

**Office of Disease Prevention and Health Promotion
Healthy People HC/HIT Objectives 8.1 and 8.2:**

National Quality Health Website Survey

Research Report

May 8, 2015

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Executive Summary

Background

According to the National Assessment on Adult Literacy, only 10% of adults have the knowledge and skills needed to understand important information about their health.¹ Eighty-seven percent of U.S. adults use the Internet, and 72% of Internet users report looking for health information online within the past year.² Poor-quality health websites—such as those that feature confusing information or are difficult to use—can prevent people from accessing and understanding the health information they need. Even worse, they may lead users to make health decisions based on inaccurate information.

The quality and accessibility of online health information is key to improving access to health services and to informed decision making. Healthy People 2020's Health Communication and Health Information Technology (HC/HIT) topic area focuses on achieving health equity by improving population health outcomes and health care quality. On behalf of the Office of Disease Prevention and Health Promotion (ODPHP), CommunicateHealth (CH) measured new baseline data points for the topic area's website quality objectives:

- **HC/HIT objective 8.1:** Increase the proportion of health-related websites that meet three or more evaluation criteria for disclosing information that can be used to assess information reliability.
- **HC/HIT objective 8.2:** Increase the proportion of health-related websites that follow established usability principles.

By establishing baseline data points for these Healthy People objectives, ODPHP can more easily pinpoint the types of changes needed and the tools that might support content and web developers in implementing these changes.

Methods

CH selected 100 qualified sample websites for both HC/HIT objective 8.1 and objective 8.2 using specific inclusion and exclusion criteria (see "Sampling" for detailed methodology). Two CH usability specialists reviewed the 100 websites against the criteria established in the National Quality Health Website Survey, following a reviewer training process until they reached the desired level of inter-rater reliability (above 0.80 for objective 8.1 and above 0.61 for objective 8.2). CH randomly divided the remaining websites from the top 100 websites list into two groups. Each reviewer reviewed an equal number of websites.

¹ <http://nces.ed.gov/naal/health.asp>.

² <http://www.pewinternet.org/fact-sheets/health-fact-sheet/>.

Findings

The National Quality Health Website Survey, 2015 indicated that:

- For Healthy People 2020 HC/HIT objective 8.1, **58.0%** of health-related websites (n=100) met three or more out of six reliability criteria.
- For Healthy People 2020 HC/HIT objective 8.2, **42.0%** of health-related websites (n=100) followed 10 or more out of 19 established usability principles.

Overall, the health websites included in the study scored poorly on most reliability and usability criteria. In particular websites struggled the most with items such as:

- Displaying the date content was created and reviewed/updated
- Differentiating between advertising and non-advertising content
- Following accessibility/508 compliance guidelines, especially by providing ALT text for links, images, and videos
- Offering easy search functionality by providing corrective options or predictive text (auto-filling search terms)

There is still a lot of room for health-related websites to improve in order to meet national quality standards as defined by Healthy People objectives.

Future Implications

ODPHP is uniquely positioned to help health websites improve their capacity to meet HC/HIT objectives 8.1 and 8.2. In order to increase the quality of health-related websites, CH recommends that ODPHP create additional tools to assist website developers. For example, the criteria for HC/HIT objectives 8.1 and 8.2 could be turned into easy-to-use checklists to facilitate adherence to web quality guidelines. Health website teams could use these checklists as implementation tools to guide them through the development process.

CH also recommends promoting Health Literacy Online as a more comprehensive resource for national health websites. ODPHP is currently working to release an updated edition in 2015, and its guidelines and recommendations will align with the usability principles defined in objective 8.2. By promoting the guide and showing how it can serve as a tool for meeting Healthy People 2020 objectives, ODPHP will continue to demonstrate its leadership in health literacy and health IT.

1. Introduction

To improve the information reliability and usability of the nation's health-related websites, the Healthy People Federal Interagency Workgroup (FIW) included two objectives within the [Health Communication and Health Information Technology \(HC/HIT\)](#) topic area in Healthy People 2020:

- **HC/HIT objective 8.1:** Increase the proportion of health-related websites that meet three or more evaluation criteria for disclosing information that can be used to assess information reliability.
- **HC/HIT objective 8.2:** Increase the proportion of health-related websites that follow established usability principles.

ODPHP developed the Website Information Reliability Evaluation Instrument for measuring website information reliability (objective 8.1) in 2006 and the Website Usability Evaluation Instrument for measuring website usability (objective 8.2) in 2012. On behalf of ODPHP, CH used these instruments to measure the new 2015 baseline data points for these two objectives.

1.1 HC/HIT Objective 8.1

Information reliability refers to the accuracy and credibility of website content as well as transparency in the purpose and ownership of a website. This information can help users discern the quality of health information that they find. HC/HIT objective 8.1 establishes six disclosure criteria that can be used to assess information reliability:

1. Website sponsor identity (“Identity”)
2. Website purpose (“Purpose”)
3. Authors or sources for health information content provided (“Content”)
4. Privacy and personal information confidentiality policies (“Privacy”)
5. User feedback (“User Feedback”)
6. Identification of dates of creation and dates of review/changes to health information content (“Content Updating”)

Each criterion has a set of reliability requirements—see Table 1. (Note: These requirements were called Required Disclosure Elements or RDEs in the 2006 report.) The instrument to measure objective 8.1 is in Appendix B: Website Information Reliability Evaluation Instrument .”

Table 1. HC/HIT 8.1 Criteria and Reliability Requirements

Criteria	Reliability Requirements
Identity	<ul style="list-style-type: none"> • Name of person or organization responsible for website • Street address for person or organization responsible for website • Identified source of funding for website
Purpose	<ul style="list-style-type: none"> • Statement of purpose or mission for website • Uses and limitations of services provided • Association with commercial products or services
Content Development	<ul style="list-style-type: none"> • Differentiation of advertising from non-advertising content • Medical, editorial, or quality review practices or policies • Authorship of health content (per page of health content)
Privacy	<ul style="list-style-type: none"> • Privacy policy • How personal information is protected
User Feedback	<ul style="list-style-type: none"> • Feedback form or mechanism • How information from users is used*
Content Updating	<ul style="list-style-type: none"> • Date content created (per page of health content) • Date content reviewed, updated, modified, or revised (per page of health content) • Copyright date*

* Optional requirements

1.2 HC/HIT Objective 8.2

The usability of a website can impact users' ability to access, understand, and obtain the information they need. HC/HIT objective 8.1 established three criteria that can be used to assess the usability of a health website:

- "Site Design" (including design/graphical elements, tools, multimedia, and interaction)
- "Information Architecture" (including easy search functionality and content organization)
- "Content Design" (including plain language, treatment of text, and accessibility)

The three criteria are composed of 19 established usability principles with a total of 59 usability measurements (see table 2). All usability measurements are calculated with a scale of 1 to 4. The instrument to measure objective 8.2 is in appendix D, "Website Usability Evaluation Instrument."

Table 2. Criteria, Established Usability Principles

Criteria	Established Usability Principles
Site Design	<ol style="list-style-type: none"> 1. Use conventional interaction elements <ul style="list-style-type: none"> <i>Links clearly indicated in the same manner</i> <i>Links embedded in descriptive text</i> 2. Make it obvious what is clickable and what is not <ul style="list-style-type: none"> <i>Clickable items are easy to target and hit</i> <i>Buttons are clearly identified, and large enough to easily see and click</i> <i>Site uses text links rather than image links</i> 3. Minimize vertical scrolling <ul style="list-style-type: none"> <i>Site uses paging rather than scrolling</i> <i>Visual cues are in the layout of the page that help users know there is more content “below the fold”</i> 4. Ensure that the Back button behaves predictably <ul style="list-style-type: none"> <i>The Back button is functional on the browser toolbar on every page</i> <i>Clicking the Back button always goes back to the page from which the user came</i> 5. Provide clear feedback signals for actions <ul style="list-style-type: none"> <i>Error messages are informative and provide solutions to the user</i> <i>Links and buttons clearly describe what people will find on the next page</i> 6. Ensure site is accessible for users with disabilities and uses elements of 508 compliance <ul style="list-style-type: none"> <i>ALT text is provided for links, images, video, and animation</i> <i>Captioning is provided for video and animation</i> <i>Any captioning is easy to read</i> 7. Provide a simplified user experience <ul style="list-style-type: none"> <i>Site includes print options or printer-friendly tools</i> <i>Site provides a feedback mechanism for users</i> <i>It is easy to get back to the homepage from anywhere in the site with just one click</i> 8. Incorporate multimedia <ul style="list-style-type: none"> <i>Site includes audio and visual features</i> <i>Images and other multimedia are relevant to, and supportive of, the text content</i> 9. Offer a functional homepage <ul style="list-style-type: none"> <i>Homepage looks like a homepage</i> <i>Homepage is simple yet engaging</i> <i>Homepage states the purpose of the site or organization</i> <i>Homepage enables easy access to navigational items</i>

Criteria	Established Usability Principles
Information Architecture	<p>10. Present a clear visual hierarchy</p> <ul style="list-style-type: none"> <i>Offers a clear visual “starting point” to the page</i> <i>The path users took to get to their current page is clearly displayed</i> <i>Clearly displays options for next navigational steps</i> <i>Information is presented with a greater level of detail the further users navigate into the site</i> <p>11. Provide easy search functionality</p> <ul style="list-style-type: none"> <i>Has a universally located simple option for searching the site</i> <i>Provides corrective search options</i> <i>Provides predictive text search options</i> <i>Offers a simple option for browsing the site</i> <p>12. Clearly label content categories</p> <ul style="list-style-type: none"> <i>Has descriptive labels</i> <i>Has labels that are understandable on their own</i> <p>13. Make pages easy to skim or scan</p> <ul style="list-style-type: none"> <i>Dense pages are grouped or clustered</i> <i>White space is used to break up clusters of content</i> <i>Content and advertising have discernible differences</i> <i>It is easy to tell what content is part of the page’s main body</i> <i>Pages use bullets and lists</i> <i>Are page elements aligned either vertically or horizontally?</i> <p>14. Make elements on the page easy to read</p> <ul style="list-style-type: none"> <i>Default type size is at least 12-point</i> <i>Headings are noticeably larger than body content</i> <i>Text is set in a type face that is easy to read</i> <i>Headings are set in a type face that is easy to read</i> <i>Visual cues direct users’ attention to important items</i> <p>15. Visually group related topics</p> <ul style="list-style-type: none"> <i>Frequently used topics, actions, and links are found without scrolling</i> <i>Important information is at the top center of the page</i> <i>A template is applied consistently across the site</i> <p>16. Make sure text and background colors contrast</p> <ul style="list-style-type: none"> <i>Colors are used together to make information easy to see and find</i> <i>Clickable items are highlighted differently</i>
Content Design	<p>17. Focus the writing on audience and purpose</p> <ul style="list-style-type: none"> <i>Content is written in the active voice and directed to the reader</i> <i>Sentences are short and straightforward</i> <i>Paragraphs are short and scannable</i> <i>Headings, labels, and captions describe the content’s purpose</i>

Criteria	Established Usability Principles
	<p>18. Use the users' language; minimize jargon and technical terms</p> <p><i>Site uses mixed-case prose</i></p> <p><i>Site uses words familiar to the audience</i></p> <p><i>Site explains new or technical terms to readers</i></p> <p><i>Site defines acronyms before using them</i></p> <p>19. Allow for interaction with the content</p> <p><i>Are users able to input information and preferences that result in tailored content?</i></p> <p><i>Are users able to share the content with others (do pages include email, Facebook, Twitter, or other social media sharing buttons)?</i></p>

2. Methodology

The methodology for sample selection, website review, and data analysis were based on previous reports: National Quality Health Website Survey, 2006³ and National Quality Health Website Survey, 2012.

A CH senior usability researcher and research associate conducted this study. The senior usability researcher developed the research plan and served as the trainer, lead reviewer, and analyst. The research associate assisted in the data collection as a second reviewer.

Sampling

CH selected 100 qualified sample websites for both HC/HIT objective 8.1 and objective 8.2 using the following methodology:

- Identify first 100 top-ranked health-related websites⁴ for three months (August, September, and October) in 2014 from Alexa Top Sites⁵ pool, based on the criteria of having at least three items of health information content as broadly defined by the eHealth Code of Ethics (Table 3).

³ <http://www.health.gov/communication/healthypeople/obj1104/>.

⁴ Alexa's Traffic Ranks are based on the traffic data provided by users in Alexa's global data panel over a rolling three-month period. A site's ranking is based on a combined measure of unique visitors and pageviews. See <https://alexa.zendesk.com/hc/en-us/articles/200449744-How-are-Alexa-s-traffic-rankings-determined->.

⁵ Alexa Top Sites: <http://www.alexa.com/topsites/category/Top/Health>. The data was collected from Alexa on October 14, 2014.

- Exclude sites with the following characteristics:
 - Sites that are not about human beings (e.g., www.petmd.com)
 - Sites that are owned or maintained in a foreign country (e.g., <http://www.nhs.uk>)
 - Sites that are specifically for health industry professional development, listing job postings for health professionals or research grants available for health researchers (e.g., www.studentdoctor.net)
 - Sites that are designed only to introduce, sell, or support specific medical commercial products or technology solutions for the health or medical industry (e.g., www.nuance.com)
 - Sites that provide platforms for lab services (e.g., www.labcorp.com)
 - Sites accessible only to members or paying subscribers who must enter an identifying login name and password (e.g., www.medcohealth.com)
 - Sites about beauty or cosmetic products or hair styles (e.g., www.makeupalley.com)
 - Sites about health or medical education programs (e.g., www.hsph.harvard.edu)
 - Sites about fitness industry professional development or gym memberships (e.g., <http://www.ideafit.com>)
 - Sites providing pharmacy price comparison information (e.g., www.goodrx.com)
 - Online forums, groups, or other social media platforms for informal discussions regarding health (e.g., <https://groups.google.com/forum/#!forum/exchange-forum>)
- Consolidate duplicated sites (e.g., www.cdc.gov/vhf/ebola will be considered part of CDC.gov). The exception to this is NIH sites (e.g., PubMed, Medline Plus) as they are quite different.

Table 3. Definitions from e-Health Code of Ethics⁶

- Health information includes information for staying well, preventing and managing disease, and making other decisions related to health and health care.
- It includes information for making decisions about health products and health services.
- It may be in the form of data, text, audio, and/or video.
- It may involve enhancements through programming and interactivity.
- Health products include drugs, medical devices, and other goods used to diagnose and treat illnesses or injuries or to maintain health. Health products include both drugs and medical devices subject to regulatory approval by agencies such as the U.S. Food and Drug Administration or the U.K. Medicines Control Agency, and vitamin, herbal, or other nutritional supplements and other products not subject to such regulatory oversight.
- Health services include specific, personal medical care or advice; management of medical records; communication between health care providers and/or patients and health plans or insurers or health care facilities regarding treatment decisions, claims, billing for services, etc.; and other services provided to support health care.
- Health services also include listservs, bulletin boards, chat rooms, and other online venues for the exchange of health information.
- Like health information, health services may be in the form of data, text, audio, and/or video and may involve enhancements through programming and interactivity.

See Appendix A: List of 100 Qualified Sample Sites,” for the final list of the qualified sample sites. The sample represented three different types of organizations: for profit, nonprofit, and government (in Figure 1).

⁶ Rippen H & Risk A. e-Health code of ethics. Journal of Medical Internet Research. 2000 May 24;2(2).

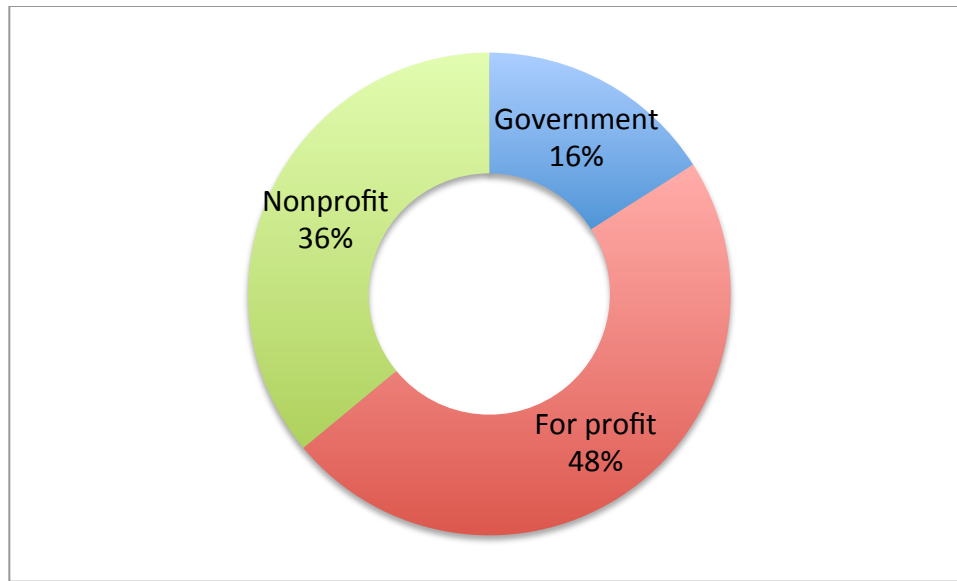


Figure 1. Websites, Percent by Type of Organization

Collecting Data

The senior usability researcher and the research associate reviewed the sample 100 websites, following the reviewer training process to reach a certain level of inter-rater reliability (IRR). The training process and IRR for each objective are discussed below.

Reviewer Training Process

A reviewer training process ensures a certain level of IRR. A commonly accepted benchmark scale is listed below.

Table 4. Altman's Kappa Benchmark Scale⁷

Kappa Statistic	Strength of Agreement
<0.20	Poor
0.21 to 0.40	Fair
0.41 to 0.60	Moderate
0.61 to 0.80	Good
0.81 to 1.00	Very Good

⁷ Altman DG. Practical statistics for medical research. London: CRC Press; 1990.

Objective 8.1 is primarily comprised of “Yes/No” questions. We adhered to the benchmark Kappa score of 0.80 (a score generally accepted as demonstrating an acceptable degree of IRR⁸) based on the National Quality Health Website Survey, 2006. Objective 8.2 is comprised of a scale of 1 to 4, making it more difficult to reach a perfect IRR. For this objective we used a standard of 0.61 or higher.

CH transformed the website evaluation instrument (Appendix B: Website Information Reliability Evaluation Instrument and Appendix D: Website Usability Evaluation Instrument”) for each objective into an online survey tool, using [surveymonkey.com](https://www.surveymonkey.com), to facilitate data input. The senior usability researcher trained the research associate to assess the 100 top-ranked health-related websites with the following steps:

1. The trainer introduced the second reviewer to the rating tool for each objective.
2. The trainer demonstrated how to use the rating tool to score one website.
3. Each reviewer independently conducted the review process on the same three websites chosen randomly from the sample.
4. The trainer assessed the IRR and identified and resolved discrepancies with the second reviewer. A spreadsheet was used to document agreed-upon guidance for scoring—particularly when there were discrepancies.
5. Steps 3 and 4 were repeated until the IRR reached the benchmark score (0.80 for objective 8.1 and 0.61 for objective 8.2).

Data Collection

CH randomly⁹ divided the remaining websites from the top 100 websites list into two groups. Each reviewer reviewed an equal number of websites. The trainer was available throughout the data collection period to answer questions or establish and clarify decision rules. In addition, another four websites from each of the organization types were randomly selected and reviewed independently by both reviewers to ensure the IRR remained high. The trainer and the second reviewer identified and resolved any discrepancies to arrive at a satisfying score for the doubly reviewed sites. The data was collected and stored in a Microsoft Excel file.

Once the data collection was complete, the senior usability researcher cleaned and validated the data by:

- Reviewing all responses that the reviewers flagged with comments
- Reviewing and validating all “not applicable” responses
- Flagging any missing responses and returning items to the second reviewer for completion

⁸ Ibid

⁹ Excel’s “RAND” function and “Sort” feature, were used to generate the random website list.

Inter-rater Reliability

To ensure IRR, both reviewers reviewed the same three websites for the first and second round during the training process and then reviewed the same four websites from the remaining sample sites (see Table 5). Websites for IRR analysis were randomly selected.

Table 5. Double-Reviewed Sites

First Round Double-Reviewed Sites	Second Round Double-Reviewed Sites
<ul style="list-style-type: none"> • FoxNews Health • Food and Drug Administration (FDA) • Cleveland Clinic 	<ul style="list-style-type: none"> • American Academy of Dermatology • MyFitnessPal • National Institute of Mental Health (NIMH)
Double-Reviewed Sites from Remaining Samples <ul style="list-style-type: none"> • The Rehab Guide • The New England Journal of Medicine • Planned Parenthood • National Institute of Neurological Disorders and Stroke 	

HC/HIT objective 8.1 mainly includes nominal (categorical) variables (each question represents one variable), for example, “Yes/No” questions (see Figure 2). The team calculated Cohen’s kappa,¹⁰ which is commonly used for these types of variables, to obtain IRR. Adjustments were made to the variables before calculating IRR, which included:

- Excluding questions that require reviewers to randomly select pages on the site, since reviewers were reviewing and scoring different pages.
- Accepting any or a combination of choices for multiple-choice questions. For example, if a question had multiple options and the reviewer selected any of the choices, the question counts as a “Yes” (see Figure 3).

*** 1. Does the website identify by name the person or organization responsible for the website, within 2 clicks of the homepage?**

☐ Yes
 ☐ No

Figure 2. Example of “Yes/No” Question in Objective 8.1 Measurements

¹⁰ Cohen, J. A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*. 1960;20(37).

2. Does the website provide the following contact information for the person or organization responsible for the website, within 2 clicks of the homepage?

☐ Street address

☐ Other mailing address (e.g. post office box, mailstop)

☐ Telephone number

☐ E-mail address

☐ Other contact information

Figure 3. Example of “Multiple-Choice” Question in Objective 8.1 Measurements

The IRR for HC/HIT objective 8.1 is listed in Table 6. The first round IRR (0.59) did not meet the desired level of 0.80. The second round (0.91) and the remaining sample sites (0.83) met the target threshold.

Table 6. HC/HIT Objective 8.1 Inter-rater Reliability

	Number of Questions	Kappa Value	Std. Error
First Round	36	0.586	0.104
Second Round	36	0.911	0.061
Remaining Samples	48	0.830	0.069

HC/HIT objective 8.2 contains ordinal variables (questions are measured by a scale of 1 to 4). We calculated intra-class correlation (ICC), which is the most commonly used statistic for assessing IRR for ordinal, interval, and ratio variables.¹¹ The following ICC variants were specified:

- Two-Way Random model (having the same raters for all variables and assuming the raters are samples of raters’ population)
- Consistency Agreement type (assuming the raters provide scores that are similar in rank order)

¹¹ Hallgren, KA Computing inter-rater reliability for observational data: An overview and tutorial. Tutorials in quantitative methods for psychology. 2012;8(1):23.

The IRR for HC/HIT objective 8.2 is listed in Table 7. The first-round IRR (0.55) didn't meet the desired level of 0.80. The second round (0.73) and the remaining sample sites (0.76) met the target threshold.

Table 7. HC/HIT Objective 8.2 Inter-rater Reliability

	Number of Cases	Intra-class Correlation	95% Confidence Interval	
			Lower Bound	Upper Bound
First Round	180	.549	.395	.664
Second Round	180	.728	.634	.797
Remaining Sites	240	.764	.695	.817

We used SPSS statistical software to conduct the IRR analysis.

To improve the agreement between the reviewers, we documented the resolved discrepancies in a scoring guide (see attachment A).

Scoring and Analyzing Data

The senior usability researcher performed scoring and data analysis on the collected data set using scoring worksheets created in Microsoft Excel (see attachment B and attachment C). Next, the researcher performed scoring and data analysis. For full details, see Appendix F: Scoring and Analyzing Data."

3. Findings for HC/HIT Objective 8.1

Summary Estimates of Compliance for Objective 8.1

For Healthy People 2020 HC/HIT objective 8.1, **58.0%** of health-related websites (n=100) met three or more reliability criteria out of six in 2015 (Figure 4). Only 2% of websites met all the criteria, and 1% of the websites met none of the six criteria. Figure 4 indicates compliance by cumulative number of criteria met.

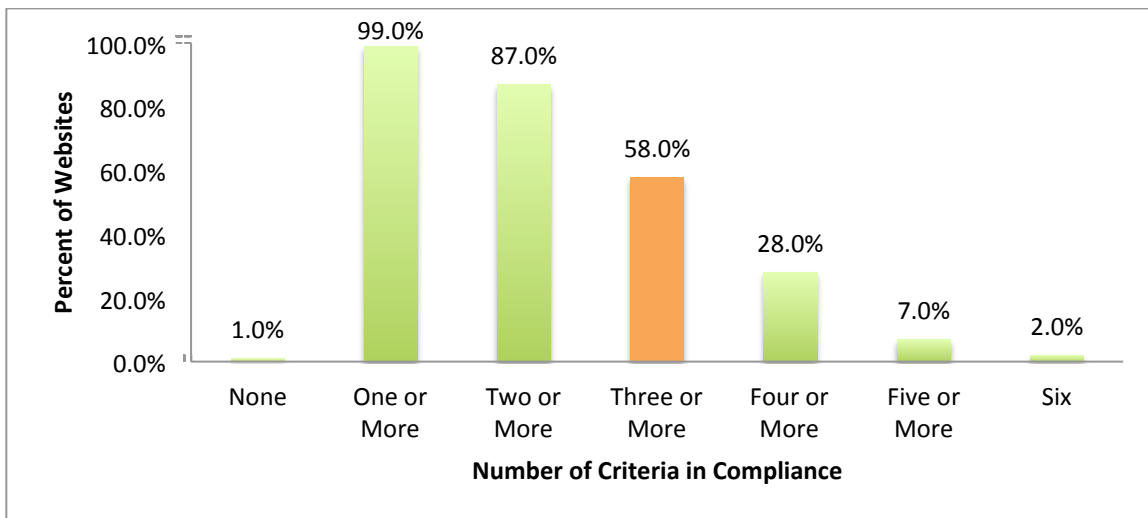


Figure 4. Percent of Websites in Compliance, Cumulative Number of Criteria

Figure 5 displays the distribution of website compliance by exact number of criteria met. Eighty percent of websites met two to four criteria.

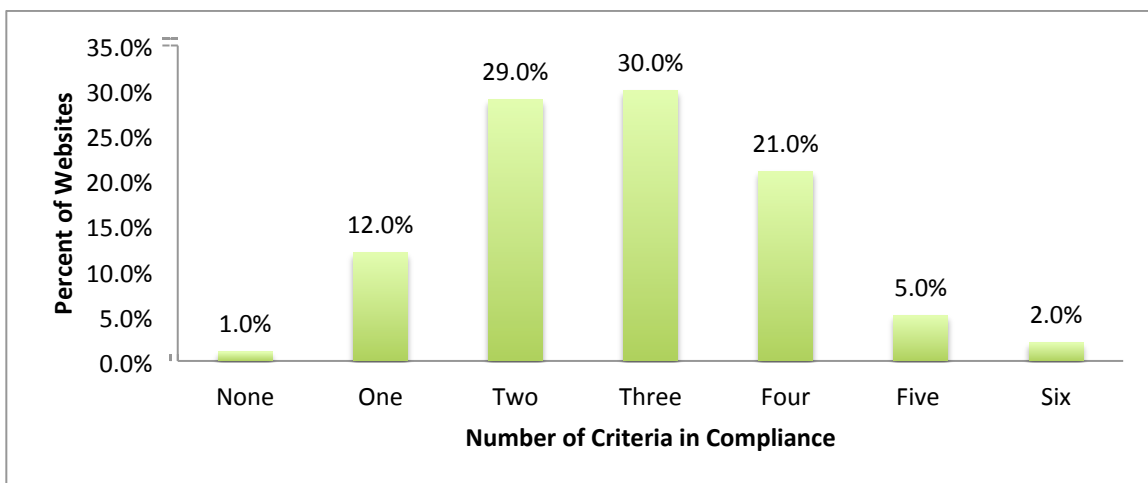


Figure 5. Percent of Websites in Compliance, Number of Criteria

Compliance by Criterion and Reliability Requirements

Figure 6 shows the percent of health-related websites in compliance with specific criteria. User Feedback (90%) has the highest percent in compliance, followed by Privacy (83%), Purpose (52%), and Identity (37%). Only 4% of websites met the criterion of Content Updating, by displaying the date created and the date reviewed or updated on their webpages. Seventy-five percent of websites didn't meet the Content criterion regarding identifying advertising content, describing editorial policy, and providing authorship.

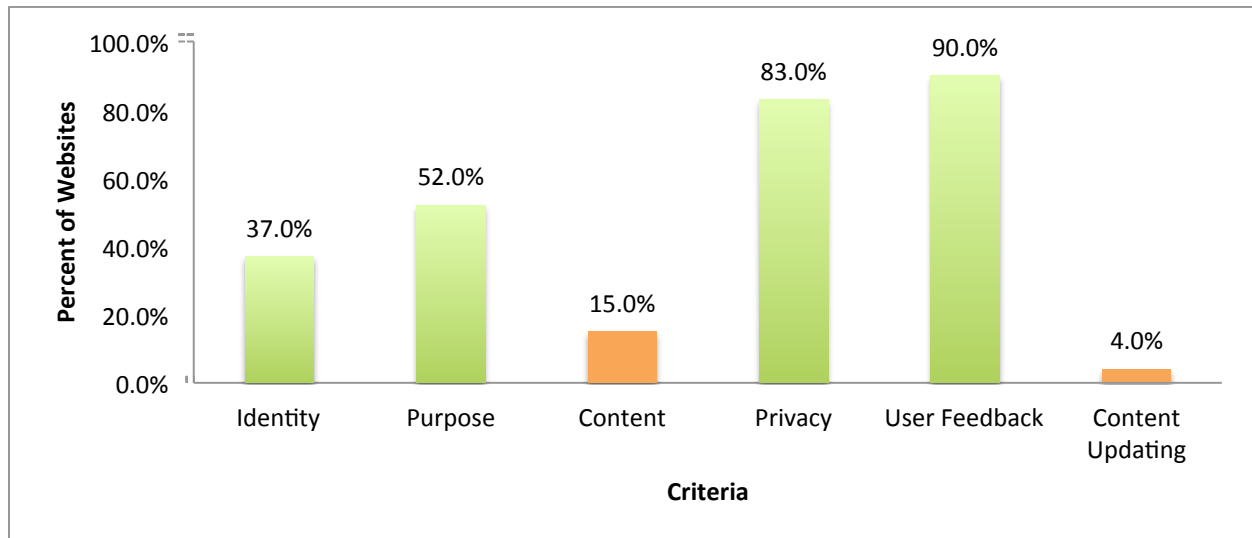


Figure 6. Percent of Websites in Compliance, Specific Criterion

Table 8 displays the estimates of website compliance by criterion and by reliability requirements associated with each criterion.

Table 8. Estimated Percent of Websites in Compliance, Criterion and Reliability Requirement

Criterion and Reliability Requirement	Number (n 100)	Percent	SE	Lower bound 95% CI	Upper bound 95% CI
Identity	37	37.0%	4.83%	27.5%	46.5%
Name	93	93.0%	2.55%	88.0%	98.0%
Street address	83	83.0%	3.76%	75.6%	90.4%
Funding sources	44	44.0%	4.96%	34.3%	53.7%
Purpose	52	52.0%	5.00%	42.2%	61.8%
Purpose or mission	79	79.0%	4.07%	71.0%	87.0%
Uses and limitations	82	82.0%	3.84%	74.5%	89.5%
Association with commercial products	71	71.0%	4.54%	62.1%	79.9%
Content Development	15	15.0%	3.57%	8.0%	22.0%
Identify advertising content (N/A=40, n=100-40)	28	46.7%	6.44%	34.0%	59.3%
Describe editorial policy	39	39.0%	4.88%	29.4%	48.6%
Authorship	38	38.0%	4.85%	28.5%	47.5%
Privacy	83	83.0%	3.76%	75.6%	90.4%
Privacy policy	96	96.0%	1.96%	92.2%	99.8%
Describe protection of personal information	83	83.0%	3.76%	75.6%	90.4%
User Feedback	90	90.0%	3.00%	84.1%	95.9%
Feedback mechanism	90	90.0%	3.00%	84.1%	95.9%
Content Updating	4	4.0%	1.96%	0.2%	7.8%
Display date created	25	25.0%	4.33%	16.5%	33.5%
Display date reviewed or updated	28	28.0%	4.49%	19.2%	36.8%

ODPHP included some optional questions in the survey instrument that were not included in scoring. Findings related to these optional questions include:

- **Identity:** In addition to street address, other mailing address, telephone number, and email address, 41% of the websites provided other contact information, including web forms, online chat, and live help.
- **Content Development/Editorial Policy:** Twenty-five percent of the websites provided names and credentials of medical/scientific editors, reviewers, or advisors.
- **User Feedback:** Seventy-four percent of the websites described how they use information from users to improve their services or operations.
- **Content Updating:** Only 8% of the websites displayed a copyright date.

4. Findings for HC/HIT Objective 8.2

Summary Estimates of Compliance for Objective 8.2

For Healthy People 2020 HC/HIT objective 8.2, **42.0%** of health-related websites (n=100) followed 10 or more out of 19 established usability principles in 2015.

Figure 7 illustrates the distribution of website compliance by the number of usability principles met. All websites met at least one usability principle. Almost half of the websites (47%) met between 9 and 11 principles. None of the websites met 15 or more of the established usability principles.

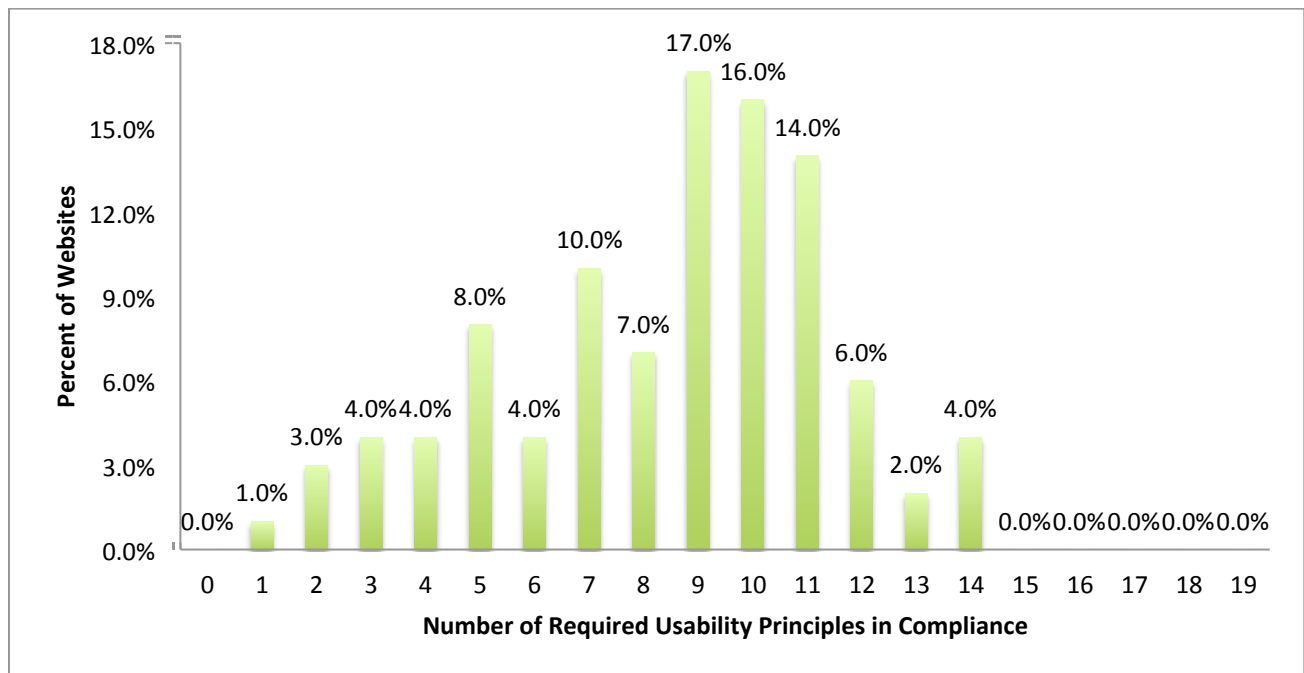


Figure 7. Percent of Websites in Compliance, Number of Usability Principles

Compliance by Criterion and Established Usability Principles

The percentage of websites in compliance with each usability principle is displayed in Table 9.

Table 9. Estimated Percent of Websites in Compliance, Criterion and Established Usability Principles

Criterion and Established Usability Principles	Number (n 100)	Percent	SE	Lower bound 95% CI	Upper bound 95% CI
I. Site Design					
1. Use conventional interaction elements	78	78.0%	4.14%	69.9%	86.1%
2. Make it obvious what is clickable and what is not	68	68.0%	4.66%	58.9%	77.1%
3. Minimize vertical scrolling	24	24.0%	4.27%	15.6%	32.4%
4. Ensure that the Back button behaves predictably	100	100.0%	0.00%	100.0%	100.0%
5. Provide clear feedback signals for actions	39	39.0%	4.91%	29.8%	49.0%
6. Ensure site is accessible for users with disabilities and uses elements of 508 compliance	6	6.0%	2.37%	1.3%	10.7%
7. Provide a simplified user experience	30	30.0%	4.58%	21.0%	39.0%
8. Incorporate multimedia	70	70.0%	4.58%	61.0%	79.0%
9. Offer a functional homepage	30	30.0%	4.58%	21.0%	39.0%
II. Information Architecture					
10. Present a clear visual hierarchy	42	42.0%	4.94%	32.3%	51.7%
11. Provide easy search functionality	17	17.0%	3.76%	9.6%	24.4%
12. Clearly label content categories	25	25.0%	4.33%	16.5%	33.5%
13. Make pages easy to skim or scan	45	45.0%	4.97%	35.2%	54.8%
14. Make elements on the page easy to read	72	72.0%	4.49%	63.2%	80.8%
15. Visually group related topics	45	45.0%	4.97%	35.2%	54.8%
16. Make sure text and background colors contrast	74	74.0%	4.39%	65.4%	82.6%
III. Content Design					
17. Focus the writing on audience and purpose	30	30.0%	4.58%	21.0%	39.0%
18. Use the users' language; minimize jargon and technical terms	32	32.0%	4.66%	22.9%	41.1%
19. Allow for interaction with the content	19	19.0%	3.92%	11.3%	26.7%

5. Conclusion

The National Quality Health Website Survey, 2015 indicated that:

- For Healthy People 2020 HC/HIT objective 8.1, **58.0% of health-related websites (n=100) met three or more out of six reliability criteria.**

- For Healthy People 2020 HC/HIT objective 8.2, **42.0% of health-related websites (n=100) followed 10 or more out of 19 established usability principles.**

What Performed Well

For **objective 8.1**, websites were 90% compliant or more with the following reliability requirements:

- Providing identity of the name of the person or organization responsible for the website (93%)
- Describing website's privacy policy (96%)
- Providing a mechanism to collect user feedback (90%)

For **objective 8.2**, websites were 90% compliant or more with only one usability principle:

- Ensuring that the back button behaves predictably (100%)

Room for Improvement

For **objective 8.1**, websites were 30% compliant or less with the following reliability requirements:

- Displaying the date the content was created (25%)
- Differentiating between advertising and non-advertising content (28%)
- Displaying the date the content was reviewed and/or updated (28%)

For **objective 8.2**, websites were 30% compliant or less with the following usability principles:

- Following accessibility/508 compliance guidelines, especially by providing ALT text for links, images, and videos (6%)
- Providing easy search functionality, by providing corrective options or predictive text (auto-filling search terms) (17%)
- Allowing for users to interact with content through inputting preferences, sharing, and social features (19%)
- Minimizing vertical scrolling by using pagination and providing visual cues in the layout of the page that help users know there is more content "below the fold" (24%)
- Using clear labels (descriptive and easy-to-understand labels) for content categories (25%)
- Providing a simplified user experience with printer-friendly tools, a feedback mechanism for users, and the ability to return to the homepage in one click (30%)
- Offering a functional homepage (30%)
- Focusing the writing on audience and purpose (30%)

There is still a lot of room for health-related websites to improve in order to meet national quality standards as defined by the Healthy People objectives.

This study has the following limitations:

- The samples of this study were selected from Alexa Top Health websites. The research team had no control over the quality of the website rankings performed by Alexa.
- Some of the usability principles might change over time. For example, in this study, only 24% of websites followed the principle of minimizing vertical scrolling. However, with the proliferation of mobile and responsive design technology, users are more and more used to navigating websites by scrolling. Minimizing vertical scrolling may not remain a guideline in the future.
- The survey instrument is somewhat subjective, especially for objective 8.2. Although we controlled the reliability by measuring the IRR from several websites from the sample, there were still individual differences among reviewers that may affect the results.

Future Implications

ODPHP is uniquely positioned to help health websites improve their capacity to meet HC/HIT objectives 8.1 and 8.2. In order to increase the quality of health-related websites, CH recommends that ODPHP create additional tools to assist website developers. For example, the criteria for HC/HIT objectives 8.1 and 8.2 could be turned into easy-to-use checklists to facilitate adherence to web quality guidelines. Health website teams could use these checklists as implementation tools to guide them through the development process.

CH also recommends promoting Health Literacy Online as a more comprehensive resource for national health websites. ODPHP is currently working to release an updated edition in 2015, and its guidelines and recommendations will align with the usability principles defined in objective 8.2. By promoting the guide and showing how it can serve as a tool for meeting Healthy People 2020 objectives, ODPHP will continue to demonstrate its leadership in health literacy and health IT.

Appendix A: List of 100 Qualified Sample Sites

(Data were pulled on 10-14-2014)

No.	Website	URL	Alexa Rank	Sub-category
1	National Institutes of Health (NIH)	www.nih.gov	1	Government
2	WebMD	www.webmd.com	2	For Profit
3	PubMed	www.ncbi.nlm.nih.gov/pubmed	3	Government
4	MyFitnessPal, Inc.	www.myfitnesspal.com	4	For Profit
5	Mayo Clinic	www.mayoclinic.org	5	Nonprofit
6	Centers for Disease Control and Prevention	www.cdc.gov	6	Government
7	MedlinePlus	www.nlm.nih.gov/medlineplus	7	Government
8	Drugs.com	www.drugs.com	8	For Profit
9	Mercola.com	www.mercola.com	9	For Profit
10	MedicineNet.com	www.medicinenet.com	10	For Profit
11	Psychology Today	www.psychologytoday.com	11	For Profit
12	PMC	www.ncbi.nlm.nih.gov/pmc	12	Government
13	Men's Health	www.menshealth.com	15	For Profit
14	Health	www.health.com/health	16	For Profit
15	Medscape	www.medscape.com	17	For Profit
16	Fox News Health	www.foxnews.com/health/index.html	18	For Profit
17	Men's Fitness	www.mensfitness.com	19	For Profit
18	Prevention	www.prevention.com	20	For Profit
19	Kaiser Permanente	www.kaiserpermanente.org	21	Nonprofit
20	Weight Watchers	www.weightwatchers.com	22	For Profit
21	U.S. Food and Drug Administration	www.fda.gov	24	Government
22	RxList	www.rxlist.com	25	For Profit
23	ZocDoc	www.zocdoc.com	26	For Profit
24	SELF	www.self.com	27	For Profit
25	Kids Health	www.kidshealth.org	28	Nonprofit
26	American Cancer Society	www.cancer.org	30	Government
27	Authority Nutrition	www.authoritynutrition.com	31	For Profit
28	Fitness Magazine	www.fitnessmagazine.com	32	For Profit
29	American Psychological Association	www.apa.org	34	Nonprofit
30	Vitals	www.vitals.com	38	For Profit
31	Share Care	www.sharecare.com	40	For Profit
32	Top 10 Home Remedies	www.top10homeremedies.com	42	For Profit

No.	Website	URL	Alexa Rank	Sub-category
33	Spine Health	www.spine-health.com	44	For Profit
34	National Cancer Institute	www.cancer.gov	46	Government
35	Cleveland Clinic	www.clevelandclinic.org	49	Nonprofit
36	American Heart Association	www.heart.org	50	Nonprofit
37	Health Boards	www.healthboards.com	51	For Profit
38	Yahoo Health	www.yahoo.com/health	54	For Profit
39	WEIL Andrew Weil, MD	www.drweil.com	55	For Profit
40	Cure Zone	www.curezone.com	56	For Profit
41	Alzheimer's Association	www.alz.org	58	Nonprofit
42	Johns Hopkins Medicine	www.hopkinsmedicine.org	59	Nonprofit
43	American Diabetes Association	www.diabetes.org	62	Nonprofit
44	Federal Emergency Management Agency	www.fema.gov	65	Government
45	The New England Journal of Medicine	www.nejm.org	68	Nonprofit
46	Sutter Health	www.sutterhealth.org	69	Nonprofit
47	WELLNESS	www.wellness.com	73	For Profit
48	Planned Parenthood	www.plannedparenthood.org	76	Nonprofit
49	ClinicalTrials.gov	www.clinicaltrials.gov	78	Nonprofit
50	Lab Tests Online	www.labtestsonline.org	84	Nonprofit
51	Examine.com	www.examine.com	86	For Profit
52	Calorie King	www.calorieking.com/foods	87	For Profit
53	EARTHCLINIC	www.earthclinic.com	88	For Profit
54	National Institute of Diabetes and Digestive and Kidney Diseases	www.niddk.nih.gov	90	Government
55	Social Anxiety Support	www.socialanxietysupport.com	94	For Profit
56	Fit Pregnancy	www.fitpregnancy.com	95	For Profit
57	The Lancet	www.thelancet.com	100	For Profit
58	Kevin MD	www.kevinmd.com	106	For Profit
59	MD Anderson Cancer Center	www.mdanderson.org	108	Nonprofit
60	GoodTherapy.org	www.goodtherapy.org	110	Nonprofit
61	Science-Based Medicine	www.sciencebasedmedicine.org	111	Nonprofit
62	Additude	www.additudemag.com	114	For Profit
63	Family Doctor	www.familydoctor.org	116	Nonprofit
64	Substance Abuse and Mental Health Services Administration	www.samhsa.gov	118	Nonprofit

No.	Website	URL	Alexa Rank	Sub-category
65	National Institute of Neurological Disorders and Stroke	www.ninds.nih.gov	119	Government
66	CNN Health	www.cnn.com/health	120	For Profit
67	American Society for Nutrition	www.nutrition.org	122	Nonprofit
68	A Place for Mom	www.aplaceformom.com	123	For Profit
69	National Institute on Drug Abuse	www.drugabuse.gov	124	Government
70	ALS Association	www.alsa.org	125	Nonprofit
71	MD Linx	www.mdlinx.com	130	For Profit
72	American Academy of Dermatology	www.aad.org	131	Nonprofit
73	Journal of the American Heart Association	www.circ.ahajournals.org	133	Nonprofit
74	Memorial Sloan Kettering Cancer center	www.mskcc.org	136	Nonprofit
75	Providence Health & Services	www.providence.org	141	Nonprofit
76	DoctorsLounge	www.doctorslounge.com	143	For Profit
77	Agency for Healthcare Research and Quality	www.ahrq.gov	144	Government
78	National Institute of Mental Health	www.nimh.nih.gov	147	Government
79	Breast Cancer.org	www.breastcancer.org	148	Nonprofit
80	National Multiple Sclerosis Society	www.nationalmssociety.org	149	Nonprofit
81	The Rehab Guide	www.therehabguide.com	150	For Profit
82	American Medical Association	www.ama-assn.org	152	Nonprofit
83	Intermountain Healthcare	www.intermountainhealthcare.org	155	Nonprofit
84	Davita	www.davita.com	156	For Profit
85	3FC	www.3fatchicks.com	163	For Profit
86	PXE international	www.pxe.org	164	Nonprofit
87	eMEDtv	www.emedtv.com	166	For Profit
88	Partners Healthcare	www.partners.org	167	Nonprofit
89	National Alliance on Mental Illness	www.nami.org	168	Nonprofit
90	Merck Manuals	www.merckmanuals.com	169	For Profit
91	National Sleep Foundation	www.sleepfoundation.org	170	Nonprofit
92	UCLA Health	www.uclahealth.org	171	Nonprofit
93	St. Jude Children's Research Hospital	www.stjude.org	174	Nonprofit
94	Cancer Treatment Centers of America	www.cancercenter.com	175	For Profit

No.	Website	URL	Alexa Rank	Sub-category
95	National Academy of Sports Medicine	www.nasm.org	176	Nonprofit
96	The New York Times, Health	www.nytimes.com/pages/health	177	For Profit
97	Obesity Help	www.obesityhelp.com	178	For Profit
98	JDRF	www.Jdrf.org	181	Nonprofit
99	Cancer.net	www.cancer.net	182	Nonprofit
100	Wrong Planet	www.wrongplanet.net	183	For Profit

Appendix B: Website Information Reliability Evaluation Instrument

ODPHP WEBSITES DISCLOSURE EVALUATION PROTOCOL FOR HC/HIT OBJECTIVE 8.1

Website Name:

Website Homepage URL:

Type of site:

Date Accessed:

Rater:

Coding Start Time:

Coding End Time:

I. IDENTITY

1. Does the website identify by name the person or organization responsible for the website, within two clicks of the homepage?

☐ Yes

☐ No

Explanation: This is intended to refer to the individual, business, corporation, association, coalition, or group that the user would identify as the website sponsor. Note that responsible entity is distinct from the webmaster or other contractor to whom day-to-day website functions may have been delegated.

2. Does the website provide the following contact information for the person or organization responsible for the website, within two clicks of the homepage?

☐ Street address

☐ Other mailing address (e.g., post office box, mailstop)

☐ Telephone number

☐ Email address

☐ Other contact information [****Optional, not include for scoring**]:

3. Does the website provide the following information on sources of funding for the website, within two clicks of the homepage?

☐ Includes explicit statement about sources of funding for website

☐ Names individual or organizational sponsors, donors, or financial partners for website

Explanation: Note that this refers to funding for the website, not for the sponsoring organization. This information may be found in an advertising or sponsorship policy.

II. PURPOSE

1. Does the website provide information about the purpose or mission of the website, within two clicks of the homepage?

☐ Yes

☐ No

Explanation: Note that this refers to the purpose or mission of the website, and not of the sponsoring organization. It may include a statement of purpose or a description of services provided to website users such as health information, discussion groups or forums, advice from professionals, support for health services, tools for self management, or the sale of products or services.

2. Does the website describe appropriate uses and limitations of the services it provides, within two clicks of the homepage?

☐ Yes

☐ No

Explanation: This may include terms and conditions regarding the provision of services, statements that advice or information is not intended to replace the evaluation of a health care professional, statements about the rights and responsibilities of users or chat room participants, or other disclaimers.

3. Does the website include a statement regarding its association with commercial products or services, within two clicks of the homepage?

☐ Yes

☐ No

Explanation: This may include a statement that the website has no financial interest or association with any product or service mentioned; a statement disclosing a financial

interest or association with a product or service mentioned; or a statement that it endorses no product or service mentioned on the website.

III. CONTENT DEVELOPMENT/EDITORIAL POLICY

1. Does the website clearly differentiate between advertising and non-advertising content?

☐ Yes

☐ No

Explanation: Look at advertising on the home page and on at least two links from the homepage. Advertising, including sponsored health content, should be clearly distinguished from non-advertising content using identifying words, design, or placement. Answer “yes” to this question only if all advertisements found are clearly marked. “Not applicable” should be selected ONLY if no advertising is found on the site.

2. Does the website describe how it oversees its health content in the following ways, within two clicks of the homepage?

☐ Describes its editorial or medical review process

Explanation: Note that this should include a description of the process, and not just a statement that content is reviewed.

☐ Provides names and credentials of medical/scientific editors, reviewers, or advisors
[**Optional, not include for scoring]

Explanation: Credentials may include degrees, licensure, titles, academic or clinical affiliations, or areas of professional expertise. If the website provides the names and credentials of medical/scientific advisors, it must clearly state that these advisors oversee health content.

☐ Describes its policy for keeping health content current

Explanation: Note that this should include a description of the policy, and not just a statement that content is kept current.

☐ Describes other quality oversight practices (explain in comments)

3. Does the website disclose the author of this health-related content in the following ways, within one click of health content?¹²

☐ States that the content is supplied by the website's sponsoring organization or staff

☐ States the name of an organization other than the website sponsor as supplying the content

☐ Identifies individual authors of content by name

Explanation: When the health content is a .pdf file, it should be considered a stand-alone document. Look for the disclosure items only on the .pdf file. Document the page number where the disclosure item was found.

IV. PRIVACY AND CONFIDENTIALITY

1. Does the website describe its privacy policy, within two clicks of the homepage?

☐ Yes

☐ No

2. Does the site explain how users' personal information is protected, within two clicks of the homepage?

☐ Yes

☐ No

Explanation: "Personal information" may include email addresses or email exchanges, personal health information, or information derived through the use of passive tracking mechanisms ("cookies").

V. USER FEEDBACK

1. Does the website provide the following specific mechanisms for user feedback about the website, within two clicks of the homepage?

¹² For this question the coder will visit three randomly selected pages of health content that are accessible through direct paths from the website's homepage.

☐ Feedback form

Explanation: Feedback form refers to a form that is clearly marked as a means for submitting comments or questions about the website.

☐ Pop-up user survey

☐ Email address

☐ Other feedback mechanism (explain in comments)

2. Does the website describe how it uses information from users to improve its services or operations, within two clicks of the homepage? [****Optional, not include for scoring**]

☐ Yes

☐ No

VI. CONTENT UPDATING¹³

1. Does this page of health content display the date this content was created?

☐ Yes

☐ No

Explanation: The date may be indicated as a year, month and year, or month, day, and year. This question DOES NOT refer to copyright date. If there is a date listed with no other explanation, count this as the date created.

2. Does this page of health content display the date this content was last reviewed and/or updated in the following ways?

☐ Displays date last reviewed or verified

☐ Displays date last updated, modified, or revised

¹³ For questions 1–3 in this section, the coder will visit three randomly selected pages of health content that are accessible through direct paths from the website’s homepage.

Explanation: The date may be indicated as a year, month and year, or month, day, and year.

3. Does this page of health content display a copyright date? [****Optional, not include for scoring**]

☐ Yes

☐ No

Explanation: The date may be indicated as a year, month and year, month, day, and year, or a range of years.

Appendix C: Scoring Tool for HC/HIT Objective 8.1

Criteria	Reliability Requirements	Number of Points	Optional Disclosure Elements
Identity	Name of person or organization responsible for website	1	Other contact information for person or organization responsible for website
	Street address for person or organization responsible for website	1	
	Identified source of funding for website	1	
	Target Subtotal	3	
Purpose	Statement of purpose or mission for website	1	
	Uses and limitations of services provided	1	
	Association with commercial products or services	1	
	Target Subtotal	3	
Content Development	Differentiating advertising from non-advertising content	1	Names/credentials of reviewers
	Medical, editorial, or quality review practices or policies	1	
	Authorship of health content (per page of health content)	3	
	Target Subtotal	5	
Privacy	Privacy policy	1	
	How personal information is protected	1	
	Target Subtotal	2	
User Feedback	Feedback form or mechanism	1	How information from users is used
Target Subtotal		1	
Content Updating	Date content created (per page of health content)	3	Copyright date
	Date content reviewed, updated, modified, or revised (per page of health content)	3	
	Target Subtotal		
Total Number Criteria In Compliance (out of 6)			

Appendix D: Website Usability Evaluation Instrument

ODPHP WEBSITES USABILITY EVALUATION PROTOCOL FOR HC/HIT OBJECTIVE 8.2

Website Name:

Website Homepage URL:

Type of site:

Date Accessed:

Rater:

Coding Start Time:

Coding End Time:

SCORING

4 = Minimal problems – satisfies the heuristic

3 = Minor hindrance – possible issue, but probably will not hinder this persona/user

2 = Serious problem – may hinder this persona/user

1 = Task failure – prevents this persona/user going further

I. SITE DESIGN

1. *Use conventional interaction elements*

Are all links clearly indicated in the same manner (such as in the same font, with underlined text)?

Score: __

Are links embedded in descriptive text (rather than “click here,” or something similar)?

Score: __

2. *Make it obvious what is clickable and what is not*

Are clickable items easy to target and hit?

Score: __

Are buttons clearly identified, large enough to easily see and click?

Score: __

Does the site use text links rather than image links?

Score: __

3. *Minimize vertical scrolling*

Does the site use paging (having shorter pages that require to user to frequently move from page to page) rather than scrolling (having longer pages that require scrolling down more than one page to see the end)?

Score: __

Are there visual cues in the layout of the page that help users know there is more content “below the fold”?

Score: __

4. Ensure that the Back button behaves predictably

Is the Back button functional on the browser toolbar on every page?

Score: __

Does clicking the Back button always go back to the page from which the user came?

Score: __

5. Provide clear feedback signals for actions

Are error messages informative and provide solutions to the user?

Score: __

Do links and buttons clearly describe what people will find on the next page (using different, distinct, and relevant key words)?

Score: __

6. Ensure site is accessible for users with disabilities and uses elements of 508 compliance

Is ALT text provided for links, images, video, and animation (this text should pop up when a user hovers the mouse over the element in question)?

Score: __

Is captioning provided for video and animation?

Score: __

Is such captioning easy to read (in terms of size and contrast)?

Score: __

7. Provide a simplified user experience

Does the site include print options and printer-friendly tools?

Score: __

Does the site provide a feedback mechanism for users (such as comment tools or easily identified contact information)?

Score: __

Is it easy to get back to the homepage from anywhere in the site with just one click?

Score: __

8. *Incorporate multimedia*

Does the site include audio and visual features?

Score: __

Are images and other multimedia relevant to, and supportive of, the text content?

Score: __

9. *Offer a functional homepage*

Does the homepage look like a homepage (including mostly clear navigation items and general site info, without too much detailed content)?

Score: __

Is the homepage simple yet engaging?

Score: __

Does the homepage state the purpose of the site?

Score: __

Does the homepage enable easy access to navigational items?

Score: __

Is it easy to navigate to the homepage, with one click, from anywhere in the site?

Score: __

II. INFORMATION ARCHITECTURE

1. *Present a clear visual hierarchy*

Is there a clear visual “starting point” to the page?

Score: __

Is the path users took to get to their current page clearly displayed (such as with breadcrumbs)?

Score: __

Are options for next navigational steps clearly displayed (such as with signposting)?

Score: __

Do users find that information is presented with a greater level of detail the further they navigate into the site (i.e., telescoping)?

Score: __

2. *Provide easy search functionality*

Is there a universally located simple option for searching the site?

Score: __

Does the search option provide corrective options (recommendations for misspelled search terms)?

Score: __

Does the search option provide predictive text (auto-filling predicted search terms)?

Score: __

Is there a simple option for browsing the site (such as a directory of all site topics or a navigational structure)?

Score: __

3. *Clearly label content categories*

Are labels descriptive enough to make it easy to accurately predict what the content will be under each topic category?

Score: __

Are labels understandable on their own?

Score: __

4. *Make pages easy to skim or scan*

If pages are dense with content, is content grouped or otherwise clustered to show what is related?

Score: __

Is white space used to break up and clusters of content?

Score: __

Is it easy to tell what is content and what is external advertising?

Score: __

Is it easy to tell what content is part of the page's main body?

Score: __

Do pages use bullets and lists?

Score: __

Are page elements aligned either vertically or horizontally?

Score: __

5. *Make elements on the page easy to read*

Is the default type size at least 12-point?

Score: __

Are headings noticeably larger than body content (between 14-point and 24-point)?

Score: __

Is text set in a type face that is easy to read (without unnecessary flourishes)?

Score: __

Are headings set in a type face that is easy to read (without unnecessary flourishes)?

Score: __

Are there visual cues (such as icons, text boxes, and different colors) to direct users' attention to important items?

Score: __

6. *Visually group related topics*

Are frequently used topics, actions, and links found on the screen without needing to scroll down more than one page?

Score: __

Is important information at the top center of the page?

Score: __

Is there a template applied consistently across the site?

Score: __

7. *Make sure text and background colors contrast*

Do the colors that are used together make information easy to see and find, and have enough contrast to make items easy to read?

Score: __

Are clickable items highlighted differently from other non-clickable highlighted items?

Score: __

III. CONTENT DESIGN

1. *Focus the writing on audience and purpose*

Is the content written in the active voice, directed to the reader (using “you” as though the page is “talking” to the reader)?

Score: __

Are sentences short (20 words or fewer), simple, and straightforward?

Score: __

Are paragraphs short and scannable (covering only one subject, and under 12 lines)?

Score: __

Are headings, labels, and captions describe the content piece’s purpose?

Score: __

2. *Use the users’ language; minimize jargon and technical terms*

Does the site use mixed case prose (sentences with upper and lower case letters)?

Score: __

Does the site use words familiar to the audience (without needing to refer to a dictionary)?

Score: __

If there are new or technical terms, does the site help users learn what the terms mean?

Score: __

Does the site define acronyms before using them?

Score: __

3. *Allow for interaction with the content*

Are users able to input information and preferences that result in tailored content?

Score: __

Are users able to share the content with others (do pages include email functions, Facebook, Twitter, or other sharing social media sharing buttons)?

Score: __

Appendix E: Scoring Tool for HC/HIT Objective 8.2

Criteria	Established Usability Principles and Measurements	Ratings
Site Design	1. Use conventional interaction elements <i>Links clearly indicated in the same manner</i> <i>Links embedded in descriptive text</i>	1–4
	2. Make it obvious what is clickable and what is not <i>Clickable items are easy to target and hit?</i> <i>Buttons are clearly identified, and large enough to easily see and click</i> <i>Site uses text links rather than image links</i>	1–4
	3. Minimize vertical scrolling <i>Site uses paging rather than scrolling</i> <i>Visual cues are in the layout of the page that help users know there is more content “below the fold”?</i>	1–4
	4. Ensure that the Back button behaves predictably <i>The Back button is functional on the browser toolbar on every page</i> <i>Clicking the Back button always go back to the page from which the user came</i>	1–4
	5. Provide clear feedback signals for actions <i>Error messages are informative and provide solutions to the user</i> <i>Links and buttons clearly describe what people will find on the next page</i>	1–4
	6. Ensure site is accessible for users with disabilities and uses elements of 508 compliance <i>ALT text is provided for links, images, video, and animation</i> <i>Captioning is provided for video and animation</i> <i>Any captioning is easy to read</i>	1–4
	7. Provide a simplified user experience <i>Site includes print options or printer-friendly tools</i> <i>Site provides a feedback mechanism for users</i> <i>It is easy to get back to the homepage from anywhere in the site with just one click</i>	1–4
	8. Incorporate multimedia	1–4

Criteria	Established Usability Principles and Measurements	Ratings
	<p><i>Site includes audio and visual features</i></p> <p><i>Images and other multimedia are relevant to, and supportive of, the text content</i></p> <p>9. Offer a functional homepage</p> <p><i>The homepage looks like a homepage</i></p> <p><i>The homepage is simple yet engaging</i></p> <p><i>The homepage states the purpose of the site or organization</i></p> <p><i>The homepage enables easy access to navigational items</i></p>	1–4
Information Architecture	<p>10. Present a clear visual hierarchy</p> <p><i>Offers a clear visual “starting point” to the page</i></p> <p><i>The path users take to get to their current page is clearly displayed</i></p> <p><i>Clearly displays options for next navigational steps</i></p> <p><i>Information is presented with a greater level of detail the further they navigate into the site</i></p> <p>11. Provide easy search functionality</p> <p><i>Has a universally located simple option for searching the site</i></p> <p><i>Provides corrective search options</i></p> <p><i>Provides predictive text search options</i></p> <p><i>Offers a simple option for browsing the site</i></p> <p>12. Clearly label content categories</p> <p><i>Has descriptive labels</i></p> <p><i>Has labels that are understandable on their own</i></p> <p>13. Make pages easy to skim or scan</p> <p><i>Dense pages are grouped or clustered</i></p> <p><i>White space is used to break up clusters of content</i></p> <p><i>Content and advertising have discernible differences</i></p> <p><i>It is easy to tell what content is part of the page’s main body</i></p> <p><i>Pages use bullets and lists</i></p> <p><i>Are page elements aligned either vertically or horizontally?</i></p> <p>14. Make elements on the page easy to read</p>	<p>1–4</p> <p>1–4</p> <p>1–4</p> <p>1–4</p> <p>1–4</p>

Criteria	Established Usability Principles and Measurements	Ratings
	<p><i>Default type size at least 12-point</i></p> <p><i>Headings are noticeably larger than body content</i></p> <p><i>Text is set in a type face that is easy to read</i></p> <p><i>Headings are set in a type face that is easy to read</i></p> <p><i>Visual cues direct users' attention to important items</i></p> <p>15. Visually group related topics</p> <p><i>Frequently used topics, actions, and links are found without scrolling</i></p> <p><i>Important information is at the top center of the page</i></p> <p><i>A template is applied consistently across the site</i></p> <p>16. Make sure text and background colors contrast</p> <p><i>Colors are used together to make information easy to see and find</i></p> <p><i>Clickable items are highlighted differently</i></p>	<p>1–4</p> <p>1–4</p>
Content Design	<p>17. Focus the writing on audience and purpose</p> <p><i>Content is written in the active voice and directed to the reader</i></p> <p><i>Sentences are short and straightforward</i></p> <p><i>Paragraphs are short and scannable</i></p> <p><i>Headings, labels, and captions describe the content's purpose</i></p> <p>18. Use the users' language; minimize jargon and technical terms</p> <p><i>Site uses mixed case prose</i></p> <p><i>Site uses words familiar to the audience</i></p> <p><i>Site explains new or technical terms to readers</i></p> <p><i>Site defines acronyms before using them</i></p> <p>19. Allow for interaction with the content</p> <p><i>Are users able to input information and preferences that result in tailored content?</i></p> <p><i>Are users able to share the content with others (do pages include email, Facebook, Twitter, or other social media sharing buttons)?</i></p>	<p>1–4</p> <p>1–4</p> <p>1–4</p>
Total Number of Usability Principles in Compliance (out of 19):		

Appendix F: Scoring and Analyzing Data

Based on the scoring tool for HC/HIT objective 8.1 (see Appendix C: Scoring Tool for HC/HIT Objective 8.1”), there are four steps:

1. Scoring for reliability requirements
 - a. For “Yes/No” questions, the researcher gives a point to each question that is scored as “Yes.”
 - b. For multiple-choice questions, the researcher gives a point to each question where one or more choices are scored as “Yes.”
 - c. For questions where reviewers are required to visit three randomly selected pages of health content that are directly accessible from the website’s homepage, the researcher gives a point to each page that is scored “Yes.”
2. Scoring for criteria
 - a. If the subtotal score for a given criterion equals the target score (Appendix C: Scoring Tool for HC/HIT Objective 8.1,” shows the target scores for each criterion), then the site is determined to be in compliance with that criterion.
 - b. If the subtotal score for a given criterion is less than the target score, it is designated as noncompliant even if some of the questions are scored as “Yes.”
3. Counting the number of criteria in compliance for each website
4. Counting the number of websites in compliance for each criterion

An example of scoring for steps 1 and 2 is illustrated in Figure 8. There are three questions under the criterion “Identity.” The second and the third questions have multiple response options. For the website Psychology Today, a point is given to the second question, because one of the choices was selected. No point is given to the third question, because none of the choices were selected. The subtotal of the website Psychology Today is 2, while the target score is 3. Therefore, the website was not in compliance with the “Identity” criterion. For the website Apa.gov, the subtotal is 3, which equals the target score. The website was in compliance with the “Identity” criterion.

A	B	R	S	I
1				
2	Website Name:	Psychology Tod	American Psych	UCLA Health
3	Website Home Page URL:	Psychologytoda	Apa.org	Uclahealth.org
6	I. IDENTITY			
7	1. Does the website identify by name the person or organization responsible for the website, within 2 clicks of the homepage? [1=Yes, 0=No]	1	1	1
8	2. Does the website provide the following contact information for the person or organization responsible for the website, within 2 clicks of the homepage? [Multiple Choices]	1	1	1
9	Street address	1	1	
10	Other mailing address (e.g. post office box, mailstop)			
11	Telephone number		3	3
12	E-mail address		4	
13	Other contact information (*Optional, not for scoring)			
14	3. Does the website provide the following information on sources of funding for the website, within 2 clicks of the homepage? [Multiple Choices]	0	1	1
15	Includes explicit statement about sources of funding for website		1	1
16	Names individual or organizational sponsors, donors, or financial partners for website		2	
17	Criterion Subtotal (target score = 3)	2	3	3
18	IN COMPLIANCE (1 = YES, 0 = NO)	0	1	1
19				

Figure 8. Screenshot for HC/HIT Objective 8.1 Scoring Worksheet

For **HC/HIT objective 8.2**, we used the top box scoring method (the goal is for any website to achieve as many target scores as possible). Based on the study results, the benchmark was set to require a score between “4, minimal problems” and “3, minor hindrance” (score of 3.5) for 10 or more of the established usability principles.

The scoring process included the following steps:

1. Rate each usability measurement on a scale of 1 to 4 based on the level of difficulty in performing tasks on the website (see Appendix D: Website Usability Evaluation Instrument”).
2. Calculate the average rating score¹⁴ (denominator was adjusted based on the number of “N/A” scores for each usability principle for each website) (see Figure 9).
3. Count the number of the usability principles that scored above 3.5 for each website (see Figure 10).
4. Count the number of websites in compliance for each usability principle (see Figure 10).

¹⁴ Previous National Quality Health Website Surveys did not specify how scores were combined for each Usability Principle. This is our recommended approach.

		Average rating scores		
Website Name:		Foxnews Health	FDA	WebMD
Website Home Page URL:		www.Foxnews.c	http://www.fda	www.webmd.cc
16. Make sure text and background colors contrast		4.0	4.0	2.5
Do the colors that are used together make information easy to see and find, and have		4	4	2
Are clickable items highlighted differently from other non-clickable highlighted items?		4	4	3
III. CONTENT DESIGN				
17. Focus the writing on audience and purpose		3.3	3.3	3.8
Is the content written in the active voice, directed to the reader (using "you" as though		N/A	4	4
Are sentences short (20 words or fewer), simple, and straightforward?		2	3	4
Are paragraphs short and scannable (covering only one subject, and under 12 lines)?		4	3	3
Are headings, labels, and captions describe the content piece's purpose?		4	3	4
18. Use the users' language; minimize jargon and technical terms		3.0	3.0	3.0
Does the site use mixed case prose (sentences with upper and lower case letters)?		4	4	4
Does the site use words familiar to the audience (without needing to refer to a diction		2	2	2
If there are new or technical terms, does the site help users learn what the terms mea		2	2	2
Does the site define acronyms before using them?		4	4	4

Figure 9. Screenshot for HC/HIT Objective 8.2 Scoring Wo

					# of Websites in Compliance (n=100)
Website Name:		Foxnews Health	FDA	WebMD	
Website Home Page URL:		www.Foxnews.c	http://www.fda	www.webmd.cc	100
Type of site:		2	1	2	
I. SITE DESIGN					
1. Use conventional interaction elements		4.0	4.0	4.0	78
2. Make it obvious what is clickable and what is not		4.0	4.0	3.7	68
3. Minimize vertical scrolling		2.5	3.0	2.0	24
4. Ensure that the Back button behaves predictably		3.5	4.0	3.5	100
5. Provide clear feedback signals for actions		3.0	2.0	3.5	39
6. Ensure site is accessible for users with disabilities and uses elements of 508 compliance		2.7	4.0	2.7	6
7. Provide a simplified user experience		4.0	4.0	3.3	30
8. Incorporate multimedia		4.0	3.5	4.0	70
9. Offer a functional homepage		3.0	3.2	3.0	30
II. INFORMATION ARCHITECTURE					
10. Present a clear visual hierarchy		1.8	3.3	3.3	42
11. Provide easy search functionality		2.5	3.5	4.0	17
12. Clearly label content categories		4.0	2.5	4.0	25
13. Make pages easy to skim or scan		3.3	3.6	3.2	45
14. Make elements on the page easy to read		3.8	4.0	3.6	72
15. Visually group related topics		3.3	3.7	3.7	45
16. Make sure text and background colors contrast		4.0	4.0	2.5	74
III. CONTENT DESIGN					
17. Focus the writing on audience and purpose		3.3	3.3	3.8	30
18. Use the users' language; minimize jargon and technical terms		3.0	3.0	3.0	32
19. Allow for interaction with the content		3.0	2.5	4.0	19
# of Usability Principles >=3.5		8	11	11	

Figure 10. Screenshot for HC/HIT Objective 8.2 Scoring Worksheet, Step 3 and 4

Attachments

Attachment A: Scoring Guide Spreadsheet

- HC/HIT8.1&8.2_Scoring_Guide_2015.05.xlsx

Attachment B: Final Data and Scoring Worksheet for Objective 8.1

- HC/HIT8.1_Raw-Data_Scoring_Analysis_2015.05.xlsx

Attachment C: Final Data and Scoring Worksheet for Objective 8.2

- HC/HIT8.2_Raw-Data_Scoring_Analysis_2015.05.xlsx