

**Draft Final Report on ASA24 Respondent and Researcher Websites**

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**Expert Review and Usability Evaluations**

**Conducted by User-Centered Design, Inc.**

**For the**

**National Cancer Institute's**

**Applied Research Program**

**Risk Factor Monitoring and Methods Branch**

**Division of Cancer Control and Population Sciences (DCCPS)**

September 2012

## **Executive Summary**

The National Cancer Institute's Applied Research Program (ARP), Risk Factor Monitoring and Methods Branch in the Division of Cancer Control and Population Sciences carries out a variety of activities to monitor the influence of individual and societal risk factors and health behaviors that mediate cancer incidence, morbidity, mortality, and survival, both directly and indirectly. One of these activities has been to support the development and evaluation of high quality, affordable dietary assessment instruments for use by investigators and clinicians in their research. The system ARP has supported in this endeavor is the Automated Self-Administered 24-hour Dietary Recall (ASA24) website. There will be two websites (1) a Respondent site, where participants describe their total dietary information from the previous 24 hours and (2) a Researcher site where investigators originate a study and collect the dietary data.

User-Centered Design, Inc. (UCD) was contracted to conduct an expert reviews and perform several tests of the Respondent and Researcher websites to determine if the sites are meeting the needs of potential users. This final report documents the methods and findings of all activities.

In 2011, an initial expert review of the respondent website was conducted prior to the completed development of the website. Later, an expert review of the more developed product and an initial round of testing were conducted on the ASA24 Respondent site.

A second round of usability testing was conducted on the Respondent website in 2012; participants in this test included 12 who were either low literacy or elderly.

A third round of usability testing was conducted on the Spanish version of the Respondent website with participants who spoke Spanish.

The Researcher website was unavailable for review or testing based on the status of the website at the end of the contract. This report documents all the activities of this project: the expert reviews, and the usability tests of the Respondent website. All the documents used in testing are also provided.

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## Introduction

The National Cancer Institute's Applied Research Program (ARP), Risk Factor Monitoring and Methods Branch in the Division of Cancer Control and Population Sciences carries out a variety of activities to monitor the influence of individual and societal risk factors and health behaviors that mediate cancer incidence, morbidity, mortality, and survival, both directly and indirectly. One of these activities has been to support the development and evaluation of high quality, affordable dietary assessment instruments for use by investigators and clinicians in their research. The system ARP has supported in this endeavor is the Automated Self-Administered 24-hour Dietary Recall (ASA24) website. There will be two websites (1) a Respondent site, where participants describe their total dietary information from the previous 24 hours and (2) a Researcher site where investigators originate a study and collect the dietary data.

User-Centered Design, Inc. (UCD) was contracted to help assess the usability of the two ASA24 websites. Anticipated activities were expert reviews and usability testing of the two sites. The respondent site was to be tested with adult participants who were elderly, low literacy, Spanish speaking, and others not described by the other descriptions.

Attempts to review both the Respondent and Researcher websites early in the project forced the recognition that the websites needed further development before the review would be helpful. The official Respondent review was accomplished in April 2011. It was followed by usability testing with adult respondents who were not in a special category. A second usability test in January, 2012 tested elderly and low literacy participants, as well as some others (who should have been tested remotely in the first round but were not) on the English version of the website.

A third usability test of the Respondent website covered the Spanish edition of ASA24 with participants who spoke Spanish.

The Researcher website was not available for usability testing within the time limits of this project.

All the activities have been reported to the client in briefings, and this final report documents the methods and findings of the activities.

## Method and Findings

The project was conducted in four phases.

**Phase 1: Expert Review of the Respondent Website.** In early 2011 an initial expert review of the respondent website was conducted prior to the completed development of the website. In April 2011, two UCD professionals conducted independent reviews of the ASA24 Respondent website. They consolidated their findings into a comprehensive review of the website and presented them in a briefing.

Some results of the expert review dealt with functionality problems throughout the application, which were addressed in later stages as the application continued to be developed.

**Phase 2: Initial Respondent Usability Test.** Six participants tested the ASA24 Respondent website in May 2011. At the request of NCI and their website contractor, testing remote participants was delayed until some functional bugs were fixed. Three of these were tested later and eventually three others were tested in the time frame of second usability test. The issues that were of special concern were the penguin, moving foods into meals (problems with the mouse and using Enter), and slowness of the site.

The objective of the usability test was to determine if users could respond appropriately to the website as it requested dietary information. The screener and facilitator's guide used for this and the other tests of the Respondent website are found in the Appendix to this report.

**Phase 3: Second Respondent Usability Test.** Another test with English speaking respondents was conducted in January 2012. Although it was not obvious to the participants, the voice of the penguin had changed. In this test the penguin had a "human" voice rather than a computer generated one. In the opinion of the professionals working on the project, this change did increase participants' ability to hear and understand the instructions.

Twelve elderly and low literacy respondents were tested in the NCI Usability Lab during this testing. Participants who matched the characteristics of those participants in the previous test were tested remotely.

**Phase 4: Spanish Respondent Usability Test.** In July 2012, twelve individuals who spoke and read Spanish were tested remotely on the parallel Spanish website. In many ways, the results were very similar to the results from tests of the English site.

**Phase 5: Researcher Expert Review and Usability Test.** It was anticipated that an expert review and usability testing of ASA24's researcher site would be conducted in the fall of 2012. However, neither the ASA24 Researcher website nor the ACT24 Researcher website (which was going to be a substitute for the ASA24 Researcher site) were ready for testing before the time the contract was to be finished. An alternate project with "Life in the Day," an android application, is being substituted so that the project can be accomplished before the contract deadline.

The details of the various methods and findings for the four phases that were completed are documented in the annotated briefings that accompany this brief report. Attached in the Appendix are

the materials used in the process of usability testing: the screening document, the in-lab and remote consent forms, and the facilitator's guide. For the Spanish testing, these documents were translated into Spanish.

## **Conclusion**

The ASA24 website for the respondents improved in usability over the course of the project. Some issues that are known problems present two sides that need to be balanced. For example, although it is known that users need to know more about the overall process of the website/application, it is also acknowledged that the penguin already gives users too much information. This information overload means that many users do not comprehend all that is said even without any more information being added. Such issues have been covered and discussed in the various briefings so that the ASA24 stakeholders will make any changes based on their understandings of the possible solutions. Further, the availability of a demo site provides an ideal way for new respondents to practice using the website. It was recommended that all new respondents use the demo site to practice when the researcher or the researcher's proxy can be nearby for answering questions.

## Appendix A- Screener for Recruiting Respondents

Thirty four (34) individuals are needed to participate in a usability test for the ASA24 Respondent website. Three groups of respondents should be recruited as described below. Note: This document includes questions for all three groups of participants. In practice, questionnaires may be separated for ease of use. Questions for the three recruits are color- and title-coded in the material below.

For the Group A, there should be ten (10) individuals.

- Participants will NOT have previous experience with the website.
- Respondents should be ~20-40 years old.
- All participants should have at least intermediate computer/internet experience.
- Age, gender, and race should be mixed as well as possible.
- These individuals can be tested in the lab or remotely.

For Group B, there should be twelve (12) individuals who either have low literacy or who are older. A list of potential volunteers who are low literacy individuals may be obtained from a local literacy council. Individuals could then be recruited from that list.

- As well as possible the individuals should be divided into half (6) with low literacy and half (6) who are older (defined as 65-75 years).
- Individuals should have no previous experience with the website
- All participants should have at least intermediate computer/internet experience. However, if finding appropriate individuals with this level of experience is a problem, all participants should be able to use the computer by themselves.
- Age, gender, and race should be mixed as well as possible.
- These individuals will be tested in the lab.

Group C is twelve (12) Spanish speaking respondents who will be recruited to use the Spanish version of the site.

- All participants should have at least intermediate computer/internet experience.
- Age, gender, and race should be mixed as well as possible.
- These individuals will be tested remotely.

Note: Individuals known to have previously used ASA24 will answer Group A questions. Individuals who are low literacy will be recruited (for Group B) from a list of volunteers from a low literacy group.

The following table repeats the numbers and a brief description and the numbers of participants who are needed.

Group	Description of Respondent Participants	Number needed
A	Aged ~20-40, Has not used ASA24	10
B	Low literacy	6
B	Older individuals (65 -75 yrs)	6
C	Spanish speaking	12

Hello, my name is \_\_\_\_\_, calling for User-Centered Design. We are recruiting individuals to do usability testing of a website used by researchers, dietitians, and others to learn about what people eat. . We would like to ask you a few questions to find out if you qualify and would like to participate. This will only take a few minutes of your time and no one will attempt to sell you anything. This is strictly for research purposes. If you are interested and qualify for the study, you will be paid to participate. Can I ask you a few questions?

### Group A Participant Screener

1. Do you or anyone in your household work for:

- An Internet or software development company
- A usability or market research business/company

(DISMISS if yes to either of the above)

2. Have you participated in a market research study, such as a focus group or an in-person interview, within the last six months?

- Within the last 6 months? (DISMISS)
- Over 6 months?
- Never?

3. Have you ever used the National Cancer Institute’s application called ASA24? This is a website that prompts you to record everything that you ate and drank the day before.

- Yes (DISMISS)
- No

4. What is your age group?

- 19 or less (Dismiss)
- 20-34 (Preferred age for group who have not previously used the application)



- 35-45 (Preferred age for group who have not previously used the application)
- 46-64
- 65-75 (Qualifies for Group B)
- > 75 (DISMISS)

5. What is your present level of education

- Did not graduate from High School (May qualify for low literacy, Group B)
- High School Diploma (May qualify for low literacy, Group B)
- Some college
- Degree from College
- Some post graduate courses
- Post graduate degree

6. How many hours per week do you use the Internet for business or personal use, excluding checking your e-mail?

- Less than 2 hours a week
- Between 2-5 hours a week
- Between 6-15 hours a week
- Over 15 hours a week

7. How would you rate your Internet experience? Where 5 is Advanced, 3 is Intermediate, and 1 is Novice. \_\_\_\_\_ (DISMISS anyone who rates him/herself less than 3)

8. Which of the following activities have you done on the Internet? (Check all that apply)

- Made a purchase online
- Paid bills online
- Worked or created pages on MySpace or Facebook
- Downloaded Music or Videos
- Looked for information about a hobby or interest
- Looked at information from a local, state or government web site
- Looked for current news, sports, or weather

DISMISS if respondent has not done at least two of the activities above.

9. [Do not ask but] Record gender

- Male
- Female

## Group B Participant Screener

10. Do you or anyone in your household work for:

- An Internet or software development company
- A usability or market research business/company

**(DISMISS if yes to either of the above)**

11. Have you participated in a market research study, such as a focus group or an in-person interview, within the last six months?

- Within the last 6 months? **(DISMISS)**
- Over 6 months?
  - Never?

12. What is your age group?

- 19 or less (Dismiss)
- 20-45
- 46-64
- 65 -75 or older (Qualifies as older, we need 6 individuals. Check for literacy too.)
- >75 **(DISMISS)**

13. What is your present level of education

- Did not graduate from High School (May qualify for low literacy)
- High School Diploma (May qualify for low literacy)
- Some college
- Degree from College
- Some post graduate courses
- Post graduate degree

Note that the next 4 questions are designed to determine literacy. If individuals are being recruited from a list of low literacy individuals, these questions will not be asked.

14. Are you comfortable reading the daily newspaper?

- Yes [Even if someone says yes, ask question below]
- No [If someone says no, assume they have low literacy skills]

15. What do you typically read in the newspaper? Tell me all that you read.

- Headlines
  - Daily news stories in the paper; Which types? (Use this to verify that they actually read stories which will be a partial determinant of literacy)
- 

- TV Digest
- Comics and Editorial cartoon
- Advice Columns
- Editorials
- Sports scores
- Stock market numbers
- Other material, Please describe \_\_\_\_\_

16. What was the last material you read just for pleasure?

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17. When was the last time you read for pleasure?

- Today
- Yesterday
- This week
- Last week
- This month
- A few months ago
- Other, Please describe \_\_\_\_\_

[Make a judgment about literacy based on

- Education level at a high school diploma or lower can predict low literacy skills,
  - Actually reading (or not) the newspaper (which requires ~ a fifth grade education) whereas simply reading numbers in the newspaper does not require literacy skills, and
  - Reading for pleasure within the recent past is a sign of literacy.

If you have difficulty deciding if this individual has low literacy skills, contact UCD for a consultation. Six (6) low literacy skilled individuals are needed.

- Consider this individual someone who has low literacy skills.
- Do not consider this individual someone who has low literacy skills.

18. How many hours per week do you use the Internet for business or personal use, excluding checking your e-mail?

- Less than 2 hours a week
- Between 2-5 hours a week
- Between 6-15 hours a week
- Over 15 hours a week

19. How would you rate your Internet experience?

- None or almost none (**DISMISS**)
- Novice, but can work on the internet by self
- Intermediate
- Advanced

20. Which of the following activities have you done on the Internet? (Check all that apply)

- Made a purchase online
- Pay bills online
- Have worked or created pages on MySpace or Facebook
- Downloaded Music or Videos
- Looked for information about a hobby or interest
- Looked at information from a local, state or government web site
- Looked for current news, sports, or weather

**DISMISS** if respondent has not done at least one of the activities above.

21. [Do not ask but] Record gender

- Male
- Female

### Group C, Participant Screener

This material will be presented in Spanish to potential participants.

22. Do you or anyone in your household work for:

- An Internet or software development company
- A usability or market research business/company

**(DISMISS if yes to either of the above)**

23. Have you ever used the National Cancer Institute's application called ASA24? This is a website that prompts you to record everything that you ate and drank the day before.

- Yes (DISMISS)
- No

24. Have you participated in a market research study, such as a focus group or an in-person interview, within the last six months?

- Within the last 6 months? (**DISMISS**)
- Over 6 months?
- Never?

25. Do you have any trouble reading Spanish?

- Yes [If someone says yes, **DISMISS**]
- No

26. What is your age group?

- 19 or less (**DISMISS**)
- 20-34
- 35-49
- 50 or older (**DISMISS**)

27. What is your present level of education

- Did not graduate from High School
- High School Diploma
- Some college
- Degree from College
- Some post graduate courses
- Post graduate degree

28. How many hours per week do you use the Internet for business or personal use, excluding checking your e-mail?

- Less than 2 hours a week

- Between 2-5 hours a week
- Between 6-15 hours a week
- Over 15 hours a week

29. How would you rate your Internet experience? Where 5 is Advanced, 3 is Intermediate, and 1 is Novice. \_\_\_\_\_ (DISMISS anyone who rates him/herself less than 3)

30. Which of the following activities have you done on the Internet? (Check all that apply)

- Made a purchase online
- Pay bills online
- Have worked or created pages on MySpace or Facebook
- Downloaded Music or Videos
- Looked for information about a hobby or interest
- Looked at information from a local, state or government web site
- Looked for current news, sports, or weather

**DISMISS** if respondent has not done at least two of the activities above.

31. [Do not ask but] Record gender

- Male
- Female

Thank you for taking the time to answer my questions. We would like to invite you to participate in the usability test. For the test, you will be asked to use a computer by yourself and work with a website and answer some questions? This will take about an hour.

For Group A: If you live in the Washington, DC area, we would like you to participate at the National Cancer Institute Usability Lab in Rockville, MD. The sessions will be held on [date] at [time] at the lab at 6116 Executive Blvd. Room 400 in Rockville, MD. We will email you a confirmation & directions, and we will call you the day before to confirm your attendance. For in-lab participation, we can offer you a stipend of \$100 to compensate you for your time.

If you are unable to come to the lab, we can have you test the website remotely using conferencing software. For remote participation, we can offer you a stipend of \$50 to compensate you for your time.

For Group B: We would like you to participate at the National Cancer Institute Usability Lab in Rockville, MD. The sessions will be held on [date] at [time] at the lab at 6116 Executive Blvd. Room 400 in Rockville, MD. We will email you a confirmation & directions, and we will call you the day before to confirm your attendance. Do you have a way to get to the lab? For in-lab participation, we can offer you a stipend of \$100 to compensate you for your time.

For Group C: We will have you test the website remotely using conferencing software. The sessions will be held on [date] at [time]. For remote participation, we can offer you a stipend of \$50 to compensate you for your time.

Respondent's name \_\_\_\_\_

Respondent's availability \_\_\_\_\_

Respondent's email address \_\_\_\_\_

Telephone number \_\_\_\_\_

## Appendix B- Informed Consent Form for In-lab Testing

<b>Identification of Project</b>	ASA24 Usability Test
<b>Statement of Age of Subject</b>	I state that I am at least 18 years of age, in good physical health, and wish to participate in a program of research being conducted by Amy F. Subar, PhD in the Risk Factors Methods and Monitoring Branch of the National Cancer Institute, Rockville, MD 20852.
<b>Purpose</b>	The purpose of this research is to test the design of the application's interface for usability.
<b>Procedures</b>	Participants will be asked to work with the interface, perform certain tasks, and answer questions about the experience. The total time involved, including instructions will be no more than 60 minutes. A total of about 35 individuals such as yourself are being asked to participate in a test of the ASA24.
<b>Confidentiality</b>	All information collected in this study will be kept secure to the extent permitted by law. I understand that the data I provide will be grouped with data others provide for the purpose of reporting and presentation and that my name will not be used.
<b>Risks</b>	I understand that the risks of my participation are expected to be minimal in nature.
<b>Benefits, Freedom to Withdraw, &amp; Ability to Ask Questions</b>	I understand that this study is not designed to help me personally but that the investigators hope to check the new design of the ASA24 diet recall application in order to make the experience future participants in studies easier. I am free to ask questions or withdraw from participation at any time and without penalty.
<b>Contact Information of Investigators</b>	Name: Position: Telephone: Email:

Printed Name of Research Participant \_\_\_\_\_

Signature of Research Participant \_\_\_\_\_

Date \_\_\_\_\_



## **Appendix C- Script for Verbal Consent Form for Remote Testing**

As part of this research, I need to ask you to formally agree to this usability test and interview.

As part of a research project for the National Cancer Institute's ASA24 Web-based Application, we are seeking to evaluate the appropriateness and usability of a new application design. The ASA24 includes an application used by participants to record everything they ate and drank the previous day and an application used by researchers, teachers, and clinicians to set up and monitor studies and obtain output. The focus of this study is on the participant site. We are asking a total of about 35 individuals such as yourself to participate in a test of the ASA24. We are asking you for about 60 minutes of your time today plus the time you've already spend responding to phone calls and/or emails.

We won't be asking anything personal and identifying information is only collected so we can send you \$50 as a token of our appreciation of your time. Identifying information will not be shared. Any findings will be reported in aggregated form.

Your participation is voluntary, and if you choose not to participate it will not affect your relationship with the National Cancer Institute. You may ask questions at any time during the interview. You are also free to stop the interview at any time without penalty and without any questions being asked of you. Do you have any questions about the process of the interview/usability test?

If you agree to participate, you are saying that you understand what I've told you and that any questions you have were satisfactorily answered. You are also saying that you are at least 18 years old, and that you voluntarily agree to participate. Do you agree to participate in this usability test and interview?

## Appendix D- Facilitator's Guide for Respondent Usability Tests

[Note: The purpose of this document is to guide the moderator. The questions and tasks contained herein may not be asked as written. The facilitator often draws on participant comments and the natural flow of the testing process to determine the flow of the session. While the facilitator will try to follow the order of the guide, many times tasks will come up ahead of time or in different order. The facilitator may allow the order of the tasks to change in order to let the process flow naturally. ]

### Pre-Test

[Administer the informed consent]

### Introduction

Thank you for agreeing to participate in this study. Do you have any questions for me before we get started?

There are a few things I'd like you to keep in mind while we work. The first is, this is not an evaluation of you or your knowledge. This is an evaluation of the design of the website you will be working with today. I will be trying to evaluate the design through your eyes. I'll give you some things I'd like you to try to do and then see if it is clear to you what you should do. Mostly I will just watch you work but I'm also here to answer any questions, although I may let you keep working on your own before I answer you. At times, I may ask you some direct questions; this is not to test you but to find out if the website is easy to follow. In other words, I am testing the website, not you.

The second thing I would like you to keep in mind is that I didn't design what you will be working with today so don't worry about hurting my feelings. . I want you to feel free to praise or criticize the design as you see fit. If there are areas of concern or things you don't like, I want you to feel free to talk about them. That way, we might be able to figure out a way to make the website better.

Finally, I'd like you to know that I have one of my colleagues with us today taking notes for me. There [may be/are] other people who are observing today as well. Don't worry about them. You and I will work on this together and they'll just watch.

[To verify that we know actual information about the participants (and their background) and to get them comfortable with talking in this strange situation, we'll have them talk about subjects that they are comfortable with.]

Before we actually get started, I'd like to know a little bit about your background.

Have you ever been asked by someone to use the ASA24 Website to record what you ate and drank the previous day?

If yes, What sort of project were you participating in?

This is a new design for the ASA24 website, but we were just wondering about your previous experience.

## Tasks

First, I'd like you to look at the website. Please describe your first impressions of this "look".

Now I'm going to ask you to do go through the website and enter the information that is requested. Feel free to ask any questions that come to mind as you work but I might not answer right away to see if the design lets you find the answer on your own. Also, if it feels comfortable, tell me what you think about each of the entries that you make.

I'm going to watch as you go through the application and I may ask you questions. Meanwhile, I'd like you to tell me if it's easy or difficult for you to see what you should do and then what you should do next. Your username and password for this will be \_\_\_\_\_ and \_\_\_\_\_. [Also give them the name and password written on a piece of paper.]

Areas/items to watch and/or talk about:

Penguin (general impressions)

Instructions

Changing font size

Turning penguin on/off

Meal name

Time

Location

TV

Eating alone

Going to next screen

Threefold screen

Browsing food categories

Searching for food and drinks

Moving an item over to My Foods and Drinks

Editing/copying/deleting foods or drinks

Editing/deleting meals

What to do if can't find item in categories (no match found)

What to do when done entering all meals and snacks

Accessing and recording the quantity—food, drink

Meal gap questions

Multi-ingredient queries

Accessing the details of food

Using the portion selectors for foods and drinks (report amount consumed, not amount taken or served)

Using the additions screen – common additions, searching

Review of food

Forgotten food

Supplements

Find, record, amount of supplements

Specific tasks to be checked:

Quit the application and re-access the material previously entered

Duplicate check (if doesn't occur naturally, force this)

Add multi ingredient (sandwich, hamburger, etc.)

Add a new supplement

Use the Make Changes button

Add forgotten foods Add additions to already-reported foods.]

### Post Test Interview Questions

Great, now I'd like to ask you a few questions.

1. Most websites take awhile to master. You [have used| haven't used] the present website before, correct? How hard or easy was it for you to [use| learn] this website today? Do you think that others with your background will have about the same degree of difficulty that you did?

2. What are the things you liked most about the way the website looks and works?
3. What things did you like least about the way the website looks and works?
4. Was there a time when you were stuck and didn't quite know what to do next? What would have helped?
5. How did you feel about the use of the penguin to provide instructions to you?
6. What about the way in which the website asked about the foods you ate: Did that seem ok, or did it seem like it keeps asking the same thing over and over?
7. Do you have any suggestions for changes that would improve the website that we haven't already covered already?

### Wrap up

OK, we're done. Are there any questions you would like to ask me about the website or about today's experience that I did not ask you about?

[You will be getting a check from the company that recruited you. Statement about stipend and payment if in-person testing.]

Thanks again for your participation.