Perrault, 2018), preconception health information (Baron et al., 2015), and women's health services information (Judson et al., 2010). However, none focused on the general information architecture of these SHC websites. In general, there does not appear to be a set of guidelines by the American College Health Association (ACHA) for how SHC websites should be structured and/or what information should or should not be included and to what degree. Findings from these studies are discussed in the following section.

Content Analysis and Usability of Health Websites

General Public

Childs (2004) implemented the Judge Project, which looked into setting health website quality assessment guidelines by conducting research through focus groups and questionnaires. The researcher sought to understand how to appropriately provide health information, as the problems surrounding it include difficulty in assessing the quality of information. Based on a literature review of health information quality assessment on the Internet and conducting research with a health consumer group of parents/carers of children with rare diseases and support group members/workers, the researcher was able to create a set of guidelines that reflected the requirements set by the health consumer group. What Childs (2004) found as benchmarks for a quality health website correlated with Randeree & Rao (2004) set of Web assurance strategies.

The perceived quality of websites varied from person-to-person, as individuals sought information unique to their specific circumstance. Furthermore, the researcher found that information was often found by trial and error and followed different stages of information seeking behavior. While it was difficult for the health consumer group to validate the information they found, some ways they did checks were by looking for areas of agreements between sites, site recommendations, information sources on the sites, and contacting researchers directly (Childs, 2004). The researcher discovered that there needed to be guidance for different groups, with the first being for individuals who needed help with searching skills and judging information quality. The researcher also suggested that there be guidance for site developers when putting together a website for its health information and organization.

Based on findings, Childs (2004) set some standards of quality criteria that included the following: date (meaning, websites should be updated regularly); trust (this depends on the individual); agenda of a site (sponsorship or funding); unbiased, balanced information; factual information; simply written, easy to understand (no medical jargon); no sloppy writing; accessible and navigable; and links to other websites (with websites including disclaimers). Given all of these criteria, Childs (2004) suggested focusing on privacy, usability, accessibility, date, and details of the organization and any sponsors.

Hospitals and Health Systems

Like Childs (2004), Ford et al. (2012) found that accessibility and content were two major factors in assessing hospital and health systems' websites. Ford et al. (2012) also considered marketing and technology aspects of these websites in their research based on the Health Information Technology Institute's criteria for health websites. The

breakdown for each factor is as follows: accessibility – design and caveats; content – credibility and content itself; marketing – disclosure, design, and interactivity; technology – links, interactivity, and caveats. Ford et al. (2012) wanted to understand how much health system and facility websites lined up with the criteria set by the Health Information Technology Institute. Their findings found that on average, these websites had significant room for improvement, with one such concern being reading comprehension level. The researchers mentioned that reading level on these websites should be around 8th to 11th grade reading level, but in reality, they were higher than this recommendation. Baron et al. (2015) also focused on the importance of reading level, which will be discussed further in the next section.

Student Health Centers

In studies related to SHC websites – and in the studies mentioned previously – information quality was an important factor when studying these websites. Tao et al. (2017) broke down information quality into five parts: completeness, understandability, relevance, depth, and accuracy. Similarly, Stanley et al. (2019) focused on credibility and completeness and found that those two factors played a factor into how students perceived their university or college's SHC website, although in general, they found that college students considered SHCs to be credible.

With all of these factors in mind, several researchers looked into the accessibility aspect of SHC websites. Stanley et al. (2019) analyzed SHC websites on two levels, the first being if there was an explicitly labeled area for sexual health, and the second being if there wasn't, was sexual health mentioned elsewhere on the SHC website. Out of the 400 randomly selected US college/university SHC websites, only 9% had a tab or menu

specifically for sexual health, and out of the remaining, 80.2% only mentioned sexual health and did not provide other information or resources on the website. Furthermore, there was inconsistency in information across institution type (Stanley et al., 2019). Judson et al. (2010) focused on health information for women. Like Stanley et al. (2019), the researchers found inconsistency in health information on SHC websites for this particular topic. Out of all the California State University websites they looked at, 93.1% of them did not list all essential women's health services on their list that was provided in-person. This ties back to Childs (2004), who had mentioned date being an important factor in quality of health information. While in Judson et al. (2010), this did not have to do with health information, it is still important to consider keeping various other information up-to-date on a SHC website.

Perrault (2018) also found inconsistencies on SHC websites in terms of the button or tab name to access information about providers. Names included: staff, providers, contact us, about us, meet the doctors/physicians, our team, directory, find a clinician/meet a clinician, our services. Taking into consideration the factors Tao et al. (2017) accounted for in information quality, Perrault (2018) found a lack of completeness and clarity in the information about providers. For example, SHC websites did not provide an explanation as to which credentials meant what, such as PA, NP, APRN, and CRNP. They found that this was a deterrent for students if they didn't know the differences, and many students would default to wanting to only see a physician. I found that this was, in a way, related to reading comprehension level as previously mentioned in this literature review. Keeping all of these things in mind, one recommendation the

researcher had for future research was to assess how and what improvements could be made to SHC websites to increase students' willingness to go there for care.

With Perrault's (2018) study, there also comes into play the information architecture of a website. Lund & Thomas (2015) researched the availability, location, and content of sexual assault information found on college and university websites, and they found that for the 102 websites they looked at, there was an overall lack of centrality for sexual assault information. Meaning, the information was located in two or more places, which they cited as a barrier to efficiently locating this particular information. They suggested centralizing the information so as to make searches more efficient. However, the issue of depth (again, one of the factors Tao et al. (2017) mentioned), was prevalent in this particular study, as the researchers found there was a lack of information surrounding sexual assault, such as the definition of consent, implications of drug and alcohol intoxication for consent, date and acquaintance rape, and symptoms of date rape drugs (Lund & Thomas, 2015). Overall, there appears to be several issues with SHC websites with accessibility, navigation, content, accuracy, and more, which offers an opportunity to do more research on SHC websites in general. All of this research shows that there has been work and interest in health information seeking behaviors and information provided, and it is worth exploring both to continue the work that has been done to try to improve the situation, especially with SHC websites and in particular, information related to COVID-19.

Research Questions and Hypotheses

The purpose of my research is to see how various university student health websites structure their information architecture on COVID-19 and if there is a way to make information more accessible, if needed. Based on my literature review, I found that any studies related to SHC websites were focused on one particular aspect such as women's health (Judson et. al, 2010), sexual health information (Stanley et. al, 2019), mental health information (Laws & Fiedler, 2013), or sexual assault information (Lund & Thomas, 2015), but none looked at them through the lens of information architecture and COVID-19 considering the pandemic started in 2020. I incorporated factors that each of those studies used in assessing websites, such as accessibility, content, date, and more, ultimately focusing on the user experience.

Research questions focused on the following:

- (1) How do university student health websites organize their information about COVID-19 (information architecture)?
- (2) Is there a pattern these sites seem to follow in this information architecture regarding COVID-19?
- (3) Is the information architecture effective in finding the information needed?
- (4) Are there changes that could be made to increase the user experience and information behaviors of those seeking information?

Methods

This study used an explanatory sequential mixed methods design (SAGE, 2019) to examine student health websites from ten flagship state universities for how they chose to organize their information about COVID-19 to their students and how it compared to those of other schools in this dataset.

Positionality / Researcher Role

My role in this research project was lead PI to conduct both the quantitative and the qualitative research. I am a graduate student at UNC and a UX designer interested in the health field. My motivation to undertake this project was to keep within the scope of user experience and to do something related to health that I've dealt with. In this case, this was UNC's Campus Health website.

Sample

The sample data includes 289 screenshots of student health websites and COVID-19 websites from ten flagship state universities – one in each state – from the list of top ten states with total COVID-19 cases as of 12:15pm on August 13, 2020 from the CDC's COVID Data Tracker (stratified sampling). The screenshots were taken from both the student health website and the COVID-19 website of each school to see if information that was missing on the student health website could be found on the COVID-19 website. All screenshots were taken starting at 5pm on August 23, 2020 until August 24, 2020 at

2am to ensure all screenshots were taken in the same time period. While this specific timeframe suggests these universities could have had certain motivation to plan, it does not mean they had to do so.

Limitations / Delimitations

I did not look at hospital websites, which generally focus on research. Rather, I focused specifically on flagship state universities to serve as a middle ground between community colleges and private elite universities due to on-campus student population (or rather, usually) and residential programs that would require students to reach out to their SHCs for health concerns.

All of the data I used came from publicly available sources. By selecting the list of schools from the CDC's COVID Data Tracker (2020) at a specific date and time (12:15pm on August 13, 2020) and then taking screenshots within the same time period from August 23-24, 2020, I increased validity and reproducibility. As I did the content analysis, I constantly compared between SHC websites as I analyzed a new website. I kept notes in OneNote, a bullet journal, and my Miro whiteboard.

The screenshots were taken at the beginning of a university's semester or prior, and some SHC websites had undergone changes since then that could have very well encompassed my suggestions. While the sample demonstrates some level of representation of states with high number of total COVID-19 cases as of a specific date and time, it is nonrandomized, and so the data is not intended to be a statistically representative national sample. Furthermore, this content analysis was not meant to comment on these universities' coronavirus response as a whole. SHC websites are one

part of more complex health communication strategies, which might include emails, apps, separate COVID-19 websites, and more that I was not privy to as a non-student. As a UNC student, I was privy to this information but did not take it into consideration when analyzing UNC's SHC website.

One of the limitations with this type of sampling was that on the Data Tracker, it lists states/territories, and New York City was listed separately from New York, yet both were in the top ten states/territories. As a result, I had to pull in the 11th highest state/territory to account for a separate state. Furthermore, the State University of New York (SUNY) system does not recognize an official flagship state university but does informally have two unofficial flagships: the University at Buffalo and Stony Brook University. I chose the University at Buffalo at random.

The top ten states/territories and their respective flagship state universities are:

- 1) California – University of California, Berkeley (UC Berkeley)
- 2) Florida – University of Florida (UF)
- 3) Texas – University of Texas at Austin (UT Austin)
- 4) New York City
- 5) Georgia – University of Georgia
- 6) Illinois – University of Illinois at Urbana-Champaign (UIUC)
- 7) New York – University at Buffalo
- 8) Arizona – University of Arizona
- 9) New Jersey – Rutgers University (Rutgers)
- 10) North Carolina – University of North Carolina at Chapel Hill
- 11) Louisiana – Louisiana State University (LSU)

Data Collection Methods

I collected data on August 23, 2020 and August 24, 2020 using FireShot, a Google Chrome extension. I took a screenshot of each page of a university's student health website and its COVID-19 website and used the stored website data as the basis for all analysis. I used F1000 Workspace to organize articles for my literature review, a bullet journal and OneNote to keep track of to-dos and to act as a sort of research journal for this paper, and Miro to whiteboard my findings.

Data Analysis Methods

I used Miro¹ to manually code data by research question. For each research question, I employed the following operational questions for site analysis:

1. How do university student health websites organize their information about COVID-19 (information architecture)?
 - a. What information is on the home page?
 - b. Where is information about appointments?
 - c. Is there a COVID-19 page? If so, what information is on it?
 - d. Is there a COVID-19 website?
2. Is there a pattern these sites seem to follow in this information architecture regarding COVID-19?
 - a. How is the navigation set up?

¹ <https://www.miro.com>

- b. Is there a button or link to COVID-19 information (page or website)?
- 3. Is the information architecture effective in finding the information needed?

By effective I meant can it answer the following questions:

- a. What are preventative actions [for COVID-19]?
 - b. What are symptoms [of COVID-19]?
 - c. How can I get tested [for COVID-19]?
 - d. When can I get tested [for COVID-19]?
 - e. Where can I get tested [for COVID-19]?
 - f. When do I get results back [for a COVID-19 test]?
 - g. How much does it [a COVID-19 test] cost?
 - h. What are the hours [of the student health center]?
 - i. What happens if I get tested positive [for COVID-19]?
 - j. What happens if I am in contact with someone who tested positive [for COVID-19]?
 - k. Is there a [COVID-19] dashboard? If so, where?
- 4. Are there changes that could be made to increase the user experience and information behaviors of those seeking information?

Each research question was assigned its own whiteboard, and each school had its own column, with one question per row. Below is a screenshot of coding for research question 3:

RQ3: Is the information architecture effective in finding the information needed?

Representative Actions?	What are symptoms?	How can I get tested?	When can I get tested?	Where can I get tested?	When do I get test results?	How much does it cost?	What are the hours?	What happens if I get tested positive?	What happens if I am in contact with someone who tests positive?	Dashboard?	Other?
UC Berkeley	Contains information on how wearing face masks, keeping your distance, types and effectiveness	Infographic on transmission possibility if face covering	On page	On page	COVID website	FAQs	No, but an infographic, as well as a video to watch. Also under FAQs	coronavirus, rugers.edu	Under FAQs	www.flou.edu/infographic	
University of Florida	Makes note of pattern for symptoms	None	On page, along with disease's information	On page	COVID website	FAQs	Under the Mainline information about it is also located in the site also under FAQs	coronavirus, rugers.edu	Under FAQs	www.flou.edu/infographic	
UT Austin	PCF Saliva taste for asymptomatic people	Unsure	On page, along with transmission information	No details on test type	Most of the information is in the COVID website but University full updates homepage information	Links to multiple sites for testing through the Erie County Department of Health	Use information that campus health offers PCF and have a link to a video in information about symptoms and answers	Guide coronavirus, rugers.edu	Requires appointment, so depends	www.flou.edu/infographic	
	Depends on eligibility criteria	Links to multiple sites for testing through the Erie County Department of Health	Says to schedule an appointment by calling one of two numbers between the hours of 8am to 5pm	Under the Monday Fall Update	Links to multiple sites for testing through the Erie County Department of Health	Unclear other than "call first procedure"	Focus are provided with the locations	coronavirus, rugers.edu	Requires appointment, so depends	www.flou.edu/infographic	
	Also links to COVID-19 testing site in California	Includes directions from several different areas	At UHS	COVID website	Links to multiple sites for testing through the Erie County Department of Health	Use information that campus health offers PCF and have a link to a video in information about symptoms and answers	Various local coronavirus, rugers.edu	Campus Health. Given instructions for which entrance to take	www.flou.edu/infographic		
	About 2-3 days later	At the time, several days to process. "We will update on this progress."	3-6 days depending on volume	COVID website	Links to multiple sites for testing through the Erie County Department of Health	There is a link to a video in information about symptoms and answers	coronavirus, rugers.edu	There are hours to call. Unsure about actual service hours	On home page		
	Under UHS updates (but don't need to get test)	On page, clearly listed that they will let you know for the cost of the test	Free for those who are asymptomatic	Free: COVID website	Free: Information is on the COVID website, which is linked from the COVID page	Home website banner	There are hours to call. Unsure about actual service hours	On home page			
	Has information if tested positive outside of UHS	Self quarantine for 14 days, outline what self quarantine means	On page	There's information	COVID website	Under Also an infographic	Home website banner	There are hours to call. Unsure about actual service hours	On home page		
	Part of the information criteria. No infographic linked to the testing information page	There is an infographic linked to the testing information page	There's information for both asymptomatic and not	COVID website	FAQs	No info	coronavirus, rugers.edu	Guidance in place	www.flou.edu/infographic		
	On COVID website	Yes	Yes but on separate site	Check	COVID website	Noticed a dashboard when checking on 10/14	Under COVID website	coronavirus, rugers.edu	Yes	www.flou.edu/infographic	

Figure 1. Screenshot of Miro whiteboard for research question 3

Results

Research Question 1: How do university student health websites organize their information about COVID-19 (information architecture)?

Information architecture refers to the structural design of information and allows users to know where they are in relation to the larger space. Out of all ten schools, only UNC had a link to COVID-19 in their navigation menu, and it was named as “COVID-19 Services” under “Appointments.” According to the breadcrumbs² (Figure 2), the University of Florida showed that its COVID-19 information was under “Services,” but this was not in the actual navigation menu (Figure 3), which I found confusing. The rest of the schools had a link or button to COVID-19 updates via their home page.

² Breadcrumbs act as a mini navigation element for user to let them know where they are on a website in terms of hierarchy. In Figure 1, this is shown underneath the navigation bar where it says Services and Coronavirus (COVID-19), which translates to mean that the current page – Coronavirus (COVID-19) – is located under the Services page/menu, which is shown in Figure 2.



Figure 2. UF's Student Health Care Center COVID-19 page

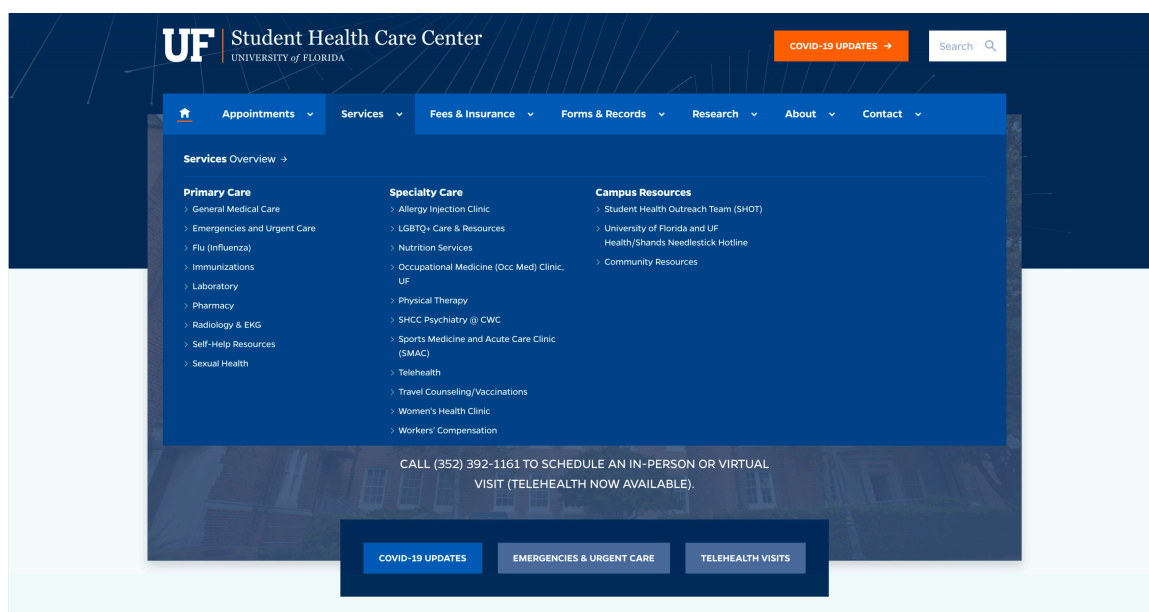


Figure 3. UF's Student Health Care Center navigation menu for the Services section

UC Berkeley highlighted their COVID-19 information as the first image in a carousel³ on the home page, as well as a box on the right-hand side and a banner⁴ (Figure 4). LSU also used a carousel (Figure 5). Meanwhile, the University of Florida, the University of Arizona, and Rutgers University had at least one button on the home page that linked to COVID-19. UF had two buttons that said “COVID-19 Updates” (Figure 6) whereas the University of Arizona had buttons for “COVID-19 Health Updates,” “Tested Positive for COVID-19?,” and “Supervisor Resources for COVID-19” (Figure 7). UT Austin had brief COVID-19 information about hours and scheduling a telehealth visit, as well as links to testing information and resources. Both the University of Georgia and UIUC had a link to their respective COVID-19 updates, with Georgia placing it under “what’s happening” and UIUC placing it under “News & Announcements” (Figure 9). Buffalo did not have its own student health center website. Rather, its information was under Health Services in Student Life Gateway (Figure 10). As mentioned, UC Berkeley had a banner (Figure 4) as one of its links to COVID-19 information, which UNC also had, but theirs was expandable⁵ (Figure 11; see Appendix A: Screenshots for screenshots related to the schools and information mentioned in this paragraph).

In terms of appointments, seven out of ten schools had information about SHC hours and scheduling an appointment on their home page. Out of those seven, two

³ A carousel is a user interface element that allows for multiple content to be displayed. In the case of these websites, this meant having a few images appear on timed rotation in one area of the website but could be moved quicker using arrow buttons or clicking on another user interface element.

⁴ A banner is a message that appears to share important, prominent information on top of other information.

⁵ Meaning, the banner on UNC’s SHC website showed as an unobtrusive rectangle near the top of the website, but when clicked, the rectangle would lengthen to include more information. When clicked again, it closed back into the unobtrusive rectangle.

schools had specific information regarding COVID appointments. UF had their button for COVID-19 testing, and the University at Buffalo linked to multiple sites for testing through the Erie County Department of Health. LSU had information on its COVID-19 page on how to access telehealth services on their COVID-19 page on the SHC website.

Research Question 2: Is there a pattern these sites seem to follow in this information architecture regarding COVID-19?

There was no clear-cut pattern to how sites seemed to follow information architecture regarding COVID-19. The closest patterns I could see were the use of buttons on the home page, carousels, and banners, but after that, it seemed to be a free-for-all with how information was organized. Some schools like UC Berkeley had a hierarchy with its links, whereas UT Austin used links to various questions and answers.

Research Question 3: Is the information architecture effective in finding the information needed?

In order to define what effective meant in this context, I looked to see if the university's SHC websites could answer the following questions regarding COVID-19:

- 1) What are preventative actions?
- 2) What are the symptoms?
- 3) How can I get tested?
- 4) When can I get tested?
- 5) Where can I get tested?

- 6) When do I get results back?
- 7) How much does it cost?
- 8) What are the hours?
- 9) What happens if I get tested positive?
- 10) What happens if I am in contact with someone who tested positive?
- 11) Is there a dashboard with COVID-19 information? If so, where?

With some schools like UC Berkeley and UT Austin, it was fairly easy to find information based on the hierarchy of information provided as seen in the screenshots below. I was able to answer all of my questions with both schools without having to go to a separate COVID-19 website (see Figures 12 and 13).



Figure 12. The University of California Berkeley's COVID-19 page on its University Health Services website

TEXAS Division of Student Affairs

The University of Texas at Austin
University Health Services

APPOINTMENTS MyUHS SERVICES ABOUT UHS LOCATION CONTACT

UHS COVID-19 Information

- [What is novel coronavirus \(COVID-19\)?](#)
- [Symptoms, transmission, and prevention](#)
- [Testing for COVID-19 at UHS](#)
- [UT Proactive Community Testing Program for COVID-19](#)
- [COVID-19 Educational Tools](#)
- [Exposure action chart: social distancing, monitoring, quarantine or isolation?](#)
- [What to do if you have COVID-19 symptoms](#)
- [Guidance for ending self-isolation and returning to regular activities after COVID-19 infection](#)
- [Travel guidelines](#)
- [Stress and anxiety related to COVID-19](#)
- [Stigma and discrimination related to COVID-19](#)
- [Staying well while social distancing](#)
- [UHS communications to campus](#)

What is novel coronavirus (COVID-19)?

COVID-19 illness ranges from mild to no symptoms to severe illness and death. Although serious cases and death have occurred in healthy, young people, those most seriously affected tend to be older adults and those with underlying medical conditions such as chronic lung conditions, moderate to severe asthma, serious heart conditions, severe obesity, diabetes, kidney disease requiring dialysis and liver disease and individuals with weakened immune systems.

[The University's Response, Guidelines and Information about Academics, Financial Questions, Assistance for Students, University Operations, Events, etc..](#)

Figure 13. The University of Texas at Austin's COVID-19 page on its University Health Services website

Another school with fairly comprehensive information was the University of Arizona, which only had one-page split into different sections (Figure 14). Their SHC provided just enough information that reached important topics through its body content and FAQs, which made it easy to navigate.

THE UNIVERSITY OF ARIZONA


CAMPUS HEALTH

[HOME](#)
[ABOUT US](#)
[SERVICES](#)
[APPOINTMENTS](#)
[FEES & INSURANCE](#)
[EMPLOYEES](#)
[NEW STUDENTS](#)
[EMERGENCY & AFTER HOURS](#)

[Home](#) / [Coronavirus \(COVID-19\)](#) /

Campus Health Remains Open
PLEASE CALL BEFORE YOU COME IN.

Medical: (520) 621-6302
Real After Hours: (520) 520-1908
CAR 24/7: (520) 621-3334
Most appointments will be done via phone or Zoom health (link) on demand.
Latest COVID-19 health updates

Hours & Location
Hours
REGULAR HOURS
 Monday - Friday
 8am - 4:30pm (closed upon all days)
 Closed on University holidays
Contact
 Main Phone: **520-621-6302**
 Medical After Hours: **520-520-1908**
 CAR 24/7: **520-621-3334**
Location
 Highland Commons
 1200 E. Second St.
 Tucson, AZ 85721
 NW corner of Highland & 6th St.

Coronavirus (COVID-19)

Page last updated/rewritten 4:17 PM MST 8/27/20

TEST ALL, TEST SMART STATISTICS

COVID-19 Testing Results *

CAMPUS HEALTH STATISTICS

(Phone with COVID-19 symptoms and/or COVID-19 exposure from Campus Health began testing on 8/23/2020)

Confirmed Positive Cases: 77 (results update daily at 6)

Total PCR & Antigen Tests Completed at Campus Health: 1,488 (Positive Positive: 48, 3% at 8/27/2020 - results update weekly)

CAMPUS HEALTH REMAINS OPEN, PLEASE CALL BEFORE YOU COME IN.

You will be connected with one of our medical or mental health providers. This call first procedure is in place to better serve you, increase efficiency, and accurately measure risk of COVID-19 exposure for the risk community.

Medical: (520) 621-6302 | **After Hours:** (520) 520-1908
Counseling & Psych Services (CARP): (520) 247-3334

Going forward, many appointments will be done via phone or Zoom health (link) on demand.

CAMPUS HEALTH PHONE, LOCATION, HOURS AND SERVICES

COVID-19 TESTING

Like or worried you have COVID-19? Please call us at (520) 621-6302 before you come in.

We are testing individuals who are concerned that they are infected with or have been exposed to COVID-19. We continue to test only students, staff, and faculty of the University of Arizona. Campus Health providers will evaluate patients and order testing if appropriate. Campus Health offers both PCR and Rapid Antigen Testing.

Rapid Antigen Testing Information *

- How to Do a Self-Rapid Antigen Test (link)

Antibody Testing Options & Information *

Antibody Testing Information *

HAVE YOU TESTED POSITIVE FOR COVID-19? **SUPPLEMENTAL RESOURCES FOR COVID-19**

Get Your Test Results

- If you have already been tested at North Row, Midtown, or a remote location, your results will be available on the **test results portal** to view as they are ready.
- If you were tested at Campus Health, visit **PatienceLink** for your results.

COVID-19 test results will NEVER be sent via text message or email. Results can only be obtained by logging into the **Test Results Portal** or **PatienceLink**.

RESOURCES

- COVID-19 Self-Quarantine Guide
- COVID-19 Self-Isolation Guide
- What to Do if You've Tested Positive for COVID-19
- Quarantine is Key Flyer
- Staying Active With COVID-19: Breathing Exercises
- Staying Active With COVID-19: Isometric Exercises
- Staying Active With COVID-19: Mobility Exercises
- Guidelines for Shared Living Space/Room Door Hanger
- More Resources

HOW COVID-19 SPREADS

COVID-19 is thought to spread easily through close contact from person to person. Some people without symptoms may be able to spread the virus. As we still learning about how the virus spreads and the severity of illness it causes. **For more information, visit the CDC.** (The CDC website is offered in multiple languages)

PROTECT YOURSELF & OTHERS

The best way to prevent illness is to avoid being exposed to this virus. You can take steps to slow the spread.

- Maintain good physical distance *** (about 6 feet)
- Wash your hands *** often with soap and water for 20 seconds. If soap and water are not available, use a hand sanitizer that contains at least 60% alcohol.
- Wear a cloth face covering * over your mouth and nose when around others.
- Respiratory clean and disinfect *** frequently touched objects and surfaces.
- Evaluate the risk of exposure for various activities with **COVID-19 Risk Index Chart ***
- More prevention tips ***

COVID-19 SYMPTOMS

According to the CDC, people with COVID-19 have had a wide range of symptoms reported - ranging from mild symptoms to severe illness. Symptoms may appear 2-14 days after exposure to the virus. People with these symptoms may have COVID-19:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Loss of taste or smell
- Headache
- Muscle or body aches
- New loss of taste or smell
- Sore throat
- Conjunctivitis or watery eyes
- Nausea or vomiting
- Diarrhea
- More information on COVID-19 symptoms ***

IF YOU FEEL SICK

- Stay home: people who are mildly ill with COVID-19 are able to **isolate at home** during their illness.
- Monitor your symptoms and seek emergency care immediately if your illness is worsening, you difficulty breathing, inability to stay awake, black stool or vomit. Seeking medical care call the doctor's office or emergency room when and feel from about your symptoms.
- Find out more from the CDC: What to Do if You Are Sick ***

Currently there is no vaccine for COVID-19. The best way to prevent infection is to **practice prevention practices and avoid being exposed.**

MENTAL HEALTH

Isolation is pretty grating through, you don't have to go through it alone.

- Sign up for CARP **Counseling & Psych Services (CARP)** at (520) 621-3334. Online counseling appointments and **online groups** are available right away.
- Test & Resources for Testing With COVID-19**
- TRP Pathways Self Help Program**
- COVID-19 testing advice in **camping** (see link to 7471471 or call 7-800-274-8648).

HEALTH & WELLNESS

- Take Charge of Your Well-Being in 2020**
- Living Well ***
- Follow us @UACampusHealth**

OTHER RESOURCES

University of Arizona Re-Entry Website
THE ROAD BACK: FALL 2020 *

Travel
COVID-19 IMPACTED SERVICES: TRAVEL *

FAQs

Face Covering FAQs

- What is the proper way to wear my face covering?
- How can I eat or drink?
- What if I am in a University vehicle?
- Can I take a break from wearing my face covering?
- How can I exercise outside?
- Are there accessibility considerations for face coverings?

General FAQs

- What should I do if I test positive for COVID-19?
- What is the University doing to track COVID-19 cases?
- Is hot water necessary for hand washing?
- Are there prevention resources I can post in my area?
- Can I get tested for COVID-19?
- What is the difference between quarantine and isolation?
- Are there resources for quarantine and self-isolation?
- What if I am a University of Arizona student located in Phoenix or outside of Tucson?
- How do I reduce my risk of COVID-19?
- Are there resources for departmental wellness checks?
- How can I manage my asthma during COVID-19?


CAMPUS HEALTH

[About](#) / [Policies](#) / [Calendar](#) / [Contact](#) / [Staff Login](#)



University Information Security and Privacy

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Figure 14. The University of Arizona's COVID-19 page on its Campus Health website

For the most part, many schools had information on their separate COVID-19 website, but for some, I was able to answer the questions I asked and included how the information was shown and/or where. I indicated any unclear answers or ones that could be found on the COVID-19 website in bold and with a gray box (see Table 1 below):

	University of California at Berkeley	University of Florida	University of Texas at Austin	University of Georgia	University of Illinois at Urbana-Champaign	University at Buffalo	University of Arizona	Rutgers University	University of North Carolina at Chapel Hill	Louisiana State University
Preventative actions?	Extensive information on face coverings and masks; broke down different types of masks and effectiveness	Infographics on transmission possibility and face covering	On COVID-19 page	On COVID-19 page	On COVID-19 website	Under FAQs	Yes; has an infographic, as well as a bullet list with links; also under FAQs	On COVID-19 website	Under FAQs	On COVID-19 website
Symptoms?	Has information on pattern for symptoms	Not available	On COVID-19 page, along with transmission information	On COVID-19 page	On COVID-19 website	Under FAQs	Bullet list that mentions symptoms may appear 2-14 days after exposure to the virus; links to more information	On COVID-19 website	Under FAQs	In Daily Symptom Checker app
Tested how?	PCR (swab); saliva test for asymptomatic people	Not available	On COVID-19 page, along with transmission information	No details on test type	Most of the information is on the COVID-19 website, but McKinley Fall Update has some information	Links to multiple sites for testing through the Erie County Department of Health	Clear information that Campus Health offers PCR and Rapid Antigen Testing, as well as information about options and whatnot	Guide	Requires appointment, so depends	On COVID-19 website
Tested when?	Depends on eligibility criteria	Specific days and hours (8am-3:30pm M-F); limited to those who are symptomatic and were evaluated by staff	Schedule an appointment by calling one of two numbers between the hours of 8am to 5pm	Appointment only, scheduled online	Information available under the McKinley Fall Update	Links to multiple sites for testing through the Erie County Department of Health	"Call-first procedure"	Hours provided with the locations	Requires appointment, so depends	On COVID-19 website

Tested where?	Tang Center (limited) and depends on eligibility criteria; also links to COVID-19 testing sites in California	Includes directions from several different areas	At UHS	Has information for those who are asymptomatic (but how would you know if you are asymptomatic ...); vague information about COVID-19 testing in that it's by appointment only and the situation needs to be assessed	On COVID-19 website	Links to multiple sites for testing through the Erie County Department of Health	Clear information that Campus Health offers PCR and Rapid Antigen Testing, as well as information about options and whatnot	Various locations	Campus Health; gives instructions for which entrance to take	On COVID-19 website
Results when?	About 2-3 days later	Several days to process. "We will update as this improves"	3-6 days depending on volume	Not clear	On COVID-19 website	No information	Unclear, but there is information about how results are never sent via text or email, only by logging into the test results portal or patientlink	On COVID-19 website	Depends on reference lab testing capacity and nationwide shortage of testing supplies	On COVID-19 website
Testing cost?	Information under SHIP Updates (but do not need SHIP to get tested)	Not available	On COVID-19 page, clearly bolded that UHS will bill insurance for the cost of the test	Free for those who are asymptomatic	On COVID-19 website	No information	Information is available on the COVID-19 website (health center website links to it to answer the question)	Unclear	Unclear, maybe free? Says Campus Health provides	On COVID-19 website
Hours of Operation?	Under UHS operations page	On front page	On the front page in multiple places	On home page	"Today's Hours" button	Not available	On the COVID-19 page	On home page banner	There are hours to call, but unsure about actual service hours	On home page
What to do if tested positive?	Has information	Self-quarantine for 14 days; outlines what self-quarantine means	On COVID-19 page	Has information	On COVID-19 website	Says to be in isolation until certain criteria are met and outlines the criteria and information on how to protect self and the community	Under General FAQs and links to guides; also an infographic	Some information	Campus Health must notify the local Health Department and then initiate up to 14-day isolation for the individual and daily medical monitoring	On COVID-19 website

What to do if in contact with someone who tested positive?	Part of eligibility criteria; infographic linked to the testing information page	Self-quarantine for 14 days; outlines what self-quarantine means; if thinking there was possible exposure to COVID-19, can contact the Student Health Care Center at a specific number to discuss symptoms	There is an exposure chart to reference	Information for both asymptomatic and not	On COVID-19 website	Under FAQs	No information	On COVID-19 website	Guidance in place	On COVID-19 website
Dashboard?	On COVID website	Yes, on separate site	Yes, on separate site	Yes through DawgCheck	Not clear	No	Under General FAQs as "What is the University doing to track COVID-19 cases?"; gives general information and links	On COVID-19 website	On COVID-19 website	On COVID-19 website

Table 1. Condensed version of Figure 1

The schools with the least amount of information on their SHC website were UIUC and LSU by far, as LSU had most of its information on its COVID-19 website, and UIUC did it through fall updates and its COVID-19 website. However, it could very well be that UIUC students (and even students at other schools) were updated via email or some other form of notification that I am not privy to as a non-student.

In second with least amount of information on the SHC website were the University at Buffalo and Rutgers University. COVID-19 information for University at Buffalo was limited to how one can help (preventative actions), how they are helping (telehealth appointments and cleaning procedures), and what to do if needing a test or testing positive for COVID-19. The information for needing a test and testing positive for COVID-19 information linked to the Erie County Department of Health for testing sites and Order for Isolation. Based on this information, students would have a difficult time

accessing COVID-19 resources directly through the SHC itself. Rutgers provided information on who is eligible for COVID-19 testing, general guidelines for COVID-19 testing, and testing information at Rutgers itself, which is beneficial to students, especially because the testing locations had specific dates and times included. Relative to other schools, however, this information was far less than others.

There are a few findings that I found to be particularly interesting. For one, the University of Arizona was one of two schools to provide COVID-19 specific contact information to ask other related questions. The other school was UNC. The University of Arizona was also the only website that had information on how to manage asthma during COVID-19 and accessibility considerations for face coverings. While it lacked information on what to do if in contact with someone who tested positive for COVID-19, the rest of its information was outlined in a clear and concise manner. Both the University of Arizona and UNC had information differentiating between quarantine and isolation. The University of Arizona placed it under a question asking what the difference was (Figure 15), and UNC placed it under the question “what are COVID-19 key terms I should know” (Figure 16)?

What is the difference between quarantine and isolation?

Quarantine is used to keep someone who might have been *exposed* to COVID-19 away from others.

- **Campus Health COVID-19 Self-Quarantine Guide**

Isolation is used to separate people infected with the virus (those who are *sick* with COVID-19 and those with no symptoms) from people who are not infected.

- **Campus Health COVID-19 Self-Isolation Guide**

For more information on quarantine and isolation, **visit the CDC** (this website is available in multiple languages)

Figure 15. The University of Arizona's FAQ "What is the difference between quarantine and isolation?"

▼ **What are COVID-19 key terms I should know?**

- A close contact includes those within 6 feet of an infected person for more than 15 minutes when any person is not wearing a face covering.
- Physical distancing (social distancing) is for everyone. It means keeping people farther apart to prevent the virus from spreading in communities.
- Quarantine is for people who may have been exposed to the virus. It means keeping them physically apart from others in case they are infected (i.e., staying at home).
- Isolation is for people who have the virus. It means keeping them separated from people who don't have it.

Figure 16. The University of North Carolina at Chapel Hill's FAQ "What are COVID-19 key terms I should know?"

UC Berkeley had the most information on preventative care and seemed to be the most prepared SHC out of all ten schools at the time of the screenshots. They had various resources on mental health, ergonomics for working from home for faculty and staff, and various guides on self-care, Zoom intrusions, grieving, anxiety, resilience, and coping mechanisms, which made it easy to find the information I needed and feel supported, even as a non-student.

UNC provided parking information for in-person appointments and information on which entrance to take, which I thought was beneficial considering there are multiple entrances, and the current situation with COVID-19 makes it difficult to know what the current parking situation is on campus. There was also information on how to support a friend in quarantine or isolation (Figure 17), which I thought was extremely important as a way to stay connected with others and their mental health.

▼ How do I support a friend who is in quarantine or isolation?

If you know someone struggling with COVID-related illness or quarantine, show them kindness.

- Listen with compassion.
- Be present. Call, text or video chat with them to let them know you are there to support them.
- Take cues about what you can do to best support them. Ideas:
 - Drop off food or drinks at their door.
 - Ask if they need any items the next time you go to the store.
 - Offer to run to the pharmacy for them.
 - Drop off or digitally send items you know they enjoy (magazines, comic books, craft supplies, music, etc).
 - Offer to do their yard work, take out their trash, or bring in their mail.
 - Offer to help with their pets.
 - Keep them informed with reliable news.
 - Ask about finances to see if they need support.
 - Help them create or maintain daily routine.
- Get creative and come up with ideas among mutual friends. Consider sending snail mail, playing online games together, watching a Netflix series together, or listening to the same audiobooks.
- Take care of yourself and your own mental health too.

Figure 17. The University of North Carolina at Chapel Hill's FAQ "How do I support a friend who is in quarantine or isolation?"

Discussion and Conclusions

Recommendations

While going through the SHC websites, I came up with several recommendations which I've split into three broad categories: navigation, COVID-19 information, and helpful extras.

The first recommendation I have is to be clear in how the navigation is organized, specifically with breadcrumbs. Navigation lets users move around a website in a hierarchical manner, and breadcrumbs on a website are one form of navigation that provides users with a reference point as to which page they are in in relation to another. This allows users to easily move between pages since they know where they were previously. The University of Florida would benefit from this recommendation by making sure the navigation menu matches the breadcrumb so that "Services" also has a link to COVID-19. This way, users are clear that they can also find the information via the navigation menu, rather than just the same exact steps they took to get to that particular page.

The second recommendation I have related to navigation is to make information as readily available as possible to minimize the number of clicks it takes for a user to access information, as this helps with efficiency of use, one of the 10 usability heuristics for user interface design (Nielsen, 1994). As mentioned previously, several universities such as the University of Florida and UNC had buttons or links on their home page to their COVID-19 information, which follows the usability heuristic efficiency of use

(Nielsen, 1994). However, not all schools had that. UIUC's information about testing, appointments, or symptoms were available under Fall Updates and Announcements, located towards the bottom of the page. This was not easily located or apparent that all COVID-19 information should be accessed there or through their separate COVID-19 website. Another school that would benefit from this recommendation is the University at Buffalo. They could make the link to their COVID-19 website clearer, rather than an innocuous link on the right-hand side of the page underneath the Campus Updates box (see Figure 18).

How You Can Help

You can help yourself and your campus community by doing the following:

- If you are told to isolate or quarantine for COVID-19, do it
- Do not come to Health Services without an appointment
- Attend scheduled appointments alone, wearing your face covering
- Arrive at your scheduled time to avoid contact with other patients
- Call your health care provider if you are ill or if you think you have been exposed to COVID-19 and **stay home**
- Set up voicemail on your smartphone. Make sure your voicemail box is not full, and check your messages throughout the day. If you are determined to be a close contact of someone who tests positive for COVID-19, contact tracers will need to reach you
- E-mail [link](#), mail or fax [link](#) forms to our office
 - Fax is the best option for submitting forms
 - Campus mail is extremely limited at this time. Expect significant delays if you are mailing forms to our office.

How We Are Helping

We are doing our part to reduce exposure and ensure availability to those that will need us most by:

- Moving to appointments only – no walk in clinic – call for an appointment 716-829-3316
- Offering telehealth appointments, thereby reducing the number of patients who will need to come to Michael Hall
- Offering in-office visits when medically necessary, and eliminating wait times and contact with other

CAMPUS UPDATES

Latest on coronavirus

- ▶ 8/20: Human Resources clarifies employee use of mandatory daily health screening tool
- ▶ 8/17: UB deploys mandatory daily health screening tool
- ▶ 8/13: Previewing the Fall Semester

SEE ALL UPDATES [link](#)

Visit UB COVID-19 website for FAQs, news and more [link](#)

AUTHORITATIVE SOURCES

- ▶ Centers for Disease Control [link](#)
- ▶ NYS Department of Health [link](#)
- ▶ Erie County Department of Health [link](#)

Figure 18. The University at Buffalo's page with their COVID-19 website link

My third recommendation is to provide robust COVID-19 information, including but not limited to symptoms, testing, and appointments. While this information may be available on a school's separate COVID-19 website, it should also be available on the student health center website given the medical services provided. There were a handful of SHC websites that could not answer the questions I asked when testing the

effectiveness of SHC websites, such as “what are symptoms of COVID-19?”

The University of Georgia had one line that said “...students not feeling well and showing symptoms.” In this case, it would be helpful to know examples of such symptoms within this particular section, rather than separately under the FAQs, which is where it is now. They had information on getting tested for COVID-19 but nothing beyond it. The University of Florida, Rutgers, and LSU lacked information about COVID-19 symptoms, and LSU lacked information on COVID-19 testing. Rutgers specifically would benefit from providing information on COVID-19 symptoms, preventative actions, what to do when tested positive, and what to do if in contact with someone who tested positive.

UNC, like the University of Georgia, had a separate section on COVID-19 symptoms. The question “when should someone consider being tested for COVID-19?” (see Figure 19) is an example of a section that could use information about COVID-19 symptoms and the definition of a CDC high-risk group. As mentioned, there is already a question answering what COVID-19 symptoms are, but including them in this question helps to make the relevant information easily available for students.

▼ **When should someone consider being tested for COVID-19?**

CDC recommends that individuals be tested when they:

- Have symptoms of COVID-19
- Have come in close contact with someone who tested positive for COVID-19
- Are in a CDC defined high-risk group

If you believe you need to be tested for COVID-19, but have already returned home, please visit this [COVID-19 Test Finder](#) to find a testing location in your area. There are a variety of [testing locations in Orange County](#) and Campus Health offers testing by appointment, so students and post-docs can [message a nurse in the patient portal](#) or call Campus Health to coordinate and facilitate your care.

Figure 19. The University of North Carolina at Chapel Hill’s FAQ “When should someone consider being tested for COVID-19?”

The fourth recommendation I have is to include screenshots when steps are involved, which helps with recognition by including clear instructions (Nielsen, 1994). For example, UNC’s Campus Health website could include screenshots of steps for its “How do I message a nurse in the Patient Portal?” question (see Figure 19).

▼ How do I message a nurse in the Patient Portal?

- Log into the [Healthy Heels Patient Portal](#)
- In the menu on the left, select Messages
- Select New Message
- Select Primary Care/Medical
- Select Coronavirus
- Send a message

https://getfireshot.com/pdf_aHR0cHM6Ly9jYW1wdXNoZWZsdGudW5jLmVkdS9zZXJ2aWNlcy9jb3ZpZC0xOS1zZXJ2aWNlcyNmYXEtSG93LWRvLUktbWVzc2FnZS1hLW51cnNILWluLXR0ZS1QYXRpZW50LVBvcnRhbD8=

If you need to talk to someone right now, call Campus Health at 919-966-2281.

For emergencies, call 911.

Figure 20. The University of North Carolina at Chapel Hill’s FAQ “How do I message a nurse in the Patient Portal?”

Impact

This study analyzed how COVID-19 health information through SHC websites are or are not similar across flagship state universities in the top ten states with the highest number of COVID-19 total cases as of 12:15pm on August 13, 2020. I looked for patterns in how information is organized and phrased despite there not being any set guidelines by the ACHA.

Potential stakeholders such as UNC’s Campus Health (or other universities if they find out about my paper) might find this beneficial to convey their information in a clearer manner. Overall, this was a good way to see how different campuses are handling the pandemic in how they share information about student health safety, especially prior to the start of the semester.

Conclusions

This content analysis provided insight into other university SHC websites. It is hard to tell if there was a correlation between ranking on the CDC COVID Data Tracker and how well-informed a university's SHC websites was designed, as I found UC Berkeley, UT Austin, University of Arizona, and UNC to have the most informative COVID-19 information on their respective SHC websites. Their rankings correlate to first, third, seventh, and ninth on the CDC COVID Data Tracker. In any case, most websites had room for improvement, and it is important to remember that health information and UX design are crucial for making information accessible and understandable for the user. There were several instances where COVID-19-related questions could not be answered on a university's SHC website and rather, a student would have to go to the separate COVID-19 website.

If there was time, I would have liked to have a discussion with students on how they would prefer to receive their information surrounding COVID-19 (via their SHC website, a separate COVID-19 website, or both, as well as what they themselves have actually done, if anything). As shown in *The New York Times'* article cited earlier in this paper, the number of COVID-19 cases at colleges and universities in the United States overall has not gone down this semester. As a UNC student, I am experiencing firsthand how a university has to pivot into making changes for the spring 2021 semester. While I will no longer be a student and will not directly receive information, I am curious to see how schools in general will handle the changes needed for the next semester and if that affects the type of information they provide on their SHC websites, and how. User

research would be an excellent opportunity to expand further on this project, especially as an ongoing project to observe what was done in the past, what is going on in the present, and what potential changes there could be for the future.

References

- Baron, K. A., Kehinde, J. O., & Al-Khudairi, A. (2015). Preconception health education and website development for college students. *Clinical Scholars Review*, 8(2), 181–191. <https://doi.org/10.1891/1939-2095.8.2.181>
- Brower, S. M. (2004). Academic health sciences library website navigation: an analysis of forty-one websites and their navigation tools. *Journal of the Medical Library Association*, 92(4), 412–420.
- CDC. (2020). *United States COVID-19 Cases and Deaths by State*. Retrieved August 14, 2020 from <https://www.cdc.gov/covid-data-tracker/#cases>.
- Childs, S. (2004). Developing health website quality assessment guidelines for the voluntary sector: outcomes from the Judge Project. *Health Information and Libraries Journal*, 21 Suppl 2, 14–26. <https://doi.org/10.1111/j.1740-3324.2004.00520.x>
- Fontenot, H. B., Fantasia, H. C., Sutherland, M. A., & Lee-St John, T. (2016). HPV and HPV vaccine information among a national sample of college and university websites. *Journal of the American Association of Nurse Practitioners*, 28(4), 218–223. <https://doi.org/10.1002/2327-6924.12312>
- Ford, E. W., Huerta, T. R., Schilhavy, R. A. M., & Menachemi, N. (2012). Effective US health system websites: establishing benchmarks and standards for effective consumer engagement. *Journal of Healthcare Management*, 57(1), 47–65.
- Harlan, J. (2020). Covid-19 live updates: as U.S. sets another daily record, college cases soar. *The New York Times*. Retrieved November 5, 2020.
- Judson, K., Goldsack, J., & Sonnad, S. S. (2010). Availability of e-information for women's health services: assessment of California State University Student Health Centers. *Journal of Women's Health*, 19(12), 2219–2225. <https://doi.org/10.1089/jwh.2010.1936>
- Jue, J. J. S., & Metlay, J. P. (2011). Web-based health resources at US colleges: early patterns and missed opportunities in preventive health. *Preventing Chronic Disease*, 8(6), A138.
- Laws, T. A., & Fiedler, B. A. (2013). Students seeking help for mental health problems: do Australian university websites provide clear pathways? *Australian Universities' Review*, 55(2).

- Lund, E. M., & Thomas, K. B. (2015). Necessary but not sufficient: sexual assault information on college and university websites. *Psychology of Women Quarterly*, 39(4), 530–538. <https://doi.org/10.1177/0361684315598286>
- Nielsen, J. (1994). 10 usability heuristics for user interface design. *Nielsen Norman Group*. <https://www.nngroup.com/articles/ten-usability-heuristics/>
- Pariera, K., & University of Southern California. (2012). Information literacy on the web: how college students use visual and textual cues to assess credibility on health websites. *Comminfolit*, 6(1), 34. <https://doi.org/10.15760/comminfolit.2012.6.1.116>
- Perrault, E. K. (2018). Campus health centers' lack of information regarding providers: a content analysis of Division-I campus health centers' provider websites. *Health Communication*, 33(7), 860–866. <https://doi.org/10.1080/10410236.2017.1316635>
- Randeree, E., & Rao, H. R. (2004). E-health and assurance: curing hospital websites. *International Journal of Electronic Healthcare*, 1(1), 33–46. <https://doi.org/10.1504/IJEH.2004.004653>
- SAGE Publications, Ltd. (2019). Learn to use an exploratory sequential mixed method design for instrument development. *SAGE Research Methods Datasets*. <https://methods.sagepub.com/base/download/DatasetStudentGuide/exploratory-sequential-mixed-method-instrument-development-united-states>
- Stanley, S. J., Yan, K., Jiao, J., Lutovsky, B. R., Aubrey, J. S., & Pitts, M. J. (2019). Communicating about sex when it matters: a content analytic investigation of sexual health information on college student health center websites. *Journal of Applied Communication Research*, 47(5), 591–610. <https://doi.org/10.1080/00909882.2019.1675895>
- Tao, D., LeRouge, C., Smith, K. J., & De Leo, G. (2017). Defining information quality into health websites: a conceptual framework of health website information quality for educated young adults. *JMIR Human Factors*, 4(4), e25. <https://doi.org/10.2196/humanfactors.6455>

Appendix A: Screenshots

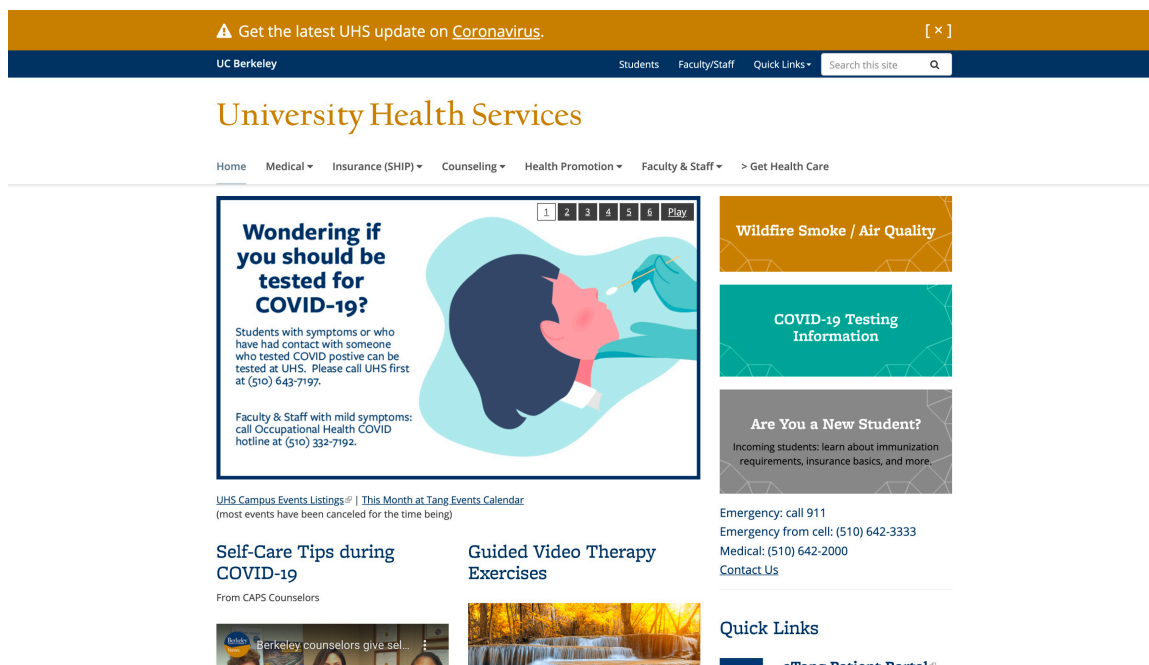


Figure 4. The University of California Berkeley's University Health Services website's home page



Figure 5. Louisiana State University's Student Health Center website's home page

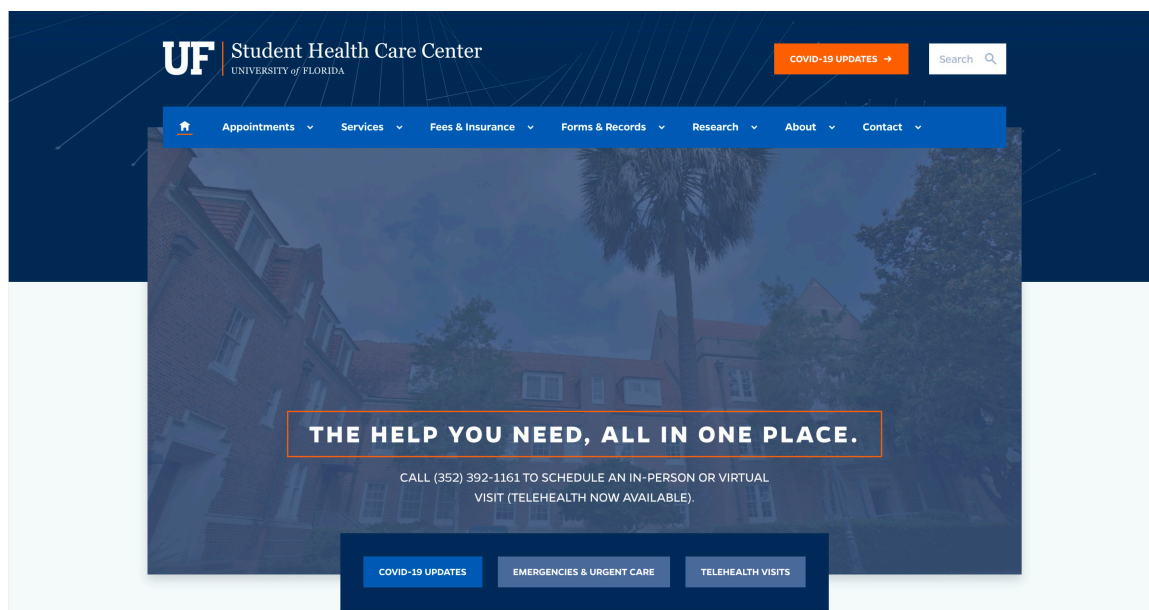


Figure 6. The University of Florida's Student Health Care Center website's home page

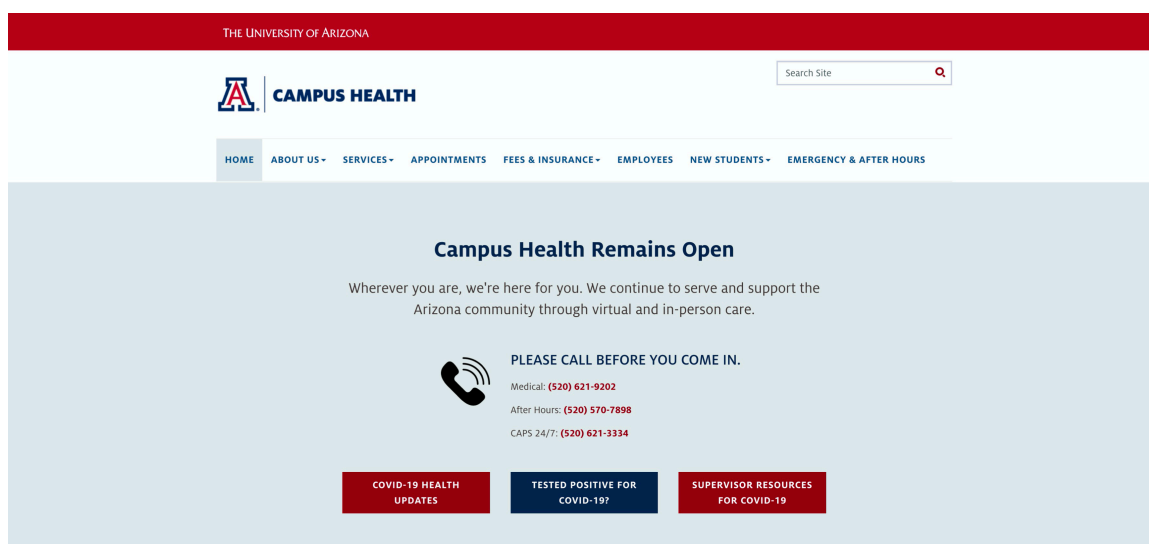


Figure 7. The University of Arizona's Campus Health website's home page

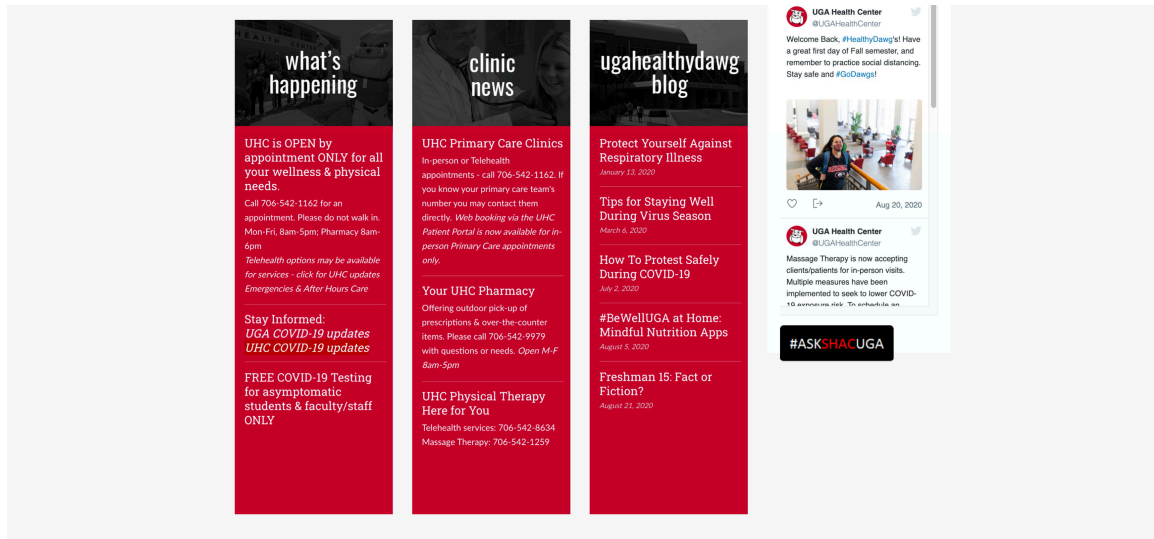


Figure 8. The University of Georgia's University Health Center website's home page

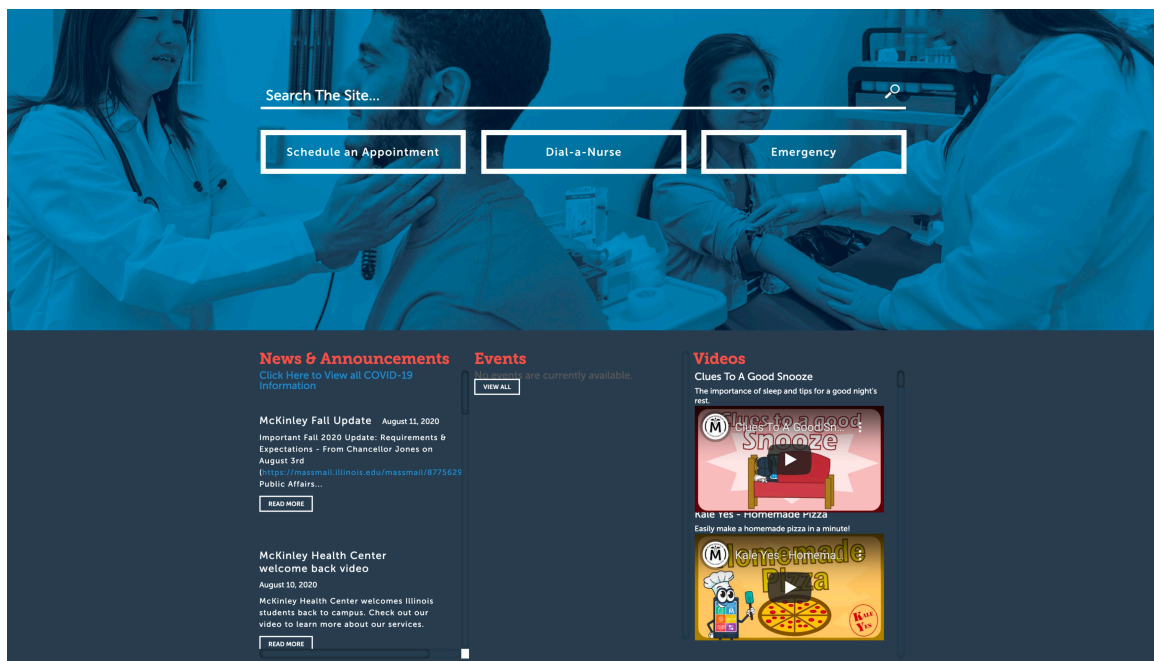


Figure 9. The University of Illinois Urbana-Champaign McKinley Health Center website's home page

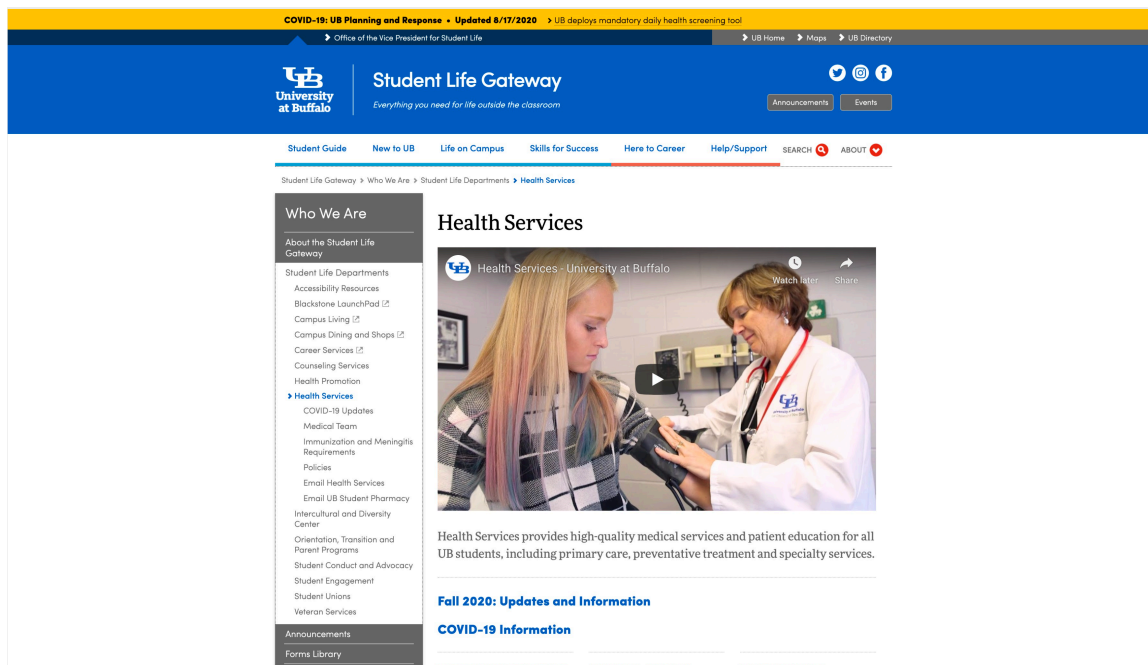


Figure 10. The University at Buffalo's Health Services page



Figure 11. The University of North Carolina at Chapel Hill's Campus Health website's home page with expanded COVID-19 Resources banner