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A Comparative Features Analysis of Publicly Accessible Commercial and Government Health Database Web Sites



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The goal of this study was to compare the features of a set of commercial health database sites to those of a set of government health database sites. Given the different kinds of cultural imperatives, structural incentives and constraints, audiences, motivations, purposes, and criteria used by commercial versus government health, we might expect some differences in the kinds of services and features used by these two types of sources.

TENSION BETWEEN CULTURAL IMPERATIVES AND STRUCTURAL INCENTIVES AND CONSTRAINTS

Internet health care communication takes many forms. However, the sustained distribution of sophisticated, timely health care information via the Internet often requires large capital expenditures to get started, and inten-

sive labor and ongoing costs to maintain. The small-scale activities that have been the hallmark of computer bulletin board systems and chat groups can succeed on an irregular, informal basis. Large, authoritative systems that can claim to be comprehensive and valid are simply too vast in scope to be maintained by volunteers; they must have extensive resources dedicated to them. Hence major Web systems of health care information must reside within an institutional framework. They must, given the ethical and social dimensions of health care, also reside within a framework that socially justifies and validates its work. Only three sectors have the resources available to be plausible sources of the health care information and services typical of a major Web site: the governmental, the private, and the nonprofit sectors. We undertook a content analysis of health database sites from two of the three sectors, representing the opposite ends of the institutional continuum. We based our expectations of what we might find on the work of Katz (1983, 1984, 1999), who explored the tensions between the private and governmental sectors from the structural incentive and cultural imperative perspectives.

Cultural imperatives are ideals that are widely accepted. They are used to demand efforts and sacrifice from people within the society, to contribute to the larger society. These often rely on moral persuasion. The most obvious example is the soldier, who must be prepared to die for his or her country. Examples of, and motivations for, larger social contributions also operate at the organizational level. Obvious examples include the "police," whose mission is to "protect and serve." Note that the concept of the cultural imperative is valid regardless of the social organization (e.g., capitalism or socialism); organizations and institutions must have a source of strength and legitimacy in order to persuade others, and apply themselves, to provide social service and goods and to foster individual achievement. There must be a fundamental rationalization of the organization's existence within the terms of the cultural imperatives.

However, a strong tension exists between this cultural imperative of the larger society's interests, and the self-interests of the commercial organization, influenced by *structural incentives*. At their core, to attract capital, business organizations must have a plausible business model that will generate a belief that they will ultimately be profitable. This in turn means that they must adhere to an inherently conservative and self-serving bias (Katz, 1984). Clearly one consequence is that no matter the particular overt form action takes, it should not lead to anything that will create a substantial liability from a financial or legal viewpoint. Thus organizations, espe-

cially commercial ones, will acknowledge, and attempt to satisfy, the cultural imperatives, within the limits of their structural incentives. This is equally true of government agencies, which may be highly sensitive to incentives and constraints such as policy recommendations, renewal of funding, avoiding bipartisan or partisan political controversy, and so on. This may take the form of symbolically supporting cultural imperatives in ways that camouflage, or support, structural incentives. For example, many corporate sponsorship activities cost considerably less than the price of the advertising campaign promoting the activity. It can be argued, then, that the activity serves the symbolic value of supporting the cultural imperative but does not in any way challenge the structural imperative. Indeed, such attempts to justify the structural incentives in light of cultural imperatives may be intensified during times of external pressure or crisis.

The application of this approach to our interest in health information Web sites is that a powerful cultural imperative is to provide excellent health care to every individual. If this were the only influence, we would expect Web sites to offer additional capabilities such as emergency service and advice on an expedited basis; emergency 911 help; interactive answers to questions about health; doctors and nurses online to answer questions in real time; health maintenance organizations that would allow their clients to ask questions directly and learn about benefits; real-time monitoring of requests for second opinions; permission for elective surgery, and payment processing; bulletin boards and forums that permitted open discussion of the shortcomings and mistakes of organizations such as hospitals, HMOs, and government bureaucracies; and easily accessible consumer-oriented information such as malpractice suits against physicians, hospital mortality rates, hospital infection levels, and so on. However, even though tremendous amounts have been invested in Web-medical information services, especially the business aspects, very few of these kinds of services are (yet) available. Nonetheless, the symbolic discourse about Web health information sites emphasizes the cultural imperative values, such as better health information and improved health.

LIKELY FEATURES IN COMMERCIAL AND GOVERNMENT HEALTH DATABASE SITES

This brief overview of the tension between cultural imperatives and structural incentives leads to two general implications for our study. The first is

that there should be noticeable differences between commercial and governmental Web health information sites, as they must respond to different structural incentives and constraints. The second is that the full range of features and services one might expect from the cultural imperative about universal health is likely not reflected in health database Web sites, regardless of the sector. In this sense, the Internet, while touted as a revolutionary new medium, may well offer few novel or socially challenging features in the realm of health information and services, such as support for true dialogue between the site organization and its users, or among users.

For example, one general feature that might be expected to be commonly supported by both commercial and governmental sites would be support for interaction with and among users. In the commercial case, it would be to develop relationships with and feedback from potential customers, while in the government case, it would be to support the principle of public access and input to government. Applied to their full potential for health communication, however, such features would support completely dialogic interaction, or "cooperative, communicative relationships," a (post)modern cultural imperative. In this approach, health Web sites would support an equitable exchange between organization and users, and among users, not just opportunities to "monitor," "respond," or "seek feedback" on the gathering and disseminating of information (Kent & Taylor, 1998, p. 325). Examples include (a) dialogic loops (where feedback is a source of continued and supported dialogue); (b) useful related and background information that contextualizes the site content and that can be made available automatically rather than imposing new search costs each time; (c) features that foster return visits through constantly changing added value, especially if it is based on users' comments, discussions, and requests; (d) design structures that promote easy and quick access, such as through the choice of text-only interfaces for those with older systems and judicious use of multimedia; and (e) emphasizing links only to sites that are relevant to the user's and the original site's primary purpose (unlike top-of-page banner ads or lists of tangential links; Kent & Taylor, 1998).

Considering more typical features, we would expect comprehensive disclaimers to be an integral part of the private sector sites. Registration would be a frequent requirement so that the behavior of the user could be better monitored and later resold at a profit, or targeted with advertisements. Other likely commercial sector features would be partner links, and stories "placed" in the interest of supporters or advertisers. Exposure to

site visitors and "stickiness" (return visits by users) are important to the commercial success of the sites. Hence their formats are expected to be more dynamic, livelier, with greater use of multimedia. Content would be more informal and designed to be interesting and useful to visitors. We would also expect a variety of tools to be available for visitors to make the site still more attractive. After all, market share is vital to the survival of the proliferating medically oriented Web sites. There are also likely to be attempts to build seeming communities of users, once again to increase the return of visitors, such as through forums, chat groups, opinion polls, expert guests, and so on. As a corollary, it would be plausible to expect heavier use of e-mail notifications and newsletters as part of an outreach effort by these sites.

In contrast, governmental organizations have a quite different mission, one of fulfilling designated useful social goals. To a degree far more stringent than the private sector, the public sector must demonstrate equity, fairness, and inclusion. As Weber (1958) noted in an institutional context, and Hippocrates in a professional one, there should be public rules that are applied in a universal fashion. We would thus expect government sites to be less exciting and feature-rich than those of the private sector, to minimize criticisms that government sites are too "commercial" or are spending limited public resources on "glitz." At the same time, we would expect far greater concern for the legitimacy and credibility of health information, in the form of seals of approval and links to public health institutions. Descriptions of procedures, and inclusion, and avenues to challenge them will be available. Links to commercial and explicitly "for-profit" Web sites will be avoided. Indeed, the appearance of governmental health sites would be expected to be more authoritative and expert-driven than their commercial counterparts. Finally, there should be greater opportunities for feedback in order to support the principle of public accountability.

METHOD

Cases

Health database sites are Web sites that not only cover a range of topics about many medical issues but also lead to other sites that deal with the topics. Most of the information is directly available from the homepage. For our analysis, we consider a health database site to be *commercial* if it contains an advertising banner or is sponsored by any other organization

(except the government). A health database is considered *governmental* when it is explicitly provided by a government agency and has the ".gov" domain name.

During the summer of 1999, a set of such sites was found by first using the Yahoo! search engine and its root directories, choosing the "health" topic first, and from there searching different directories, such as "general health" and "news and media." These were then inspected for sites that had been reviewed by Yahoo! or contained other comments. Other sites used were those with a trademark name or ones that were the homepage of an association. A similar process was used with the Excite search engine, using the search term "health sites." Some intermediary and useful sites included A Patient's Guide to Healthcare Information on the Internet (<http://www3.bc.sympatico.ca/me/patientsguide>), How to Search for Medical Information (<http://www.ultranet.com/~eglib/www.htm>), and The Netcenter's Official Roadmap to the I-INTERNET! (<http://svis.org/medicine.htm>). Sites that emphasized a specific geographic location and site links that were attempting to sell something in their own description were ignored. For the government sites, the health directory and the institutes subdirectory on the Yahoo! search engine were inspected. From there, the "Department of Health and Human Services@" and "National Institutes of Health" directories provide a long listing of government health sites. Table 10.1 lists the final sample of 20 commercial and 11 government health database sites.

Features

There have been, of course, prior evaluations of Web site features. For example, Bell and Tang (1998) analyzed 60 commercial Web sites across six industry sectors. Three coders answered an online survey asking about 10 aspects of each of the sites (access, content standards, graphics standards, structure, user-friendliness, navigation, usefulness, unique features, online transactions, and usage fee). Results showed that 30% offered features supporting online transactions, and that sites were generally rated highly on access, content, and structure, but overall had a low number of unique features. Several prior studies (Ha & James, 1998; Haas & Grams, 1999; Koehler, 1999; Teach, 1998; Witherspoon, Chapter 9, this volume), along with an inspection of the selected sites, provided the primary categories for a typology of health Web site features. Each category contained a list of features based upon their function in the Web site. For example, every-

Table 10.1

Large-Scale Health Commercial and Government Database Sites Used in This Study

Commercial Health Database Sites

American Medical Association: <http://ama-assn.org>
 American Public Health Association: <http://www.apha.org>
 The Global Health Network: <http://pitt.edu/HOME/GHNet/GHNet.html#reso>
 HealthAtoz The Source For Health and Medicine: <http://www.healthatoz.com>
 Healthtouch®, online for better health: <http://www.healthtouch.com>
 HSR Health Care Information Resources on the Web: <http://www.xnet.com/~hretstatind.htm>
 Lifelines® work Resources for Improvement of Health, Productivity and Effectiveness: <http://www.lifelines.com/cgi-bin/cgiwrap/~lifeline/mainpage.pl>
 MedConnect: <http://www.medconnect.com>
 MedExplorer—Health-Medical Information Center: <http://www.medexplorer.com>
 Mediconsult.com, Inc.: <http://www.mediconsult.com>
 Medscape Home Page: <http://www.medscape.com>
 Netwellness: <http://www.netwellness.org>
 NewsEdge NewsPage Healthcare: <http://www.newspage.com/browse/46610>
 On-Health, A New Way to Look at Everything: <http://www.onhealth.com/ch1/index.asp>
 Thriveonline.com—Medical: <http://www.thriveonline.com/medical/index.html>
 Welcome to AmericasDoctor.com: <http://www.americasdoctor.com>
 Welcome to Medinex: <http://www.medinex.com>
 Welcome to TM Health Online: <http://www.health.com.my>
 Welcome to YourHealth.com: <http://www.yourhealth.com>
 Your Health Today: <http://www.yourhealthtoday.com>

Government Health Database Sites

Agency for Health Care Policy and Research Home Page: <http://www.ahcpr.gov>
 Centers for Disease Control and Prevention: <http://www.cdc.gov>
 Combined Health Information Database: <http://www.chid.nih.gov>
 Food and Drug Administration Home Page: <http://www.fda.gov>
 Healthfinder, a gateway to consumer health and human services information: <http://www.healthfinder.gov/default.htm>
 Internet Grateful Med V2.6.3: <http://www.igm.nlm.nih.gov>
 National Institutes of Health, Health: <http://www.nih.gov/health>
 National Institutes of Mental Health: <http://www.nimh.nih.gov>
 U.S. Department of Health and Human Services: <http://www.os.dhhs.gov>
 U.S. National Library of Medicine: <http://www.nlm.nih.gov>
 Welcome to the National Center for Health Statistics: <http://www.cdc.gov/nchswww/default.htm>

thing that deals with the selling of content is listed under the general category "e-commerce." This comprehensive but preliminary typology was used on several pilot sites, with interim revisions, along with discussions between the first two researchers, to improve the clarity of the

operationalizations and the mutual exclusivity and the comprehensiveness of the general categories and specific features. Each Web site's homepage was printed, and each individual section that corresponded to a feature was boxed off. This print version was compared to the actual Web site in order to account for any multimedia features not seen on a print copy. Each section was numbered and then coded for specific features within categories. The initial typology was again revised to clarify the categorization of several features and to add a few new feature categories.

Then during the fall of 1999 the first and third researchers used the revised typology to code separately small sets of sites, compare their results, reconcile any differences, and clarify or add any new features before moving on to the next set of sites. We started with a small set of sites that had the most features according to the pilot coding, to ensure the maximum amount of coding opportunities. We did this three more times, using approximately a third of the commercial and a third of the government sets each time.

Table 10.2 provides the final seven general coding categories, 74 specific features, and associated operationalizations. The major categories that emerged from the prior typologies and our own analysis included (a) noninteractive substantive content (Scientific/Medical/Academic, Educational/Journalistic/PR/Publicity; Other Resources; and Web Site-Specific Columns), (b) e-commerce, (c) Multimedia Content, (d) Navigation/Assistance, (e) Search Methods, (f) Interactivity (among Users; with the Web site), and (g) Policy. Features included in the initial typology but not occurring in these sites include e-commerce: auctions (online bidding for medical products), and online consultations for a fee; Interactive with Web site: surveys (usually separate page, includes questions about personal information); and Policy: security/encryption (encrypted messages, transaction security from main page).

RESULTS

Table 10.2 also provides the mean percentage of general category and specific feature occurring in the commercial and in the government sites (see the note in Table 10.2 for comments on significant differences). Scientific/Medical/Academic materials were slightly more frequent on government sites (a mean of 1.55 of the 6 features) (especially notices of clinical trials and medical library databases) than on commercial sites (mean = 1.3). Al-

ternatively, commercial sites had somewhat more Educational/Journalistic/PR/Publicity features than did government sites (1.95 of 4 features vs. 1.55), but only in the area of prevention/wellness information. Both types of sites had similar frequencies of Other Resources (calendars, employment opportunities, patient resources, doctoral referrals), with government sites having slightly more employment opportunities. Obviously, commercial sites had far more e-commerce features (2.3 of the 7 features vs. 0.27 for government), especially in the form of advertising banners, sponsors, online pharmacies, and health or life insurance quotes. Commercial sites also used multimedia features more frequently (1.25 of the 4 features vs. 0.36), especially moving icons/animation or pictures/illustrations. Government sites provided slightly more navigation and assistance features (2.64 of the 10 features vs. 2.15), but only in the form of FAQs and last update/revision date. Government sites provided more search methods and tools (3.27 of 6 features vs. 2.65), especially in the use of topic headings, but with far less use of pull-down or scrolling menus. Commercial sites provided extensive support for interactivity among users compared to government sites (1.00 of the 5 features vs. 0.18), especially chat rooms and newsgroups. The same held for interactivity with the Web site: Commercial sites provided 4.1 of the 14 features, while government sites provided 1.9. Commercial sites especially provided more "ask a physician/expert," live events, opinion polls, and member registration/customization. Government sites provided noticeably fewer policy features (1 of the 8 features vs. 2.75), particularly with respect to copyright (to be expected, as most, but not all, government information is not copyrighted), advertising policy, and disclaimers. On average, commercial sites offered 22.5 of the 74 features compared to 14 by government sites.

TRENDS AND IMPLICATIONS

It could be argued that some of the features found in this site analysis are more appropriate to commercial sites (such as advertising policy and banners, copyright, membership, and various forms of e-commerce). However, government sites could well provide more interactive features, such as multimedia content, site maps, pull-down/scroll menus, message boards, online newsletters, links to drug checkers, spellcheckers, and codes of ethics. While some of these may be considered primarily decorative, they may not only improve the online experience of users, but also

(text continues on p. 230)

General Categories, Specific Features, Coding Operationalizations, and Means (percentage of sites having that feature or number of features from a category) and Standard Deviations for Commercial Health Database Sites and Government Health Database Sites

1. Noninteractive Substantive Content

General Category and Specific Feature	Operationalization of Specific Feature		Com		Gov	
	Mean	SD	Mean	SD	Mean	SD
Academic papers	.20	.41	.18	.40	.40	.18
Full-text research results, articles, or detailed conference papers done by professors, MDs or members of the academic community that may or may not be published; may be listed only as journal title if it's clear that articles are provided; may require knowledge of the journal	.10	.31	.00	.00	.00	.00
Article abstracts	.10	.31	.00	.00	.00	.00
Any collection of article summaries, sometimes with the option to obtain the entire article; not as listed under "news"	.15	.37	.36	.50	.50	.36
Articles that summarize a professional-level conference, or alert readers to the existence of conference proceedings, but not the particular articles or proceedings themselves	.15	.37	.36	.50	.50	.36
Articles about major meetings of doctors or members of academia discussing health issues; or contents of those conferences	.15	.37	.09	.30	.30	.09
Conference reports and summaries	.15	.37	.09	.30	.30	.09
Medical library databases	.50	.51	.73	.47	.47	.73
Any general grouping of articles or resources, such as medical dictionaries, not proceedings; data sources	.50	.51	.73	.47	.47	.73
Online journals	.20	.41	.18	.40	.40	.18
Access to full journal content online	.20	.41	.18	.40	.40	.18
Total noninteractive academic content	1.30	1.34	1.55	.93	.93	1.55

(continued)

A. Educational/Journalistic/PR/Publicity						
Educational material	.35	.49	.36	.50	.50	.36
Description or explanation of any medical condition or medication, written in simpler languages; glossaries; Q&A	.35	.49	.36	.50	.50	.36
The most current (often daily) reports of health news from any source	.65	.49	.64	.50	.50	.64
News headlines and stories	.65	.49	.64	.50	.50	.64
Prevention or wellness information	.60	.50	.18	.40*	.40*	.18
Any advice, recipes, or tips that cover general health or prevention, or travel tips	.60	.50	.18	.40*	.40*	.18
Press releases	.15	.37	.18	.40	.40	.18
Official documents (usually from drug companies) making announcements concerning products or services—current press releases may also be considered "news headlines" or "Press Rooms/areas"	.15	.37	.18	.40	.40	.18
Archived material	.20	.41	.18	.40	.40	.18
Archived news on medical procedures, devices, etc.—anything that isn't the most current, such as past newsletters, discussions, etc.	.20	.41	.18	.40	.40	.18
C. Other Resources						
Total noninteractive educational/journalistic content	1.95	1.47	1.55	1.44	1.44	1.55
Calendar/Schedule of events	.35	.49	.36	.50	.50	.36
Listing of upcoming happenings, conferences, either on the site or in certain cities	.35	.49	.36	.50	.50	.36
Employment opportunities	.35	.49	.55	.52	.52	.55
Job postings and resume openings	.35	.49	.55	.52	.52	.55
Patient resources	.30	.47	.36	.50	.50	.36
Any list of physical locations, such as a directory of organizations, agencies, hotlines, government agencies; not physician referrals	.30	.47	.36	.50	.50	.36
Doctor referrals, physician directory	.10	.31	.00	.00	.00	.31
List or directory of physicians	.10	.31	.00	.00	.00	.31
Total other resources	1.00	.92	1.27	1.01	1.01	1.27
Material written expressly for the Web site, usually by an editor or in-house physician	.01	.31	.00	.00	.00	.31
D. Web Site Specific Articles or Columns						

(continued)

General Category and Specific Feature	Operationalization of Specific Feature	Mean	SD	Mean	SD
FAQ	Frequently Asked Questions	.05	.22	.36	.50
Site map/Index/Contents	A layout, listing, contents of all the components, options in a site	.35	.49	.09	.30
"About us"	Information about the creators, editors, advisors, or anyone who is a part of the Web page	.70	.47	.73	.47
Top or side frame	A list of available options to explore in the site past the home page; separate from the main image/frame/contents	.45	.51	.36	.50
Feature descriptions and explanations	Explanations of how to use features	.00	.00	.09	.30
Date, time		.05	.22	.00	.00
Site developer, WebMaster	May be individual or company	.15	.37	.09	.30
Multiple languages	Offers to present some or all links in other languages	.05	.22	.18	.40
Last update, revised	Indicating when page was last revised	.15	.37	.45	.52
Help, instructions	Help in using the page and its features	.20	.41	.27	.47
Total navigation, help		2.15	1.27	2.64	1.36

IV. Navigation, Assistance (anything provided only to help with the details of the site)

General Category and Specific Feature	Operationalization of Specific Feature	Mean	SD	Mean	SD
Audio sound bytes	A recording or short comment on a medical topic	.10	.31	.00	.00
Moving icons or animation	Small moving pictures used to bring attention to something	.55	.51	.09	.30***
Pictures or illustrations	Actual photographs or hand-drawn diagrams	.55	.51	.18	.40*
Video clips	A piece of video from any source on a health topic	.05	.22	.09	.30
Total multimedia		1.25	.72	.36	.50***

III. Multimedia Content

General Category and Specific Feature	Operationalization of Specific Feature	Mean	SD	Mean	SD
Advertising banner	A paid advertisement that tries to lure a viewer to its Web site	.50	.51	.00	.00***
Sponsors (not a banner)	Any company that has its logo placed on a Web site in a way that's integrated with site content, and isn't explicit about selling higher-level government agency	.40	.50	.00	.00***
Classified ads	Multiple senders, usually individuals	.10	.31	.00	.00
Online stores (a single site, not pharmacy)	Selling products including (but not limited to) audio tapes, books, CD-Rom software, supplements, videotapes, and vitamins	.60	.50	.27	.47
Online pharmacy	The selling of medication online	.20	.41	.00	.00*
Stock quotes	An online stock ticker, updated frequently	.05	.22	.00	.00
Health or life insurance quotes	Can search for one or more quotes from insurance companies, based on user input	.45	.51	.00	.00***
Total E-commerce		2.30	1.59	.27	.47***

Table 10.2 Continued

II. E-Commerce

Gov	Com		
Mean	SD	Mean	SD

(continued)

General Category and Specific Feature	Operationalization of Specific Feature	Mean	SD	Mean	SD
A. Among Users					
Message board, or forums, newsgroups	An area where people post "threads" (a hyperlink phrase leading to a full message) that can be responded to by posting to the message board	.25	.44	.09	.30
Discussion list, listserv	An e-mail-based, nonthreaded discussion that allows users to send e-mail to an address that sends the message to all of the people on the list	.10	.31	.09	.30
Forum	Post messages, some of which are selected for display and comment	.10	.31	.00	.00
Total boards, lists, forums	As there was some ambiguity among the use of these terms on different pages, this represents the total of the prior three features	.45	.51	.18	.40
Chat room	An area where people can have a continuous dialogue, in real time, concerning medical issues	.45	.51	.00	.00***
Health e-card	A greeting sent through e-mail	.10	.31	.00	.00
Total interactive with users		1.00	.97	.18	.40***
B. With Web Site					
Ask a physician/librarian/health expert, etc.	Question and answer, done in a mediated chat room or via e-mail (free only); or selected responses may be put on the site	.45	.51	.00	.00***
Continuing education program	Any type of online schooling where the user takes actual online classes, beyond general advice; especially CME	.30	.47	.09	.30
E-mail, phone, written feedback	Users can contact Web site administrators	.95	.22	.73	.47
Newspaper/online magazine (receive as separate mailing)	Usually a summary of some of the latest updates and advances in health; however, it may be about anything, including when a site is updated; can be a reminder e-mail	.30	.47	.09	.30

VI. Interactivity

General Category and Specific Feature	Operationalization of Specific Feature	Mean	SD	Mean	SD
A. Scientific/Medical/Academic					
External links	Links that lead to a specific page not contained within the site, or to other parallel site(s) provided by the same organization; not ads	.30	.47	.64	.50
Pull-down/Scroll menu	Allows the user to choose from a series of topics in a list	.50	.51	.09	.30**
Searchable newsgroup links	A current listing of newsgroups, hyperlinked	.05	.22	.00	.00
Search engine (internal or external)	Allows the user to type in a word; the search engine will find all the occurrences of that word in a certain database on the internet or throughout the Web site	.75	.44	.91	.30
Topic headings (hyperlinked)	Individual topics (they may be elaborated on), with the option to choose them and be taken to their pages	.45	.51	.82	.40*
Links page	Link to a Web page with links to pages in the site or other sites	.60	.50	.82	.40
Total search methods		2.65	1.18	3.27	1.27

V. Search Methods

Table 10.2 Continued

NOTES: *T* tests (two-tailed, using appropriate shared or pooled variance) were conducted for each separate feature and for each category of features: * $p < .05$; ** $p < .01$; *** $p < .005$. These significance tests are purely illustrative, for three reasons. First, we cannot know the entire population of Web health database sites, so cannot possibly analyze a representative sample. Second, the selection procedure we did use was based on an attempt to obtain large-scale, comprehensive commercial and government health database sites, so is naturally biased toward more features. Third, to the extent that any features are not independent, there is shared variance across those features and the significance tests are overestimates. We provide the significance tests only to provide a rough indication as to "substantial" differences in frequency of various feature categories across these commercial and governmental health database sites.

General Category and Specific Feature	Mean	SD	Com	Mean	SD	Gov
Live events	.25	.44	.44	.00	.00	.00*
Being able to experience specialists or presentations in real time via audio or video; open either to anyone or to registered members, but not a paid service; doesn't include "chats"						
Opinion poll	.25	.44	.44	.00	.00	.00*
A question asked by a Web site to determine the opinion of some of the visitors (a brief question set, one or two, as opposed to a survey); there is also no explicit disclosure of e-mail or identity						
Quiz, test, self-assessment	.20	.41	.41	.18	.40	.40
A few questions asked by the Web site with the intent to determine a knowledge base, or how informed its viewers are; or an interactive tool for self-assessment in some way						
Registration, customization	.35	.49	.49	.00	.00	.00***
Giving personal information for access to otherwise restricted information; not conference registration						
Adding your site	.20	.41	.41	.09	.30	.30
A form allowing users to add their Web sites to a database or search engine						
Site updates: "What's New" (about site structure, not substantive content)	.30	.47	.47	.45	.52	.52
The most recent updates to a Web site						
Drug checker	.30	.47	.47	.09	.30	.30
The ability to type in medications to see if they have harmful effects when combined, or to find out more about a drug						
Online organizer	.15	.37	.37	.00	.00	.00
Personal information organized by a Web site's tools (phone list, calendar, records, personal wellness, etc.)						
Spellchecker	.10	.31	.31	.09	.30	.30
For posting comments, check spelling of medication						
Participate in study	.00	.00	.00	.09	.30	.30
Allows users to participate in health study						
Total interactive with site	4.10	2.40	2.40	1.91	1.14***	1.14***
Advertising policy	.25	.44	.44	.00	.00	.00*
Instructions for parties interested in advertising on a site, or criteria for allowing advertising						
Awards/Accreditation	.30	.47	.47	.09	.30	.30
Recognition given by other sites to this site because the content is deemed worthy; must be obvious that it's an award, accreditation						
Recommendation seal	.00	.00	.00	.00	.00	.00
A seal of approval that this site creates and that it will give if another Web site meets a certain list of requirements						
Code of ethics	.10	.31	.31	.00	.00	.00
A list of rules that the site believes and follows						
Copyright	.85	.37	.37	.18	.40***	.40***
Prohibits anyone else from using a Web site's information without permission						
Criteria for content (used in forums, or a standard of accuracy)	.05	.22	.22	.09	.30	.30
Any restrictions on what a site may allow to be posted; terms and conditions						
Disclaimer	.65	.49	.49	.18	.40**	.40**
A statement made (usually for legal purposes and patient safety) absolving a Web site from responsibility due to complications caused by the advice and information they give; also informs patients to clear all final decisions with their physician; does not have to be a separate icon (may be in text at bottom)						
Hits counter	.10	.31	.31	.00	.00	.00
Shows the number of unique visits to a Web site						
Privacy policy	.45	.51	.51	.45	.52	.52
A Web site's stance concerning security, and the procedures it takes to uphold it						
Total policy	2.75	1.45	1.45	1.00	.63***	.63***
Total all features	22.45	7.51	7.51	14.00	5.48***	5.48***

VII. Policy

Operationalization of Specific Feature	Mean	SD	Com	Mean	SD	Gov
Being able to experience specialists or presentations in real time via audio or video; open either to anyone or to registered members, but not a paid service; doesn't include "chats"	.25	.44	.44	.00	.00	.00*
Opinion poll	.25	.44	.44	.00	.00	.00*
A question asked by a Web site to determine the opinion of some of the visitors (a brief question set, one or two, as opposed to a survey); there is also no explicit disclosure of e-mail or identity						
Quiz, test, self-assessment	.20	.41	.41	.18	.40	.40
A few questions asked by the Web site with the intent to determine a knowledge base, or how informed its viewers are; or an interactive tool for self-assessment in some way						
Registration, customization	.35	.49	.49	.00	.00	.00***
Giving personal information for access to otherwise restricted information; not conference registration						
Adding your site	.20	.41	.41	.09	.30	.30
A form allowing users to add their Web sites to a database or search engine						
Site updates: "What's New" (about site structure, not substantive content)	.30	.47	.47	.45	.52	.52
The most recent updates to a Web site						
Drug checker	.30	.47	.47	.09	.30	.30
The ability to type in medications to see if they have harmful effects when combined, or to find out more about a drug						
Online organizer	.15	.37	.37	.00	.00	.00
Personal information organized by a Web site's tools (phone list, calendar, records, personal wellness, etc.)						
Spellchecker	.10	.31	.31	.09	.30	.30
For posting comments, check spelling of medication						
Participate in study	.00	.00	.00	.09	.30	.30
Allows users to participate in health study						
Total interactive with site	4.10	2.40	2.40	1.91	1.14***	1.14***

VI. Interactivity

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emphasize a greater orientation toward users. On the other hand, some critics of the commercialization and popularization of health information may argue that many of these additional features serve to mask biases in health information and services offered by narrow or highly commercial sites. For example, attractive and interactive sections may increase attention and attraction, but distract from objective evaluation of the information. Or, online newsletters may appear timely, interactive, and personally addressed, but may embed preferences for certain companies' products over others and certain treatments over others. As discussed elsewhere in this volume, interactive listservs and newsgroups, and especially real-time chat rooms, may seem more personal and customized, but the information provided by the participants may be ill informed, counter to accepted medical practice, and used to mask true identities. Future research might consider the role of features (both general categories and specific forms) in influencing users' experiences with, evaluation of, and preference for online health database sites, as discussed in several chapters in this volume. Finally, both commercial and government sites might consider a more dialogic approach, rather than conceptualizing a health Web site as primarily a repository of information that users can seek out and retrieve.

This is of course only a preliminary investigation. Yet, it highlights how cultural forms are reproduced within a new technological capability and conceptual space, due to the importance of structural incentives and constraints, regardless of wider cultural imperatives. Clearly, commercial and governmental health Web sites exhibit noticeable differences somewhat in line with their different structural incentives and constraints. However, the results also demonstrate that, given preexisting social constraints on organizations, the options, or at least the choices, for creating innovative health communication systems in support of broad cultural imperatives may be quite limited regardless of the sector. As Kent and Taylor (1998) conclude, "the World Wide Web still remains underutilized by many organizations and underexamined by scholars as a tool for building organizational-public relationships" (p. 322).

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