

A COMPARISON OF PRINT VS. WWW-BASED READY-REFERENCE SOURCES

by
Susan Lynn

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An evaluation and comparison of print ready-reference sources versus WWW-based ready-reference sources. This investigation evaluated four directories available in both print format and on the Web. Each directory was individually evaluated against a list of pertinent criteria. Evaluation results of individual directories were compared to determine if the WWW-based format was superior to the print format of each directory. Results of the investigation demonstrate that neither the print format nor the WWW format of any of the directories evaluated is significantly superior to the other.

Headings:

Internet – Evaluation

World Wide Web – Directories

Internet – Directories

Reference Services - Automation

Introduction

Contemporary reference librarians have access to a wider array of information sources than ever previously available. This is largely the result of the advent of the Internet and related Online databases. Emerging from a research project funded by the United States Department of Defense in the late 1960's, the Internet links computer networks across the world to function as a single large network. This permits a global exchange of information, resources and knowledge.¹

Originating in a laboratory in Geneva, Switzerland in 1989, the World-Wide Web (WWW) provides a graphical interface to the services of the Internet. Based on hypertext, WWW documents contain links to other WWW documents. Using Web client software like Netscape or Internet Explorer, users can view documents on the Web as part of a massive network of interlinked pages. Hypertext links to other documents provide "access to almost all of the information available on the Internet"² through "the click of a mouse."³ The World Wide Web also permits multimedia. Documents can contain text, images, sound and video. The Web is simply a "front end" to the services of the Internet. However, because it supports multimedia and interlinked pages, it is also user friendly.⁴

Various scholars in the field of Information and Library Science have posed numerous concerns regarding the potential impact of the WWW upon library services. Despite an array of opinion, most researchers agree that "the Internet is changing the ways in which reference librarians and information specialists serve their clientele"⁵. Some claim that the Internet will eventually become the primary vehicle for sharing information and knowledge.⁶ This presents unique opportunities and problems for librarians because

“Internet access represents the next major technological challenge for libraries.”⁷ This is largely because resources on the Internet are continually growing and are often difficult to evaluate or even identify.

Despite the difficulties posed by accessing material through the WWW, reference librarians often utilize the valuable resources available here. One area where this is most evident is the answering of ready-reference questions. A ready-reference question is a request for factual information such as an address, telephone number, a definition or brief information about an individual or organization. Ready-reference questions “constitute the majority of questions received at most reference desks in public and academic libraries.”⁸

In the past, librarians had only a select number of print sources available to answer these questions. Examples of traditional print ready-reference sources include encyclopedias, almanacs, dictionaries and directories. However, librarians now have access to a potentially unlimited number of ready-reference resources available through the World-Wide Web. This creates a challenge for librarians attempting to locate the most appropriate source for each ready-reference question posed by patrons.

This challenge is further illustrated by the rapid growth of the WWW. Approximately forty million Americans currently use the Internet compared with less than a million only ten years ago.⁹ At the current growth rate, the number of WWW sites will exceed half a million.¹⁰ WWW growth may have already exceeded this number as evidenced in the 1998 *World Almanac and Book of Facts*. According to one article about the Internet, there are approximately one million WWW servers worldwide and the number of WWW pages is between thirty and fifty million.¹¹ Another author states that “as a technological innovation, the Internet will by its presence alone create an impact on ready-reference.”¹²

How will reference librarians now and in the future determine not only what is the best source to answer a ready-reference question, but also what is the most appropriate format? Through an evaluation and comparison of four WWW-based directories and four print directories, this master's project will investigate the following question. For librarians answering ready-reference questions, are WWW-based ready-reference sources superior to print ready-reference sources?

Literature Review

Many published articles in the Information and Library Science literature discuss the phenomena of the Internet and its impact upon libraries and library services. *Database, Online, Computers in Libraries* and *Internet Reference Services Quarterly* are examples of popular journal titles dedicated to the study of the Internet and related phenomena. Common topics featured in many articles include general discussions of the Web, reference library service in the future and guidelines for using the Internet as a reference tool. Despite the preponderance of published materials available on this subject, only a small number of articles specifically investigate the topic of ready-reference and the Internet and even fewer propose an evaluation of Online versus print ready-reference sources. Additionally, articles on this topic often address commercial online databases that are only accessible through a user fee. This evaluation only investigated those resources accessible thorough the WWW without a user fee or subscription.

Since the master's project is an evaluation and comparison of ready-reference sources, several examples from the literature on the topic of critical evaluation are included in this review. Because librarians are often responsible for examining and critically evaluating reference tools, there is an array of published material concerned with the topic of evaluation. Many of the more recent publications primarily discuss the evaluation of reference sources on the WWW. Appropriately, the full-text of many of these articles is available via the WWW.

The Internet as a Ready-Reference Tool

Numerous articles about the Web appearing in Library Science literature provide basic background information about the WWW and the tools necessary to search for

information on it. In “Welcome to the World-Wide Web,” author Philip Davis provides an excellent introduction and history of the Web for librarians unfamiliar with the terminology associated with the Internet.¹³ By author Stacey Kimmel, “WWW Search Tools in Reference Services” is an evaluation and introduction to Web search tools. Such tools like Yahoo and AltaVista aid users and librarians in the search for documents and information on the WWW.¹⁴

Additionally, there are several articles that specifically examine the role of the Internet as a reference tool. Such articles often highlight the negative and positive benefits librarians derive by using the Internet for reference. By author Paul D. Healey, “Untangling the Web: The World Wide Web as a Reference Tool” is an examination of both the benefits and drawbacks associated with use of the WWW.¹⁵ Despite drawbacks such as “shifting and disappearing resources,” the author states that “such a communications network has immense potential as a reference tool” and “offers significant resources for almost any area

¹⁶ Author Scott A. Mellendorf argues further that the “immediacy” of the Internet makes it “a valuable alternative to traditional published sources.”¹⁷ In “Evaluating Use of the Internet Among Academic Reference Librarians,” authors Marilyn Rosenthal and Marsha Spiegelman present the results of a survey examining academic reference librarian’s use of the Internet at the reference desk. According to results of the survey, sixty-six percent of the respondents stated they used the Internet for reference but “it became apparent that participants who considered themselves to be users rarely turned to the Internet for ready or general reference.”¹⁸

Two articles written before the current popularity of the WWW present an earlier interpretation of the Internet as it relates to reference service. “Ready Reference via the

Internet” extols the virtues and benefits librarians derive from using the Internet as a ready-reference tool. Though the focus of the article is not specific to Web-based resources, the author emphatically states that the majority of questions that come to reference desks in the future will be answered through the use of computers and online databases.¹⁹ In “Using the Internet for Reference,” authors Sharyn J. Ladner and Hope N. Tilman discuss how reference librarians in special libraries use the Internet for communicating with colleagues via discussion groups and e-mail.²⁰

Other published material presents a broad discussion of the potential impact of technology upon reference service in the future. In “Changing Roles for Reference Librarians,” authors Julia Kelly and Kathryn Robbins state that “the Internet and its descendants are sure to play a large role in libraries of the future.”²¹ According to the authors, this role includes increased use of e-mail by librarians to answer reference questions and continued development of virtual libraries. Such virtual environments present information on the WWW in an organized fashion much like a library in a physical building.²² Author Johannah Sherrer argues that new technology should be rapidly adopted by libraries and librarians in the present and not viewed as a tool for future library services.²³ Authors P. Warren-Wenk and Vivienne Monty further emphasize the importance of adopting new technology by pointing out that many United States government documents are now only available in electronic format.²⁴

Resources Available on the WWW

Numerous published material in the Information and Library Science literature presents a general discussion of the potential impact of the Internet upon future library services along with an annotated bibliography of online resources librarians may consult to

answer patron's ready-reference queries. In *College and Research Library News*, an article entitled "Internet Resources for Ready Reference" is representative of several titles written in this style.²⁵ Authors Jeff Rosen and Carl E. Snow initially present a general discussion of the World Wide Web and its usefulness as a resource for ready-reference materials. According to Rosen and Snow, the Web provides a plethora of potential resources that may be especially useful for smaller libraries or any libraries with the goal of "user self-

²⁶ The remainder of the article consists of an annotated list of Web sites deemed as useful ready-reference sources for librarians as well as patrons.

Other titles include "Ready Reference on the Internet: A Beginning List of Sources." In this article, author Barbara Ripp Stafford presents an annotated bibliography of Internet ready-reference sources ranging from geographic related WWW sites to government information available on the WWW.²⁷ Volume fifty-seven of *The Reference Librarian* is solely dedicated to presenting a comprehensive list of reference sources available on the Internet. Areas include everything from business, government and law to the environment and sports.

Print Versus Online

Another type of article appearing in the literature utilizes qualitative and quantitative data to present evaluations and comparisons of print ready-reference sources and online ready-reference sources. One recent publication appearing in the March 1998 issue of *Catholic Library World* compares the results of ready-reference searches utilizing traditional print sources and Web-based sources.²⁸ In "Ready Reference Library?" author Michael Gabriel lists twenty-four ready-reference questions posed by patrons. Each question was first answered using print sources. The questions were then answered using MetaCrawler, an

Koutnik extracted 104 reference questions from *Reference Interviews, Questions, and Materials* by author Thomas P. Slavens. Koutnik arranged the extracted questions categorically by the type of source traditionally used to answer each kind of question such as dictionaries, statistical sources and directories. All of the questions could be answered by traditional print reference sources and the purpose of Koutnik's research was to determine if answers to the same questions could be found via freely accessible Web sites. Results include graphs illustrating percentages of questions answered correctly and the average time required by the author to answer questions via the WWW. Koutnik concludes that the Web can not answer all questions but as a single source "it is more powerful than any

Two additional articles present an evaluation of print versus online sources. Unfortunately, the online sources used in both studies consist only of commercial fee-based databases. However, the articles are included in this review because they are representative

of the few published titles that compare print and online ready-reference sources in the literature. Based upon an earlier study, the first article is an investigation conducted in 1990 that compared the “efficiency” and “accuracy” of online versus print sources for librarians conducting ready-reference searches.³¹ Thirty-seven librarians selected from a population of 34 Canadian academic libraries returned mailed question sets that consisted of various types of ready-reference questions. Each librarian received the same questions. Half of the survey respondents were asked to answer the questions using commercial online databases while the other half were asked to answer survey questions using traditional print sources. Authors Jan Horner and Nicole Michaud-Oystryk conclude that the type of questions asked by patrons determine if a print or online ready-reference source is more accurate and efficient. According to Horner and Michaud-Oystryk, “bibliographic questions are more efficiently answered online, while factual questions are more efficiently answered with print sources” and neither “was found to be more accurate.”³²

This study was based upon an earlier investigation conducted by W. Michael Havener in 1988.³³ Results of Havener’s original study were later published under the title, “Answering Ready-Reference Questions: Print versus Online.” The results of research mirror the results of the later investigation by Horner and Michaud-Oystryk.³⁴ Providing 68 reference librarians with the same set of reference questions, Havener split the group in half. One half answered the questions using print sources and the other half answered questions using commercial online databases. Like Horner and Michaud-Oystryk, Havener concludes that results vary “significantly with question type.”³⁵ Both studies indicate the necessity for librarians to utilize print and commercially available online sources when answering ready-reference questions.

Directories

Few published articles in the literature specifically address the topic of directories. However, two recently published titles present an evaluation of WWW-based directories. By author Greg R. Notess, "Internet Ready Reference Sources" presents a select list of various business directories freely accessible through the WWW. Presenting a concise evaluation of each WWW-based resource, the author does not compare any of the online sources with similar print ready-reference sources. Rather, the article simply lists several WWW-based sources librarians may utilize when helping patrons access information.³⁶

Another recently published article presents an evaluation of law directories.³⁷ Author Danielle Borasky compared and evaluated three lawyer directories available on the WWW. Utilizing a compiled set of criteria such as accuracy and authority, Borasky conducted a step by step evaluation of each WWW-based directory. Results of the study conclude that each lawyer directory evaluated presents unique strengths and weaknesses.³⁸ One example of the differences is search capabilities. West's Legal Directory on the WWW has a keyword search option whereas all the other directories evaluated by Borasky do not provide this search option.

Evaluating Reference Sources

Directories are an important component of ready-reference material. The focus of this research is significant because little has been conducted in this area and because reference librarians are often charged with the work of evaluating reference tools. There are numerous published accounts on the topic of evaluation. Most are "how to" guides outlining the elements necessary for the review of reference material. "Evaluating Reference Books in Theory and Practice" by Norman Stevens is one such account. The author provides a

detailed list of criteria librarians should utilize when they are charged with the review of a reference tool. Such criteria include “accuracy, arrangement and bibliography.”³⁹

In addition to titles concerned with the review of printed materials, there are currently many titles specifically concerned with the review and evaluation of Web sites. Most authors agree that “many of the criteria used to evaluate print resources can still be successfully adapted to the evaluation of Web resources.”⁴⁰ Because the need for the evaluation of Web resources is so critical, many librarians have appropriately created Web sites devoted to the topic of WWW evaluation. Purdue University Libraries maintain a WWW site called “Evaluating World Wide Web Information.” The site is available at <http://thorplus.lib.purdue.edu/research/classes/g175/3gs175/evaluation.html>. Another site at <http://www.library.ucla.edu/libraries/college/instruct/web/critical.htm> entitled “Thinking Critically About World Wide Web Resources,” provides librarians with evaluation criteria for the review of information sources on the WWW. Many of these sites contain both guidelines for evaluation as well as reviews by librarians of current WWW sites.⁴¹

Methodology

The inspiration for this project began in the summer of 1998 when I completed field experience work in a public library in South Florida. During this time, I observed that several of the reference librarians were using various databases available via the WWW to answer ready-reference questions. Often, the sources they used were not new. Rather, several were traditional sources that were now available via the WWW. Other sources consulted by librarians were new ready-reference tools only available via the WWW. I was intrigued by the notion of using the WWW as a ready-reference tool and I was also curious how other scholars in the field approached this topic. Was there any literature in the field about the WWW as a ready-reference tool? Would WWW-based ready-reference sources replace print sources in the future? From this and other curiosities did the notion of evaluating print versus WWW-based reference tools emerge.

This project is an investigation examining the notion of superiority. As stated previously, the following broad question was pursued. For librarians answering ready-reference questions, are WWW-based ready-reference sources superior to print ready-reference sources? A print ready-reference source is defined according to the American Library Association's definition for "reference book." It is a "book designed by the arrangement and treatment of its subject matter to be consulted for definite items of information rather than to be read consecutively." Secondly, it is "a book whose use is restricted to the library building."⁴² A WWW-based ready-reference source is also defined according to the same criteria with two alterations. It is not a book and it is not restricted to the library. Rather, it is a resource accessible via the WWW and is consulted for "definite

To investigate the question of superiority regarding print versus WWW-based ready-reference sources, this master's project presents an evaluation and comparison of four directories available in both print format and on the WWW. A directory is one type of ready-reference source that generally contains "a list of persons or organizations systematically arranged usually in alphabetic or classed order, giving address, affiliations, etc., for individuals, and address, officers, functions, and similar data for organizations."⁴³ Directories were chosen for this project because they represent a frequently consulted ready-reference tool and because there are numerous directories currently available on the WWW. Examples of other ready-reference sources that may have been examined include but are not limited to encyclopedias, almanacs, dictionaries and handbooks.

Time constraints do not permit a full evaluation of every available ready-reference source in both print and online formats. For the same reason, it is not possible to evaluate every print and online directory currently available. However, the outcome of this research may further illuminate the discussion of WWW-based versus print ready-reference tools.

Directories for evaluation were selected based upon availability. Only those directories available in both print format and on the WWW were considered for inclusion in the research. Directories were chosen in this manner because the project is an evaluation and comparison of reference tools. It would be both inefficient and difficult to compare two different types of directories. This would be the equivalent to comparing apples and oranges. An evaluation tool may easily be devised to compare the same source available in two formats.

To locate those directories available in both print format and on the WWW, articles published in the Information and Library Science literature as well as the reference staff in

Davis Library at the University of North Carolina, Chapel Hill were consulted for guidance and input. Additionally, the Internet search engine, Yahoo, was used as a tool to locate directories available via the WWW. Search terms “directory” and “directories” were entered as a query. This resulted in over three thousand hits! Once the individual directories were selected, they were organized by category. Organized by type and format, the following chart is a list of the directories examined for this research project.

DIRECTORY TYPE	WWW-based	PRINT
Government	<ul style="list-style-type: none"> • <i>United States Government Manual</i> @ http://www.access.gpo.gov/nara/nara001.html • <i>Official Congressional Directory</i> @ http://www.access.gpo.gov/congress/cong016.html 	<ul style="list-style-type: none"> • <i>United States Government Manual 1998/99</i> • <i>Official Congressional Directory 1997/98, 105th. Congress</i>
Law	<ul style="list-style-type: none"> • <i>Martindale-Hubbell Lawyer Locator</i> @ http://www.martindale.com/locator/home.html 	<ul style="list-style-type: none"> • <i>Martindale-Hubbell Law Directory, 1998/99</i>
Addresses	<ul style="list-style-type: none"> • <i>ZIP Code Lookup and Address Information</i> @ http://www.usps.gov/ncsc/ 	<ul style="list-style-type: none"> • <i>National Five-Digit Zip Code and Post Office Directory, 1998</i>

Once the process of selecting which directories were to be examined was completed, a thorough review of the literature was conducted. Databases that were searched include Library Literature, Library and Information Science Abstracts, InfoTrac Expanded Academic Database, ISI Citation Database and ERIC. The University of North Carolina, Chapel Hill Public Access Catalog also was examined. To locate relevant items, some of the following search terms were used.

- ready-reference
- reference
- World-Wide Web, Web, WWW
- directory, directories
- evaluation, evaluate,
- Internet, Online, Online searching
- reference services

Once the literature review was conducted, a tool for evaluating and comparing directories was constructed. To create this evaluation tool, several articles concerned with the topic of evaluating reference sources were consulted. Superiority of WWW-based versus print was determined by a list of criteria used to first evaluate each directory individually and then compare the WWW-based versus print format of each directory. All of the listed criteria except one, accessibility, were extracted directly from “Evaluating Reference Books in Theory and Practice” by Norman Stevens.⁴⁴ Many additional evaluative techniques are available for the review of Web sites.⁴⁵ However, these are often not as complete as Steven’s criteria or are specific to WWW-based sources only. Norman Steven’s listed criteria are comprehensive and easily apply to both print and WWW-based sources. The criterion “accessibility” was extracted from Danielle Borasky’s review of WWW-based lawyer directories.⁴⁶ For this research, the criterion accessibility applies only to the evaluation of WWW-based directories. It was included in this research because how easy/difficult it is to access a WWW site and find information is an important component when evaluating WWW tools. The following is a list of the criteria that was used to evaluate each directory.

Accuracy	To determine accuracy, three questions were formulated for each directory title. Answers to the questions were pursued in both directory formats. If each directory contained a different answer, then a third independent source was consulted. The directory with the most answers correct was deemed more accurate than the other. If answers to the questions corresponded in both directories, it was assumed that the answer was correct in both and neither was more accurate (for a list of questions, see appendix A).
Appropriateness	For what audience is the source appropriate?
Arrangement	Is the arrangement of the information appropriate for the topic and does it facilitate ease of use?
Authority	What are the qualifications of the author(s), editor(s), and the reputation of the publisher?
Bibliography	Are there citations to other resources? Are these appropriate?
Completeness	Does it cover the subject adequately or are there obvious omissions?
Content	What is the overall value of the content?
Distinction/ Uniqueness	Is there anything distinctive about the source that may set it apart from other sources on the same topic? Does the resource make a unique contribution by providing information or access to information in a manner that is unlike other sources on the topic?
Documentation	Does the source explain what resources its information is based upon?
Ease-of-use	Is it easy to use?
Illustrations	Are there illustrations? If so, what is the quality?
Index	For print sources, how thorough is the index? Are headings subdivided adequately? For WWW-based resources, does the resource include a search engine? If so, how flexible is it? Can the user define search criteria? Are there links? Are these links appropriate?
Level	What is the level of treatment of the topic? Who is the intended audience?
Reliability	Is a user likely to find information that the user can reasonable assume will be available in the resource?
Revisions	How current is the information? For print, how often is the resource revised and for WWW-based resources, how often is the site maintained?
Accessibility	How easy/difficult is it to access the site? How easy/difficult is it to find information? How flexible are the searching options?

Each directory was individually evaluated by the author using the preceding tool. The print format of each directory was evaluated first followed by the WWW format. Each resource was carefully examined by all of the listed criteria. Once each directory was individually evaluated against the stated criteria, evaluation results of the print and WWW-based format of each directory was compared. This comparison was used to ascertain if one format was superior to the other. This was determined by looking at all of the stated criteria such as accuracy, ease-of-use and uniqueness and observe if one format of a directory was more accurate or easy to use when compared to the other. Once the comparison was complete, the directory format that overall received higher marks in the evaluation tool was deemed superior. If both reference tools received similar ratings, then neither was deemed superior. general comparison was made against each type of print and online directory.

The evaluation results of each directory are presented individually by type, title and format. The print format of each directory is presented first followed by evaluation results of the WWW format. Each directory is presented along with the results of the criteria used for its evaluation. After the individual presentations, results of the comparison of print and WWW-based formats are presented by the listed criteria. This is followed by a general discussion of results in the conclusion.

Evaluation Results

TYPE: Government

TITLE: *United States Government Manual 1998/99*

FORMAT: Print

Accuracy: A comparison of the results of three questions posed in the print and WWW version of the *United States Government Manual* correspond exactly. Based upon the stated criteria for determining accuracy, this format of the directory is accurate.

Appropriateness: As clearly stated in the “Preface,” this directory is an appropriate resource for anyone seeking information on the agencies of the judicial, legislative and executive branches of the United States Government. Also included is information about several international organizations, various agencies of the United States Government and information on the commissions and committees of several governmental departments. This resource does not provide detailed organizational structure or the regulatory documents of an agency and thus would be inappropriate for locating such information.

Arrangement: The directory is appropriately arranged by the various branches, agencies, and departments within the government. There are sections specifically dedicated to the Legislative Branch, the Executive Branch and so forth. This arrangement facilitates ease of use because reference librarians can easily locate the branch of government they are seeking information about through the Table of Contents or by flipping through the pages until reaching the appropriate section. Government Departments are presented alphabetically which makes for easier searching. Once at the appropriate agency or department, librarians can readily locate current members and principal officials as they are clearly listed on the first page within each section.

Authority: Published by the Office of the Federal Register, National Archives and Records Administration, this directory is considered the “official handbook of the Federal Government” and rests on great authority. The 1998/99 directory was prepared by the Presidential and Legislative Publications Unit, Office of the Federal Register. The directory lists the names of those who compiled the information but does not give their credentials.

Bibliography: There are no citations to other resources.

Completeness: The directory covers the subject adequately and an examination of the material did not present any obvious omissions. As a directory, it provides a listing of all the principal officials of both branches of government as well as a list of members of the Senate and House of Representatives. Each agency description includes a list of principal officials and a summary statement of the agency’s purpose and role in the Federal Government. Each agency description also provides a brief history of the agency, description of its programs and a “Sources of Information” section which provides information on consumer activities, contracts and grants within the agency. Each department and agency description provides the address, telephone, and WWW address for each department and agency if available. The

directory does not provide biographical data, addresses, telephone, or e-mail addresses of individual members of departments or agencies.

Content: The overall value of the content is very high because it is both a comprehensive and concise directory of United States Government agencies and officials.

Distinction/Uniqueness: The *United States Government Manual* is unique because it is considered the only “official” handbook of the United States Federal Government. It is also unique because it is more than a directory. It not only provides the names of officials and departments, but it also offers general information about the history and purpose of various agencies and departments within the Federal Government.

Documentation: There is no clearly defined list or reference to any resources the manual is based upon.

Ease-of-use: This format is easy to use because of its arrangement and requires no specialized knowledge.

Illustrations: There are no significant illustrations except for several flow charts illustrating organizational structure.

Index: There is a comprehensive alphabetical index by name and an agency/subject index. The headings are sub-divided adequately.

Level: As a directory, the *United States Government Manual* primarily provides only the names of principal officials and not individual telephone numbers or e-mail addresses. However, at the agency and department level, the level of treatment is greater and address and telephone information is provided for agencies and departments.

Reliability: This directory is reliable because a user is very likely to find information that he or she can reasonably assume is available in the resource. This is clearly indicated by the Preface which identifies what information may be located in this resource.

Revisions: The 1998/99 *United States Government Manual* was last revised June 2 – August 1, 1998. The changes resulting from this revision are not included within the text. They are listed in a separate section at the end of the book and are not cross-referenced.

TYPE: Government
TITLE: *The United States Government Manual* @
<http://www.access.gpo.gov/nara/nara001.html>
FORMAT: Web

Accuracy: A comparison of the results of three questions posed in the print and WWW version of the *United States Government Manual* correspond exactly. Based upon the stated criteria for determining accuracy, this format of the directory is accurate.

Appropriateness: The appropriateness of this resource is the same as the print format. Please see print evaluation for a full evaluation statement of this criterion.

Arrangement: The arrangement of the WWW version of the *United States Government Manual* corresponds exactly to the print format. Please see print evaluation for a full evaluation statement. The Web version provides an initial page containing a "List of Documents" that provides links to various sections of the directory. This facilitates an arrangement that is appropriate to the topic and one that mimics opening pages in a book. Because of the provided links, a librarian may go directly to the section he or she is interested in without searching endlessly through pages.

Authority: The authority of this resource is the same as the print format. Please see print evaluation for a full evaluation statement. The Web site is sponsored by the Office of the Federal Register, National Archives and Records Administration on the United States Government Printing Office web site.

Bibliography: There are no apparent citations to other resources. However, the site does contain links to the Office of the Federal Register, the National Archives and Records Administration and to the United States Government Printing Office. All of these links are appropriate because these are the agencies that are responsible for compiling and sponsoring this directory.

Completeness: Because the content of the WWW version corresponds exactly to the print format, this criterion is the same as the print. Please see print evaluation for a full evaluation statement of this criterion.

Content: The content of the WWW format of this directory is the same as the print. There is no additional information nor any omissions. Please see print evaluation for a full evaluation statement of this criterion.

Distinction/Uniqueness: The print version of the directory is unique because it is the only "official" handbook of the United States Federal Government. This same principal applies to the Web version of this directory. It provides the names of officials and departments and it also offers general information about the history and purpose of various agencies and departments within the Federal Government. This format is additionally unique because it is available on the WWW without a user fee or a subscription from any computer terminal with Internet access.

Documentation: There is no clearly defined list or reference to any resources the manual is based upon.

Ease-of-Use: This version of the directory is quite easy to use because a “List of Documents” on the first page of the Web site clearly presents the contents of the directory with links to each section. Anyone visiting the site could quickly go to the agency or branch of government they desired. The remaining content is arranged identically to the book and is easy to navigate without any special skills or knowledge.

Illustrations: Because the content is the same as the print, there are no illustrations except several organizational flow charts. However, the Web version of the *United States Government Manual* is available in plain text format or PDF format. The plain-text format presents the text only version of the directory and loads faster because the organizational charts require more memory. The PDF format presents the material in publication quality format and the pages appear exactly as they do in the print version of the directory. Users must have Adobe Acrobat software installed on their computer to view this format.

Index: There is a comprehensive alphabetical index by name and an agency/subject index. The headings are sub-divided adequately. Additionally, this version of the directory provides a search engine. Searches may be conducted by keywords placed within quotation marks. Operators for “adjacency”, “and”, “or” and “not” may be used. Word roots can be searched using an asterisk following the word stem. A link to a “Helpful Hints” page assists visitors when developing search terms. The search engine is flexible and permits users to define search criteria.

Level: The level of the directory in this format matches the print format. Please see print format for a full evaluation statement of this criterion.

Reliability: The reliability of this format matches the print format. Please see print format for a full evaluation statement of this criterion.

Revisions: Unfortunately, the WWW version of the directory is not more current than the print format. The revision matches the print format which was last revised June 2 – August 1, 1998. The date of November 4, 1998 appears on the main page of the directory Web site and is assumed by the author to be the last time the site was revised or updated.

Accessibility: The Web version of the *United States Government Manual* is accessible through a service of the U.S. Government Printing Office called GPO Access. GPO Access provides free electronic access to many publications of the Federal Government. It is easy to locate through a search on any Internet search engine such as YAHOO or Alta Vista. Once at the GPO Access Web site, librarians may follow a link to the database page which lists all of the full text documents alphabetically. Locating information on the site is easy and search options are flexible.

TYPE: Government
TITLE: *The Official Congressional Directory 1997-1998, 105th. Congress*
FORMAT: Print

Accuracy: A comparison of the results of three questions posed in the print and WWW version of the *Official Congressional Directory* correspond exactly. Based upon the stated criteria for determining accuracy, this format of the directory is accurate.

Appropriateness: The content of this directory is appropriate for anyone seeking information about such U.S. government officials as the vice-president, president, senators, representatives and state delegations. The directory also provides the names of members of committees of the House and Senate as well as information on government departments and some international organizations. The information only lists those officials present in the 105th. Congress. The directory does not provide an explanation describing what audience the source is appropriate for.

Arrangement: The arrangement of the material is appropriate for the topic. Concise lists of members of the Senate and House are followed by a more comprehensive list of all members of Congress. This list provides brief biographical information, address and telephone numbers and the WWW site and e-mail address of all individuals listed if available. The list of officials is appropriately presented by state. Information on members of committees, departments and agencies are presented in additional sections. This arrangement is clear and facilitates ease of use. An excellent list of "Contents" provides a clear layout of the material and assists the user in locating the appropriate section to answer a query.

Authority: According to the preface, this directory is one of the oldest handbooks in the United States. It is published by the United States Senate in partnership with the Government Printing Office. Employees of the GPO compiled and published the current directory and editors and compilers are listed individually and it is considered to be a source of sound authority.

Bibliography: There are no apparent citations to other resources.

Completeness: This directory covers the subject adequately. It not only provides directory information of individuals such as address and telephone, but it also provides fax numbers, e-mail addresses and the WWW pages of all listed officials if available. Additionally the directory provides biographical information for some listed officials. The directory also provides the address and telephone numbers of various departments and agencies.

Content: This resource is very valuable because it assists librarians in locating directory information about important U.S. government officials and offices.

Distinction/Uniqueness: The *Congressional Directory* is unique because it is considered the only official resource for this type of information. It is also unique because of the information it provides. Not only does this resource provide the names of individuals, it also provides additional information such as biographical background information.

Documentation: There is no formally presented list of materials utilized to compile the directory. There are no apparent references stating where the information was obtained.

Ease-of-Use: The directory is fairly easy to use because the arrangement by geographic areas and department facilitates ease-of-use. Government departments are arranged alphabetically. A comprehensive list of the contents of the volume ensures the information is easy to locate.

Illustrations: The only illustrations are several black and white congressional district maps illustrating district information for each geographic area presented.

Index: A comprehensive name index is located at the back with no subject index.

Level: This directory presents varying levels of treatment. Information about members of Congress is more in-depth than information about officials within government departments like the Department of Agriculture. Overall, the level of treatment is quite comprehensive.

Reliability: This directory is reliable because a user is very likely to find information that he or she can reasonably assume is available in the resource. This is clearly indicated by the Forward which identifies what information may be located in this resource.

Revisions: The closing date for compilation of the current edition of this directory was June 4, 1997. At the date of this writing, this was the most current edition available and only lists members of the 105th. Congress. The beginning of the directory also lists changes in membership since the election of November 5, 1996 and after the election of November 8 1994.

TYPE: Government
TITLE: *The Official Congressional Directory 1997-1998, 105th. Congress, October 1998 Online Revision* @ <http://www.access.gpo.gov/congress/cong016.html>
FORMAT: Web

Accuracy: A comparison of the results of three questions posed in the print and WWW version of the *Official Congressional Directory* correspond exactly. Based upon the stated criteria for determining accuracy, this format of the directory is accurate.

Appropriateness: The appropriateness of this resource is the same as the print format. Please see print evaluation for a full evaluation statement of this criterion.

Arrangement: The arrangement of the WWW version of the *Congressional Directory* corresponds exactly to the print format. Please see print evaluation for a full evaluation statement of this criterion. The Web version provides an initial page containing a "List of Documents" that provides links to various sections of the directory. This facilitates an arrangement that is appropriate to the topic and one that mimics opening pages in a book. Because of the provided links, a librarian may go directly to the section he or she is interested in without searching endlessly through pages. The "List of Documents" appropriately arranges the information content by topic and geographic region.

Authority: The authority of the WWW version of this directory rests on the same authority as the print. Please see print evaluation statement for a full evaluation of this criteria. Additionally, the Web site is sponsored by the U.S. House of Representatives and the United States Senate. The site is located on the United States Government Printing Office WWW page.

Bibliography: There are no apparent citations to other resources. There are links to the U.S. House of Representatives, United States Senate and the GPO. All of these links are appropriate because these agencies are responsible for the content and presentation of this directory and also because the directory is primarily concerned with the officials of these agencies.

Completeness: Because the content of the WWW version corresponds exactly to the print format, this criterion is the same as the print. Please see print evaluation for a full evaluation statement of this criterion.

Content: The value of the content of the WWW format of this directory is the same as the print. Please see print evaluation for a full evaluation statement of this criterion.

Distinction/Uniqueness: The print version of the directory is unique because of its authority as an "official" handbook of the U.S. government. This same principal applies to the Web version of this directory. This format is additionally unique because it is available on the WWW without a user fee or a subscription from any computer terminal with Internet access.

Documentation: There is no clearly defined list or reference to any resources the directory is based upon.

Ease-of-Use: This version of the directory is quite easy to use because a “List of Documents” on the first page of the web site clearly presents the contents of the directory with links to each section. Anyone visiting the site could quickly go to the agency or branch of government they desired. The remaining content is arranged identical to the book and is easy to navigate without any special skills or knowledge.

Illustrations: Because the content is the same as the print, there are no illustrations except several Congressional District Maps. The Web version of the directory is available in plain text format or PDF format. The plain text format presents the text only version of the directory and loads faster. The PDF format presents the material in publication quality format and the pages appear exactly as they do in the print version of the directory. Users must have Adobe Acrobat software installed on their computer to view this format.

Index: The site presents an alphabetically arranged name index that corresponds exactly to the print volume. Page numbers in the index correspond to Web pages facilitating ease-of-use. Additionally, this version of the directory provides a search engine. Searches may be conducted by keywords placed within quotation marks. Operators for “adjacency”, “and,” “or” and “not” may be used. Word roots can be searched using an asterisk following the word stem. A link to a “Helpful Hints” page assists visitors when developing search terms. The search engine is flexible and permits users to define search criteria.

Level: The level of the directory in this format matches the print format. Please see print format for a full evaluation statement of this criterion.

Reliability: The reliability of this format matches the print format. Please see print format for a full evaluation statement of this criterion.

Revisions: The WWW version of this directory is revised more frequently when compared to its print counterpart. As stated on the first page of the directory, the Joint Committee on Printing produces periodic online interim issues to assure the public’s access to current information. The frequency of these revisions is determined by the volume of changes submitted for incorporation. No print counterpart exists for these changes. Thus, the WWW version of this directory is more current than the print.

Accessibility: This version of the *Official Congressional Directory* is accessible through a service of the U.S. Government Printing Office called GPO Access. GPO Access provides free electronic access to many publications of the Federal Government. It is easy to locate through a search on any Internet search engine such as YAHOO or Alta Vista. Once at the GPO Access Web site, librarians may follow a link to the database page which lists all of the full text documents alphabetically. Locating information on the site is easy and search options are flexible.

TYPE: Law
TITLE: *Martindale-Hubbell Law Directory, 1998/99*
FORMAT: Print

Accuracy: A comparison of the results of two questions posed in the print and WWW version of the *Martindale-Hubbell Law Directory* correspond exactly. Answers to a third question about lawyer ratings could not be verified because the WWW version of this directory does not provide that data. Thus based upon the results of the comparison of two questions, the print version is accurate and no other resources were consulted to verify the third question. Martindale-Hubbell is responsible for creating the rankings and is the sole authority of this information.

Appropriateness: The directory clearly states that the information it presents is primarily intended for the use of lawyers and law firms in professional practice.

Arrangement: The arrangement of the information is appropriate for the topic and facilitates ease-of-uses. Eighteen volumes cover lawyers and law firms in the United States and are alphabetically arranged by state and counties and cities within each state. Each volume is separated into three main sections which have been color-coded for easy access. These sections include “practice profiles,” “professional biographies” and “services, suppliers and consultants.” Each section of every volume provides headings at the top of every page. Each volume also has a section explaining the Martindale-Hubbell lawyer ratings. Other volumes of the directory include:

- Listings for corporate law departments and the American Corporate Counsel Association
- One alphabetical index volume
- One areas of practice index volume
- Three volumes of the international law directory
- Two law digests for the United States
- One international law digest

Authority: Martindale-Hubbell maintains great authority as a source for lawyer directory information. Marindale-Hubbell has been publishing some form of this directory since 1930. The directory has a fourteen member Legal Advisory Board composed of lawyers selected from the private, corporate and international sectors of the profession. The directory lists editors and compilers of the directory. According to the editors, only lawyers providing information regarding their law firms for inclusion in the directory are responsible for the accuracy of the information.

Bibliography: There are no apparent citations or references to other resources.

Completeness: This directory does cover the subject adequately and there are no obvious omissions. The current print edition covers more than 900,000 lawyers and law firms in over 150 countries. This edition also includes over 215,000 e-mail addresses and 8,200 Web page addresses. The “Practice Profiles” within each section provide such information as full attorney name, address and telephone information and biographical information such as date

of birth and college attendance. The directory also provides additional information such as a listing of law schools and their academic programs and teaching staff. The directory also includes a list of suppliers and consultants arranged alphabetically by state.

Content: The content of this directory has a very high value because it provides a comprehensive array of information in one source.

Distinction/Uniqueness: The directory is distinct because of the prestigious Martindale-Hubbell name. The Martindale-Hubbell lawyer ratings which rank lawyers based upon “legal ability ratings” and “general ethical standards rating” is another important factor contributing to the distinction of this resource. The content and overall scope of coverage also sets apart this directory.

Documentation: Lawyers provide most of the content and the publishers of the directory do not warrant that it is complete or accurate. Lawyer ratings in the directory are obtained through soliciting confidential opinions from members of the Bar, lawyers who have and do not have ratings, and members of the Judiciary are queried. All lawyers are encouraged to participate in the process.

Ease-of-Use: Though the directory consists of a large set of volumes, it is easy to use because of its arrangement and the comprehensive help pages at the beginning of each volume. The help pages provide the layout of the directory and how to effectively use it.

Illustrations: A perusal of several volumes elicited no illustrations.

Index: The directory contains an alphabetically arranged name index volume and an “Areas

Level: The level of treatment of this topic is comprehensive in scope and coverage.

Reliability: A user can reasonably assume that the information he is looking for will be available in this resource. Its reliability is further enhanced by the fact that it has been published in its present form since 1930.

Revisions: At the time of this writing, the current print volumes had publishing dates of either 1998 or 1999. The directory is updated yearly but volumes are revised on a volume-by-volume basis rather than the entire set being updated at once.

TYPE: Law
TITLE: *Lawyer Locator* @ <http://www.martindale.com/locator/home.html>
FORMAT: Web

Accuracy: A comparison of the results of two questions posed in the print and WWW version of the *Martindale-Hubbell Law Directory* correspond exactly. Answers to a third question about lawyer ratings could not be verified because the WWW version of this directory does not provide that data. Based upon the results of the comparison of two questions, the print version is accurate and no other resources were consulted to verify the third question. Martindale-Hubbell is responsible for creating the rankings and is the sole authority of this information.

Appropriateness: The directory clearly states that the information it presents is primarily intended for the use of lawyers and law firms in professional practice.

Arrangement: The arrangement of the WWW version of the directory is appropriate and facilitates ease-of-use. The directory is available via the Martindale-Hubbell Web site. The page contains a link to an excellent site map clearly illustrating the entire layout of the site. The WWW site is presented in three sections. One section entitled “The Profession” contains information on such topics as law schools and vendor listings. This information is also available in the print version of the directory. The second section is entitled, “About Martindale-Hubbell” and contains facts about the site, about Martindale-Hubbell and the products they offer. The “Lawyer Locator” is the third section and is the Web version of the print directory. The main page contains a search engine permitting users to locate information. In addition, there are links from the Lawyer Locator main page to a page providing disclaimers and restrictions about the site. There are also links for lawyers to update or add information to the site as well as information about lawyer Web pages and custom WWW sites for lawyers.

Authority: The authority of the WWW version of this directory rests on the same authority as the print. Please see print evaluation statement for a full evaluation of this criteria.

Bibliography: There are no apparent citations to other resources outside Martindale-Hubbell. However, there are links to various pages within the WWW site. These links are appropriately placed and help the user navigate through the site smoothly.

Completeness: This version of the directory contains all of the same information as the print format except:

- Due to Iowa state codes that govern lawyer advertising to the public, currently there are no listings from the state of Iowa in this version.
- The Martindale-Hubbell ratings are not in the WWW version and are only available in print, CD-ROM and Lexis-Nexis.
- The Martindale-Hubbell Law Digest is not currently available in this version.

Content: The value of the content of this directory is the same as the print minus the information not available in the WWW version as mentioned earlier. Please see print evaluation for a full evaluation statement of this criterion.

Distinction/Uniqueness: This directory is unique because of the authority and prestige associated with the Martindale-Hubbell name. It is unique because of its comprehensive scope and coverage. Additionally the WWW version is unique because it is accessible twenty-four hours a day without a user fee or subscription.

Documentation: Lawyers provide most of the content and the publishers of the directory do not warrant that it is complete or accurate.

Ease-of-Use: The WWW version is easy to use because of its clear and logical arrangement. A help section on the main search page for the "Lawyer Locator" contains a list of frequently asked questions and practice area lists. Users can also request technical assistance by phone or by e-mail.

Illustrations: The site contains some illustrations. All illustrations fade into the background of the Web pages and are not distracting. Illustrations are generally not important to the text and provide only aesthetic value to this version of the directory.

Index: There is no index corresponding to the print version of the directory. The site does contain a search engine that permits searches by law firm, location/practice, corporate and government. Searches can be limited by country, state, county and city. There are only four basic categories of search options. The search engine does not provide keyword searching and is therefore not very flexible. There is a separate search engine for vendors and law school profiles. The WWW site maintains a search engine by keyword for the entire Martindale-Hubbell site. However, this option does not include The Lawyer Locator.

Level: The level of treatment for the topic is quite comprehensive in both scope and coverage. The directory provides national and international listings, law school profiles and comprehensive information about each lawyer and law firm listed.

Reliability: The directory is generally reliable and contains data that users would reasonably assume is present. It also contains several important omissions such as lawyer rankings and listings for lawyers in Iowa that most users familiar with the print directory would reasonably assume is present in the WWW format.

Revisions: The directory is updated monthly.

Accessibility: The directory is easy to find through a search on search engines such as Yahoo or Alta Vista. The "Lawyer Locator" is the name for the online version of the directory and is very accessible from the home page of the Martindale-Hubbell site. Search options are fairly flexible. However, the Lawyer Locator does not permit keyword searching thereby limiting a user's search options.

TYPE: United States Postal Codes
TITLE: *National five-Digit Zip Code and Post Office Directory, 1998*
FORMAT: Print

Accuracy: A comparison of the results of three questions posed in the print and WWW version of this directory correspond exactly. Based upon the stated criteria for determining accuracy, this format of the directory is accurate.

Appropriateness: This directory is an appropriate source of information of current five-digit ZIP Code mailing information. The directory states that the audience most appropriate for this information is its customers and U.S. Postal Service personnel. Additionally the directory is an appropriate source of information about the United States Postal Service in general, address and state abbreviations, and various aspects of mail service.

Arrangement: The arrangement of the directory is appropriate for the topic. It is arranged by geographic area first and any additional information not specific to providing ZIP Codes is provided in separate sections. A comprehensive list of Contents clearly provides the entire layout of the two-volume set.

Authority: The directory is published by the United States Postal Service. This agency of the federal government is the authority on address and ZIP Code information and therefore is the authority on this topic.

Bibliography: There are no apparent citations to other resources.

Completeness: This directory covers the subject adequately. As its title states, it is a five-digit ZIP Code and post office directory for the United States. It contains this directory information as well as information about all aspects of postal service.

Content: The content has a high value because it provides comprehensive and important postal information all in one location.

Distinction/Uniqueness: Because it is an official publication of the of the United States Postal Service, it is distinct and unique and stands apart from other resources on the same subject. This volume is also unique because its scope includes all of the United States. Additionally, it is more than just a directory because it supplies other important information relating to the postal service.

Documentation: There is no documentation except an implication that the information is based upon previous editions of the directory. This does not pose a problem because the United States Postal Service is the authoritative source on this subject.

Ease-of-Use: The directory is easy to use because its arrangement by geographic region facilitates ease-of-use. Information is presented by state, then city and street. A help section at the beginning of each volume provides tips for locating ZIP Code information in the directory.

Illustrations: There are black and white illustrations of each state, unobtrusive ads advertising the benefits of priority mail and black and white illustrations showing how the length and girth of a package is measured.

Index: There is no index. A comprehensive list of contents at the beginning of both volumes substitutes for an index.

Level: The level of treatment is comprehensive in scope and coverage. The directory provides information on all aspects of the five-digit postal code.

Reliability: This source is reliable. The title indicates that it provides information about the five-digit postal code with a national scope and an examination of the volumes illustrates that it fulfills this statement.

Revisions: The directory is revised annually.

TYPE: United States Postal Codes
TITLE: *ZIP Code Lookup and Address Information Page* @ <http://www.usps.gov/ncsc/>
FORMAT: Web

Accuracy: A comparison of the results of three questions posed in the print and WWW version of this directory correspond exactly. Based upon the stated criteria for determining accuracy, this format of the directory is accurate. Additionally, the WWW version of this directory provides the four-digit code following the regular five-digit ZIP Code whereas the print does not provide this.

Appropriateness: Because the content of the site largely corresponds to the print format, much of the appropriateness is the same. Please see print evaluation for a full evaluation statement of this criterion. Additionally, the WWW version of the directory provides ZIP + 4 code lookup. This version of the directory also explains what audience it is most appropriate for by stating it was created to provide a simple means of public access to ZIP + 4 Code information for those requiring this information on an occasional basis.

Arrangement: The “ZIP + 4 Code Lookup” is accessible as a link from the United States Postal Service official Web page. This link arrives at the “ZIP Code Lookup and Address Information” page. The link to this page is clearly marked on the main page of the U.S. Postal Service site. The page for ZIP Code lookup includes links to the “Zip + 4 Code Lookup,” “City and State ZIP Code Associations,” “Questions and Comments Page,” and a link to official state abbreviations and street suffixes. This arrangement facilitates ease-of-use because all of the ZIP Code information is accessible from one page on the US Postal Service site rather than being scattered on various pages throughout the site. The rest of the content on the US Postal Service site corresponds with the content in the print version of this directory. These pages were not evaluated because they are not vital to directory information specific to ZIP Codes. However, this content is presented in seven logically arranged main pages covering such topics as change of address, post office locations and postal rates. Thus, like the print version, the WWW format of the directory primarily presents ZIP Code information in one section and additional information relating to various services of the U.S. Postal Service in another section. One very helpful aspect of the main page of the U.S. Postal Service site is the provision of several direct links to the most popularly visited pages. Visitors are not forced to scroll through several pages to arrive at the information they are seeking and may go directly via a link to the Zip Code information page.

Authority: This version of the directory is sponsored by the United States Postal Service. This agency of the federal government is the authority on address and ZIP Code information and therefore is the authority on this topic.

Bibliography: This page is concerned only with ZIP Code lookup and information and does not contain links to bibliographical resources.

Completeness: This version of the directory is comprehensive in both scope and coverage and there are no obvious omissions.

Content: The value of this content is very high because it is an official source of directory information on the Zip + 4 Codes.

Distinction/Uniqueness: *Distinction/Uniqueness:* Because it is an official publication of the United States postal Service, it is distinct and unique and stands apart from other resources on the same subject. This version of the directory is also unique because its scope includes all of the United States. Additionally, it is more than just a directory because it supplies other important information relating to the postal service. Finally, this version of the directory provides the ZIP + 4 Code lookup not available in the print format. Therefore, it not only stands apart from other directories on the same subject but it also stands apart from the print format.

Documentation: There is no documentation except an implication that the information is based upon previous editions of the print directory. This does not pose a problem because the United States Postal Service is the authoritative source on this subject.

Ease-of-Use: Locating Zip Code information in the directory is easy and requires no special knowledge. As in the print version, it is necessary to know the state, city, and street address to locate the appropriate ZIP Code. These are easily typed into a search engine and the information quickly retrieved. The Zip Code page also contains a “Questions and Comments” page that provides helpful tips for using the directory.

Illustrations: There are no illustrations on the “ZIP Code Lookup and Address information Page.” Other pages on the United States Postal Service site has illustrations but these were not evaluated because they were not part of the Zip Code directory information.

Index: Looking up ZIP Code information is made possible through a search engine. Visitors must know the state, city and street address to locate the correct ZIP + 4 information. The search engine does not permit keyword searching. This does not limit search capabilities as this is the same information required to access data in the print version of the directory.

Level: The level of treatment for this topic is comprehensive in both scope and coverage.

Reliability: A visitor may reasonably assume that the information he is looking for is available from this site. There are no misleading links promising information that is not there.

Revisions: The information is updated monthly.

Accessibility: The site is easily accessible from the U.S. Postal Service WWW site. Information is easy to access and search options for locating ZIP Code information are the same as the print volume. However, during the author’s evaluation of the site, the entire content of the site was unavailable for several hours because of technical problems. This certainly would be an inconvenience for librarians relying on this page for information.

Evaluation Comparisons

Accuracy: The print and WWW format of all four resources are accurate according to the criteria for determining accuracy. The only variation that occurred was at the Martindale-Hubbell WWW directory. The question regarding lawyer ratings could not be verified because the WWW format of the directory did not provide such data.

Appropriateness: The *United States Government Manual* in both print and WWW format as well as the *Congressional Directory* in both print and WWW format retained the same level of appropriateness. Both formats of each directory presented exactly the same information whereas the Martindale-Hubbell WWW and print format did not present the same information. Therefore, the level of appropriateness for these directories changed based upon format. Individuals needing lawyer ratings must use the print, CD-ROM or Lexis-Nexis version of the directory because the WWW format does not contain this information and therefore would be an inappropriate source of information for this audience. The remaining content in both the Martindale-Hubbell WWW format and print format is primarily the same and therefore the level of appropriateness is the same. The appropriateness of the WWW format and print format of the United States Postal Service directory is generally the same. However, individuals requiring Zip + 4 Code information will not find this in the print version of the directory and therefore this would be an inappropriate source.

Arrangement: The arrangement of information in all versions of each directory is appropriate and facilitates ease-of-use. Both government directories present an identical arrangement of information and additionally the WWW version of each government directory permits keyword searching through a search engine. Therefore, the WWW format provides an additional mode of access not present in the print format. Both the Martindale-Hubbell and Postal Service WWW formats are arranged similarly to the print. Directory information for lawyers is separated from information about law schools and vendors in both the print and WWW version. Users may access lawyer directory information in both formats using the same basic criteria. These include lawyer name, geographic area, etc. In both the WWW version and print version of the ZIP Code directory, ZIP Code information is presented by state, city and street address with separate sections for other topics.

Authority: Because all formats of each directory is published by the same source, the authority is the same for all formats.

Bibliography: There is no substantial variation of this criterion in any of the directories. Links presented in the WWW formats generally were links to other pages within the site or links to the WWW pages of site sponsors and not to various outside resources.

Completeness: The *United States Government Manual* and the *Congressional Directory* did not demonstrate any variation of this criterion in the print and WWW version. However, both the Martindale-Hubbell and the United States ZIP-Code directory demonstrated some level of variation. The WWW version of the Martindale-Hubbell directory did not contain several elements present in the print format. Please see WWW evaluation for a full description of this criterion. Conversely, the WWW format of the ZIP Code directory

presents ZIP + 4 Code information in the same site whereas the print format does not have this information.

Content: The overall value of the content in all formats of each directory demonstrated little or no variation.

Distinction/Uniqueness: Because the content of all formats of each directory is primarily the same, the level of distinction and uniqueness is the same as well. All of the WWW formats have the added advantage of being available twenty-four hours a day from any computer with Internet access and also without a user fee or subscription. Libraries must purchase the print format of each directory and they are only available in the library building during business hours.

Documentation: There is little or no variation of this criterion in all formats of the directory.

Ease-of-Use: All formats of each directory contain help pages and guides and all were easy to use.

Illustrations: There is no significant variation in the number or variety of illustrations in any of the directories. The WWW version of the Martindale-Hubbell directory contains a few unobtrusive illustrations providing more aesthetic value than content. The print ZIP Code directory contains a few simple drawings whereas the WWW version does not.

Index: All of the print directories have an index either by name or subject. Both the government directories also have identical indexes to the print format. Additionally, both WWW formats of the government directories provide a search engine with keyword searching capabilities. The WWW formats of the Martindale-Hubbell and United States Postal Service directories do not have a corresponding index to the print version. But, both have search engines. Neither of these search engines permit keyword searching thereby limiting flexibility of search options.

Level: There is no significant variation in the level of treatment for any formats of all the directories.

Reliability: The only directory that demonstrated any variation of this criterion is the WWW format of the Martindale-Hubbell directory. Individuals familiar with the print format might reasonably assume that lawyer rankings would be available in this format as well. Additionally, lawyer directory information is currently unavailable for the state of Iowa.

Revisions: The WWW and print version of the *United States Government Manual* correspond exactly and neither is more current. However, the WWW version of the *Congressional Directory* is revised more frequently and is therefore more current than the print format. Additionally, there is no print counterpart to this revision. The WWW version of the *Martindale-Hubbell* directory is updated monthly whereas the print format is revised annually. This same principal applies to the WWW format of the ZIP-Code directory which

is updated monthly and the print is updated annually. Out of the four directories examined, the WWW format was more current three times out of four.

Accessibility: All of the WWW formats are easy to access and information is easy to locate. Flexibility of search options varied with keyword search capabilities permitted in both government WWW sites and more restricted search capabilities presented in others. The technical difficulties that sometimes arise from using the Internet was presented to the author when the WWW version of the ZIP-Code directory was unavailable for several hours due to technical difficulties.

In this investigation, the criteria demonstrating the greatest level of variation between formats are:

- Appropriateness
- Arrangement
- Completeness
- Index
- Reliability
- Revisions

Accuracy is one of the most important criteria for any reference work. However, it did not demonstrate any variation based upon format among any of the directories evaluated. The criteria of appropriateness and reliability showed variation as the result of a directory's "completeness." If one format of a directory proved to be not as complete as another format, this impacted the directory's level of appropriateness and reliability. Thus, all three criteria are related. The arrangement of information in both formats of government directories did not differ. The WWW version of the Martindale-Hubbell directory and the ZIP Code directory differed somewhat from the print. This variation of arrangement does not impact the integrity of the content of the WWW version nor its ease-of-use. It is simply a different arrangement from the print but one that does not imply superiority or inferiority. Currency of revisions is another important element demonstrating a high level of variation. Out of four directories evaluated, the WWW version was revised and updated more frequently than the print.

Conclusion

Based upon this investigation and analysis, it is apparent that neither format of any of the directories investigated is overwhelmingly superior to the other format. In most instances both the WWW and print format of each directory have negative and positive attributes. This is evidenced in the evaluation of the Martindale-Hubbell directory. The print format is superior because of its level of completeness when compared to the WWW format. However, the WWW format of the directory is superior because it is revised more frequently and it is available without a user fee or subscription. This version of the directory is also accessible from any computer with Internet access. Unfortunately, all of the positive attributes of the WWW version are not helpful to the librarian or patron seeking lawyer rankings because they are not available in the WWW version.

Another example of this mix of positive and negative attributes occurs in the ZIP Code directory. The WWW version is superior to the print format because it provides ZIP + 4 code lookup whereas the print volumes only supply the five-digit code. Additionally, the WWW version is updated monthly and the print in only updated annually. Despite all the positive attributes of the WWW version, the author was unable to search the WWW format for several hours during this investigation because of technical problems. The site containing the directory information was unavailable. This would be quite an inconvenience for a busy reference librarian helping patrons.

Conversely, two directories that do demonstrate some level of superiority between formats are both government directories. The print and WWW version of the *United States Government Manual* significantly vary on only one aspect. The WWW version of the directory has an additional search option provided by a search engine. Visitors can search

the directory using keyword searching. The print format does not provide this option. Therefore, it may be stated that the WWW format of the directory is superior because it provides a greater level of flexibility in search options. The WWW version of the *Congressional Directory* is superior for this same reason. Additionally, it is also more current than the print format. Therefore, it may be stated that the WWW format of the *Congressional Directory* is superior.

Again the question is posed, “for librarians answering ready-reference questions, are WWW-based ready-reference sources superior to print ready-reference sources?” Based upon this research, the answer is specific to the individual ready-reference source, the information need of a patron and issues of accessibility. WWW-based ready-reference sources are not inherently superior to their print counterparts. Rather, it is imperative that librarians utilize critical evaluation and analytical skills when selecting a ready-reference tool for each individual client and each individual question. Therefore, based upon this research, WWW sources can and should be evaluated by the same formula reference librarians use to evaluate print tools. Comparisons must also be made between WWW and print formats ensuring that the most appropriate resource is selected to meet the information needs of patrons.

NOTES

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- ³ Paul D. Healey, "Untangling the Web: The World Wide Web as a Reference Tool," *Reference Quarterly* 34, no. 4 (Summer 1995): 442.
- ⁴ Comer, *The Internet*, 191-213.
- ⁵ Sharyn J. Ladner, Hope N. Tillman, "Using the Internet for Reference," *Online* (January 1993): 45.
- ⁶ Michael Gabriel, "Ready Reference Library?" *Catholic Library World* 68, no. 3 (March 1998): 13-18.
- ⁷ Patricia Cline, "Confessions of a Reference Technophile," *The Reference Librarian* 39 (1993): 7.
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- ¹⁵ Healey, "Untangling the Web: The World Wide Web as a Reference Tool," 441-444.
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- ¹⁷ Scott A. Mellendory, "Pounding the Pavement with Purpose: Utilizing the Information Superhighway" *Reference Quarterly* 35, no. 2 (Winter 1995): 232.
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- ¹⁹ Lanier and Wilkins, "Ready Reference via the Internet," 359-369.
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- ²² Ibid., 114-115.
- ²³ Johannah Sherrer, "Implications of New and Emerging Technologies on Reference Service," *The Impact of Emerging Technologies on Reference Service and Bibliographic Instruction*, Contributions in Librarianship and Information Science, Number 87, ed. Gary M Pitkin (Westport, Connecticut: Greenwood Press, 1995), 25-47.
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- ²⁵ Jeff Rosen and Carl E. Snow, "Internet Resources for Ready Reference," *College and Research Library News* 1 (Jan.1997): 14-17.
- ²⁶ Ibid., 14.
- ²⁷ Barbara Ripp Safford, "Ready Reference on the Internet: A beginning List of Sources," *School Library Media Activities Monthly* 12, no. 9 (May 1996): 46-48.
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- ³⁷ Danielle V. Borasky, "Lawyer Directories," *Database* (August/September 1997): 67-73.
- ³⁸ Ibid., 73
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- ⁴⁰ Marsha Tate, Jan Alexander, "Teaching Critical Evaluation Skills for World Wide Web Resources," *Computers in Libraries* (November/December 1996): 50.
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- ⁴² Heartsill Young, ed., *The ALA Glossary of Library and Information Science* (Chicago: American Library Association, 1983), 188.
- ⁴³ Ibid., 75.
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- ⁴⁶ Borasky, "Lawyer Directories," 67.

Appendix A

Government Directories

Official Congressional Directory, 1997/98, 105th. Congress

1. Who is the elected Democratic senator of Florida? What high school did he/she graduate from?
2. Who is the director of the Federal Bureau of Investigation?
3. Who is the Chairman of the Judiciary Committee of the House? What state is he/she from?

United States Government Manual, 1998/99

1. Who is the Secretary of Agriculture?
2. Who is the Assistant Secretary of the Navy (Manpower and Reserve Affairs)?
3. Who is the Commandant of the United States Coast Guard?

Law Directories

Martindale Hubbell Law Directory 1998/99 and the Lawyer Locator

1. What is the e-mail address for attorney Robert L. Allman practicing in Denver, Colorado?
2. What is the attorney rating for attorney Jeffrey A. Levine of Boca Raton, Florida?
3. In Atlanta, Georgia is there a translation service that offers video tape services for lawyers. If so, what is the telephone number?

Postal Service

National Five-Digit ZIP Code and Post Office Directory and ZIP Code Lookup and Address Information

1. What is the ZIP Code for Adeline St. in Daytona Beach, Florida?
2. What is the ZIP Code for University Mall, 201 S. Estes Dr. in Chapel Hill, North Carolina?
3. What is the three-digit Zip Code for Ft. Lauderdale, Florida?

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