HYPOTHESIS

THE JOURNAL OF THE RESEARCH SECTION OF MLA

Contents

Message from the Chair

-*Submitted by Martha R. (Molly) Harris, MA, MLS, AHIP*

The goals and objectives of the Research Section this year are centered around three major issues:

1. Increase membership in the Section and personal involvement among the members

2. Update and expand the Section's Website as a means of communicating with other MLA and Chapter members, providing guidance to MLA Chapter Research Committees, and showcasing the Section's accomplishments

3. Make *Hypothesis:the Journal of the Research Section of MLA* a more research-oriented journal in terms of providing research skills development, methodological issues, and preliminary research reports.

In keeping with these major issues, articles providing the results of the 2005 Research Awards were published in both the Summer 2005 issue of *Hypothesis* as well as the September 2005 issue of the *MLA News.* The *MLA News* article also described the five program sessions sponsored by the Research Section at the 2005 MLA Annual Meeting held in San Antonio.

The first step in upgrading the Section's Web site was to update the officers and committee members' names and contact information. Names of the 2005 Research Awards winners were also added. Plans are to create a Section Procedure Manual that will include a Section history, revised Bylaws, and definitions and responsibilities of the individual officers and committees. Our most ambitious effort will be to add a Research Awards Program section on the Web site, containing guidelines and procedures, revised evaluation forms, tips on creating/maintaining a Research

Chapter Research Committees Report
— submitted by Leslie Behm

Midcontinental, South Central, and Southern Chapters
Recognize Research Efforts
- by Junie Janzen, and Rita Smith

Midcontinental Chapter
At the Midcontinental Chapter meeting in Salt Lake City, September 17-20, 2005, two research posters shared the award for the MCR-NN/LM-sponsored "Best Research Poster."

- "Guiding Students Past Obstacles on the Bridge to Successful Searching: A Comparison of Two Teaching Methods," by Cindy Schmidt, McGoogan Library of Medicine, University of Nebraska Medical Center and Andrea Dinkelman, Parks Library, Iowa State University.

- "Implementation of the Evidence Based Practice (EBP) Model through a Multi-disciplinary NICU Journal Club," by Joyce Condon, Exempla Saint Joseph Hospital Medical Library, Denver, CO.

The abstracts for these posters and other posters and papers presented at the MCMLA meeting are available on the chapter Web site:
<http://medstat.med.utah.edu/mcmla/2005/MCMLA2005Paper&PosterDescriptions.pdf>

South Central Chapter
At the South Central Chapter meeting October 22-26, 2005, in Little Rock, AR, the chapter awarded prizes for the best research presentations among the contributed papers and posters. Cash awards for the research awards for contributed papers and poster presentations were provided by SCAMeL, the South Central Academic Medical Libraries consortium.

2005 Contributed Research Papers:
First Place $300
- Gary Ives, MLS, Texas A&M University Libraries, College Station, TX. "Indexing Lag Time Between Current Contents and Web of Science, with a Focus on MEDLINE Indexed Titles."

Second Place $200
- Gabriel Rios, MLIS; Lynda Howell, MLS; Julie K. Gaines, MLIS; and Melissa De Santis, MLIS, AHIP, Briscoe Library, University of Texas Health Science Center, San Antonio, TX. "Library Intranets: Tools for Knowledge Management."

Third Place $100
- Jodi L. Philbrick, MLS, and Ana D. Cleveland, Ph.D., AHIP, School of Library & Information Sciences, University of North Texas, Denton, TX. "What's in the Forms? An Analysis of the Web Forms Used by Academic Health Sciences Libraries for Virtual Reference."

2005 Research Poster Presentations:
First Place $200
- Dee Jones, MLS, AHIP, Medical Library, Louisiana State University Health Sciences Center, Shreveport, LA. "Consumer Health Information Provided by Hospital Websites in Louisiana."

Second Place $100
- David C. Dugger and Kerri Ann Christopher, Library, Louisiana State University Health Sciences Center, Shreveport, LA. "Journal Selection in a Morning Report Study."

Third Place $50
- Linda J. Bennett, Indianapolis, IN; Mary V. Taylor, Memphis, TN; Diana F. Akins, Bay Pines, FL; and Nancy J. Clark, VA North Texas Health Care System, Dallas, TX. "So Many Vendors, So Little Time: 'Adult Trick-or-Treating' or a Learning Opportunity."

Southern Chapter
The Southern Chapter met in San Juan, PR, October 20-24, 2005. The Research Committee awarded its 2005 Research Project Grant award to Lin Wu, MLIS, Reference Librarian, UTHSC Health Sciences Library, Memphis, TN, and Ping Li, MLIS, Graduate School of Library and Information Studies, McGill University, Montreal, Canada. Lin and Ping will receive $860 to help fund their study, "What Employers Are Looking For in Reference Librarians: An Analysis of Job Announcements in *MLA News* from January 2000 to December 2004."

Wu and Li will use the award to examine the qualifications and characteristics expected of reference librarians in health sciences libraries. Earlier studies examined *MLA News* job advertisements between 1961 to 1995, prior to the growing reliance on the Internet and electronic services in health sciences libraries.

Findings from the study will document the changing roles of reference librarians today, providing information and career guidance for those seeking employment in health sciences libraries and information for employers looking at possible reorganization of public service areas.

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New Canadian EBL Journal

The University of Alberta has announced the creation of a new quarterly journal, *Evidence Based Library and Information Practice*. This peer-reviewed, open access journal will be targeted to library and information professionals interested in an evidence-based model of practice. The journal's web site has full information for potential authors and reviewers, as well as editorial contact information: <http://ejournals.library.ualberta.ca/index.php/EBLIP/>.

The editorial staff includes Editor-in-Chief Su Cleyle, while Denise Koufogiannakis and Lindsay Glynn share Associate Editor responsibilities. Pam Ryan is Production Editor. The goal of the new publication is to facilitate access to original research in librarianship and to provide evidence summaries of relevant research from the library literature. Starting in the fall of 2006, the Evidence-Based Librarianship Interest Group of the Canadian Library Association will select members of the Editorial Board.

According to the call for papers, *Evidence Based Library and Information Practice* is seeking papers relating to all areas of EBL/EBP, including

- EBL application
- Qualitative and quantitative research
- Management and administration issues related to EBP
- Research tools (statistics, data collection methods, etc.)
- Collaborative and inter-professional EBP
- Research education in library schools
- Evidence-based practices from other disciplines applicable to EBL
- Harnessing evidence to support new innovations
- Developing and applying evidence-based tools
- Future prospects for the evidenced-based information profession
- Maximizing the value and impact of our information services

Potential authors should submit papers Lindsay Glynn (lglynn@mun.ca) for consideration. Submission guidelines are available on the EBLIP web site: <http://ejournals.library.ualberta.ca/index.php/EBLIP/about/submissions>. Quarterly deadlines for each issue are March 1, June 1, September 1, and December 1.

(President's Message-Continued from page 1)

Awards Program, and links to those MLA Chapters with current Research Award programs.

One of the most critical elements in the Section's Research Awards program has always been the group of Section volunteers who review the abstracts submitted for program sessions sponsored by the Section. Volunteers also judge the research papers and posters presented at the Annual Meeting. If you are interested in performing either of these vital functions, please contact Mary Jackson, <mjackson@library.tmc.edu>.

On a personal note, this year has brought huge changes which culminated in the retirement of my husband after 28 years as an Army research veterinarian. We moved to College Station, TX, where we are currently living on our land in an RV trailer as we await the completion of our log house. Since I will not have a work address for awhile, please contact me at: <aggie2005mom@yahoo.com>

I hope to see you at the 2006 MLA Annual Meeting in Phoenix!

Molly

LIS/ten Up: Research News from the Groves of Academe
— submitted by Ellen Detlefsen, DLS

Masters' Theses and Dissertations
in Library and Information Science, 2004-2005

Earlier iterations of this column appeared in 2003[1] and 2004[2], reporting on masters' theses and doctoral dissertations (as found in the ProQuest Digital Dissertations database[3]) that had appeared in the time period for 2000 through mid-2004. This list covers the period from mid-2004 through mid-2005. The keyword search used truncated forms of the words "librar?" and "inform?" and "medic?" and "healt?". In addition, this year the listing includes master's theses completed for the MLIS and MSIS degrees awarded between 2001 and 2005 at the University of North Carolina at Chapel Hill. These theses are not included in the Digital Dissertations database, so this addition will parallel the information contained in earlier editions of this column.

The sorting and classifying of the retrieval is entirely the work of the column author, as are the choices of topical areas under which to list these publications. As with last year's list, there were far fewer theses or dissertations with a purely library focus. The distinction between "Theses and Dissertations with an Internet/Web Focus" and "Theses and Dissertations with a Patient/Consumer Focus" is blurry, and there is considerable overlap. New topic areas this year are "Theses and Dissertations with an Information Retrieval Focus," "Theses and Dissertations with a Health Professions Education Focus," and "Theses and Dissertations with a Health Sciences Library Focus." Within each group, the order is reverse chronological, with dissertations preceding master's theses. Note that many of the universities whose students are represented here do not have graduate programs in either Library/Information Science or in Medical Informatics, yet graduate students in other disciplines have found these areas to be of research interest.

To obtain copies of any of these works or to see the citation/abstract or the 24-page preview sample from the dissertation or thesis, search the Digital Dissertations database with the name of the researcher to retrieve the citation. In the special case of the University of North Carolina master's program theses, use the web page for the Master's Papers Index at <http://ils.unc.edu/mpi/> and search by the author's name; in most cases a PDF of the thesis is linked to the record.

Finally, my two personal favorites in this batch are *Looking after Yourself: The Cultural Politics of Health Magazine Reader Letters,* by Christy Elizabeth Newman, PhD, written toward fulfillment of her doctoral degree at the University of New South Wales (Australia), and *Communication Skills and the Veterinarian-Client-Patient Relationship*, by Jane Radcliffe Shaw, PhD, written for her doctoral degree at the University of Guelph (Canada).

Theses and Dissertation
with a Health Professions Education Focus

Bodies of information: Reinventing bodies and practice in medical education by Prentice, Rachel, PhD. Massachusetts Institute of Technology, 2004.

The use of computers to teach human anatomy and physiology to allied health and nursing students, by Bergeron, Valerie J., EdD. University of Delaware, 2004.

Creating a hyper-linked educational resource for pre-medical enrichment programs designed for minority and disadvantaged students, by Doyle, Lawrence Hilmar, IV, EdD. University of California, Los Angeles, 2004.

A comparison of problem-based learning and traditional curricula in baccalaureate respiratory therapy education, by Beachey, Wilmer D., PhD. University of North Dakota, 2004.

An integrative method of teaching medical humanities in the clinical setting, by Reeves, Leda E., DMH. Drew University, 2004.

Usability study of an online PubMed tutorial for dental students, by Krampl, Anna I. University of North Carolina at Chapel Hill, 2005.

Design and implementation of a database-driven web-based student evaluation and tracking system for the Emergency Medicine Department of the University of North Carolina at Chapel Hill, by Li, Meichun. University of North Carolina at Chapel Hill, 2003.

AIMS Online Testing System, an interactive web-based testing system for medical school courses, by Wang, Yuehong. University of North Carolina at Chapel Hill, 2002.

Evaluation of the graphical interface to a World Wide Web-based college course offered through the UNC-CH School of Public Health Department of Maternal and

Child Health, by Cervino, D. Jay. University of North Carolina at Chapel Hill, 2000.

**Theses and Dissertations
with a Health Sciences Library Focus**

Breaking new grounds: A case study of a prison hospital library, by Preddie, Martha I. University of North Carolina at Chapel Hill, 2005.

Collection development in school and public libraries: An analysis of health related titles, by Clancy, Colleen M. University of North Carolina at Chapel Hill, 2004.

The differences in perception of librarians' roles in supporting the practice of evidence-based medicine as they are represented in the literature targeted toward healthcare professionals versus the literature targeted toward librarians, by Willis, Amy R. University of North Carolina at Chapel Hill, 2004.

Usability study of an online tutorial for volunteers at a hospital resource library, by Jenks-Brown, Angelique R. University of North Carolina at Chapel Hill, 2004.

Theses and Dissertations with an Informatics Focus

Designing care: Cultural factors in the design of clinical IT systems, by Novak, Laurie Lovett, PhD. Wayne State University, 2005.

Rural vulnerability in health care delivery: A geographic information systems analysis by Shambaugh-Miller, Michael, PhD. The University of Nebraska - Lincoln, 2004.

Systems integration in healthcare industry: A case study of one healthcare records management company, by Madanamohanan, Mahesh. University of North Carolina at Chapel Hill, 2005.

Design of a database driven system to compile and define local bioinformatics resources at the University of North Carolina at Chapel Hill, by Losi, Patricia. University of North Carolina at Chapel Hill, 2004.

Database support for microchip identification in companion animal identification, by Brockway, Kenneth Andrew. University of North Carolina at Chapel Hill, 2002.

The influence of ease of use and provision of explanations in practitioner use of medical decision support systems, by Sharpe, Susan. University of North Carolina at Chapel Hill, 2001.

**Theses and Dissertations
with an Information Behavior Focus**

Attitudes of residents in training about use of PDAs, by

Ciavarella, Ginevra G., DrPH. Univ. of Illinois At Chicago, H.S. Center, School of Public Health, 2005.

Communication skills and the veterinarian-client-patient relationship, by Shaw, Jane Radcliffe, PhD. University of Guelph (Canada), 2004.

Medical journals and the culture of clinical care, by Stanbrook, Matthew Buchanan, PhD. University of Toronto (Canada), 2004.

The influence of pharmaceutical company sponsored educational programs, promotions and gifts on the self-reported prescribing beliefs and practices of certified nurse practitioners in three states, by Blunt, Elizabeth Muncey, PhD. Drexel University, 2004.

An observational investigation of on-duty critical care nurses' information behavior in a nonteaching community hospital, by McKnight, Michelynn, PhD. University of North Texas, 2004.

The communication information-seeking model: Examining information-seeking motivations and associated channel use, by Rothenberg, Kathryn Perry, PhD. Kent State University, 2004.

Is question asking a tool for knowledge translation? An exploration in the decision making process of specialists, by Gondocz, S. Tunde, MA. Royal Roads University (Canada), 2004.

An Assessment of chat reference usage trends at the Health Science Library of the University of North Carolina at Chapel Hill, by Emanuel, Jennifer. University of North Carolina at Chapel Hill, 2004.

Open access publishing and researchers at the National Institute of Environmental Health Sciences: Results of a survey, by Pernell, Rebecca I. University of North Carolina at Chapel Hill, 2004.

An information gathering model to identify health care professionals serving diabetics in North Carolina, by Keesee, Susan H. University of North Carolina at Chapel Hill, 2004.

Biologists' information seeking behavior with online bioinformatics resources for genome research, by Lu, Dihui. University of North Carolina at Chapel Hill, 2003.

An Empirical study of the impact of subject headings on information performance - investigation of nursing domain users, by Park, Ok Nam. University of North Carolina at Chapel Hill, 2003.

Characteristics and benefits of online support groups, by Agnew, Laura. University of North Carolina at Chapel

Hill, 2001.

A study of the effectiveness of human resources representatives as information intermediaries at the University of North Carolina Hospitals, by Kaufman, Michael. University of North Carolina at Chapel Hill, 2000.

Theses and Dissertations with an Information Retrieval Focus

Measuring the impact of lowering the barriers to information retrieval on the use of a clinical reference knowledge base at the point of care, by Reichert, James Charles, PhD. University of Utah, 2004.

A study of the veterinary medical database, by Folk, Lillian C., MS. University of Missouri - Columbia, 2004.

Development of a conceptual graph-based information retrieval model for medical question databases, by Huang, Huan, MS. University of Missouri - Columbia, 2004.

A text miner analysis to compare Internet and Medline information about allergy medications, by Battioui, Chakib, MA. University of Louisville, 2004.

An analysis of citations to retracted articles in the scientific literature, by Gabehart, Mary E. University of North Carolina at Chapel Hill, 2005.

Theses and Dissertations with an Internet/Web Focus

Validation of an instrument to assess Web-based employee compliance training materials in academic medical centers as reviewed by institutional experts in compliance content, information technology, and instructional design, by Manwell-Jackson, Mary Agnes, PhD. Texas A&M University, 2004.

Internet use and information-seeking style among cancer patients, by Osterman, Gail Pinales, PhD. Illinois Institute of Technology, 2004.

Bridging the gap between medical science and communication: An interpretive analysis of messages portrayed on endometriosis websites, by Anderson, LaKesha Nichole, MA. East Tennessee State University, 2004.

Meta tag usage and credibility factors in alternative medicine websites, by Burton, Andre S. University of North Carolina at Chapel Hill, 2004.

Customer satisfaction with the NC Health Info web site: A pilot study, by De Young, Margaret. University of North Carolina at Chapel Hill, 2003.

Tribal college library web sites: provision of health information sources, by Sklar, Annelise Ynez. University of

North Carolina at Chapel Hill, 2003.

A usability study of mental health websites with an emphasis on homepage design, by Bulger, Jennifer Rae. University of North Carolina at Chapel Hill, 2002.

Web page support for use of slang terms during Internet searching in sexual and reproductive health, by Dockendorf, Dionne M. University of North Carolina at Chapel Hill, 2002.

Relationship between learning style and user satisfaction with a web based health information system, by Ballenger, Martha. University of North Carolina at Chapel Hill, 2002.

HIV/AIDS information on government health websites in developing countries, by Cash, Audrey. University of North Carolina at Chapel Hill, 2002.

Following quality guidelines: An assessment of library websites offering consumer health information, by Holmgren, Stephanie. University of North Carolina at Chapel Hill, 2002.

The Impact of patient Internet information on the doctor-patient relationship, by Merrill, Cynthia. University of North Carolina at Chapel Hill, 2002.

The role of the Internet in international collaborative research in molecular biology between Japanese and other scientists, by Sakai, Yukiko. University of North Carolina at Chapel Hill, 2001.

Development of a pediatrics web site for the University of North Carolina Health Sciences Library, by Lawrence, Anne S. University of North Carolina at Chapel Hill, 2000.

Theses and Dissertations with a Patient/Consumer Focus

Ethical issues in cardiology: Patients' views of information and decision-making by Agard, Sten Anders, PhD. Lunds Universitet (Sweden), 2005.

The effect of a brief alcohol educational intervention with home health care patients by Harald, Elizabeth Anne, PhD. University of Utah, 2004.

Online health care information access by older adults, by Bulot, James John, PhD. University of Massachusetts Boston, 2004.

Effect of a health promotion program on self-efficacy, health behaviors and blood pressure within an adult hypertensive population, by Jones, Janet, DNS. Louisiana State University Health Sciences Center School of Nurs-

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ing, 2004.

Radio for health: A multi-method analysis of radio broadcasting as a means of promoting public health, by Edelman, Deborah S., DrPH. University of California, Berkeley, 2004.

Looking after yourself: The cultural politics of health magazine reader letters, by Newman, Christy Elizabeth, PhD. University of New South Wales (Australia), 2004.

How much information do men really want? Information search behavior and decision rationale in a medical decision-making task for men, by Talbot, Andrew P., PhD. Pennsylvania State University, 2004.

Educational outreach pamphlet: Colon cancer in the Hispanic population, by Schiripo, Taryn, MS. Sarah Lawrence College, 2004.

Exploring the role of medical and consumer literature in the diffusion of information related to hormone therapy for menopausal women, by Genuis, Shelagh Kathleen, MLIS. University of Alberta (Canada), 2004.

The Seeking behaviors of first and second year undergraduate students when searching online for consumer health information, by Good, Larisa V. University of North Carolina at Chapel Hill, 2005.

Spanish health information on the Internet: An exploratory study, by White, Mary W. University of North Carolina at Chapel Hill, 2004.

Self-management support for indigent patients with chronic disease: the role of information systems, by Biamon, Brendan. University of North Carolina at Chapel Hill, 2003.

Medicine for what ails you?: A content analysis of information presented in a sample of direct to consumer tele-

vision advertisements, by Gotzkowsky, Jolayne S. University of North Carolina at Chapel Hill, 2002.

Design decisions for a low literacy health survey user interface, by Lewis, Clarence. University of North Carolina at Chapel Hill, 2000

Polypharmacy in older adults: The effective design of an online information resource, by de la Varre, Claire. University of North Carolina at Chapel Hill, 2000

Steps taken and resources used to write a grant proposal for the Tammy Lynn Center for Developmental Disabilities' Parent Resource Center, by Goode, Susan E. University of North Carolina at Chapel Hill, 2000

Health information needs and the internet: A survey of older adults, by Silbajoris, Christie. University of North Carolina at Chapel Hill, 2000

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International Research Reviews
-submitted by Anne Brice

Brief Research Report:
A Randomized Controlled Trial Comparing E-Learning with a Classroom Workshop Taught by Librarians — the Effect on the Knowledge and Search Skills of Health Professionals

- by Nicola Pearce-Smith, Department of Knowledge and Information Sciences, Public Health Resource Unit, Oxford, UK <nicola.pearce-smith@dphpc.ox.ac.uk>

Library and information services regard information skills training for health practitioners as a key area of their services. The programs offered may consume a large amount of resources, but the evidence base to demonstrate the effectiveness or efficiency of alternative educational interventions is lacking. The following abstract describes an attempt to carry out a small practitioner-based research project within an acute hospital based setting.

Objectives: This study seeks to establish whether there is a difference in terms of knowledge and skills, between self-directed learning using a web-based resource, compared with a classroom-based interactive workshop directed by librarians, for teaching health professionals how to search.

Hypotheses:
There will be no difference in terms of a health professional's knowledge of databases and study designs or in skills in formulating questions, designing search strategies, and in selecting appropriate citations, before and after an educational intervention.

There will be no difference in terms of participants' knowledge of databases and study designs or in their skills in formulating questions, designing search strategies, or in selecting appropriate citations, between those health professionals receiving an online learning intervention using a web-based resource, and those receiving a classroom-based workshop intervention.

Background: Training health professionals to search databases is thought to improve their skills and knowledge, but there is little evidence in the literature to support this. Health librarians regularly teach searching workshops, but they do not know whether these social cognitive learning methods are effective for health professionals. Self-directed online instruction, or e-learning, is becoming more widespread, but again there is little evidence to show whether this is an effective training method. Librarians need to be confident that group sessions to teach search skills are worthwhile and that developing e-learning resources for search skills training is justified.

Methods: The study design is a randomized controlled trial, involving health professionals working for the Ox-fordshire Radcliffe Trust. Seventeen eligible participants were randomized into one of two groups – one group received access to a search-skills web resource (e-group), and the other group received a search workshop taught by a librarian (workshop group). Members of the e-group were shown a demonstration of the e-learning resource and asked to complete as much of the module as they could over one week; the workshop group received a 2-hour workshop taught by a librarian. Participants completed pre- and post-intervention tests involving multiple choice questions and practical searching using clinical scenarios. The test results were blindly marked using a score chart developed with two other librarians.

Results: Nine workshop and six e-group participants completed both pre-and post-intervention tests. The Mann-Whitney test showed there were no significant differences in any of the outcomes (p>0.05), between the two groups. The Wilcoxon Signed-Ranks test showed that in devising a search strategy, the workshop group performed significantly better (p=0.01) after receiving the librarian-taught workshop. This group also preferred to search using MeSH after receiving the workshop (p=0.02) instruction. There was no significant difference in citation selection or knowledge of databases and study designs before and after receiving either intervention. The statistical analyses must be viewed with caution due to the small sample size.

Conclusion: The question of whether a workshop taught by a librarian and an e-learning module are of equal effectiveness in teaching search skills, is an important one for health librarians involved in user education, and was a justifiable research topic.

Due to the small sample size, the results of the study are mainly inconclusive. However, this project may encourage other researchers to build on the methodology used here to conduct further research into the effectiveness of interventions for teaching search skills to health professionals.

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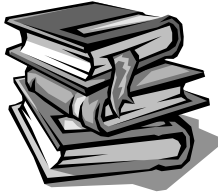
Literature Review

—submitted by Ruth Fenske, Ph.D.

♦ **Effects of Technology Adoption**
by Health Professionals

In combination, these four studies present two views of technology adoption, two papers that address emotional issues and two papers that discuss the knowledge base of physicians:

deBruin, Anique B.H. et al. The Role of Basic Science Knowledge and Clinical Knowledge in Diagnostic Reasoning: A Structural Equation Modeling Approach. *Academic Medicine*. 80(8):765-773, August 2005.

Hobgood, Cheri et al. The Influence of the Causes and Contexts of Medicine Residents' Responses to Their Errors: An Exploration. *American Medicine*. 80(8):758-764, August 2005.

McAlearney, Ann Scheck, Sharon B. Schweikhart, and Mitchell A. Meadow. Organizational and Physician Perspectives about Facilitating Handheld Computer Use in Clinical Practice: Results of a Cross-Site Qualitative Study. *Journal of the American Medical Informatics Association*. 12(5):568-575, September/October 2005.

Sittig, Dean F. et al. Emotional Aspects of Computer-based Provider Order Entry: A Qualitative Study. *Journal of the American Medical Informatics Association*. 12(5):561-567, September/October 2005.

McAlearney and others at Ohio State interviewed and held focus groups with 101 (the abstract says 161) clinicians, administrators, and IT staff about organizational strategies for facilitating use of handheld computers (HHC). The sixty-seven interviews were at seven organizations of various types and in varying parts of the country. Focus groups were held at six of the organizations and at a regional meeting. Three sites provided "active support for broad-based handheld applications;" two provided "active support for handheld niche applications;" and two provided, "basic support for individual handheld users." The broad-based organizations saw handhelds as being of strategic importance in improving physician access to information. The others merely wanted to help portions of their physician populations who were using handhelds.

Themes concerning facilitation and use of handhelds included improving usability and usefulness, learning how to promote use, and providing training and support. Or-

ganizational concerns were security, economic, technical, and strategic. The authors make the very important point that "the decision to bring a new technology to the clinical encounter represents a decided risk to a physician's productivity and potentially affects both clinical performance and professional image in the eyes of patients and colleagues." Part of their conclusion is that "supporting handheld computer use involves individualized attention to existing and potential physician users rather than standardized implementation efforts." Although neither of these points is particularly substantiated by the data presented, they are both important points for us as health sciences librarians to keep in mind when implementing new information tools.

Sittig and others did a secondary analysis of several qualitative data sets that involved observation, focus groups, and interviews with over fifty clinicians, administrators, and IT staff. They were looking for themes that expressed emotional responses to computer-based order provider entry (CPOE). The authors point out that "one's emotions and resulting moods reflect on a person's ability to attend to complex physical and cognitive tasks." Transcripts were examined electronically for positive, negative, and neutral emotional terms. Negative emotional responses were prevalent, and positive emotions were infrequent. The number of neutral emotional responses, which they say showed understanding or tolerance for the system, was fewer than the number of negative emotional responses and more than the number of positive emotional responses. The authors provide numerous quotes illustrating positive, negative, and neutral emotions.

The authors caution against CPOE system designers and implementers causing a negative effect on the performance of an already stressed group of people. Designers and implementers should listen and respond to expressed concerns. Health care providers need to be educated about the potential long-term benefits of CPOE and be open-minded to change. Positive feedback is better than negative feedback, be it from the system or from IT personnel. The authors suggest testing the hypothesis that increasing positive feedback associated with the systems would alleviate some of the problems. This article tells us about another cause of "technostress" in the health care environment.

Hobgood *et al.*, looked at 54 (abstract says 55) emergency medical residents' responses to their own medical errors in terms of emotions, leaning behavior, and disclosure. One form of learning behavior was information seeking. Residents were asked to recall their most significant medical errors, to answer Likert-scale questions about their responses to those errors, and to answer demographic questions. The questionnaire was pilot-tested on a similar group, scale development was described, and they achieved an 80% response rate (N=43). One questionnaire was returned blank, and two residents

could not identify any errors and filled in only demographic information, leaving 40 responses for analysis.

Sixty-five percent of the errors occurred in the first year. Inadequate experience accounted for 55% of the error; 51% was due to inadequate knowledge; and 43% was attributed to having competing demands. Most experienced some negative emotions, especially remorse, inadequacy, frustration, and guilt. Eighty-three percent disclosed the error. Only 10 individuals disclosed the error to patients and their families. Eighty-eight percent felt moderately or completely responsible for the error. Ninety percent promised to do things differently next time.

Twenty-eight percent responded by reading more, five percent used more EBM, and none asked for more literature references. The authors classified "asking others" as "increased information seeking." Thirty-five percent sought more advice from senior staff, 30% sought more advice from peers, and 33% asked supervisors more often. Although Table 4 is not adequately explained, it appears that some form of increased information seeking (from both humans and the literature) was most likely to be associated with errors in evaluation and treatment and errors caused by lack of experience.

We know that eleven people read more. The two who used more EBM probably were included in the eleven who read more. It is impossible to tell how many individuals are represented by the three advice seeking categories, because respondents could indicate as many as applied. It would appear that the number of individuals who asked for advice from other people is higher than those who read more. The latter would seem to be a more long lasting strategy for dealing with inadequate knowledge, because it would serve to increase knowledge.

Other common behavioral changes are increased attention to detail (81%) and personal confirmation of data (50%). The authors point out that, although the residents did not respond with many positive changes, they did not engage in negative changes such as ordering more tests.

The authors conclude that their "results" suggest that errors that occur during clinical training change learning behavior and have a substantial emotional impact. I would qualify this by saying changes in learning behavior were limited.

The authors emphasize the importance of improving the situation through organizational systems. One specific suggestion is to ensure that relevant, accurate information is available when needed. Leadership and culture also play a role. They point to a need for research on how organizations can promote residents' constructive learning behavior. Health sciences librarians can play a role

by developing information systems that meet the needs of beginning physicians at the point of need and figuring out the best way to promote them in the context of their particular organization.

DeBruin and his colleagues define basic science knowledge as "causal mechanisms regarding the functioning and dysfunctioning of the human body." Clinical knowledge is "information about relations of particular signs and symptoms with specific diseases. There is continuing debate about the roles of basic science knowledge and clinical knowledge in diagnostic reasoning.

All second through sixth year medical students at Maastricht University in the Netherlands and forty-nine (75% response) family physicians were given a basic science knowledge test, a clinical knowledge test, and a clinical performance test. Practicing family physicians had lower scores on the basic science test and higher scores than the students on the clinical knowledge and clinical performance tests. Data were plugged into four structural equation models which represented various theories about the relationship between clinical performance and clinical and basic science knowledge. Model 3, which posits encapsulation of basic science knowledge into clinical concepts after repeated exposure to patients, provided the best fit to the data. Clinical knowledge plays a greater role than basic science knowledge in clinical performance. The authors point out that contextual knowledge might also play a role in the family physicians' clinical performance.

Although this article does not bring to mind any particular action items for health sciences librarians, for those of us working in medical schools, it does give us some information about how basic science knowledge contributes to clinical practice.

Taken as a group these four articles do provide food for thought for health sciences librarians.

♦ **Information Seeking Behavior
   of Health Professionals**

Several new studies on the information seeking behavior of health professionals have appeared this year. These four papers represent very different approaches and levels of sophistication for studying information seeking behavior by clinicians and basic medical scientists:

Dee, Cheryl R. and Ellen E. Stanley. Nurses' Information Needs: Nurses' and Hospital Librarians' Perspectives. *Journal of Hospital Librarianship.* 5(2):1-13, 2005.

Macintosh-Murray, Anne and Chun Wei Choo. Information Behavior in the Context of Improving Patient Safety. *Journal of the American Society for Information and Technology.* 56(12):1332-1345, Octo-

ber 2005.

Palmer, Carole L. Scholarly Work and the Shaping of Digital Access. *Journal of the American Society of Information Science and Technology.* 56(11):1140-1153, September 2005.

Stefl-Mabry, Joette. The Reality of Media Preferences: Do Professional Groups Vary in Awareness? *Journal of the American Society for Information Science and Technology.* 56(13):1419-1426, November 2005.

Cheryl Dee and Ellen Stanley studied the information needs and information seeking habits of twenty-five nurses currently working in a hospital, who also were seeking a graduate degree in nursing. They tell us the nurses worked in a variety of settings and that all were a sample of nurses who would take or had taken a database searching course as part of an NLM grant. Very little information is given about the focus of the grant, so it is difficult to assess possible bias in the sample. The fact that all were seeking a graduate degree should pre-dispose the nurses to the use of information resources, perhaps in ways different from those they would use in clinical practice. The authors point out that the subjects had greater access to information resources than many practicing nurses would have had.

Each subject filled in an anonymous questionnaire. Two sample questions are given. One specified that they are referring to looking for information for patient care; the other does not. Subjects were later interviewed. Human resources and print resources were used most frequently. Most who used electronic resources used the open Internet rather than databases. Eighty-four percent listed one or more deterrents to use of electronic resources. Most frequent reasons were satisfaction with print, lack of time, and lack of searching skills. Despite low use of electronic resources, 92% were confident of their database searching skills. Subsequent observation revealed that the confidence was based on ability to search the Internet, rather than ability to search databases. Despite being students, these nurses rarely used a hospital or academic library. They cited lack of time and knowledge of the resources available to them as reasons.

The authors then e-mailed eight hospital librarians about their services to nurses. As would be expected, the libraries did offer the needed services to nurses, including database search training. Seven out of eight hospital libraries actively marketed their services to nurses.

The MacIntosh-Murray and Choo article is based on MacIntosh-Murray's doctoral dissertation research. It is difficult to tell if the practice leader/educator on the forty-bed floor in a large, urban, tertiary care hospital is common in Canadian hospitals or unique to this one. At any rate, the authors gathered data over a seven-month period by observation of work and meetings, thirty-nine interviews, and review of documents. The study is couched in the context of patient safety, but the data would seem to have broader applicability. She describes her general approach as an ethnographic case study, using a discourse-analytic approach.

Nurses were very involved with the daily routine of caring for patients. Their most important information is anything that contributes to their knowledge of patients. They prefer to listen to information delivered orally to reading written information. They use computers as little as possible, preferring to ask colleagues or look at printed sources. They do not read journals or access information on the Internet.

The person called a "practice leader/educator" functions as an "information/change agent." This person is present on the unit, observing the nurses' work, providing information, and discussing problems and providing corrective teaching. These people are well-connected and read widely. The remainder of the article provides a very interesting analysis of the people who are there to see the trees and those there to see the forest and how the two groups relate. As I said, it is not clear if the pattern of organization is typical of nursing units in Canada. It would seem to be related to the concepts of opinion leader and gatekeeper.

Stefl-Mabry looks at the congruence of professionals' actual information source preferences and the same individual's theoretical preferences, inferred through a social judgment analysis process. She calls the degree of congruence "self-awareness." Information sources considered in this study are word of mouth, expert advice, the Internet, books, print news, and radio and television news. Differences between actual and theoretical behavior have implications for information science research that involves self-reports.

Ninety volunteers working full-time on Long Island in law enforcement, medicine, and education completed a demographic and background profile and the Satisfaction with Information Sources Survey.

There was a wide variety of congruence between individuals' actual and inferred rankings of the six information sources. The major findings are that law enforcement professionals demonstrated a statistically significant higher level of self-awareness than did educators. Gender and level of education had no statistically significant effect.

Looking at the raw congruence results, men have a little more congruence and those with a graduate or profes-

sional degree have less congruence than those with lower levels of education.

It is hard to judge the validity of this study, because the description of social judgment analysis and how it was applied in Section I of the Satisfaction with Information Sources Survey used in this study is difficult to understand. The author herself admits that she may be trying to compare apples and oranges. This study does not appear to add to our knowledge of the validity of self-reports in information science research.

Finally, Carole Palmer looks at how scholars in the sciences and the humanities are gathering and using information in new ways in the digital environment and generating new types of products which they and others can use. She characterizes the first part of this article, on digital access, as being a "general comparative analysis" of four previous qualitative studies with which she was involved. Most of the analysis in this article is based on semi-structured interviews conducted as part of the four previous studies. She found that "Internet access is highly valued by researchers" to support four research activities which she labels as confirmation, discovery, collecting, and consultation. Science and humanities scholars differ in how they carry out these four activities.

Turning to modes of access, she posits that humanities researchers often gather a core of many primary resources and then interpret the sources. On the other hand, scientists generate data locally and use the literature to assess a preliminary finding, work out a methodological or instrumentation problem or document the recent related literature. "Information paths [in the humanities] are long, mutable, and centrifugal." In the sciences, "work is problem-centered and more bounded in time and scope." Information paths in the sciences are segmented, directed, and centripetal. I don't think it is absolutely essential that folks understand this—as long as they understand that there are differences in how humanities people use the literature versus how scientists use the literature.

She then talks about "digital assemblage," the creation of resources that scholars assemble for themselves and their communities. She expands on thematic research collections as an example for the humanities, and literature-based discovery for the sciences. The latter is a "technique of mining new knowledge or identifying implicit relationships in literature databases." The Arrowsmith System is "designed to locate information listed in MEDLINE on targeted topics produced in separate scientific specializations" and is the example Palmer uses to demonstrate "literature-based discovery for the sciences." The science researcher then makes the connections between the two threads of research. Palmer calls the former a working assemblage and the latter an implicit assemblage.

♦ **LIS Faculty Research**

Three studies focused on LIS research and LIS education programs are worth noting:

Melo, Lokman I. and Kristina M. Spurgin. Ranking the Research Productivity of Library and Information Science Faculty and Schools: An Evaluation of Data Sources and Research Methods. *Journal of the American Society for Information Science and Technology*. 56(12):1314-1331, October 2005.

Nisonger, Tomas E. and Charles H. Davis. The Perception of Library and Information Science Journals by LIS Education Deans and ARL Library Directors: A Replication of the Kohl-Davis Study. *College & Research Libraries*. 66(4):341-377, July 2005.

Weech, Terry L. and Marina Pluzhenskaia. LIS Education and Multidisciplinarity: An Exploratory Study. *Journal of Education for Library and Information Science*. 46(2):154-164, Spring 2005.

Weech and Pluzhenskaia point out that before it was possible to earn a doctorate in library and information science, library school faculty held (only) bachelor's or master's degrees in library science. Those who held doctorates had doctoral degrees in one of the traditional subject disciplines. As more LIS doctoral programs opened, it became possible to staff library schools with those holding doctorates in LIS. Now, the trend has reverted toward LIS faculty having doctorates in fields other than LIS. In 1999, 28% percent of LIS faculty had a doctorate in another field; by 2003, the percentage had risen to 42%. Computer science and education are the most frequent alternative doctorates. The percent of deans holding doctorates in LIS held steady in the low 70s for the same five-year period.

Fifty-eight percent of the doctoral students at the University of Illinois Graduate School of Library and Information Science in spring 2004 did not have an ALA-accredited master's degree. This group of doctoral students tends to think of themselves as being librarians. What implications do these data have for the LIS curriculum and the literature of LIS? "Will the movement toward multidisciplinarity in terms of LIS faculty appointments and the nature of LIS doctoral programs result in the enhancement or disintegration of the discipline of LIS?"

Nisonger and Davis present a replication of the 1985 Kohl-Davis study in which ARL directors and library school deans ranked thirty-one LIS journals in terms of value for promotion and tenure decisions and listed the five LIS journals considered most prestigious for promotion and tenure. If a dean or director wasn't familiar with a journal, they were asked to so indicate. If an ARL library didn't have tenure for librarians, the director was asked to do the

ratings on the basis of prestige of publishing in the journal. They achieved a 66.1% (N=37) response from deans and 46.7% (N=56) from ARL directors. Mean rankings were calculated, and results are presented with blanks and not familiar (NF) counted as "0" and also, in a second table, as "disregarded."

Deans rated the *Journal of the American Society for Information Science and Technology (JASIST)*, *Library Quarterly*, and the *Annual Review of Information Science and Technology* most highly for promotion and tenure decisions when blanks and NF were counted as 0. Directors liked *College & Research Libraries*, *Library Trends*, and the *Journal of Academic Librarianship* when blanks and NF were counted as 0. The *Journal of the Medical Library Association (JMLA)* was 14th on the deans' list and 15th on the directors' list. When blanks and NF were disregarded, deans liked *JASIST*, *Library Quarterly*, and *Information Processing & Management.* Directors liked *College & Research Libraries*, *Library Trends*, and *JASIST*. Most deans were familiar with *JASIST*, while a number of the directors were not. There was an approximately .73 correlation between the two methods of ranking for both groups. A number of deans were not familiar with *JMLA*, causing it to fall to 20th in the second list. *JMLA* rose to eighth in the director's ratings. The *Journal of the American Medical Informatics Association (JAMIA)* went from 19th to 9th on the deans' list and from 44 to 16 on the directors' list, when blanks and NFs were disregarded.

There were statistically significant differences between the deans' and directors' ratings for many of the journals. Directors tended to be consistent with results of the 1985 study; deans less so. The same is true when the deans and directors were asked to make an unranked list of the five most prestigious journals. Several respondents indicated that research journals outside LIS also are important in tenure and promotion. Deans' perceptions ratings correlate more highly with the *Journal Citation Reports*

(*JCR*) scores than do directors'. In fact, there was almost no correlation between directors' perceptions and the *JCR* ratings. *JASIST*, *Library Quarterly*, and *College & Research Libraries* remain the most elite journals in LIS.

Melo and Spurgin identify databases that index the highest percentage of LIS literature. The authors first gathered lists of publications from sixty-eight LIS faculty who had complete lists of publications on the web sites of eighteen LIS schools in the United States and Canada. Two hundred twenty-two other faculty members were not included in the study. They then searched nine databases for the 2,625 items from the lists that were published from 1982 through 2002. Journal articles accounted for 45% of the items, and 31.5% were from conference proceedings. Sixty-four percent of the total items were refereed. Some 14% of the items were not refereed, and 22% were either undetermined or were formats that are not refereed (i.e. books).

Library Literature and Information Science (formerly Library Literature) indexed 31.2% of the faculty publications. Interestingly, INSPEC was next highest with 30.6%. Twenty-seven percent of the items were not found in any of the nine databases. Just over 54% of the missed items were chapters in books, encyclopedia articles, yearbook articles, and editorial material. Only 16.5% of the refereed items were not found. The authors discuss their results in great detail and compare their methods to other attempts to rank the research productivity of LIS faculty and schools. Five of the top ten research areas are definitely information science oriented, reinforcing the trends noted by Weech and Pluzhenskaia.

♦ **EBM Training**

Gruppen and two medical librarian co-authors continue the parade of articles on evidence-based medicine, with their research on EBM training:

Gruppen, Larry D., Gurpreet K. Rana, and Theresa Arndt. A Controlled Comparison Study of the Efficacy of Training Medical Students in Evidence-Based Medical Literature Searching Skills. *Academic Medicine*. 80(10):940-949, October 2005.

Gruppen *et al.* report on the efficacy of a two-hour optional MEDLINE session taught at the beginning of a four-week elective EBM course for fourth-year medical students. The format included both brief lectures and guided hands-on practice. Participants were a thirty-two person self-selected, experimental group and a fifty-eight person control group.

All students did a required search before the optional

Perspectives on Library Use of GIS

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Geographic Information Systems (GIS) is a technology used to view and analyze data from a geographic perspective.[1] Cartography provides the historical origins of GIS. The process begins with the creation of an initial cartographic map, and then overlay maps containing specific information are added to provide a visual representation of spatial distributions.[2] Software applications for GIS provide different visualization techniques to organize information about events at a particular geographic location. The data can be presented in one or more of the three GIS output formats: maps, databases, and models or diagrams.

Some academic and public libraries have GIS collections and offer GIS services, but there are few examples of libraries using GIS for their own research and benefit. The corporate world is more accustomed to GIS technology and provides examples of its possible uses in libraries.

The National Network of Libraries of Medicine funded a National Outreach Mapping Center (NOMC) from 2003-2006 for the purpose of providing consultation and services to assist the National Library of Medicine and the Regional Medical Libraries with outreach impact assessment and better planning and allocation of outreach resources. Using GIS allows NOMC's researchers to measure the equitable geographic distribution of services and resources. They can also analyze which demographic groups are being served, including groups such as seniors, people with AIDS, rural citizens and their health care providers, inner city populations, minority populations, and other underserved groups.[3]

Census data is a core information source for GIS. Data files provided by the Census Bureau are called TIGER (Topologically Integrated Geographic Encoding and Referencing system <http://www.census.gov/geo/www/tiger/>) files. Examples 1 and 2 (pages 16-17) demonstrate how TIGER files can be used in ArcGIS. When using TIGER files, be prepared to do manual corrections with the data, as the data file often contains skipped fields and misspellings.

A library can use Census data to do a statistical analysis of its user demographics. GIS adds the ability to create a visual representation of population characteristics. By matching library clients' ZIP codes or street addresses to a ZIP code/street file in GIS, it is possible to reveal the extent of the library's outreach in the community.[4] There are other ways to measure clientele use of a library, but

privacy restrictions hinder libraries' handling of data.

To measure the circulation and usage of the collection, the library's floor plan and the layout of the collection can be mapped with latitude and longitude coordinates, a process called "geocoding." Once the floor has been coded, the next step is to add a map layer of the catalog collection range in relation to the floor coordinates. The third layer would consist of circulation data by classification numbers. The end result would be a map demonstrating the high circulation areas within the library. This provides valuable library management information useful in addressing marketing, personnel, and collection management issues. After the floor of the library has been given coordinates, other maps can be layered to show types of library use. Journal use can also be analyzed with GIS. By collecting IP numbers within the library's circulation area and IP addresses for journals, usage models could be created showing journal usage by time, location, and date.

Data repositories have been established by government agencies and universities to save time in building the initial data sets for maps. To find repositories of free geospatial data, search "GIS repository data files" in any Internet search engine or visit the Active Online Repository from the National Spatial Data Clearinghouse Program: <http://nsdi.usgs.gov/>

To begin creating information maps, select a GIS software program. The most recognized software is ArcGIS by ESRI (<http://www.esri.com/>), and another commercial product is MapInfo, <http://www.mapinfo.com/>. GRASS (Geographic Resources Analysis Support System - <http://grass.itc.it/>) is the leading open source software for GIS. The best way to get started with a specific software program is to get a text book on that software, do the practice examples, and learn what others have created with GIS. None of the GIS software applications are intuitive, so be prepared to spend time learning. Once you have built your first map, you will see GIS' potential for creating spectrums of information for your own research.

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MEDLINE session, did the same number of searches during the EBM course, and did another required search at the end of the course. Before and after search results for thirty experimental group and fifty-three control group members were analyzed, using a nine-item list of errors. The two groups had almost identical scores on the pre-test. Experimental group students gained a statistically significant 12.7% between tests, and control students scored slightly lower on the post-test than they had on the pre-test. Data are also given for each specific type of error.

The authors address the limitations of the small sample size and possible self-selection biases.

♦ ♦ ♦

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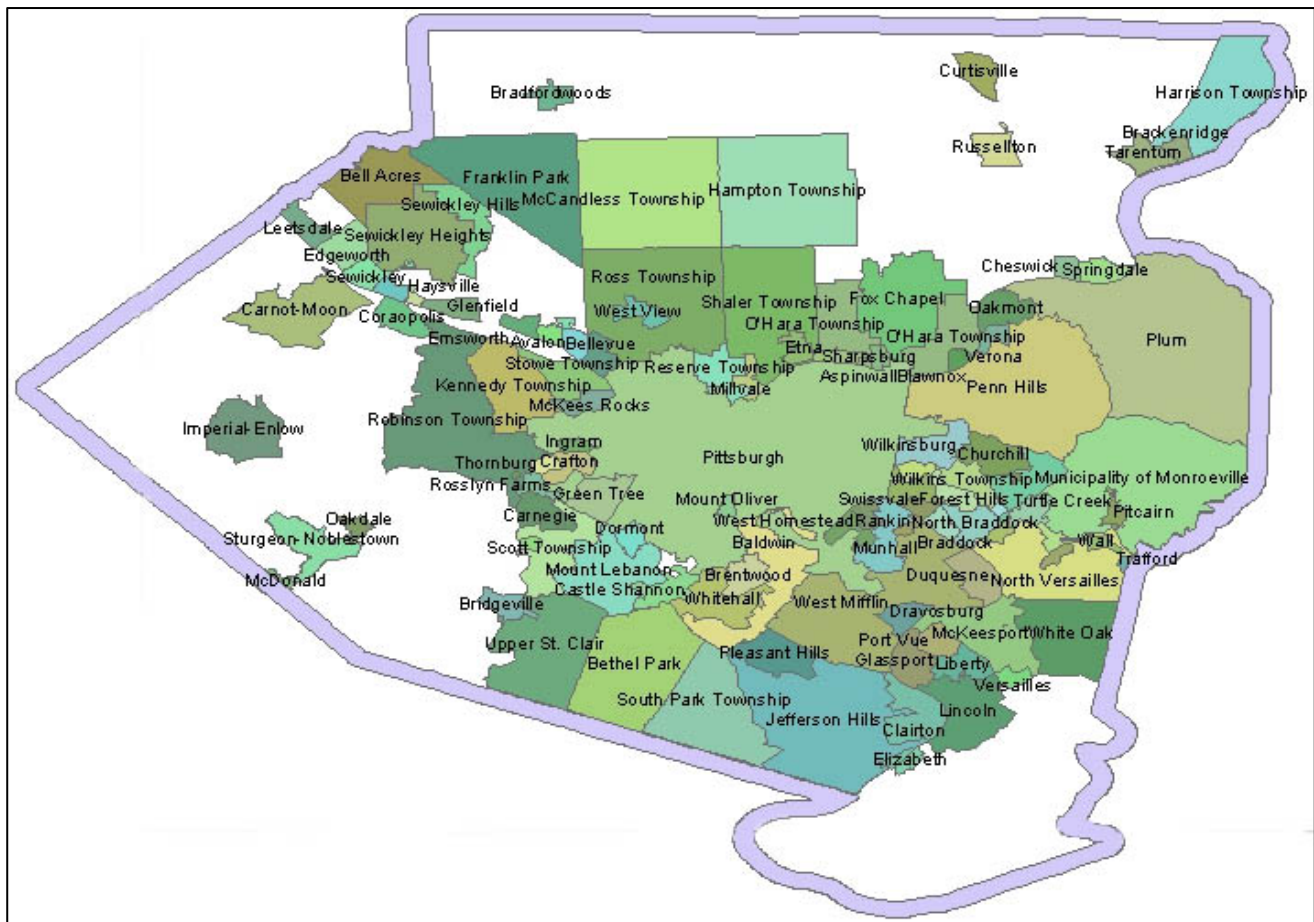
Example 1: The City of Pittsburgh, Pennsylvania is displayed with neighboring townships in Allegheny County. Two separate TIGER files were used to create the map.

Example 2: ZIP codes in Allegheny County, Pennsylvania.

♦ ♦ ♦

HYPOTHESIS
THE JOURNAL OF THE RESEARCH SECTION OF MLA