

# A Study of Web Usability for Older Adults Seeking Online Health Resources

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# Overall Concept and Question

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The web needs to meet the needs of older adults. Do older adults encounter barriers when searching health resources online?

# Introduction

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Why does web usability matter for older adults seeking health information?

- Older adults will comprise 20 percent of the population by 2030, twice the percent in 2000
- 80 percent of adult Web users have searched online for health information
- 44.5 percent of adults between 65 and 69 have a disability; 73.6 percent of adults over 80 have a disability

# Introduction

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What are older adults looking for at health sites?

- Older adults are searching the web to learn about symptoms, diagnoses, prescriptions, surgery and recovery

# NIA/NLM Guidelines

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Table I. Guidelines for Making Senior-Friendly Web Sites [NIA/NLM 2002]

<b>Sample Guidelines for Designing Readable Text</b>	
Sans serif typeface	Use font typeface that is not condensed (e.g., Arial, Helvetica) to display information content.
Large font size	Use 12–14 point font size to improve legibility of information content.
<b>Sample Guidelines for Presenting Information</b>	
Style	Present information in a clear and familiar way to reduce the number of inferences that must be made.
Simplicity	Write the text in simple language.
<b>Sample Guidelines for Increasing Ease of Navigation</b>	
Help and Contact Information	Provide help information as well as phone numbers for personal contact.
Site Map	Provide a hierarchical, visual model (site map) to show the organization and content of the site.
Menus	Use pull down menus (list of options displayed when mouse is placed over it) sparingly so precise mouse movement is not required.

Source: National Institute on Aging/National Library of Medicine

<http://nihseniorhealth.gov/>

# NIA/NLM Guidelines

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## Sans Serif Typeface

- In print, serifs are thought to enhance readability and legibility because they help readers discriminate the ends of letters and make the form of each letter more complex. On the web, serifs appear to decrease readability.

Serif (Times New Roman)



**A**t

Sans-serif (Arial)



**A**t

**The serif font has extra marks to the right and left of the bottom of the letter A.**

# Aging Factors and Web Design

## **Vision**

- Reduced ability to focus
- Decreased light sensitivity
- Reduced depth perception

## **Associated NIA/NLM Recommendation**

- Large font sizes (study focus)
- Sans-serif fonts
- High contrast foreground and background
- No patterned background

# Aging Factors and Web Design

## **Cognition**

- Less working memory
- Reduced ability to discern details

## **Associated NIA/NLM Recommendation**

- Site Map (study focus)
- Help and Contact information (study focus)



# Aging Factors and Web Design

## **Motor Skills**

- Decreased coordination
  - difficult to move and click a mouse or scroll down a page
- Reduction in fine-motor skills

## **Associated NIA/NLM Recommendation**

- Single mouse clicks to access information (study focus)
- Large buttons

# Aging Factors and Web Design

## **Literacy**

- 66 percent of adults age 65 and older have low-literacy skills
- Literacy declines with age


## **Associated NIA/NLM Recommendation**

- Clear writing, active voice, simple language
- Lower reading level (study focus)

# Usability Study

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## Test Group

- 125 Web sites, which included 25 newspapers, 25 commercial sites, 25 non-profit sites, 50 state governments sites
-  - Commercial and non-profit sites were selected from online searches for health conditions

## Evaluator

- A qualified rater completed the study for each of the 125 web sites

# Usability Study

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## **Research Categories**

- Design, performance, translation, reading complexity

# Design

Table II. Percentage of Sampled Web Sites with Usability Issue

Usability Issue	Problem	State (.gov)	Commercial (.com)	Nonprofit (.org)	Newspaper (.com)
Pull-down menus	Precise movement of the mouse may be physically challenging.	38%	12%	24%	8%
Small font size	Font size is difficult to read when it is smaller than 12 point.	84%	100%	96%	100%
Screen is 3 or more pages	Lengthy page requires memory recall of Web content.	10%	20%	4%	72%
No help feature	A question not supported by help feature may render the site inaccessible.	36%	52%	64%	48%
No contact us	No means of personal contact makes it difficult to obtain additional information.	14%	52%	4%	48%
No privacy statement	The user may mistrust the site when the use of personal information is unknown.	8%	36%	44%	40%
No site map	Complex sites may be difficult to navigate with no visual relationship among pages.	44%	88%	68%	56%

Gov't sites have the most pull-down menus

Is this an issue with browser resizing? See table III.

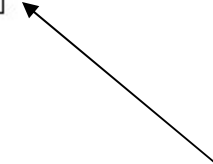
Is this really a usability issue?

# Design

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Table III. Percent of Web Sites with Text Resizing Enabled

Internet Explorer Text Resizing	State (.gov)	Profit (.com)	Nonprofit (.org)	Newspapers (.com)
All content resized	24%	16%	20%	36%
Some content resized	36%	44%	40%	28%
No content resized	40%	40%	40%	36%



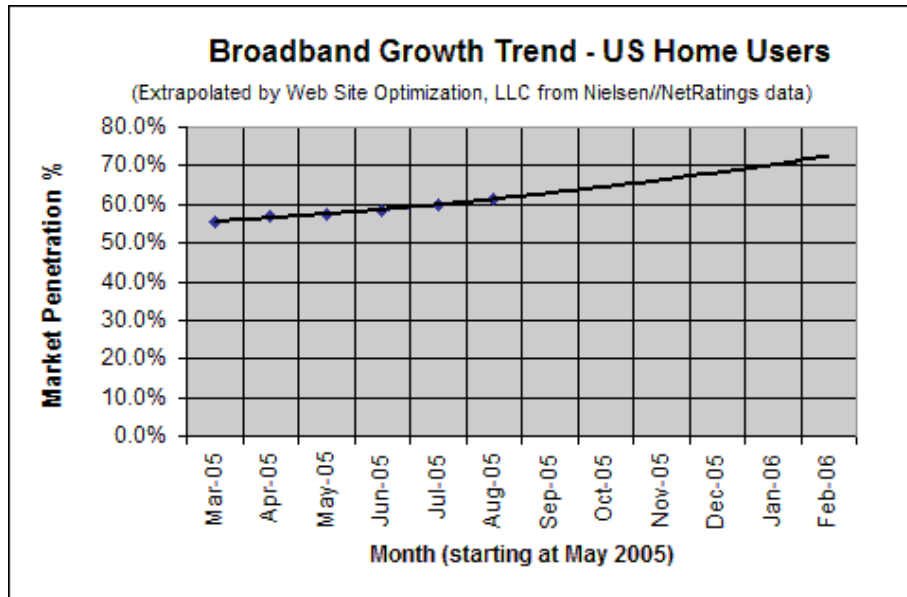
Approximately 40 percent of sites did not enable text resizing

# Performance

Table IV. Performance Times for Sampled Web Sites (Percentages are Cumulative)

Download Data in Seconds	State (.gov)	Profit (.com)	Nonprofit (.org)	Newspapers (.com)
Median download time	22	21	24	40
Minimum download time	10	6	7	4
Maximum download time	54	42	81	167
Percent of sites download < 10	3	14	4	4
Percent of sites download < 30	16	71	61	22
Percent of sites download < 60	76	100	91	78

Article: “53.26 of users connect to the Internet via 56.6 kpbs modems” (2003 Nielsen/Net Ratings)



Current data: In August 2005, broadband penetration in US homes rose 1.4 percentage points to 61.32%, up from 59.92% in July. Broadband penetration is predicted to hit 70 percent in January 2006.

Source: [December 2005 Bandwidth Report](#)

# Translation

Table V. Percent of Translated Versions with English Content

Description of Translation Issue	State (.gov)	Profit (.com)	Nonprofit (.org)	Newspaper (.com)
Links at the top of the page are in English.	20%	0%	14%	50%
Links in the navigation bar are in English.	40%	50%	57%	50%
Links at the bottom of the page are in English.	60%	50%	57%	0%
Broken link navigates to an error page in English.	40%	0%	14%	0%
Buttons are in English.	80%	50%	57%	50%
Icons, symbols, acronyms, abbreviations are in English.	40%	0%	14%	0%
Title (or logo) is in English.	40%	50%	86%	50%
Text at the top of the page is in English.	20%	0%	43%	0%
Text body is not fully translated.	40%	0%	14%	50%
The text in the menu box is in English.	40%	0%	71%	50%

→ Buttons are in English on Spanish translated sites

- 4 percent of both profit and newspaper sites had Spanish version, one third of non-profit sites, and 10 percent of State sites



- What is the sample size of the translated sites? Is this large enough? Is translation relevant to the specific population of older adults seeking health information?



# Reading Complexity

Table VI. Reading Complexity of Sampled Web Sites

	Minimum				Maximum				Median			
	State	Profit	Nonprofit	News	State	Profit	Nonprofit	News	State	Profit	Nonprofit	News
ARI	7.7	7.9	7.0	8.1	17.9	14.8	15.3	14.7	11.4	11.6	10.9	11.8
Kincaid	8.2	8.9	7.0	8.7	17.5	14.9	15.5	14.3	12.3	11.8	11.5	11.8
Approximate grade level	8	8-9	7	8-9	Graduate level	College level	College level	College level	11-12	12	11	12
Sentence length <sup>3</sup>	12.3	14.4	13.2	16.1	24.2	23.2	26.1	25.2	17.6	18.5	17.3	19.5

Non-profits had the lowest and highest reading levels at 7<sup>th</sup> grade and college level

- Used Automated Readability Index (ARI) and the Kincaid Index to text readability. Kincaid method means counting the number of syllables, while the ARI method does not. The ARI method counts characters while Kincaid method does not.
- Sample size was 99 Web sites, newspaper sites were not included.

# Reading Complexity

Table VII. Percentage of Web Sites in Each Grade Level Range

ARI Grade Level	State (.gov)	Profit (.com)	Nonprofit (.org)	Newspaper (.com)
≤8	8%	8%	16%	4%
9 ≤ 12	64%	60%	52%	71%
>12	28%	32%	32%	25%

- Most sites were in the 9th to 12th grade readability range.
- This is above the recommended reading level for health sites providing information to the public. Recommended Reading level is 6th to 8th grade.\* Author states that recommended reading level is 6<sup>th</sup> grade.

\*Source: Freda, M. C. (2004). Issues in patient education. *Journal of Midwifery and Women's Health*, 49 (3), 203–209

# Summary

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## **Design**

- No category of site met the NIA/NLM design guidelines
- State government web sites were the most compliant out of all tested
- Online newspapers were the most design friendly websites

## **Performance**

- Lengthy download times could be an impediment to accessing health resources
- Newspaper sites have the longest download times

# Summary

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## **Translation**

- Not enough sites offer translation
- Only 12 percent of the sites studied offered translation (15 sites?)
- In translated sites, English appeared in buttons, and other navigation elements

## **Reading Complexity**

- There were literacy barriers in all of the sites studied
- 30 percent of sites required higher than a high-school education to comprehend health information

# Conclusion and Future Research

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## **Conclusion**

- Improvements in web design are necessary to accommodate vision, cognition, and motor skills of older adults

## **Future Research**

- The NIA/NLM guidelines lack specific detail and need to be expanded
- Additional research is needed on the structure of help offered on websites, the tradeoff between minimizing scrolling and clutter on a webpage, the needs of “ethnic elderly,” and reading complexity

# Questions

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- Did the selection of the sites used for the study cloud the end results?
- What issues are central to the usability of health web sites for older adults? Are the issues of download speed and language relevant to the study of older adults?
- Is having health information at a 6<sup>th</sup> grade reading level a desired goal?