Developing Usable Health Web Sites:
Lessons Learned from CDC.gov

NPHIC Briefing
Thursday, June 7, 2007

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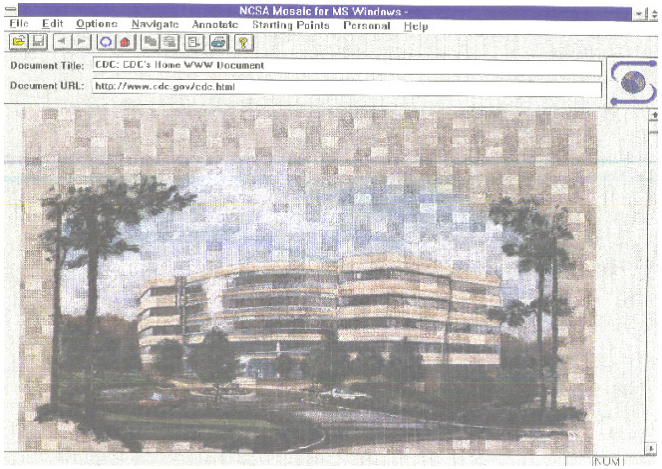
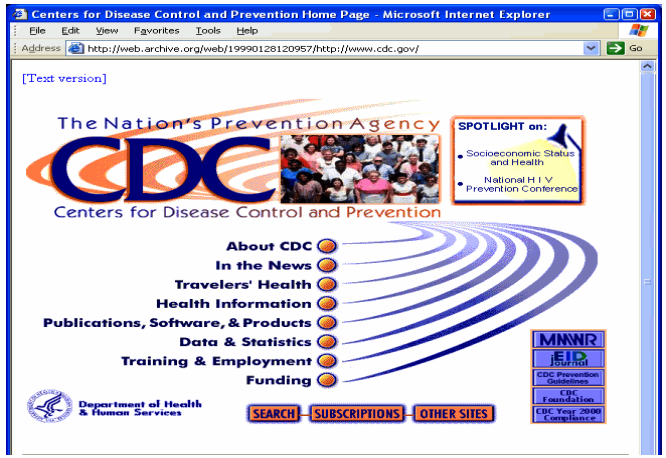
Improving CDC.gov

Updates, User Data, Governance, and Internet Resources for Improving CDC.gov

1994



1997



2003

2005

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April 2007

Why improve the CDC Web site?

- CDC's health marketing channel with greatest reach domestically and globally
- Old site not sufficiently science-based
- Increase health impact through
  - Personalization, Participation, Presentation
- Improve through incremental improvements
  - Evolution vs. Revolution

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Metric	Data
Monthly Visits (average):	9 Million
Monthly Page Views (average):	37 Million
Number of Pages Viewed in the last 12 Months:	445 Million
Number of Monthly Searches:	1.8 Million

Satisfaction Scores

- American Customer Satisfaction Index (ACSI): **80 out of 100** (March 2007)
- CDC.gov has one of the highest ACSI scores among government Web sites.

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Four Guiding Principles: **CDC.gov will be:**

1. **Research-based** – Decisions about CDC.gov (architecture, navigation, terminology, graphical interface, etc.) will be based on data, not opinions.

2. **User-centered** – CDC.gov will be based on users' needs and wants, developed with continuous user input, and tested with users.

3. **Performance-driven** – Success will be measured in quantitative and qualitative improvements in user performance and user satisfaction.

4. **Collaboration-rich** – CDC.gov must be developed with and supported by CDC's Web community.

Research-based, User-Centered Activities:

- Internal Interviews
- Call Logs and Emails
- Web Metrics and Search Logs (Omniture)
- American Customer Satisfaction Index (ACSI)
- Internal Survey
- External Interviews
- Baseline Usability Testing (Browse & Search)
- Card Sort
- User Research Notebook (Personas, top tasks, data collection results)
- Parallel Design Sessions
- First Click Usability Testing (including Tagline testing)
- Graphic Preference Testing
- First Click Usability Testing (round 2)
- Second Click Usability Testing
- Pre-Launch Usability Testing

Department of Health and Human Services
Centers for Disease Control and Prevention

Health & Safety Topics

- Birth Defects
- Disabilities
- Diseases & Conditions
- Emergency Preparedness & Response
- Environmental Health
- Genetics and Genomics
- Health Promotion
- Injury and Violence
- Travelers' Health
- Vaccines & Immunizations
- Workplace Safety & Health

Publications & Products

- Emerging Infectious Diseases Journal
- MMWR
- Podcasts/RSS
- Preventing Chronic Disease Journal
- Public Health Image Library
- Public Health Law News
- more

Data & Statistics

- Growth Charts
- National Data
- State Data
- more

What Do You Think?

Help us improve our website...
more

Concussion Tool Kit

Heads Up! Free CDC tool kit on concussion for high school coaches...
more

Pandemic Flu

Pandemic Flu resources...
more

Podcasts
Listen on your computer or on the go ...more

Add Hepatitis B Vaccination to Your Back to School List
Many states require hepatitis B vaccination before your child can go to school ...more

Aim for Color
Improve your health while enjoying the season's colorful produce ...more

HIV Rapid Test Training
CDC and WHO offer a HIV Rapid Test training package to increase reliability and accuracy of testing ...more

Commemorating CDC's 60th Anniversary
CDC was founded on July 1, 1946 ...more

Extreme Heat
Helpful resources for students, teachers, and parents ...more

Hurricane Preparedness
Learn how to prepare for this season ...more

Avian Influenza
Latest CDC science on bird flu ...more

CDC Partnerships
A new portal with information and resources for CDC's partners ...more

CDC's New Health Protection Goals
CDC focuses on a set of health protection goals to become a more performance-based agency focusing on healthy people, preparedness, and healthy places. Public and partner review and comment is encouraged ...more

past features

Programs & Campaigns

National Youth Violence Prevention Resource Center
Each day an average of 17 American youth are victims of violence.

Ovarian Cancer Initiatives
CDC works with partners to identify factors related to early detection, treatment, and survivorship.

Conferences & Events

National Health Promotion Conference
(Sept 12-14), Atlanta, GA

4th Annual Public Health Information Network Conference
(Sept 25-27), Atlanta, GA

All Conferences & Events

SAFER·HEALTHIER·PEOPLE™
Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, U.S.A
Tel: (404) 639-3311 / Public Inquiries: (404) 639-3534 / (800) 311-3435

FIRSTGOV Your First Click to the U.S. Government

Department of Health and Human Services

How do users use CDC.gov? (ACSI)

What is the primary reason for your visit today?

Rank	Primary Reason for Visiting the Site Today?	#
1	My Health Needs	189
2	Data Statistics	178
3	Friend/Family health needs	105
4	Other	101
5	Scientific Articles	88
6	Patient Education	87
7	Academia Teaching	79
8	Student Project	70
9	Pubs, Posters, Pamphlets, etc.	67
10	Health Communication Campaign	48
11	Training	43
12	Information about CDC	27
13	Jobs Careers	21
14	Conference/Events	5
15	Grants	3

During my visit today, I was primarily looking for information on:

Rank	Primarily Looking for Information on?	#
1	Diseases & Conditions	273
2	Other	202
3	Disease Prevention	120
4	Symptoms	105
5	Health Promotion	79
6	Healthy Lifestyles	70
7	Vaccines / Immunizations	67
8	Emergency Preparedness	46
9	Workplace Safety & Health	45
10	Treatments	37
11	Environmental Health	33
12	Injury Prevention	10
13	Traveler's Health	9
14	Birth Defects	8
15	Natural Disasters	7

Source: American Customer Satisfaction Index (ACSI) – July 19, 2006 – Sept. 10, 2006

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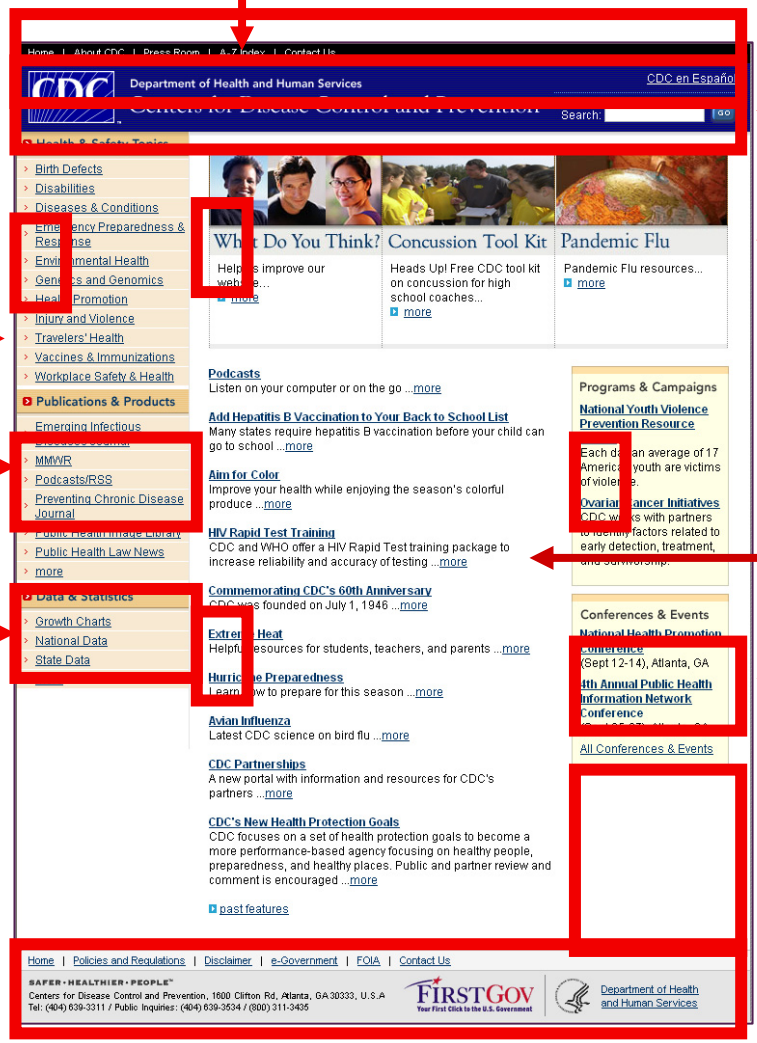

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Left Panel

Banner / Footer

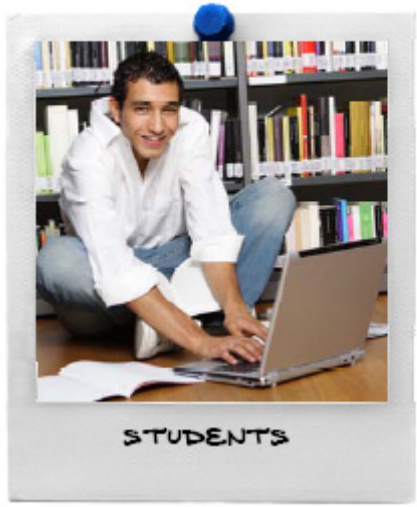
Features

Right Panel

LEADERSHIP RANK	#1	#2	#3

	Public Health Professionals	Healthcare Providers	Consumers
Percent of Current Users:	19% (N=215)	22% (N=246)	15% (N=170)
Primary Reason for Visiting the Site Today:	1. Data & Statistics 2. Patient Education 3. Scientific Articles	1. Patient Education 2. Data & Statistics 3. Academia / Teaching	1. My Health Needs 2. Family / Friend Health Needs 3. Data & Statistics
Primarily Looking For:	1. Diseases & Conditions 2. Disease Prevention 3. Health Promotion	1. Diseases & Conditions 2. Health Promotion 3. Vaccinations / Immunizations	1. Symptoms 2. Diseases & Conditions 3a. Healthy Living *(Tie for 3rd)* 3b. Disease Prevention *(Tie for 3rd)*
Current Satisfaction	73	82	69

LEADERSHIP RANK	#4	#6	#10

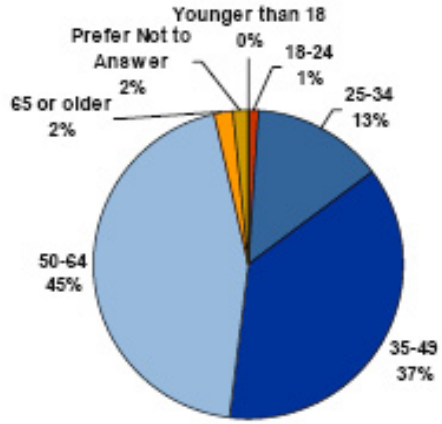


	Researchers / Scientists	Educators / Teachers	Students
Percent of Current Users:	6% (N=64)	9% (N=100)	9% (N=101)
Primary Reason for Visiting the Site Today:	1. Data & Statistics 2. Scientific Articles 3. My Health Needs	1. Academia / Teaching 2. Data & Statistics 3. My Health Needs	1. Student Project 2. Data & Statistics 3. Scientific Articles
Primarily Looking For:	1. Diseases & Conditions 2. Disease Prevention 3. Environmental Health	1. Diseases & Conditions 2. Disease Prevention 3. Healthy Lifestyles	1. Diseases & Conditions 2. Symptoms 3. Healthy Lifestyles
Current Satisfaction:	63	77	75

Healthcare Providers

Age

- 45% are 50-64 years old
- 37% are 35-49 years old



Quick Facts

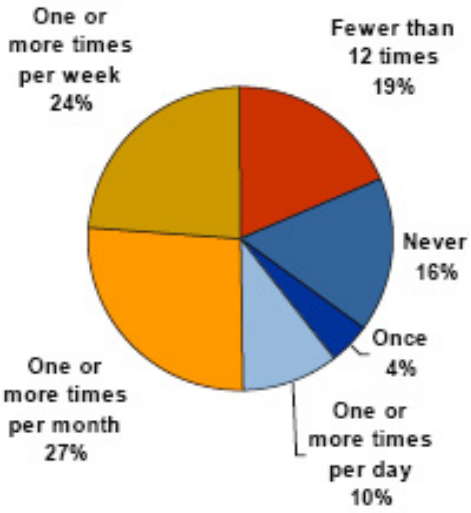
- 22% of Current Audience (ACSI Data)

Situation

- Healthcare Providers use the CDC.gov website to: educate themselves, aid their work, and find handouts for patients and staff
- They are particularly interested in the diagnosis and treatment of specific diseases. While interested in prevention, they do not require in-depth information on it.
- Information on HIV, STDs, and recent outbreaks (written in plain language) are useful to hand out to patients.
- Healthcare Providers are interested in printing immunization schedules and growth charts for use by their staff and patients.

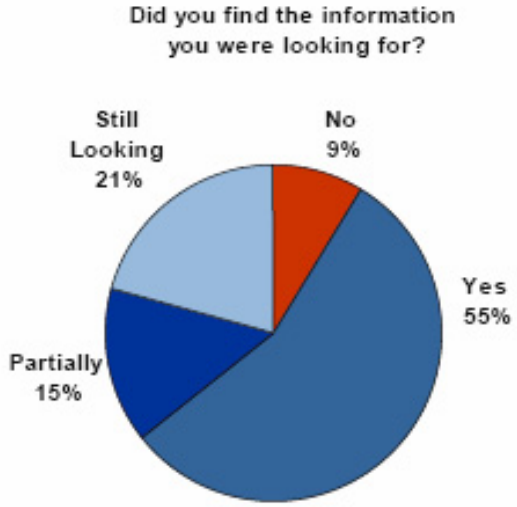
Source: CDC.gov Internal Survey, Oct. 2006

Frequency of Visiting CDC.gov



Source: ACSI – July 19, 2006 – Sept. 10, 2006

Healthcare Providers



Satisfaction

- Current Satisfaction Level: 82 / 100
- Least satisfied with
  - Navigation (77 / 100)
  - Search (78 / 100)
- Most satisfied with
  - Site performance (89 / 100)
  - Content (86 / 100)

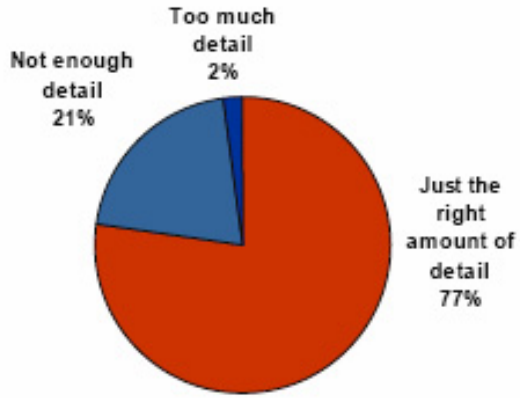
What did you do first today?

- Browse (Navigation) = 58%
- Search = 42%

Primary reasons they come to the website:

1. Patient Education
2. Data & Statistics
3. Academia & Teaching

Does the website's content provide:



Primary information they look for:

1. Diseases & Conditions
2. Health Promotion
3. Vaccinations / Immunizations

Source: ACSI – July 19, 2006 – Sept. 10, 2006

Rank of internal survey vs. actual uses (ACSI)

	Public Health Professionals	Consumers	Healthcare Providers	Researchers & Scientists	Partners & Grantees	Educators	Legislators & Staff	CDC Employees	Journalists	Students
Internal Survey	1	2	3	4	5	6	7	8	9	10
ACSI	2 19% (N=215)	3 15% (N=170)	1 22% (N=246)	6 6% (N=64)	10 0% (N=2)	5 9% (N=100)	8 1% (N=6)	9 1% (N=7)	7 1% (N=10)	4 9% (N=101)

Source: CDC.gov Internal Survey of Leadership

Source: American Customer Satisfaction Index (ACSI) – July 19, 2006 – Sept. 10, 2006

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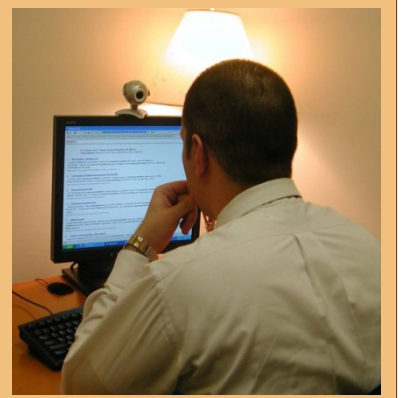
Steps in the usability test:

User Demographics	• Completed a background questionnaire
Initial Impressions	• Answered questions about initial impressions of the website
Usability Scenarios	• Performed real-world tasks on the website while thinking aloud
User Satisfaction	• Rated their satisfaction using a post-test questionnaire
Post-Test Reactions	• Answered questions about their overall satisfaction with the site



Conducted the test using:
- Usability Testing Environment (UTE)
- Morae Recording Software
- TechSmith Web Cam

TechSmith MORAE
INSIGHT YOU CAN SHARE

- Monday (pilot test): 2 stations were moderated (facilitator sat next to the user). Two stations were un-moderated (participant worked alone)
- Wednesday: All tests were moderated (4 stations)

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- **Purpose of the CDC.gov baseline usability test was to:**
  - Measure users' abilities to perform tasks *(performance evaluation),*
  - Obtain users' impressions *(preference/satisfaction evaluation),*
  - Identify difficulties involved in using the website, and
  - Suggest recommendations for improvement.

- **Intent was to:**
  - Test the "core" CDC website, global navigation, categorization, etc.
  - Establish a baseline to compare future improvements,
  - Identify what is working and what is not working, and
  - Use results of user testing to inform design changes for interim improvement prototypes (for additional testing).

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Data-Driven: Most Popular Pages

Web Page	Number of Visits	Related Scenario
• HPV:	832,504	HPV Vaccine
• BMI Home:	802, 208	Health – Obesity
• Syphilis:	801,631	Syphilis Trend
• Lyme Disease:	698,394	Lyme Disease

Data-Driven: Most Popular Downloads

Web Page	Popularity of Download	Related Scenario
• Growth Charts	#1 Most Popular	Growth Chart
• Lyme Disease Treatments	#2 Most Popular	Lyme Disease Tests
• Child Immunization Schedule:	#7 Most Popular	Immunization – MMR Vital

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What We Tested - Data-Driven Test Scenarios

- Guidance for scenario development was obtained from:
  - **Existing User Research**
  - **Call Center Logs (CDC INFO)**
  - **American Customer Satisfaction Index (ASCI)**
  - **Omniture Data**
  - **Internal Stakeholder Interviews**
  - **CDC.gov Web Council Review**

- Scenarios were developed based on data, including:
  - **Most popular pages**
  - **Most popular downloaded files**
  - **Most popular search terms, including:**
    - **Most frequent search terms used on other search engines to get to CDC.gov**
    - **Most frequent searches conducted on CDC.gov**

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- Overall Test Metrics
  - **For All Scenarios and All Participants**
  - **Success Rate for Left Panel Scenarios**
  - **Success Rates**
  - **Average Time per Scenario**
  - **Average Number of Pages per Scenario**
  - **Satisfaction Rate**

- Segmented Metrics for:
  - **Health Professionals**
  - **Researchers / Scientists**
  - **Physicians / Nurses / Physicians' Assistants**
  - **Consumers**

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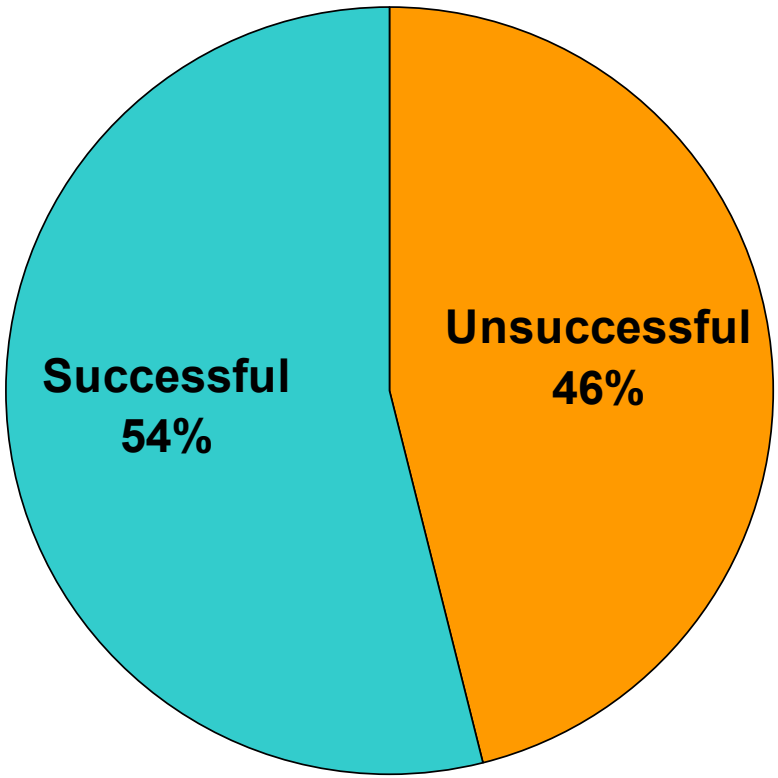
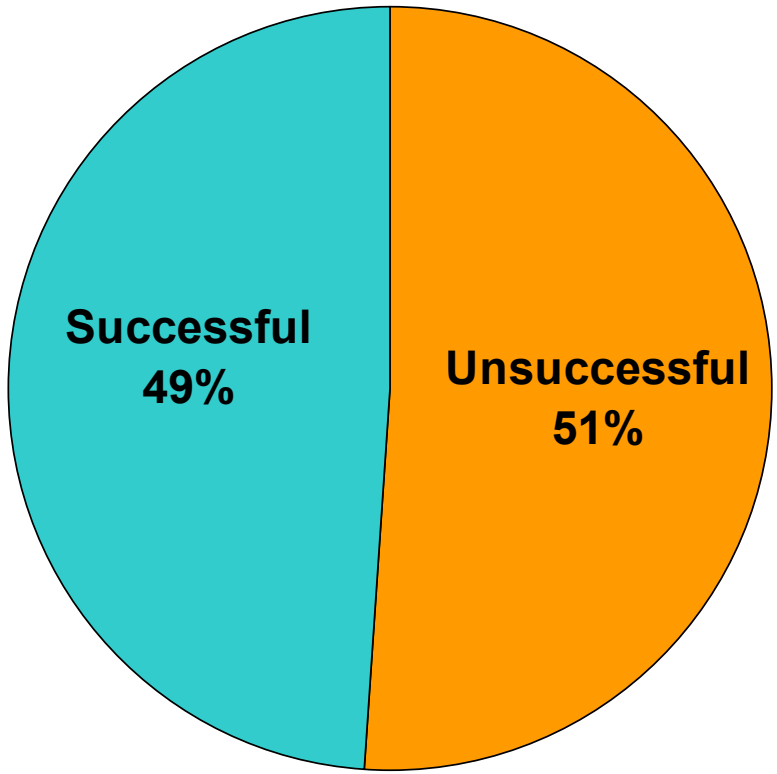
Overall 'Browse' Success Rate for All Scenarios – All Participants

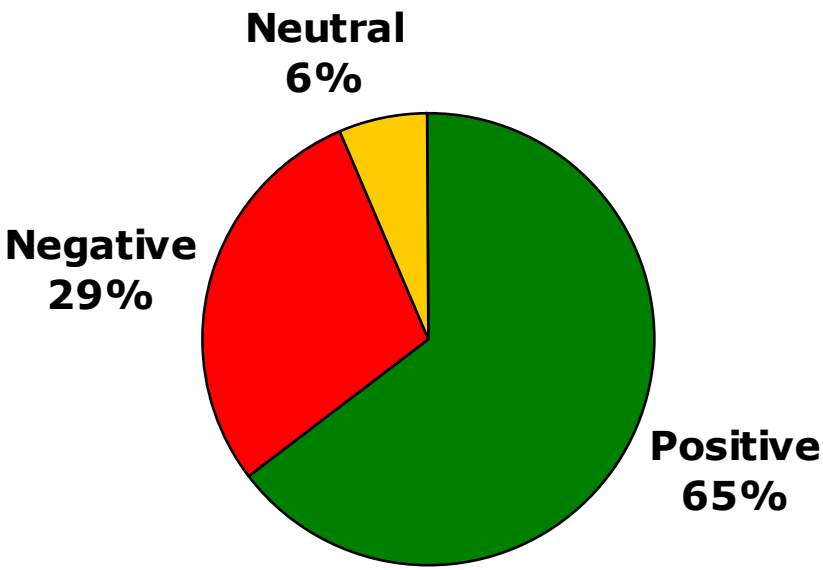


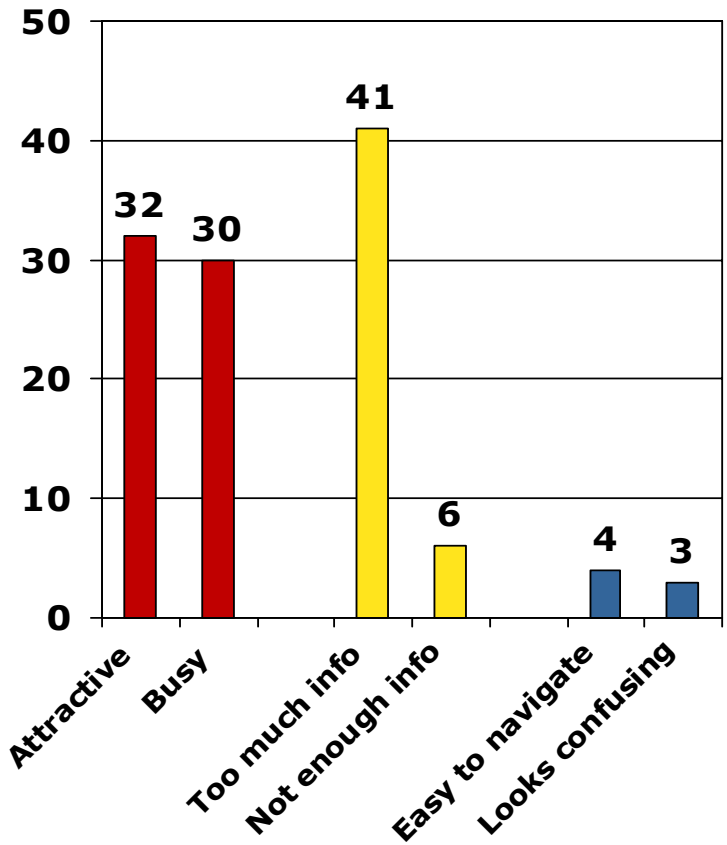
Overall 'Search' Success Rate for All Scenarios – All Participants



What was your initial impression of this website?

(BEFORE using the site)

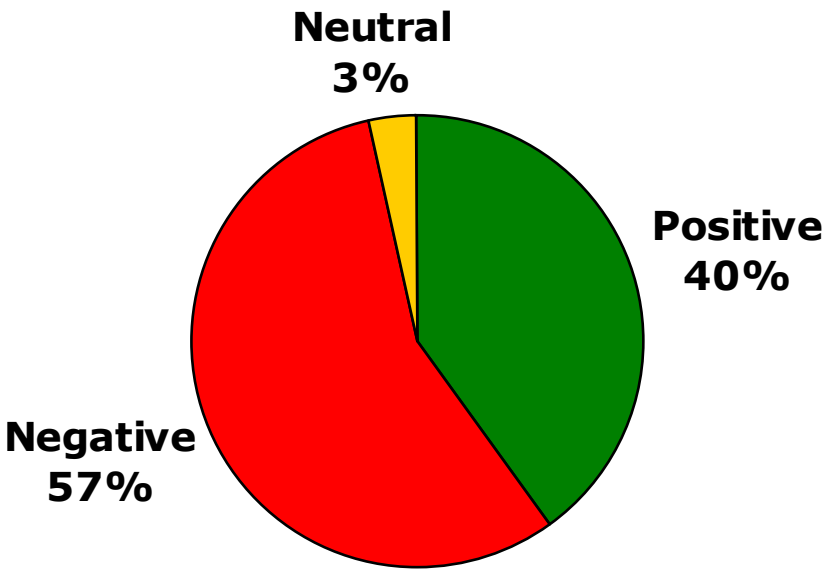


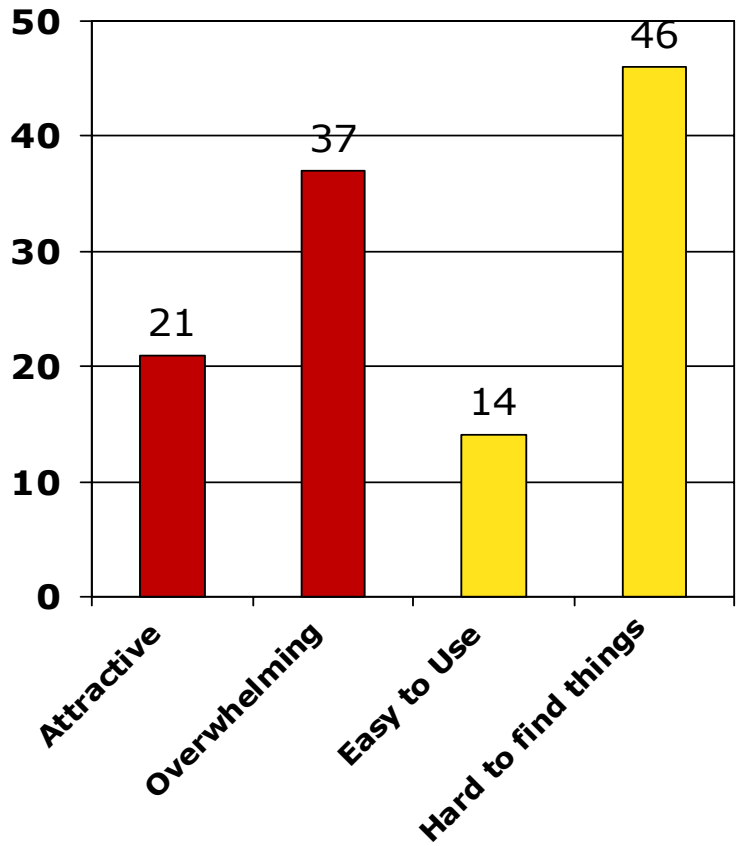


Open-Ended Comments

What is your general reaction to the website?

(AFTER using the site)





Open-Ended Comments

Top 10 Findings from Baseline Testing

1. Participants thought the website was credible.
2. Participants thought design was professional / attractive
3. Many felt that the home page was busy, cluttered, overwhelming or just had too much information.
4. Participants who found the A-Z index like it and used it quite frequently to find information.
5. Participants thought that the website was inconsistent in layout, navigation and look and feel.

Top 10 Findings from Baseline Testing

6. Participants struggled to find information because of busy, cluttered pages.

7. Participants did not feel that the categories of information were clear.

8. Participants thought that they had to go through too many layers to find information.

9. Participants did not use the features and the page descriptions.

10. Participants wanted to search and thought they would be more successful if allowed to search.

CDC

David
Debra

A Year of Health
West Nile
World AIDS Day
Children's Health
Research at CDC

Health and Safety Topics

Diseases and Conditions
ADHD, Birth Defects, Cancer, Diabetes, Fetal Alcohol Syndrome, Flu, Hepatitis, HIV/AIDS, STDs ...

Healthy Living
Exercise, Bone Health, Genetics, Immunizations, Nutrition, Sexual Health, Smoking Prevention ...

Life Stages
Pregnancy, Infant & Child, Women, Men, Seniors, Minorities ...

Injury, Violence, and Safety
Car Crashes, Falls, Fires, Food Safety, Poisoning, Suicide ...

Environmental Health
Air Pollution, Carbon Monoxide, Lead, Mold, Water Quality ...

Travelers' Health
Destinations, Travel Vaccinations, Outbreaks, Yellow Book ...

Emergencies and Disasters
Bioterrorism, Chemical & Radiation Emergencies, Mass Casualties, Severe Weather, Outbreaks ...

Workplace Safety and Health
Chemical Safety, Construction, Mining, Office Environments, Respirators ...

About CDC

- Contact Information
- Funding / Grants
- Employment

» **More About CDC**

CDC HEALTH PROTECTION GOALS

- Healthy People In Every Stage of Life
- Healthy People In Healthy Places
- People Prepared for Emerging Health Threats
- Healthy People In a Healthy World

CDC For You

- Public Health Professionals
- Researchers
- Media
- Students and Educators
- Healthcare Providers
- Partners
- Policy Makers
- Businesses

DATA AND STATISTICS

Public Water Supply (PWS) populations receiving fluoridated water

» **All Data and Statistics**

Publications

Emerging Infectious Diseases

Morbidity and Mortality Weekly Report

Preventing Chronic Disease e-Journal

» **More Publications**

Tools & Resources

Listen

- MMWR: Podcast Epis

Podcasts/RSS Feeds

Public Health Image Library (PHIL)

BMI (Body Mass Index) Calculator

» **More Tools and Resources**

Find It Fast

SEARCH

A-Z Index

A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z #

Top 20 at CDC.gov

- Immunizations
- BMI (Body Mass Index)
- STDs (Sexually Transmitted Diseases)
- Quitting Smoking
- Avian Flu (Bird Flu)
- HPV (Human Papillomavirus)

News and Events

Federal Offices are closed on January 2nd to remember President Ford

- What happens to my FOIA request?

» **All CDC News**

Press Room

Conference and Events

RSS

Podcasts

CDC Tag Cloud

Get Email Updates

SAFER·HEALTHIER·PEOPLE™
Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, U.S.A.
Tel: (404) 639-3311 / Public Inquiries: (404) 639-3534 / (800) 311-3435

USA.gov Government Made Easy

Department of Health and Human Services

New CDC.gov Homepage Features

- Interactive Photo Feature Area
- Topic-based Categories
- New Google Search Appliance/Engine
- Expanded/enhanced A-Z Index
- Top 20 @ CDC
- Tools and Resources Section
- CDC for You
- Text Enlargement Tool
- Tag Clouds
- Site Map
- What's New on CDC.gov
- About CDC.gov
- Link to CDC.gov

New 2nd Level Topic Pages

- Healthy Living
- Diseases and Conditions
- Life Stages
- Safety, Injury, and Violence
- Environmental health
- Traveler's health
- Emergency Preparedness and Response
- Workplace Health and Safety

Performance-Driven Results

- **More successful:** During the baseline usability test, users were assigned key tasks to find information on the old Web site. When asked to do the same tasks* on the new site, users were successful 78% of the time – **a 22% improvement!**

- **Improved efficiency:** On the redesigned site, users found information **in 14% less time and required 41% fewer page views (or clicks)** compared to baseline testing.

- **Greater satisfaction:** Users' satisfaction with the new site improved dramatically – **a 70% increase** over satisfaction levels with the old Web site.

* Select tasks/scenarios (not all scenarios)

User Performance (task completion) increased

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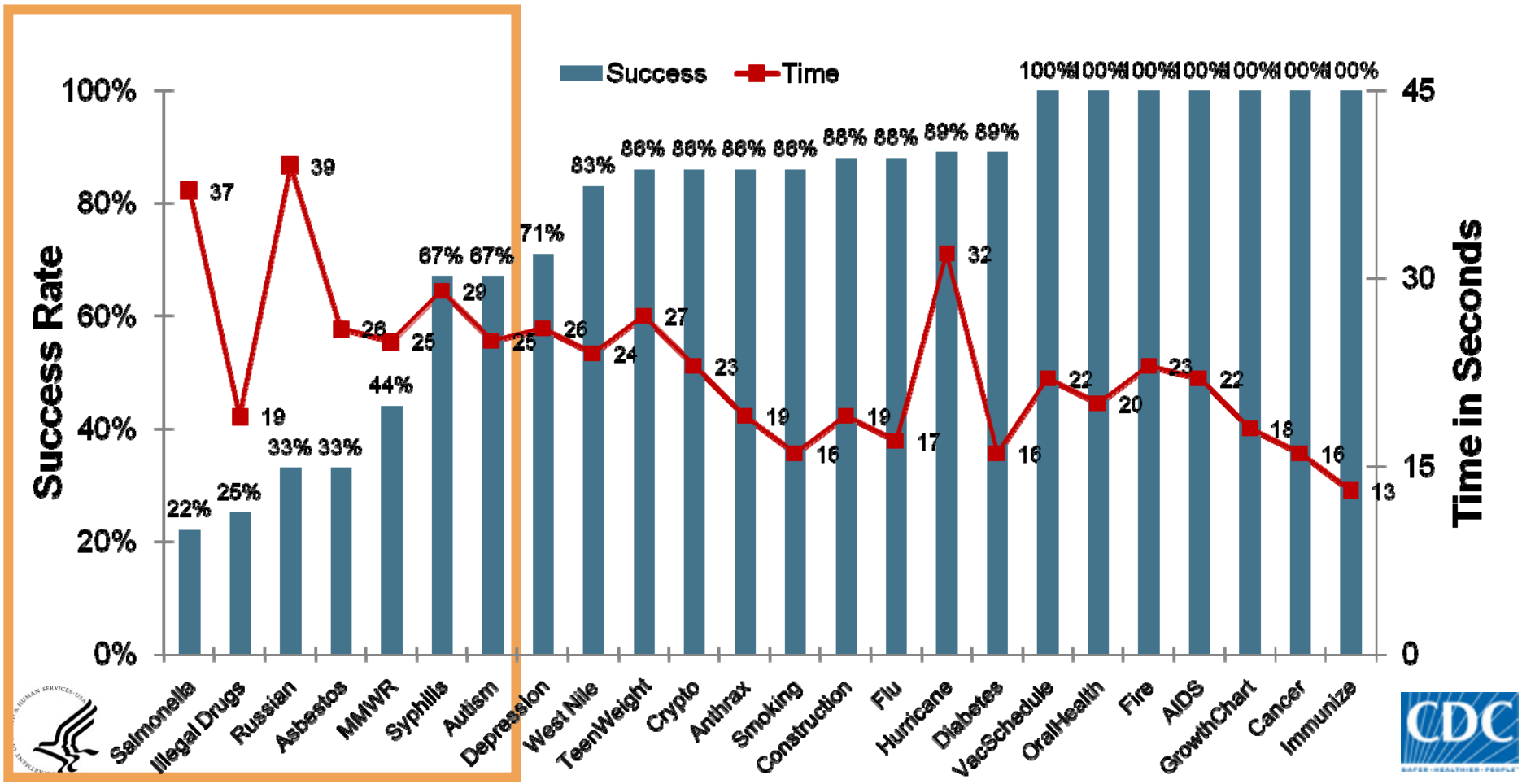
First Click from Home Page – 74% were correct

Comparing Success and Time to Succeed



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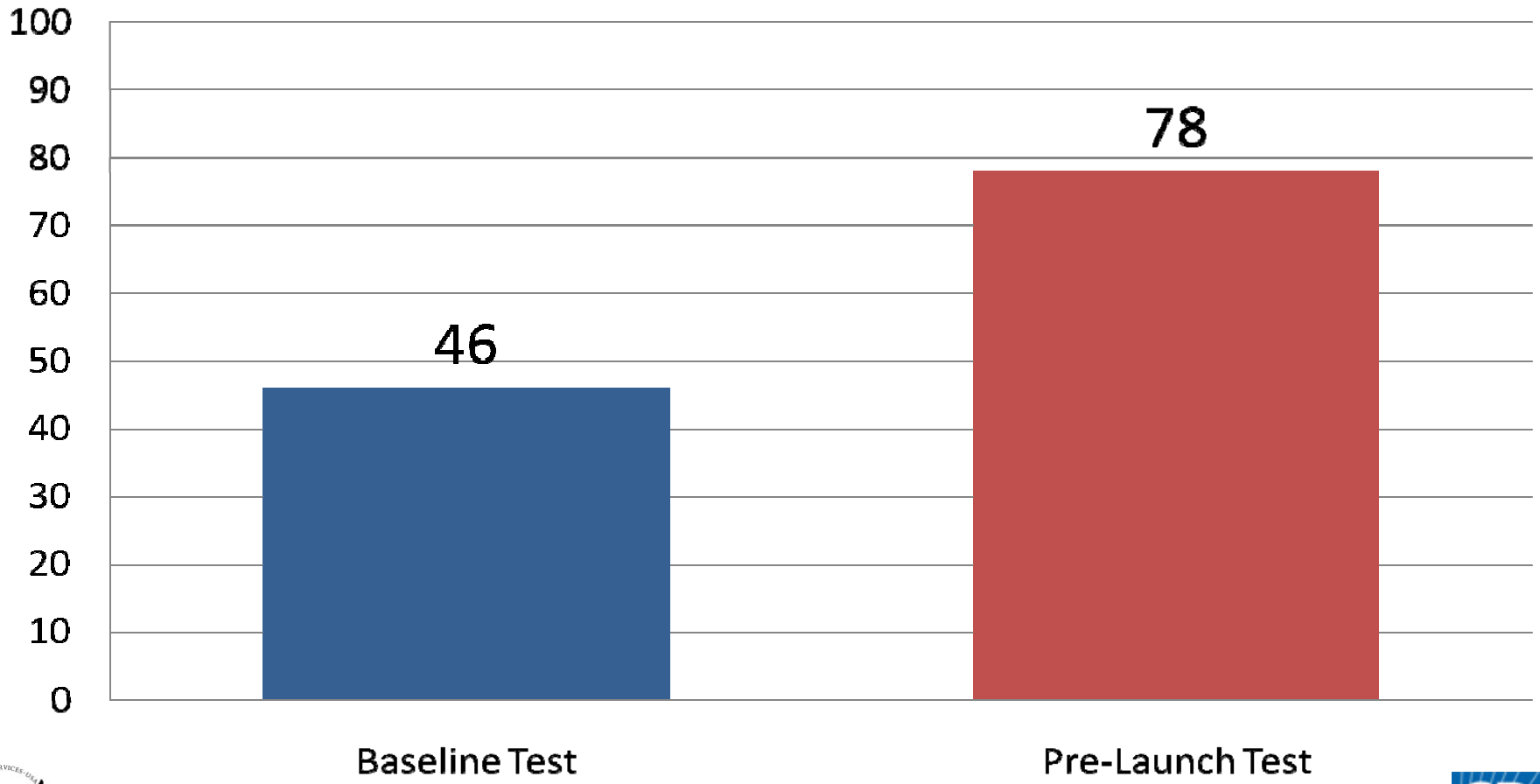
User Satisfaction – 70% improvement



External Feedback on New CDC.gov

- "As a health professional, I use the CDC website every few months to seek out certain health information. Today I discovered that the site has been revamped. I just wanted to let you know that it is MUCH improved and extremely user friendly. The site as it is designed now is an asset to the American public."

- "Information is so much easier to find!"

- "I particularly like the top 20 at CDC.gov. I really like how everything on the page is arranged. I can tell that usability really kicked in on this...the site looks very usable."

- "As a school nurse frequently in need of quick accurate information, this looks like the greatest resource since Taber's Medical Dictionary!"

External Feedback on New CDC.gov

- "I just wanted to commend you on an excellent job with this website. It is so informative and well written. Very well organized and easy to follow with practically every piece of information covered."
- "I am planning a trip abroad and have learned so much information. This is another example of why the CDC is the most well informed and powerful organization in the world."
- "I do a great deal of teaching on consumer health and I think the changes you have implemented make the site user-friendly. The content groupings, images to describe content, graphics and the A-Z Listing are all wonderful additions to the site. Thinking of how the 'typical consumer' searches was obviously kept in mind which is greatly appreciated."
- "I especially like the RSS tool which will allow broad distribution of valuable health information. This will help publishers, but also service sites to tie into the content which makes CDC.gov so important."

Collaboration-Rich

Top 10 Strategies for Increasing Internal Collaboration and Communication

1. Developed cross-agency **CDC.gov Council** composed of representatives from all CDC centers.

2. Conducted **internal interviews and online survey** to get CDC employee input on web audiences, priority tasks, strengths/weaknesses of the site, and more.

3. Developed **CDC.gov intranet site** and posted everything we did on the site.

4. Held quarterly **"State of the Web" town hall meetings** (open to any/all employees and contractors in CDC) to share data, plans, priorities, and progress to date.

5. Distributed **CDC.gov Progress Reports**, email newsletters that reported results, shared plans and priorities, and solicited feedback with CDC leadership and the web community.

Collaboration-Rich

Top 10 Strategies for Increasing Internal Collaboration and Communication

6. Initiated the **eCDC Professional Development Series**, seminars and courses related to Web development, content management, usability, technical issues, and new media.

7. Developed several internal **Communities of Practice (CoP)** on user experience, interactive media, and other topics to encourage discussion and collaboration around web at CDC.

8. Promoted web activities in **employee publications**, primarily CDC's intranet site.

9. Reported **metrics** on early efforts/successes (podcasts, Email Updates, etc.)

10. Established a CDC.gov **blog** on the intranet site to encourage ongoing feedback from CDC staff and contractors.

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