

END OF FUNDING PERIOD REPORT

LAUC Statewide Grants, Research & Professional Development Committee

Primary Applicant(s):

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Title of Project:

Using Personal Digital Assistant Technology for Statistical Research in Health Sciences

Time Period of Grant:

July 1, 2004 thru June 30, 2005

Amount of Award Received:

\$6395

Original Abstract as Submitted:

This project will explore the use of Personal Digital Assistant (PDA) technology as a tool for statistical health-related research, through conducting focus groups with interested medical and health researchers. Medical and health researchers are well accustomed to the use of a PDA, since they are required for medical and health education. The statistical research materials to be explored fall into three categories: 1) a database of major sources for medical and health related statistics; 2) a glossary and guide to statistical tools for calculating counts, rates, ratios, proportions, constants, measures of cohort events, and measures of events through time; and, 3) a ready reference guide of recent major demographic and epidemiologic statistics. Based on outcomes of focus groups a prototype resource will be developed.

I. ACCOMPLISHMENTS and EVALUATION

- Describe what was achieved during the time period of the grant.

Overview: This project proposed to meet information needs of medical and health researchers by combining expertise and resources of the UCLA Biomedical Library and the UCLA Data Archive when creating an information delivery system in a wireless PDA-friendly environment.

Our view was that health scholars would find and use statistical information more efficiently and effectively if search options were accessible using familiar technology or devices. We saw an unmet need for organizing and structuring resources to be available from a point of access that is *preferred* by health scholars, namely, the PDA. We knew that in medical schools, required purchase and use of PDAs is now a standard, meaning that graduating physicians would possess the technological knowledge set for using a PDA to access information. Many scholars in medical, epidemiological, health and demographic research are users of PDA technologies, because of this standard requirement in clinical training and practice. PDAs are also routinely used in diagnosis, in calculating drug dosages, and other medically-related areas.

We hypothesized that health researchers would benefit from being able to quickly and easily refer to directories of major statistical resources, to check statistical definitions and calculations as well as key data points on population, health, vital statistics, and disease. We also proposed that being able to find statistical information via PDAs would enable scholars to conduct research in a way that is both familiar and desirable to them.

Our goal was to test these ideas to create a prototype searchable resource that one could access through the Internet and take advantage of evolving PDA technology. PDAs themselves had been available since the mid 1990's, however the ability to access the Internet with a PDA had only recently been possible with wider availability of wireless technology.

Discussion: Our main achievement was the development of the prototype resource (<http://www.sscnet.ucla.edu/issr/da/PDA/pdacode.index.html>). As designed, the resource contains six sections: Overview, How to's, Terms, Data, Tables, and Other Links. We modified our original intent to create a ready reference guide by instead including links to sources that allow creation of custom tables. Even in the prototype stage, this project has already had 9000 hits from United States and over twenty-five other countries. (See Appendix A) Up to one third of the accesses are from PDA based operating systems. The heaviest-use section is the statistical links, or Data, section. Although our intent was for this resource to be accessed via PDA, we see as positive the large number of PC-based accesses. Our expectation is that use of a PC for resource discovery will lead to increased PDA-based usage. That is, users who find the resource using their PCs will be encouraged to later use it on their PDAs. We propose to explore this in future research projects.

- What aspects were completed as proposed? If your study could not be completed as proposed, explain how your plans were altered.

We had five goals for the project, and met these goals in the ways detailed below.

1. *Further understanding of how medical and health scholars use PDAs for research;*

We completed two official focus groups attended by a total of 9 study participants, and conducted an unofficial background-gathering session. The detailed results of the focus groups are included in Appendix B. One significant observation we made is that most

participants favored a task-oriented approach to PDA use. They were more likely to initiate PDA use with a specific goal in mind, rather than for general browsing use. They chose specific applications with an expected end outcome, for brief periods of time. This contrasts significantly with their expressed typical PC habits. One implication this tendency has for future design of this project is to replicate functionality of already familiar and successful PDA applications. One way to do this is to create a PDA-based client rather than staying with the fully web-based current design. Two models for further exploration can be seen in the designs of AvantGo and MDonTap, both of which provide access to both the downloaded application and materials available throughout the internet. The investigators propose to study this in more detail in future projects.

Further, respondents seem to favor using resources that can be downloaded entirely to a PDA, rather than only accessed in a wireless environment. We speculate that this is due to two factors. First, respondents perceive use of medical information whether on patients or on research resources as being less secure in a wireless environment. Second, the members of our focus groups were less sophisticated or aware of the potential of working wirelessly. Another interesting outcome of the focus groups was the emergence of the possibility of significant differences in use by gender. We were not able to explore these differences fully in the context of this project, but believe it to be significant enough to warrant further research.

The focus groups were conducted with the assistance of a moderator with expertise in conducting such sessions. Joan Kaplowitz (UCLA Biomedical Library) met with the investigators to explore topics to be covered, types of details we wished to ascertain, and provided us with invaluable advice on how to gather the information we needed.

2. *Explore the ways in which statistical information is used in medical and health research;*

We reviewed the content of a variety of medical and health resources from government agencies and educational institutions in order to assess type, variety and availability of the materials contained in these resources. We examined and assessed the usability of available PDA-based, medically-oriented software. These included InfoPoems, Micromedex and ePocrates. A portion of this review work was carried out by our research assistant, Jun Yanagimachi (UCLA Graduate School of Education and Information Studies). The web-based and PDA-friendly content, support and services from numerous medical libraries and schools were explored. We read software and product reviews, and scholarly articles, about PDAs and PDA-based materials.

We also relied on our work assisting users in both the Data Archive and the Biomedical Library to support our sense of how statistical information is used in medical and health research. That is, both investigators have considerable experience in finding statistical materials, surveys and data for researchers. As we stated in our proposal, there are many approaches to research. The use of statistical information in research ranges from the use of selected details in pre-existing tables, to the use of archived surveys for

secondary analysis, to the collection of primary data. The use of data from archived surveys is a popular approach and secondary analysis of data is a well-established method in both the medical and public health fields. In order to carry out secondary analysis, researchers need to be able to find, retrieve and ultimately use data files. These are key activities that are essential to a quantitative approach to research. In our project we focused on the first activity, *finding* materials for research.

3. *Develop a prototype database to:*
 - a. *Explore what specific statistical resources would be desirable for access through PDAs;*
 - b. *Explore what statistical terms and concepts would be desirable for quick reference through use of PDAs;*
 - c. *Explore the specific statistical ready reference tabulations desirable for use in a PDA format;*

We developed a prototype database of statistical resources, available at: <http://www.sscnet.ucla.edu/issr/da/PDA/pdacode.index.html>. Development of this resource allowed us to professionally evaluate the usefulness of various statistical information formats on two wireless PDA platforms; Palm and Pocket PC. Our desire was to provide users with details on statistical resources for studying general and special populations; health and health status, disease and outcomes; administrative data on hospitals, medical care establishments and health care delivery systems; and vital statistics on births and deaths. Our database contains entries with name of data distributing agency, geographic level of data available, titles and abstracts of studies, and broad subject categories. Part of this process required us to learn a great deal about how databases are administered and managed in a web environment, that is, dynamically. In particular we spent time understanding client/server technology, dynamic application platforms, such as ASP, and database management systems, such as Microsoft Access. We also used Macromedia Dreamweaver for displaying and navigating the database.

A portion of the work required to create the database was carried out by a research assistant. Jun Yanagimachi (UCLA Graduate School of Education and Information Studies) became an integral part of the project and functioned as a full team member. Her primary responsibilities involved developing a design framework for the database; we supplied her with specific content, however she undertook an active role in establishing criteria for choosing which data distribution agencies to include in the prototype. Her report is included in Appendix C.

In our work on statistical terms and concepts, the Glossary was compiled using a variety of standard texts, including the *Population Handbook*, published by the Population Reference Bureau. The prototype has the definitions on the following terms: Birth Rate, Count, Death Rate, Divorce Rate, Fertility Rate, Growth Rate, Life Table, Marriage Rate, Median, Net Migration, Population Density, Rate. As we continue to populate this resource with content, the Glossary will contain a vastly more comprehensive listing.

We determined that using front-end software systems to create customized tables, such as are available from agencies such as the National Center for Health Statistics and the Census Bureau, was preferable to the ready reference tabulations we originally intended to include. We were unable to get definitive responses on specific, preferred systems for inclusion in the prototype from our focus group population. In part we suspect that this is due to lack of familiar with dynamic data analysis on the part of the respondents. In the Tables portion of the prototype, we have included links to the US Census Bureau, a local site based on a particular survey, an archive providing a number of studies, and an archive of studies on mental health. There are a wide variety of dynamic data analysis systems available and further evaluation of them is integral to our further research in this area.

4. *Report findings to the professional library community, to medical and health scholars; and to interested individuals;*

We gave a Reference, Research, and Instructional Services Committee presentation to librarians at UCLA on September 22, 2004 detailing how PDAs are used, wireless technology, buying criteria and sources of further information. We have submitted a proposal to the TechEd 2006 conference to report on our work in developing the prototype. We are also preparing a paper proposal for the Medical Library Association Annual Meeting in 2006. We plan to solicit feedback from other medical libraries offering PDA-based support and services on future phases for the project.

5. *Share resulting prototype resources developed in the course of the project through web dissemination*

As of August 1, 2005, the prototype is officially available at: <http://www.sscnet.ucla.edu/issr/da/PDA/pdacode.index.html>. This site has had more than 9000 hits from over twenty-five countries, since its inception in July of 2004. (See Appendix A) We also intend to make available supporting materials, such as this report and appendices. We will also share all the coding and other system-related materials and files used to create the resource to those who are interested, as long as it is for research, non-commercial purposes. All requests will be evaluated on this basis.

- Did the project accomplish what it intended? Did it make a difference?
 - Include any relevant quantitative data, if applicable (e.g. How many individuals have benefited from this project? In what way? This may include various output measures such as circulation, reference transactions, program attendance, survey responses, etc. as appropriate.)
 - Include any anecdotes, if applicable.

Our overall sense is that the project accomplished what we intended; that is, to create a prototype information resource that could be used via PDA in a wireless environment. In this process we explored what specific statistical resources would be desirable for access through PDAs; what statistical terms and concepts would be desirable for quick reference

through use of PDAs; and which statistical ready reference tabulations are desirable for use in a PDA format.

We led focus groups with health researchers to assess their reactions to the prototype and to working with wireless-enabled PDAs. In this we have furthered our understanding of how medical and health scholars use PDAs for research and the ways in which statistical information is used in medical and health research. We also gained knowledge and ideas on how to select focus group participants.

We have shared the prototype resources developed in the course of the project through web dissemination. Based on the use statistics thus far, we believe the resource is being actively used, despite its prototype status. We anticipate that as we fully develop content for the next phase of the project, it will become an even more useful contribution to health research. Although the focus group participants we worked with were not as technically sophisticated as we expected, we believe our original hypothesis was correct and is demonstrated by the use statistics. At the same time, we think a future project would involve a comparison of Internet-based tools vs. those which can be downloaded and used entirely on a PDA, without necessarily accessing the Internet.

In our own professional development, this project has had an enormous effect in terms of our increased knowledge and experience in working with this technology. We have gained expertise in evaluating and reviewing handheld devices, developing criteria for purchasing handhelds, understanding handheld operating systems and platforms, and learned about a wide variety of software for use with handhelds. We also have a much greater understanding and working knowledge of how wireless technology works, how wireless networks operate, and how to implement virtual private networking in order to access the Internet using a secure protocol. This was not a trivial exercise and there was a lot of trial and error before we were fully operational.

Sharing our work has led to a greater awareness and understanding of PDA technology and handheld devices on the part of other UCLA library professionals. Campus library units have begun discussing adopting handhelds for a variety of professional and in-house activities. Libraries are beginning to integrate library resources with learning technologies, courseware management systems, ePortfolios, information portals, etc. Our work exploring the use of PDAs as handheld information access tools will be invaluable to us as we participate in this work both on the job and in future research. Because of what we have learned personally, we are better prepared to take on leadership roles in contributing to development of information technology-related initiatives for our campus community.

We would encourage LAUC to continue to support research projects that reach into evolving areas of technology, even when they may be as yet untested or untried. When librarians have the opportunity to be involved in this kind of exploration there will be greater opportunities for innovation. In this way LAUC can make a substantial contribution to the development of information technology in libraries and to professional development of individual librarians. Investing in librarians in this way can have implications and outcomes far beyond the scope of an original project.

- What would you do differently next time, if anything?

One aspect of the project that we did not anticipate was the level of knowledge about evolving technologies that we found among the focus group participants. Our pre-proposal research focused on a variety of newsletters aimed at clinicians using handhelds and other technologies as well as the requirements of medical schools to use PDAs. From this we expected our participants to be well-versed in the use of handheld devices and to have positive attitudes towards tools and software for handhelds, as well as their potential. Our user participants were drawn from members of the Robert Wood Johnson Medical Fellows (RWJ), a group of approximately 20 clinicians involved in research. There are new groups of Fellows each year. We misjudged the skills and abilities of our target RWJ group based on the habits of past groups. The group we worked with was much less proficient and less open to experimentation than we expected, based on our interactions with previous RWJ cohorts. If we were to do this differently, we would spend more time on a pre-selection process and begin with a larger universe of potential participants. In our pre-selection criteria we would assess interest in using new technologies personally and professionally. We would also consider offering some kind of reward for participation as an incentive.

- What advice do you have for others applying for LAUC research grants?

This project involved using hand held devices with wireless access to the Internet. At the time we applied for the grant, these devices were rather new to the market and wireless cell phones were not yet available in the United States. By the time we received the funding, several months later, wireless cell phones were ubiquitous and wireless technology in PDAs had undergone several changes. Needless to say, what we proposed was cutting edge, at least for libraries. We found that this produced doubtful responses from the LAUC research grants review committee. Our advice is that if a librarian has a novel idea for a project, the proposal will likely require a lot of explanatory material. This can be difficult to do when the idea is to try out something that has not been done before; there is not a lot one can use to demonstrate its potential. And this is doubly true if it involves new or evolving technology. We advise patience with reviewers who may not have a background in the project topic or design. We suggest that investigators obtain letters in support of projects using cutting edge technologies. It is also extremely important to work with the local LAUC grant proposal review committee. We are convinced that we received funding only because we received such invaluable support and assistance from our local committee.

II. IS YOUR PROJECT COMPLETED? Yes X No

If No, what is needed to complete the project? Is more time needed?
Or more funds?

We have completed all tasked covered by this grant. However, this is only the first phase of a much larger project which will require further research and design efforts. Throughout this report, we have addressed some of the areas we intend to explore in greater detail in the future.

III. FINANCIAL STATEMENT

Please explain how the funds received were spent. Attach your original budget and indicate how well your estimates matched with actual expenditures. Receipts are not necessary.

See Appendix D for a copy of the original budget.

The budget was used to purchase PDA devices and software; and to pay the salary of a library assistant. Our original budget included a software purchase we found did not need. We anticipated needing the software to develop the prototype database. At the time we planned the project this was the accepted method. However, the technology involved in creating the prototype evolved sufficiently from the time we submitted the proposal to the time we received funding, to make the purchase unnecessary. That is, the operating systems of the PDAs had changed so that we could create the database using existing PC-based software. This ended up being very helpful. In order to test some of the health-related databases we needed external memory cards. We also decided to test the use of external keyboards along with other text entry mechanisms on the PDAs. By using the funds original intended for the software (Infopath) we were able to extend our funds for these testing efforts.

As we have discussed elsewhere, the technology involved in this project rapidly evolved and changed throughout the grant period, and we tried to adapt our efforts to try as many new approaches as possible. Our use of funds for purchasing the PDA devices reflects this direction. We had planned on using two different Pocket PC devices and 2 different devices with the Palm operating system. We decided to work with just one Pocket PC and instead acquired a third device with the Palm operating system. This device was acquired very near the end of the project so that we could take advantage of the features if the very newest device available that met our criteria.

We would recommend this approach to others when working with new technology, hardware or software.

IV. SHARING YOUR PRODUCT/RESULTS

What are your plans for disseminating the results of your work? If it will be a web page or product, or published article or book, when will it be available to the public? Include citations/URLs if known.

The prototype is available via PDA and PC through the internet. The site is active and has been used in the focus groups. As it is a prototype, we plan on continuing to populate the database and web site with content and to maintain it within our respective libraries. The URL is: <http://www.sscnet.ucla.edu/issr/da/PDA/pdacode.index.html>

V. NOTE

Information included in this report may be reprinted or posted on the web for dissemination to UCOP, other UC Libraries, and future potential LAUC grant applicants.

Appendices

Appendix A. Use Statistics of prototype tool

Appendix B. Focus Group materials and notes

Appendix C. Report by Jun Yanagimachi on database project

Appendix D. Original budget

Appendix A



Web Server Statistics for UCLA www.sscnet.ucla.edu

Program started at Sun-18-Sep-2005 03:19.

Analysed requests from Mon-19-Jul-2004 17:28 to Sun-18-Sep-2005 03:50 (425.43 days).

General Summary

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This report contains overall statistics.

Successful requests: 9,069
Average successful requests per day: 21
Successful requests for pages: 5,341
Average successful requests for pages per day: 12
Failed requests: 910
Distinct files requested: 169
Distinct hosts served: 553
Corrupt logfile lines: 29,826
Unwanted logfile entries: 147,729,181
Data transferred: 71.298 megabytes
Average data transferred per day: 171.613 kilobytes

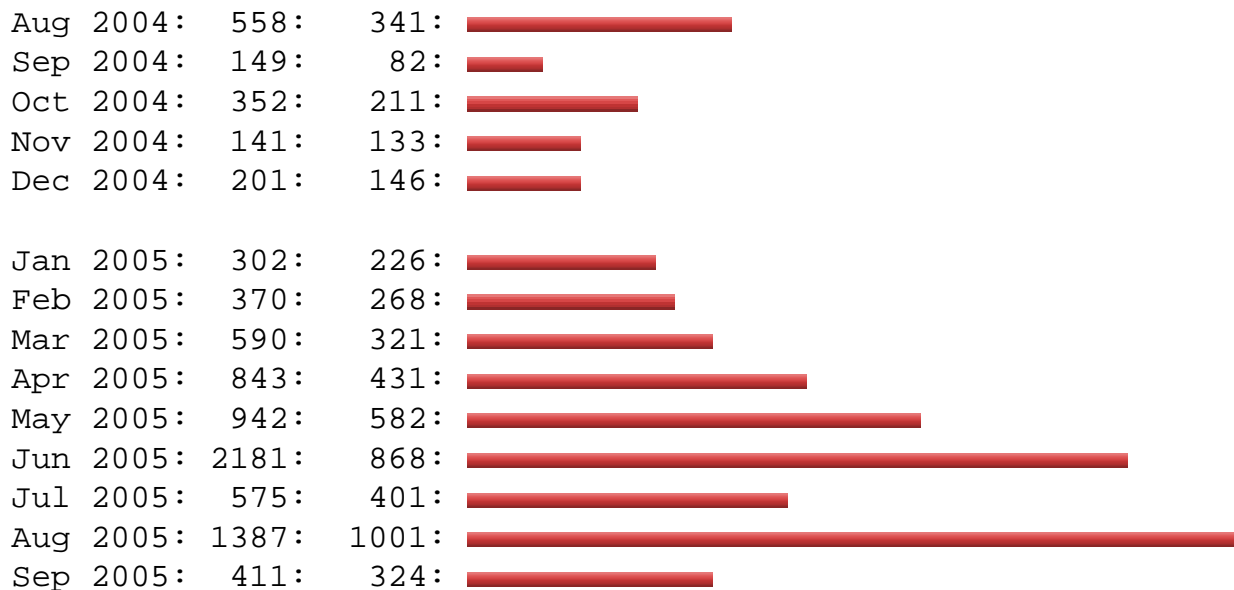
Monthly Report

(Go To: [Top](#): [General Summary](#): [Monthly Report](#): [Daily Summary](#): [Hourly Summary](#): [Domain Report](#): [Organisation Report](#): [Search Word Report](#): [Operating System Report](#): [Status Code Report](#): [File Size Report](#): [File Type Report](#): [Directory Report](#): [Request Report](#))

This report lists the activity in each month.

Each unit (■) represents 25 requests for pages or part thereof.

```
month: reqs: pages:
-----: ----: -----:
Jul 2004:  67:      6: ■
```



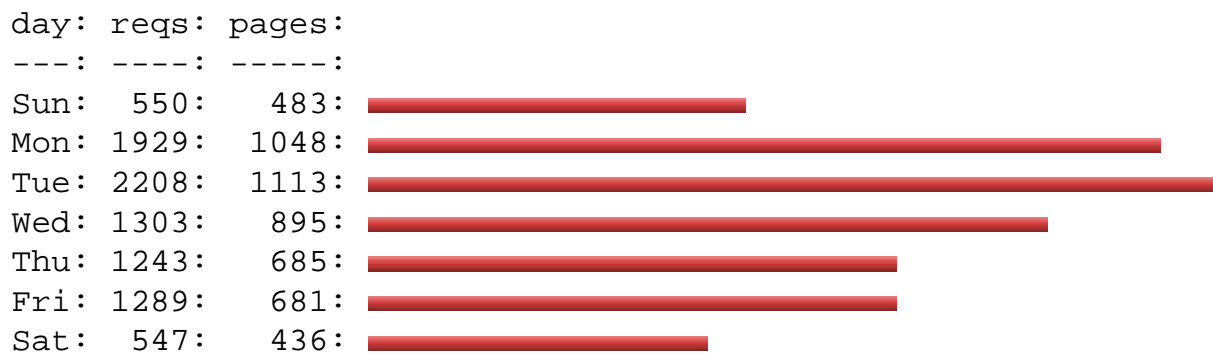
Busiest month: Aug 2005 (1,001 requests for pages).

Daily Summary

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This report lists the total activity for each day of the week, summed over all the weeks in the report.

Each unit (■) represents 25 requests for pages or part thereof.



Hourly Summary

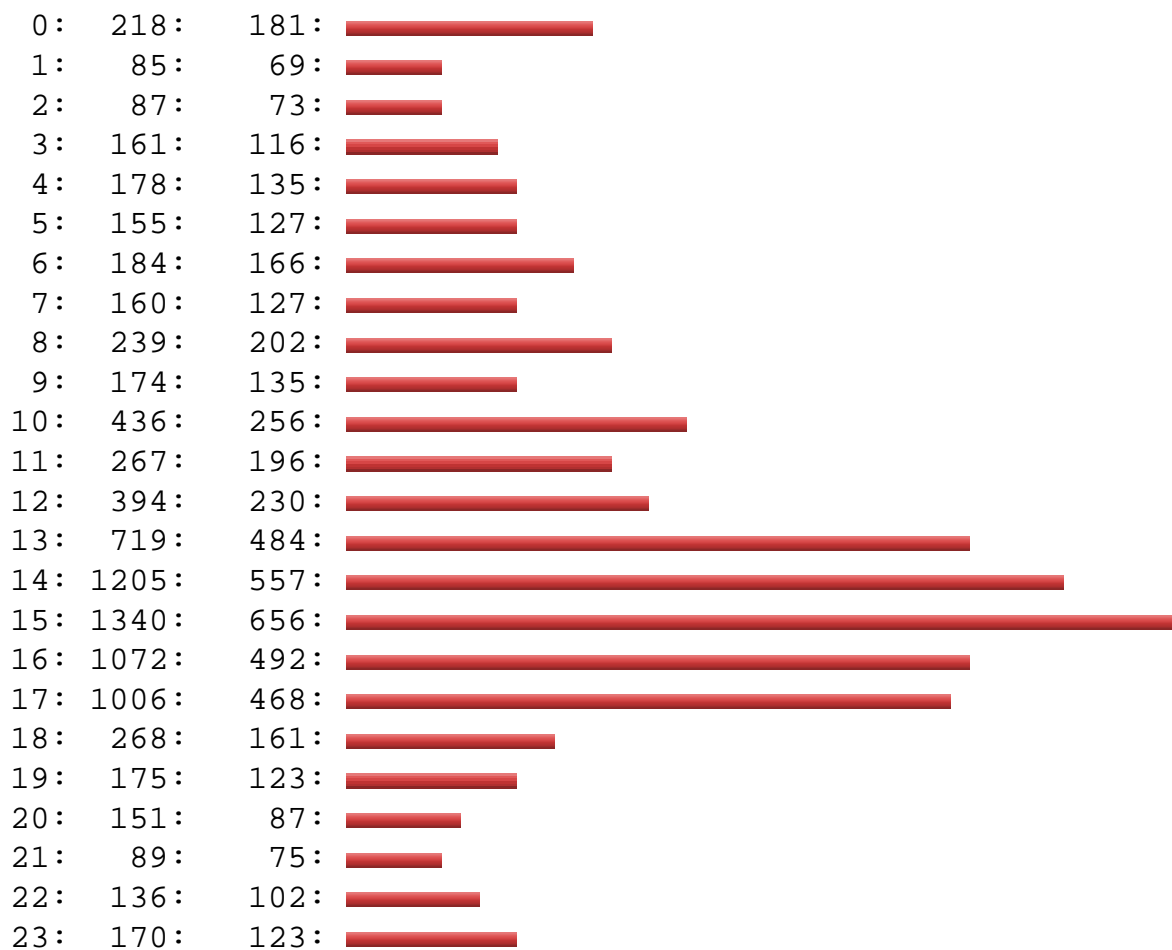
(Go To: [Top](#): [General Summary](#): [Monthly Report](#): [Daily Summary](#): [Hourly Summary](#): [Domain Report](#): [Organisation Report](#): [Search Word Report](#): [Operating System Report](#): [Status Code Report](#): [File Size Report](#): [File Type Report](#): [Directory Report](#): [Request Report](#))

This report lists the total activity for each hour of the day, summed over all the days in the report.

Each unit (■) represents 15 requests for pages or part thereof.

hour: reqs: pages:

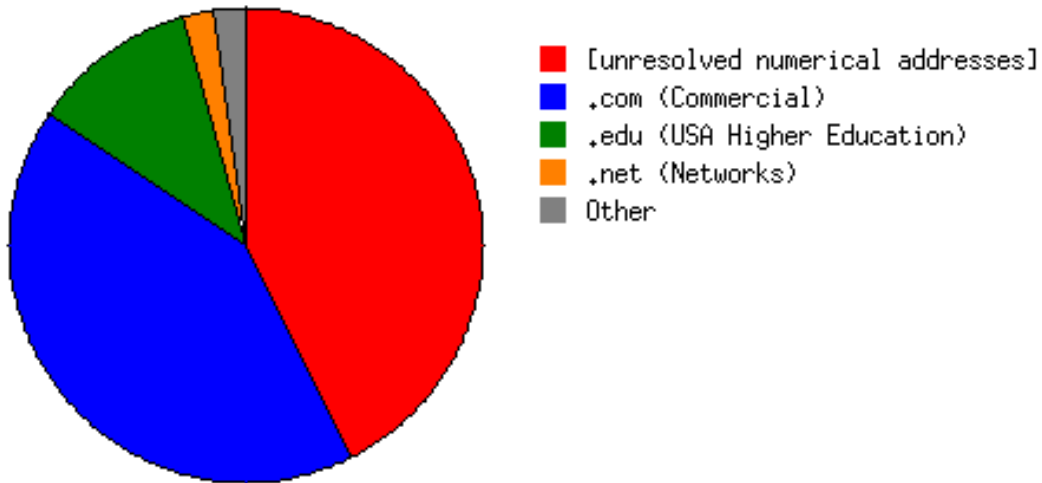
----: ----: -----:



Domain Report

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This report lists the countries of the computers which requested files.



The wedges are plotted by the amount of traffic.

Listing domains, sorted by the amount of traffic.

```

reqs: %bytes: domain
----: -:-:-:-: -:-:-:-
4943: 42.66%: [unresolved numerical addresses]
2584: 41.63%: .com (Commercial)
1157: 11.49%: .edu (USA Higher Education)
 186:  2.05%: .net (Networks)
   33:  0.46%: .uk (United Kingdom)
   18:  0.35%: .us (United States)
   23:  0.27%: .au (Australia)
   21:  0.22%: .nl (Netherlands)
   12:  0.14%: .mx (Mexico)
   13:  0.13%: .de (Germany)
    6:  0.10%: .nz (New Zealand)
   11:  0.09%: .vn (Vietnam)
   11:  0.09%: .za (South Africa)
    6:  0.07%: .ca (Canada)
    5:  0.07%: .sk (Slovakia)
    6:  0.05%: .gov (USA Government)
    5:  0.04%: .mil (USA Military)
    3:  0.02%: .cz (Czech Republic)
    8:  0.01%: .tr (Turkey)
    2:  0.01%: .fr (France)
    2:  0.01%: .jp (Japan)
    2:  0.01%: .pl (Poland)
    1:      : .org (Non Profit Making Organisations)
    1:      : .sy (Syria)
    1:      : .fi (Finland)
    1:      : .hk (Hong Kong)
    1:      : .ph (Philippines)

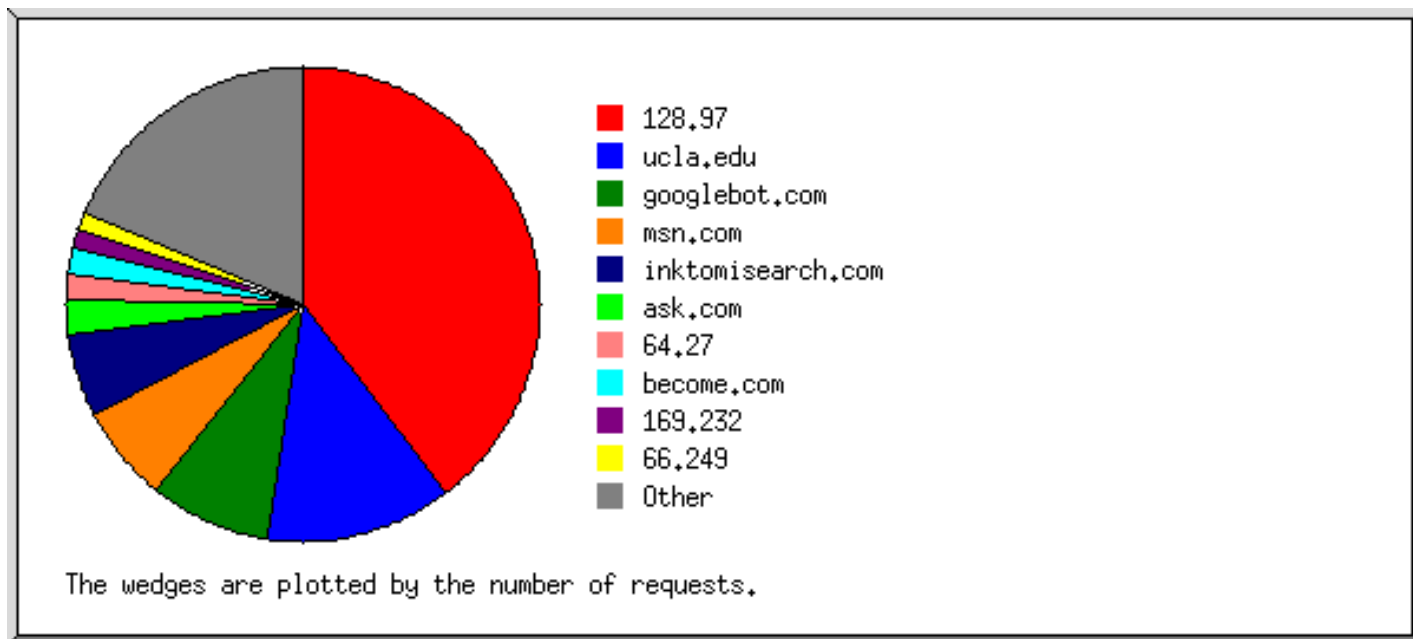
```

1: : .ro (Romania)
1: : .pt (Portugal)
1: : .tw (Taiwan)
1: : .cl (Chile)
1: : .ar (Argentina)
1: : .cy (Cyprus)
1: : .it (Italy)

Organisation Report

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This report lists the organisations of the computers which requested files.



Listing the top 20 organisations by the number of requests, sorted by the number of requests.

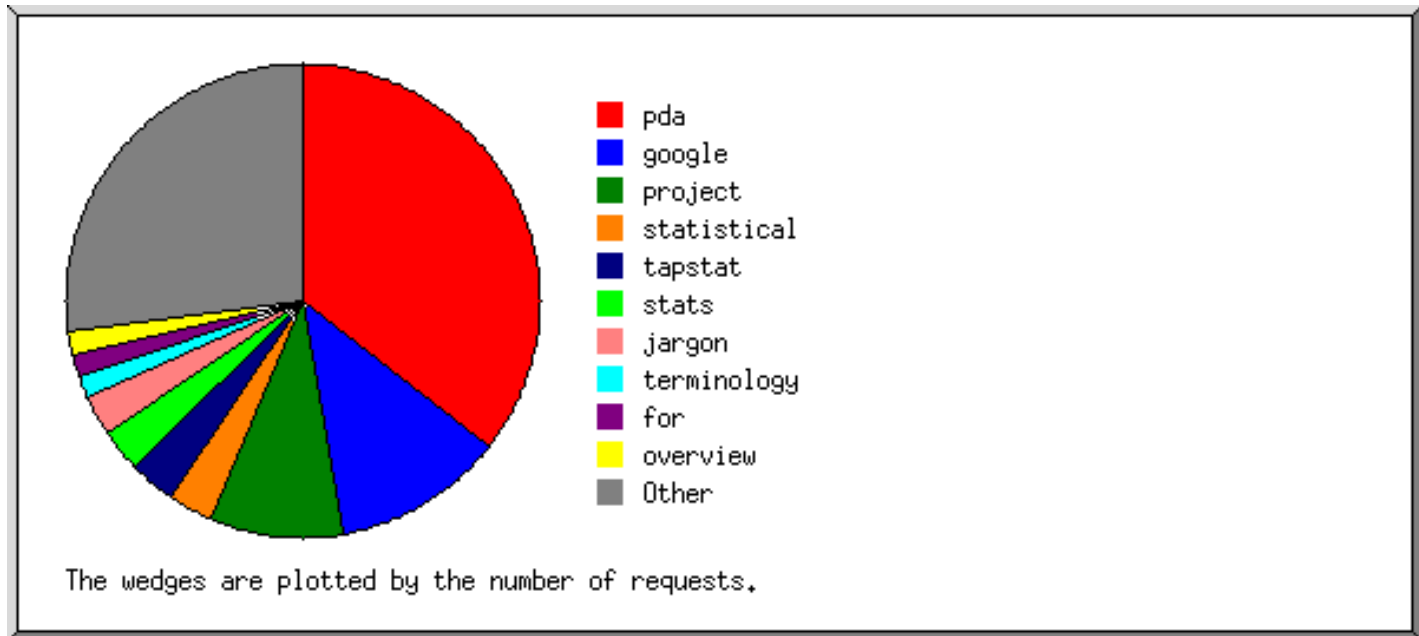
```
reqs: %bytes: organisation
----: -:-:-: -:-:-:-
3604: 31.54%: 128.97
1139: 11.35%: ucla.edu
 755: 12.94%: googlebot.com
 592:  9.37%: msn.com
 515:  8.63%: inktomisearch.com
 219:  2.62%: ask.com
 164:  2.26%: 64.27
 156:  4.82%: become.com
```

116: 1.38%: 169.232
105: 0.58%: 66.249
103: 0.51%: 164.67
100: 0.61%: alexa.com
100: 0.50%: yahoo.com
77: 0.38%: 65.214
67: 1.48%: picsearch.com
63: 1.19%: 63.97
47: 0.42%: comcast.net
32: 0.08%: 66.120
29: 0.14%: rnci.com
28: 0.14%: 62.119
1058: 9.05%: [not listed: 263 organisations]

Search Word Report

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This report lists which words people used in search engines to find the site.



Listing the top 30 query words by the number of requests, sorted by the number of requests.

```
reqs: search term  
----: -----  
93: pda  
30: google
```


24: project
8: statistical
8: tapstat
8: stats
7: jargon
4: terminology
4: for
4: overview
3: research
3: prototype
3: based
3: packages
3: ppc
2: outcomes
2: troubleshooting
2: titles
2: ucla
2: vpn
2: program
2: how
2: medical
2: issr
2: data
2: webpluck
1: to
1: friendly
1: sites
1: stephenson
30: [not listed: 30 search terms]

Operating System Report

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This report lists the operating systems used by visitors.



The wedges are plotted by the number of requests for pages.

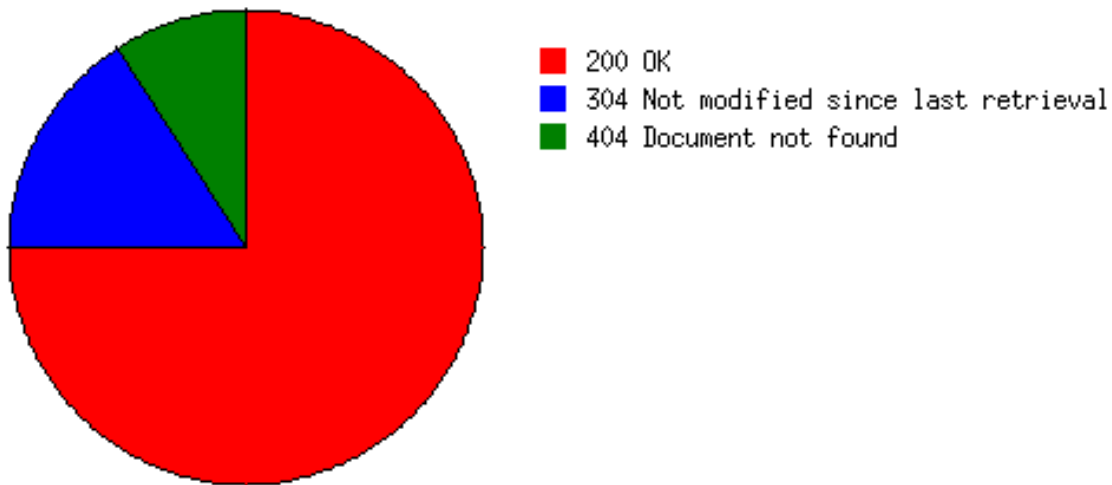
Listing operating systems, sorted by the number of requests for pages.

```
no.: reqs: pages: OS
---: ----: -----: --
 1: 5925: 2429: Windows
   : 1377: 885:  Unknown Windows
   : 1809: 697:  Windows XP
   : 1075: 437:  Windows 95
   : 994: 209:  Windows CE
   : 469: 153:  Windows 98
   : 193: 46:  Windows 2000
   : 6: 2:  Windows NT
   : 2: 0:  Windows ME
 2: 2253: 2062: OS unknown
 3: 839: 827: Known robots
 4: 42: 22: Macintosh
   : 42: 22:  Macintosh PowerPC
 5: 10: 1: Unix
   : 10: 1:  Linux
```

Status Code Report

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This report lists the HTTP status codes of all requests.



The wedges are plotted by the number of requests.

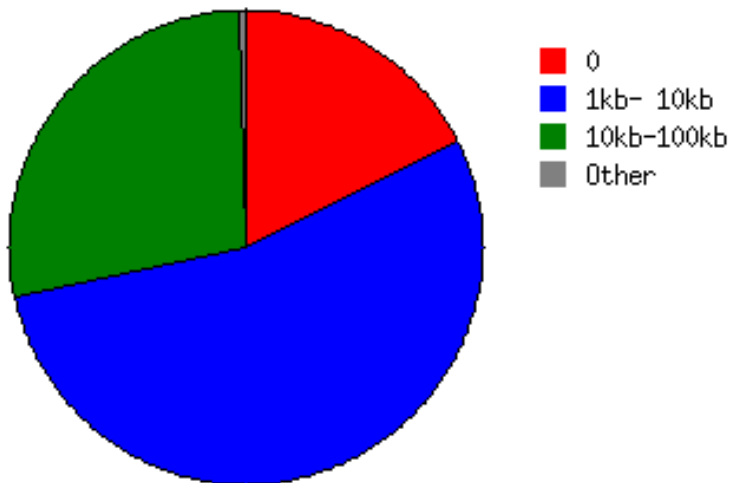
Listing status codes, sorted numerically.

```
reqs: status code
----: -
7483: 200 OK
1586: 304 Not modified since last retrieval
 910: 404 Document not found
```

File Size Report

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This report lists the sizes of files.



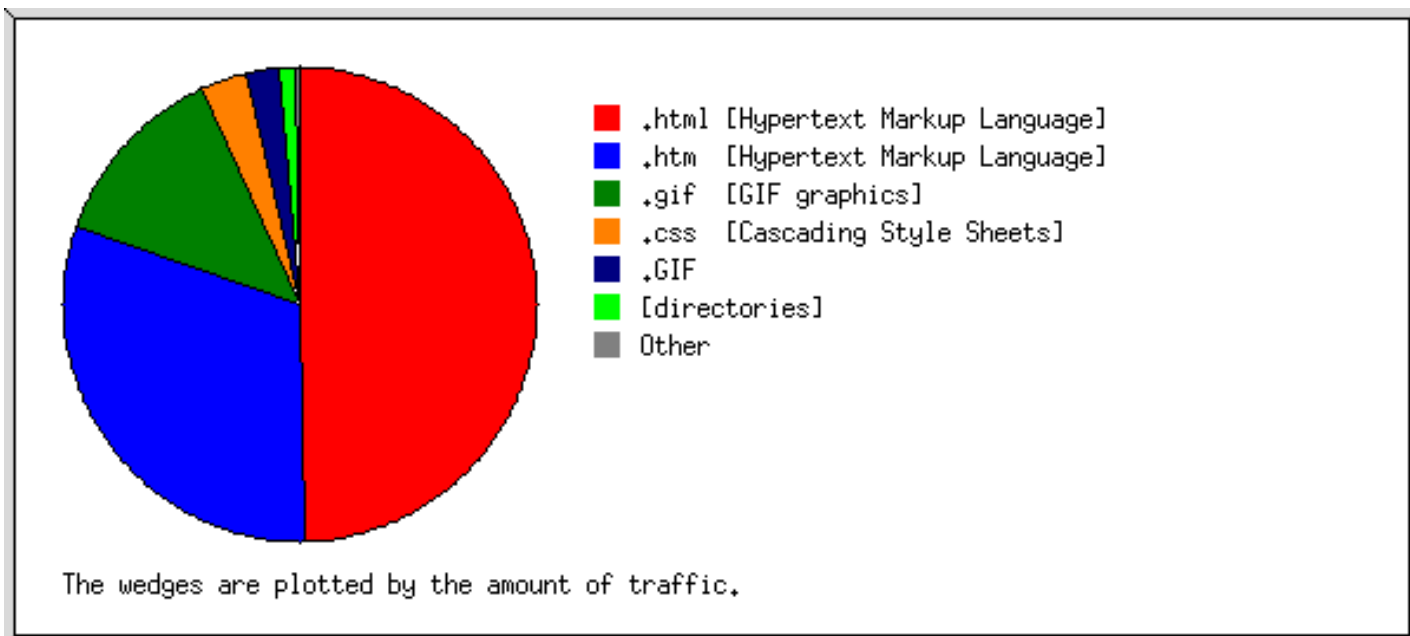
The wedges are plotted by the number of requests.

size:	reqs:	%bytes:
0:	1594:	:
1b- 10b:	0:	:
11b- 100b:	0:	:
101b- 1kb:	36:	0.02%:
1kb- 10kb:	4901:	21.98%:
10kb-100kb:	2538:	78.00%:

File Type Report

(Go To: [Top](#): [General Summary](#): [Monthly Report](#): [Daily Summary](#): [Hourly Summary](#): [Domain Report](#): [Organisation Report](#): [Search Word Report](#): [Operating System Report](#): [Status Code Report](#): [File Size Report](#): [File Type Report](#): [Directory Report](#): [Request Report](#))

This report lists the extensions of requested files.



Listing extensions with at least 0.1% of the traffic, sorted by the amount of traffic.

```

reqs: %bytes: extension
----: - - - - -: - - - - -
2213: 49.63%: .html [Hypertext Markup Language]
3027: 30.72%: .htm  [Hypertext Markup Language]
 781: 12.91%: .gif  [GIF graphics]
1381:  3.16%: .css  [Cascading Style Sheets]
1462:  2.21%: .GIF
 101:  1.05%: [directories]
  94:  0.23%: .jpg  [JPEG graphics]
  10:  0.08%: [not listed: 2 extensions]
    
```

Directory Report

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This report lists the directories from which files were requested. (The figures for each directory include all of its subdirectories.)

Listing directories with at least 0.01% of the traffic, sorted by the amount of traffic.

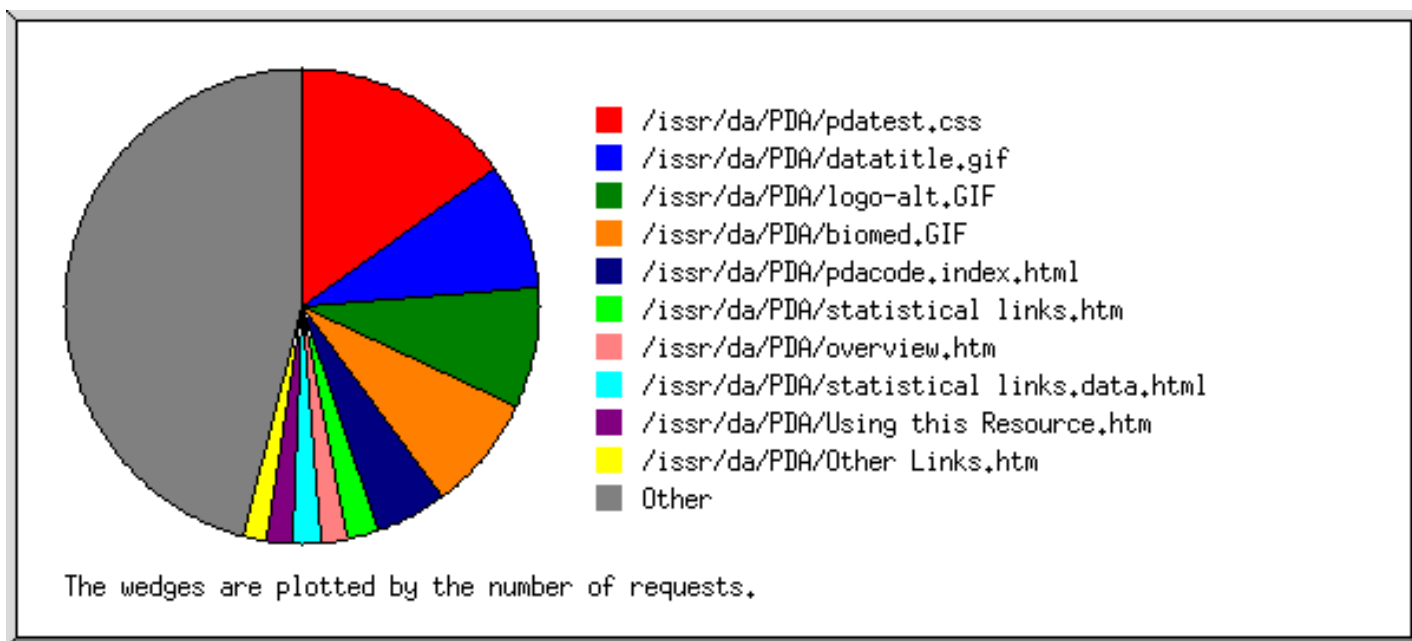
```

reqs: %bytes: directory
----: - - - - -: - - - - -
9069:  100%: /issr/
    
```

Request Report

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This report lists the files on the site.



Listing files, sorted by the number of requests.

reqs:	%bytes:	last time:	file
1381:	3.16%:	18/Sep/05 03:50:	/issr/da/PDA/pdatest.css
772:	12.88%:	18/Sep/05 03:50:	/issr/da/PDA/datatitle.gif
746:	1.28%:	18/Sep/05 03:50:	/issr/da/PDA/logo-alt.GIF
714:	0.93%:	18/Sep/05 03:50:	/issr/da/PDA/biomed.GIF
437:	4.53%:	17/Sep/05 21:04:	/issr/da/PDA/pdrcode.index.html
194:	1.21%:	31/Jul/05 15:03:	/issr/da/PDA/statistical links.htm
174:	0.97%:	13/Jun/05 14:31:	/issr/da/PDA/overview.htm
161:	2.32%:	16/Sep/05 18:16:	/issr/da/PDA/statistical links.data.html
160:	0.61%:	2/Aug/05 07:40:	/issr/da/PDA/Using this Resource.htm
148:	0.66%:	12/Jun/05 02:48:	/issr/da/PDA/Other Links.htm
147:	1.09%:	31/Jul/05 14:33:	/issr/da/PDA/table links.htm
141:	0.73%:	12/Jun/05 02:38:	/issr/da/PDA/glossary.htm
114:	1.70%:	16/Sep/05 11:46:	/issr/da/PDA/statistical links.data analysis.html
100:	0.54%:	14/Sep/05 18:18:	/issr/da/PDA/glossterms.htm
98:	1.03%:	14/Sep/05 08:47:	/issr/da/PDA/

98:	1.56%:	17/Sep/05	08:02:	/issr/da/PDA/statistical_links.help.html
91:	2.11%:	12/Sep/05	12:34:	/issr/da/PDA/databaseAgencies.htm
87:	1.37%:	17/Sep/05	20:17:	/issr/da/PDA/statistical_links.pdf.html
86:	1.32%:	18/Sep/05	03:50:	/issr/da/PDA/PDAGoogle.htm
82:	0.45%:	11/Sep/05	04:20:	/issr/da/PDA/glossc.htm
79:	0.41%:	15/Sep/05	00:36:	/issr/da/PDA/glossb.htm
75:	2.08%:	15/Sep/05	08:01:	/issr/da/PDA/UsingThisResource.html
74:	2.03%:	16/Sep/05	11:56:	/issr/da/PDA/StatisticalLinks.html
74:	1.39%:	12/Sep/05	07:57:	/issr/da/PDA/UCLASites.htm
74:	1.15%:	17/Sep/05	03:26:	/issr/da/PDA/PDADataSoft.htm
74:	2.39%:	14/Sep/05	10:26:	/issr/da/PDA/tableLinks.html
73:	0.39%:	13/Sep/05	14:52:	/issr/da/PDA/glossd.htm
73:	0.38%:	10/Sep/05	19:48:	/issr/da/PDA/glossm.htm
71:	1.65%:	12/Sep/05	13:03:	/issr/da/PDA/databaseStudiesSurveys.htm
71:	0.37%:	17/Sep/05	19:01:	/issr/da/PDA/glossn.htm
70:	0.37%:	10/Sep/05	06:34:	/issr/da/PDA/glossg.htm
69:	0.35%:	12/Sep/05	11:55:	/issr/da/PDA/glossr.htm
69:	0.37%:	13/Sep/05	23:17:	/issr/da/PDA/glossf.htm
67:	0.35%:	14/Sep/05	07:33:	/issr/da/PDA/glossl.htm
67:	0.35%:	10/Sep/05	06:35:	/issr/da/PDA/glossp.htm
66:	1.94%:	15/Sep/05	05:53:	/issr/da/PDA/glossary.html
63:	1.97%:	14/Sep/05	11:00:	/issr/da/PDA/OtherLinks.html
62:	1.01%:	17/Sep/05	11:31:	/issr/da/PDA/PDATerminology.htm
57:	0.99%:	14/Sep/05	19:31:	/issr/da/PDA/PDAMedicalLibrary.htm
56:	1.65%:	14/Sep/05	11:00:	/issr/da/PDA/overview.html
47:	0.11%:	11/Dec/04	10:15:	/issr/da/PDA/pda.index.htm
46:	0.85%:	15/Sep/05	01:48:	/issr/da/PDA/PDAjargon.html
43:	1.34%:	13/Sep/05	17:06:	/issr/da/PDA/glossterms.html
42:	1.13%:	9/Jun/05	14:39:	/issr/da/PDA/pdacode.indexPALM.html
37:	1.11%:	12/Sep/05	07:00:	/issr/da/PDA/glossb.html
34:	0.72%:	1/Sep/05	05:32:	/issr/da/PDA/databaseHealthySteps.htm
32:	0.95%:	12/Sep/05	08:05:	/issr/da/PDA/glossf.html
30:	0.15%:	15/Sep/05	17:37:	/issr/da/PDA/glossfertilityrate.htm
30:	0.69%:	12/Sep/05	15:59:	/issr/da/PDA/databaseImpact.htm
29:	0.15%:	14/Sep/05	16:23:	/issr/da/PDA/glosspopulationdensity.htm
29:	0.42%:	1/Sep/05	06:54:	/issr/da/PDA/databaseAmericanFactFinder.htm
29:	0.86%:	12/Sep/05	06:51:	/issr/da/PDA/glossc.html
28:	0.14%:	15/Sep/05	10:26:	/issr/da/PDA/glosscount.htm
28:	0.74%:	1/Sep/05	05:32:	/issr/da/PDA/databaseHealthInterview.htm
28:	0.83%:	12/Sep/05	07:06:	/issr/da/PDA/glossn.html
28:	0.14%:	15/Sep/05	13:43:	/issr/da/PDA/glossbirthrate.htm
27:	0.65%:	6/Sep/05	14:20:	/issr/da/PDA/databaseLongitudinal.htm
27:	0.69%:	8/Sep/05	09:33:	/issr/da/PDA/databaseSocialEnviron.htm
27:	0.80%:	12/Sep/05	13:23:	/issr/da/PDA/glossd.html

27:	0.82%:	12/Sep/05	08:06:	/issr/da/PDA/glossr.html
26:	0.14%:	17/Sep/05	11:46:	/issr/da/PDA/glossmedian.htm
26:	0.13%:	18/Sep/05	03:19:	/issr/da/PDA/glossmarriagerate.htm
25:	0.74%:	7/Sep/05	01:10:	/issr/da/PDA/glossm.html
25:	0.13%:	16/Sep/05	23:15:	/issr/da/PDA/glossratio.htm
25:	0.13%:	15/Sep/05	15:23:	/issr/da/PDA/glossrate.htm
24:	0.13%:	14/Sep/05	23:02:	/issr/da/PDA/glosslifetable.htm
23:	0.68%:	13/Sep/05	05:31:	/issr/da/PDA/glossg.html
23:	0.68%:	14/Sep/05	05:59:	/issr/da/PDA/glossl.html
23:	0.49%:	1/Sep/05	06:54:	/issr/da/PDA/databaseCenterForHealth.htm
23:	0.69%:	12/Sep/05	07:35:	/issr/da/PDA/glossp.html
22:	0.03%:	25/Aug/04	17:38:	/issr/da/PDA/pdalogo1.jpg
22:	0.65%:	12/Sep/05	11:30:	/issr/da/PDA/glossbirthrate.html
21:	0.10%:	14/Sep/05	06:54:	/issr/da/PDA/glossdeathrate.htm
21:	0.61%:	12/Sep/05	23:01:	/issr/da/PDA/glossfertilityrate.html
21:	0.62%:	15/Sep/05	09:12:	/issr/da/PDA/glosscount.html
21:	0.10%:	15/Sep/05	00:37:	/issr/da/PDA/glossdivorcerate.htm
20:	0.10%:	15/Sep/05	13:23:	/issr/da/PDA/glossnetmigration.htm
20:	0.04%:	28/Jun/05	17:13:	/issr/da/PDA/pdalogo.jpg
19:	0.56%:	12/Sep/05	12:36:	/issr/da/PDA/glossdeathrate.html
19:	0.10%:	15/Sep/05	00:35:	/issr/da/PDA/glossgrowthrate.htm
19:	0.56%:	15/Sep/05	09:21:	/issr/da/PDA/glosslifetable.html
19:	0.56%:	14/Sep/05	10:55:	/issr/da/PDA/PDAjargon.browselist.html
19:	0.56%:	12/Sep/05	13:09:	/issr/da/PDA/glossmarriagerate.html
18:	0.53%:	18/Sep/05	01:15:	/issr/da/PDA/glosspopulationdensity.html
18:	0.24%:	25/Apr/05	16:44:	/issr/da/PDA/database.htm
18:	2.41%:	13/Oct/04	13:56:	/issr/da/PDA/web materials.htm
17:	0.50%:	10/Sep/05	04:26:	/issr/da/PDA/glossnetmigration.html
16:	0.47%:	12/Sep/05	13:43:	/issr/da/PDA/glossgrowthrate.html
16:	0.27%:	1/Sep/05	06:54:	/issr/da/PDA/databaseQuickFacts.htm
16:	0.47%:	17/Sep/05	05:57:	/issr/da/PDA/glossmedian.html
15:	0.45%:	7/Jun/05	17:23:	/issr/da/PDA/overviewPALM.html
15:	0.05%:	19/Oct/04	16:13:	/issr/da/PDA/pdacode.html
14:	0.26%:	1/Sep/05	06:54:	/issr/da/PDA/databaseCountingCalifornia.htm
14:	0.41%:	2/Sep/05	09:58:	/issr/da/PDA/glossrate.html
13:	0.23%:	1/Sep/05	06:54:	/issr/da/PDA/databaseWHO.htm
13:	0.17%:	1/Aug/05	13:23:	/issr/da/PDA/Agencies.htm
13:	0.41%:	9/Jun/05	16:52:	/issr/da/PDA/OtherLinksPALM.html
13:	0.38%:	12/Sep/05	14:58:	/issr/da/PDA/glossdivorcerate.html
12:	0.34%:	10/Sep/05	04:22:	/issr/da/PDA/PDAjargon.A.html
12:	0.36%:	9/Jun/05	15:09:	/issr/da/PDA/glossaryPALM.html
12:	0.45%:	17/Sep/05	13:27:	/issr/da/PDA/PDAjargon.W.html
11:	0.25%:	1/Sep/05	06:56:	/issr/da/PDA/databaseFastStats.htm
11:	0.31%:	7/Jun/05	17:45:	/issr/da/PDA/StatisticalLinksPALM.html

11:	0.38%:	15/Sep/05	01:48:	/issr/da/PDA/PDAjargon.P.html
11:	0.30%:	7/Jun/05	17:57:	/issr/da/PDA/UsingThisResourcePALM.html
10:	0.34%:	12/Sep/05	12:59:	/issr/da/PDA/PDAjargon.B.html
10:	0.33%:	15/Sep/05	08:17:	/issr/da/PDA/PDAjargon.J.html
10:	0.29%:	9/Jun/05	14:36:	/issr/da/PDA/databaseLongitudinalPALM.htm
10:	0.29%:	7/Jun/05	17:28:	/issr/da/PDA/tableLinksPALM.html
10:	0.37%:	6/Jun/05	14:17:	/issr/da/PDA/databaseAgenciesPALM.htm
9:	0.30%:	12/Sep/05	12:41:	/issr/da/PDA/PDAjargon.H.html
9:	0.30%:	12/Sep/05	13:48:	/issr/da/PDA/PDAjargon.E.html
9:	0.20%:	1/Sep/05	06:54:	/issr/da/PDA/databaseUnicef.htm
9:	0.09%:	1/Aug/05	13:23:	/issr/da/PDA/welcometowireless.jpg
9:	0.30%:	14/Sep/05	10:16:	/issr/da/PDA/PDAjargon.G.html
8:		20/Jul/04	17:54:	/issr/da/PDA/blueball.gif
8:	0.26%:	15/Sep/05	10:54:	/issr/da/PDA/PDAjargon.M.html
8:	0.27%:	14/Sep/05	09:35:	/issr/da/PDA/PDAjargon.X.html
8:	0.26%:	12/Sep/05	13:42:	/issr/da/PDA/PDAjargon.D.html
8:	0.28%:	12/Sep/05	13:38:	/issr/da/PDA/PDAjargon.numbers.html
7:	0.24%:	16/Sep/05	17:20:	/issr/da/PDA/PDAjargon.V.html
7:	0.24%:	12/Sep/05	13:56:	/issr/da/PDA/PDAjargon.S.html
7:	0.07%:	20/Jul/04	17:55:	/issr/da/PDA/pdahome.pdaversion.index
7:	0.23%:	12/Sep/05	13:31:	/issr/da/PDA/PDAjargon.I.html
7:	0.24%:	14/Sep/05	10:08:	/issr/da/PDA/PDAjargon.T.html
7:	0.18%:	9/Jun/05	15:01:	/issr/da/PDA/databaseUnicefPALM.htm
6:	0.01%:	20/Jul/04	17:55:	/issr/da/PDA/biomedlib.jpg
6:	0.02%:	20/Jul/04	17:54:	/issr/da/PDA/ISSRDataArchive.jpg
6:		20/Jul/04	17:55:	/issr/da/PDA/glossarybutton.jpg
6:		20/Jul/04	17:55:	/issr/da/PDA/andthe.jpg
6:		20/Jul/04	17:55:	/issr/da/PDA/contactbutton.jpg
6:	0.01%:	20/Jul/04	17:55:	/issr/da/PDA/projstafbutton.jpg
6:	0.01%:	20/Jul/04	17:55:	/issr/da/PDA/overview2.jpg
5:	0.02%:	19/May/05	16:49:	/issr/da/PDA/pdacode.index1.html
5:	0.02%:	1/Oct/04	15:15:	/issr/da/PDA/pdacode.index[1].html
5:	0.15%:	9/Jun/05	15:23:	/issr/da/PDA/glossbirthratePALM.html
5:	0.16%:	3/Jun/05	15:51:	/issr/da/PDA/databaseQuickFactsPALM.htm
4:	0.12%:	9/Jun/05	14:48:	/issr/da/PDA/databaseStudiesSurveysPALM.htm
4:	0.02%:	27/May/05	10:04:	/issr/da/PDA/pdacode.index2.html
3:	0.09%:	9/Jun/05	15:31:	/issr/da/PDA/glossdeathratePALM.html
3:	0.09%:	9/Jun/05	15:19:	/issr/da/PDA/glossbPALM.html
3:	0.09%:	9/Jun/05	15:06:	/issr/da/PDA/databaseWHOPALM.htm
3:		18/Apr/05	15:20:	/issr/da/PDA/database.asp
2:		2/Aug/05	10:54:	/issr/da/PDA/PDA/pda.index.htm
2:	0.06%:	3/Jun/05	16:04:	/issr/da/PDA/databaseImpactPALM.htm
2:	0.06%:	13/Jun/05	14:40:	/issr/da/PDA/glossmedianPALM.html
2:	0.06%:	9/Jun/05	15:24:	/issr/da/PDA/glosscPALM.html
2:	0.01%:	20/Jul/04	17:08:	/issr/da/PDA/PDAhome.index.htm

2:	0.03%:	2/Aug/05	10:52:	/issr/da/PDA/PDA/
1:	0.03%:	9/Jun/05	15:52:	/issr/da/PDA/glossgPALM.html
1:	0.03%:	9/Jun/05	15:50:	/issr/da/PDA/glossfertilityratePALM.html
1:	0.03%:	9/Jun/05	15:27:	/issr/da/PDA/glossdPALM.html
1:	:	20/Aug/04	16:12:	/issr/da/PDA/old_stuff/
1:	0.04%:	13/Jun/05	16:15:	/issr/da/PDA/tableLinks.htm
1:	0.02%:	20/Jul/04	17:54:	/issr/da/PDA/biomed.jpg
1:	:	21/Mar/05	14:09:	/issr/da/PDA/PDA/biomed.GIF
1:	0.01%:	20/Jul/04	17:54:	/issr/da/PDA/testpage.htm
1:	0.03%:	13/Jun/05	16:07:	/issr/da/PDA/PDADataSoft.html
1:	0.03%:	9/Jun/05	15:32:	/issr/da/PDA/glossdivorceratePALM.html
1:	0.03%:	9/Jun/05	15:25:	/issr/da/PDA/glosscountPALM.html
1:	0.03%:	9/Jun/05	15:55:	/issr/da/PDA/glosslPALM.html
1:	:	19/May/05	16:50:	/issr/da/PDA/CherylBartelbio.htm
1:	0.03%:	21/Mar/05	14:09:	/issr/da/PDA/PDA/datatitle.gif
1:	0.03%:	9/Jun/05	15:41:	/issr/da/PDA/glossfpALM.html
1:	0.03%:	9/Jun/05	15:56:	/issr/da/PDA/glosslifetablePALM.html
1:	:	21/Mar/05	14:09:	/issr/da/PDA/PDA/logo-alt.GIF
1:	0.03%:	9/Jun/05	15:53:	/issr/da/PDA/glossgrowthratePALM.html
1:	:	21/Mar/05	14:09:	/issr/da/PDA/PDA/Other Links.htm
1:	0.03%:	9/Jun/05	16:23:	/issr/da/PDA/glossmPALM.html

This analysis was produced by [analog 5.23](#).

Running time: 67 minutes, 42 seconds.

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Appendix B

July 8, 2005

1) Topic: Owning and using PDA's

- Do you currently own/have a PDA or smart phone?
- Why did you choose the device you have?
- What are the current uses?
- If you do not have /use a PDA, why is that?

2) Topic: Finding data for research

- What resources do you use in research when gathering data or statistical information? (ex. Surveys from national agencies, on-line from agencies, health department records, , gather own data, etc.)
- How do you go about finding these materials? (ex. Library, the internet, google, etc use own PC, use databases etc..)

3) Topic: Using PDA's in research

- Have you ever considered or thought about using a PDA for library materials, such as MicroMedex or Pubmed?
- Would you use your PDA as an additional way to access or find information? Why or why not?

Robert Wood Johnson Focus Groups

August 4, 2005; 3:00 pm to 5:00 pm; Biomedical Library Wireless Classroom

Principal Investigators, Libbie Stephenson Libbie@ucla.edu, Data Archivist, ISSR, UCLA and Cheryl A. Bartel cbartel@library.ucla.edu, Librarian, UCLA Biomedical Library

Focus Group Moderator: Joan Kaplowitz, PhD., MLIS, Head, RICS (Research, Instruction and Collection Services) Division, UCLA Biomedical Library

Session Organization

Welcome and introductions

- Site Tour and Practicum (40 minutes)
- Exploration of Theme 3 (40 minutes)
 - Feedback on UPDATA site
- Demo (40 minutes)
 - MICROMEDEX
 - MDonTap
 - ePocrates
 - InfoRetriever

Open discussion

Robert Wood Johnson Focus Groups

Practicum

Find the definition of “Life Table”.

Which agencies might you look under to find US Census information?
Find the names of two agencies.

According to the National Center for Health Statistics, what is the most recent year available for the National Health Interview Survey?

Explore the on-line data analysis options. Using ICPSR, find a link to making tables from studies on substance abuse.

Find and list two sources of PDA support available from the UCLA medical school site.

Focus Group Notes

Focus Group One

Attended by members of the Robert Wood Johnson Fellows (about 20 possible participants who will be fellows for 2004-5) Total of 9 attended.

1) Topic: Owning and using PDA's

■ Do you currently own/have a PDA or smart phone?

Of the 9 participants, 2 did not have a PDA

■ Why did you choose the device you have?

There were a variety of elements leading to choice of device. Some bought the device recommended by the medical school they attended. Word-of-mouth was next in manner of choice and one person received a PDA as part of their residency.

When I was an intern I wanted ePocrates, got a Palm, now have a smartphone
Picked based on word of mouth, recommendations from friends and colleagues
4th year of medical school wanted for clinical applications
Also given during internship
Given Pocket PC by hospital

■ What are the current uses?

Use for

- MedMan
- Epocrates
- Calendar/contacts
- Clinical notes
- Griffith's 5 Minute Clinical Consult
- Textbooks

Most frequent use is for personal contact, time management, scheduling, note taking, diagnosis and prescription dosages.

Key point – participants are task oriented users; devices not used for browsing, exploring.

■ If you do not have /use a PDA, why is that?

Security issues, HIPPA regulations, privacy concerns of working in a wireless environment

Participants also said their work environments were well equipped with PC's and they used these when accessing the Internet

Participants had not thought about the research potential/applications they might have with a wireless hand held device

Not allowed at Mayo, didn't feel added anything

Had one in 4th year, broke and never replaced

** Our expectation was that all participants would have and heavily use devices for many purposes and that they would be well-engaged in evolving hand held technology. This was based on work with other RWJ cohorts.

2) Topic: Finding data for research

■ What resources do you use in research when gathering data or statistical information? (ex. Surveys from national agencies, on-line from agencies, health department records, , gather own data, etc.)

Databases, Pubmed and Medline, Google, HIV Insight, CDC, Institute for medicine, Department of Justice, data from faculty member or other collaborator, collect own data.

National databases

PubMed/Medline

Google

CDC

IOM

Department of Justice

State databases

Faculty members' data for secondary analysis

A couple collected their own

** Some of the resources mentioned would not lead to statistical files. There was not a differentiation between articles describing data or statistical file, and the actual data files themselves.

- How do you go about finding these materials? (ex. Library, the internet, google, etc use own PC, use databases etc..)

Google, generally surf the web, ask a colleague, read journal articles and review bibliographies, on-line literature searches, library web sites

Finding

Reference

Asking faculty members

Library as last resort

** From this particular group sense was that search strategy and information seeking skills are adequate for researching papers, but not for finding actual data files. Hard to draw any conclusions. Sense that more work up front to pre-select participants would have been advisable.

3) Topic: Using PDA's in research

- Have you ever considered or thought about using a PDA for library materials, such as MicroMedex or Pubmed?

Group had limited experience, and this was concentrated on resources that could be downloaded to a PDA through hot synching or RSS type activities. Discussion on accessing resources on the web with a PDA. Group was open to the idea but cautious.

- Would you use your PDA as an additional way to access or find information? Why or why not?

Noticed differences between male and female participants. This would need to be explored further but there do seem to be different styles in work habits; women tend to do more quick projects on the fly or to multi-task; men tend to be more focused on specific task or goal and have more defined lines between work and non-work parts of a day.

Some discussion of smart phone use – the current technology of smart phones makes them slower than PDAs.

Other comments:

Slowness of wireless

Small visual field

Only one application at a time

Good for out patient

Ease of accessing computer for inpatients

Downloading of vitals

Keeping patient notes

Infrared ports to download test results

Beaming to pharmacy

Text messaging

Pictures of rashes

Focus group 2 Notes

In focus group 2 we provided a short tour of the resource and then asked participants to use it to carry out some tasks designed to give us a sense of how it would be used; what was and was not clear and so forth.

Need to address issue of popup menus; depending on whether or not one is using a Palm or Pocket PC, pop-up work differently.

We should review the resource for any aspects that affect those with disabilities, handedness, or other challenges.

Need to evaluate some terminology; some terms or links were open to interpretation on the part of users.

Details on content and how to navigate sites we link to would be helpful. A short how to for a site, key areas to explore, etc. – should include this in the database abstracts as well.

Spend time in testing the downloading capabilities for documents – users need training and do not necessarily understand the technology even though they are familiar with downloading pdf documents to a PC. They were unaware that one could obtain Adobe Reader for a hand held device.

As part of the focus group participants also received training on the content and use of 4 databases specifically designed for use on hand holds. These were MICROMEDEX, MDonTap, ePocrates, and InfoRetriever. We expected that this training would be a kind of incentive; the training was favorably received.

Task 1 Find the definition of “Life Table”.

Started with table
Found glossary
Looked up “t” first
30 seconds

Task 2 Which agencies might you look under to find US Census information?
Find the names of two agencies.

Started with tables	Terms	American fact finder
Didn't find useful	Data	NCHS
Overview	Tried tapping on data	5 minutes
Trouble with this one	archive	
Tried how to's	Went past census bureau	

Task 3 According to the National Center for Health Statistics, what is the most recent year available for the National Health Interview Survey?

Found NCHS quickly
Went to data then overview
PDA-based medical library sites
Likes description of survey
Can see if you want to use before you are committed
10 minutes

Task 4 Explore the on-line data analysis options. Using ICPSR, find a link to making tables from studies on substance abuse.

Needed hint of “tables”
Accidentally slides off bar
Problems with ability to view
5 minutes

Task 5 Find and list two sources of PDA support available from the UCLA medical school site.

Tried other right off
3 minutes

Other comments from general discussion:
Would probably use regular computer
Might use for quick look-up
Problem with handedness
Thinks would get easier with practice
Had problems even when viewing the same page
Liked simplicity
Found it difficult as a first time user
Isn't used to looking for this sort of info
Uses for phone and epocrates
Doesn't find web browsing useful
Has computers everywhere
Cost is an issue

Appendix C

Using Personal Digital Assistant (PDA) Technology for Statistical Research in Health Sciences

Principal Investigators:

Elizabeth Stephenson (UCLA Institute for Social Science Research Data Archive) and
Cheryl Bartel (UCLA Biomedical Library)

Contact:

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Project Description:

This project explores the use of PDAs as tools for statistical health-related research by developing PDA-accessible statistical health research materials, and through conducting focus groups with interested medical and health researchers. The goal of this project is to better understand how to accommodate the information needs of health scholars, and to work with these scholars to develop useful statistical health research materials for use in a PDA environment.

Project Tasks:

I am a part of a team of librarians who are conducting research using PDA technology. The project involves the creation of prototype databases of materials used in medical and health research from a quantitative or statistical perspective. I also assist in the creation of the project Web site.

I am working under supervision of the principal investigators to define content for the prototype PDA resource, 1) a database of major sources for medical and health related statistics; 2) a glossary and guide to statistical tools for calculating counts, rates, ratios, proportions, constants, measures of cohort events, and measures of events through time; and, 3) a quick reference guide containing recent major demographic and epidemiologic statistics. Content of these databases are determined through an evaluation of resources available from the UCLA Biomedical Library and the ISSR Data Archive. I assist in the creation of html coded format of items in Access database, all of which will be made available through the project Web site.

Independent Study Work:

The prototype Web site that I am helping to create will be turned in as evidence of my work. I will also submit a short account of my specific tasks, as well as a description of issues and challenges of working on this project.

Final Report for IS 596:

My goal for the project this quarter was to build a Web site for the study, suitable for viewing on PDAs (<http://www.sscnet.ucla.edu/issr/da/PDA/pdacode.index.html>).

Another goal for the quarter was to build a database on Microsoft Access of useful and relevant health-related data providers, and provide access to the database via the Web site.

The database I created contains such information as: name of the data providing institution, abstract of the scope of the data, subject terms, Web address, and other useful contact information (Principal Investigator's name[s] when applicable). Libbie Stephenson, one of the PIs of this project provided me with a list of data providing institutions to add to the database. The database contains information of data providers, and each institution is classified into one of three groups: 1) Agencies that Distribute/Collect Data, 2) Printed Reports, and 3) Studies and Surveys. After creating the database, I attempted to provide access via the Web site that I was also largely in charge of constructing. I was essentially able to create access to the database through the Web site, but accessing and viewing the information from the database on a PDA presented a number of challenges. It was difficult to control the display information from Access, and although all the pertinent information was available through the site, viewing them on the PDA was difficult. Because I could not configure the tables that displayed the information from the database, it remained large and hard to view on the PDAs.

To view the large tables on the PDAs, users would have had to scroll left and right, as well as up and down, and the project team deemed that it was not the ideal way to display information. With our limited knowledge of Access and the programs used to create the Web site (Microsoft FrontPage and Dreamweaver), we decided that it

would be most valuable to create a PDA-friendly Web site, rather than to expend our efforts on creating access to the database, however uneasy the views on a PDA may be. We reverted to creating static pages to display the relevant information contained in the database that was created (<http://www.sscnet.ucla.edu/issr/da/PDA/statistical%20links.data.html> [click on [Agencies that Collect/Distribute Data](#) and [Studies and Surveys](#) for lists of institutions and details]).

Because we had to meet a deadline, we did not have enough time to effectively create an active Web site that synced to the database. However, we identified and resolved several challenges concerning the creation of a Web site for PDA use. Keeping in mind that PDA viewing limits the amount of information that can be presented on each page of a Web site, the project team aimed to present pertinent information in a concise manner. We understood that because the screen size of the average PDA is rather small, we needed to create multiple pages, rather than displaying a large number of information on one page. Throughout the process of producing the project Web site, we continued to test its viewing on a variety of PDAs. We found that the medical community are largely Palm-users. The Web site we initially created displayed nicely on Internet Explorer via Dell's Pocket PC. However, upon testing the views on Palm's Web Pro, we found that the viewing was drastically different from that of Internet Explorer's. With Web Pro, users needed to scroll both up and down, as well as left and right – similar to the situation the team encountered in displaying information from the database.

The team realized that the display was consistent in Internet Explorer on Dell's PocketPC due to the fact that both the program used to create the Web page and the one to display it were Microsoft products. Because we mainly relied on Microsoft

Word and Microsoft FrontPage to create the project Web site, it was compatible for viewing on Microsoft's Internet Explorer, rather than other browsers, such as Web Pro for Palm. Upon this discovery, we refocused our efforts on creating a Web page suitable for viewing on both IE and Web Pro.

One option that the project team came up with was to provide users with different views of the project Web site – one for IE users and one for Web Pro users. I then set out to create views for Web Pro, since the site was already compatible for IE viewing. I created several test pages for Web Pro viewing, and tested their displays on Palm's internet browser, Web Pro. I also tested out the viewing of the pages created for Web Pro on IE. I found that the page I created specifically for Web Pro viewing displayed just the same on Internet Explorer. It was then agreed upon by the project team that it was not necessary to create separate views for the two browsers – if a page displayed properly on Web Pro, then the view on IE would be fine as well.

During this process, we also discovered that it was much easier to scroll through the screen by moving the page up and down, rather than sideways. Keeping this in mind, I produced several displays of text to test viewing, and found that the menu bar originally (and normally, on Web sites not for PDA viewing) located on the side was not the ideal placement. I moved the menu bar to display on top of the page, rather than the left side, and upon testing by the project team, it was found that the top display was the ideal placement for PDA viewing. Displaying the menu on top of the page eliminated the need for users to scroll side to side on the screen, previously found to be a non-preferred way of viewing.

Although I was unable to create access to the database created via the Web site, I was able to meet the goal of creating a PDA-friendly Web site for the PDA project. The project team also made an important discovery that production of files on a company's product often requires users to use that company's products and its products only to open and view the files properly. Because this project's aim was to create a prototype Web site and test the use of PDAs for statistical research in health sciences, I feel that the project team was successful in identifying the various issues in providing statistical information on Personal Digital Assistants.

Linking references to major statistical resources

Agencies that Collect/Distribute Data

The Agencies listed in this section were selected based on several criteria: 1) geographical focus of data collected/distributed, 2) authority, and 3) the website's view on a PDA.

It was important to provide researchers with the option to view data with varied geographical focus. We identified four levels of geographical focus: international, national (U.S.), State, as well as County and City. Each level has approximately two agencies that offer appropriate geographical data.

In selecting agency websites, we also looked for authority and comprehensiveness. We examined various data providers, and chose agencies that are well-reputed as offering relevant and reliable statistical data to health professionals. The majority of agencies selected are government-affiliated institutions and large international organizations that are known to provide dependable data for studies on current and pertinent topics in health research.

Perhaps the most limiting criterion in the selection process was the agency website's compatibility with PDA viewing. The websites selected were not designed specifically for PDA viewing, but can be displayed on handheld devices. It was essential for us to choose authoritative sites (incompatible as they may be when viewed on a handheld), rather than PDA-friendly sites with questionable data.

For ideal PDA viewing purposes, we limited the number of agencies down to less than 10. The links provided are by no means all-inclusive or fixed. They were chosen as part of a trial analysis to determine relevance and usefulness to handheld users in the health research community.

Appendix D

Stephenson, Elizabeth
Bartel, Cheryl A.

USING PERSONAL DIGITAL ASSISTANT TECHNOLOGY

PERSONNEL	Salary	Fringe	TOTALS
Library Assistant IV 200 hrs @ \$20.00	4,000	50	4050
	<u>4000</u>	<u>50</u>	<u>4050</u>
 OTHER DIRECT COST			
2 Palm m505 @ \$500/ea			1000
2 PocketPC @ \$410/ea			820
Microsoft Office InfoPath 2003 @ \$225/ea.			225
Project Supplies @ \$200/yr			200
Telephone, fax, mail @ \$100/yr			100
			<u>2345</u>
	Total Direct Cost		\$6395