

INTERNET: A SIGNIFICANT RESEARCH
TOOL FOR PRIVATE ACADEMIA

By

SUSAN RATZLAFF BAKER

Bachelor of Science
Oklahoma State University
Stillwater, Oklahoma
1970

Bachelor of Science
University of Central Oklahoma
Edmond, Oklahoma
1984

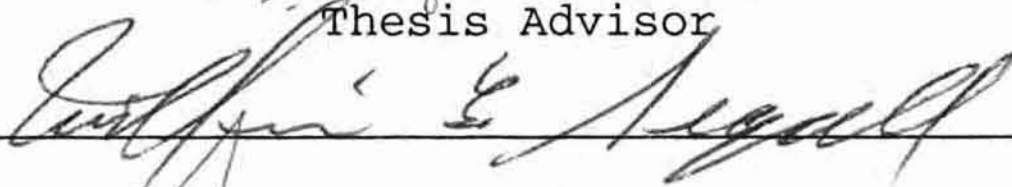
Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
May, 1994

INTERNET: A SIGNIFICANT RESEARCH
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Thesis Approved:



Thesis Advisor



Dean of the Graduate College

ACKNOWLEDGEMENTS

Special Appreciation:

I would like to express special appreciation to my committee members, Dr. Petty, Dr. Bass, and Dr. Segall. Without their sustenance in laying the groundwork for this endeavor, I could not have completed the project in a timely manner. Their support and encouragement made this job much easier.

Thanks:

A special thank you is in order to Dr. Petty for enduring the countless telephone calls and faxes. Your guidance and reassurance made all the difference. I appreciate your influence and dedication to the curriculum field.

Dedicated:

This work is dedicated to my husband, Bob and my children, Jeff and Wendy. Without their support and understanding, I would not have been able to complete this all-consuming task.

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CHAPTER I

INTRODUCTION

Computer technology has changed drastically in the last 20 years. Computer networks evolved as a byproduct of this technology explosion. Communication between machines suddenly became nearly as essential as voice communication. Internet became a reality to answer that need.

A computer network could be defined as a chain of transmitting entities. In the case of the Internet, that chain of transmitting entities is composed of the many backbones, regional, and data networks located in nearly every country of the world. "It has over 10,000,000 users through some 500,000 computers on 5,000 networks in thirty-three countries and an estimated growth rate of 20 percent a month" (Quint, 1992, 78).

Roberts (1992, 60) states that: "The Internet is basically a collection of dedicated point-to-point communication circuits on which there are packet switches and computers connected". The computers all share a common protocol called TCP/IP, or Transmission Control Protocol Internet Protocol, which allows them to communicate with one another.

With a world of information available, the biggest problem seems to stem from both identifying and ultimately gaining access to the information resources. Charles

McClure (1992) refers to this as "drinking from fire hoses". There literally is more information than can possibly be retrieved. Meanwhile, more information is added daily. The result is a never-ending supply of information resources that many people will never have the time or need to access.

Armed with typically limited knowledge, administrators must make policy decisions concerning the university's stance on providing Internet access to aid in research. Clearly, the problem then becomes to determine what, if any, of the resources available are necessary to further institutional research.

To complete this study, the first task was to examine the resources available through the Internet by direct connection. In addition, higher education institutions were surveyed to ascertain the level of connectivity provided, in order to provide a model for private universities for decision-making. It was the researcher's hypothesis that the majority of institutions in the targeted population did not offer full Internet access to their entire campus, faculty and students alike.

Significance of the Study

As researchers, librarians, and academicians are increasingly utilizing the Internet to expand available resources, universities without a connection must begin to weigh the benefits against the cost of initiating such service. Universities are often left to their own ingenuity to devise the best provision for their campus. Without appropriate computer expertise, this is often difficult, at best. Numerous books and articles are currently available for review, but time often necessitates movement in other directions. This study attempted to assimilate available information and combine it with the present trends of Christian four year institutions to provide a plan for like-kind universities to follow.

Purpose of the Study

This descriptive research was an attempt to assimilate the latest Internet information and combine it with the results of data collected from the targeted sample. Inferences about the population were drawn from the sample statistics. Specific suggestions were made to assist universities in similar situations.

Limitations of the Study

The focus of this study was directed toward a somewhat limited college and university population. Similar rationale, however, could be equally applied to larger private universities as well. Present connectivity trends of larger private universities were not surveyed. Similar results might also be obtained by examining trends of larger public universities. The intent of this study was to target private universities of similar stature to Southern Nazarene University.

Definition of Terms

- Anonymous FTP**--A method of transferring to a remote location to download a file, without actually having an account on the remote computer.
- Archie**--A search tool designed to aid in finding specific files that are available by anonymous FTP.
- ARPAnet**--Forerunner network to the Internet, established in the 1970's, but no longer in existence.
- Asynchronous**--Transmission by individual bytes.
- Backbone**--A high speed connection, typically fiber optic, which connects other computers, using cabling that is usually slower.
- Baud**--The transmittal rate that data is sent over a telephone line.
- BITNET**--A computer network similar to Internet that provides E-mail and file transfer, but not remote login (Telnet). (Because It's There Network)
- Bits per second (bps)**--The speed that bits of information are transmitted.
- Bridge**--A device that functions to connect similar local area networks.
- Broadband**--Particular transmission equipment that is capable of supporting a wide range of frequencies and can carry multiple signals.
- Client**--The user of a network service.

Coax--A form of network cabling, that consists of a central wire, surrounded by an insulator, housed in a protective covering.

COM--One of the top-level domains that stands for a commercial enterprise.

DECnet--A specific network for Digital Equipment Computers.

Dedicated Line--A telephone line dedicated to a specific purpose, such as providing Internet access.

Dial-up--A means of connecting to another computer via modem, by dialing another computer and emulating that computer.

Domain Name System (DNS)--A database system for changing Internet addresses into numeric addresses and vice versa.

EDU--A top-level domain that stands for an educational institution.

Ethernet--A type of wiring utilized in local area networks, commonly used with TCP/IP.

Flame--A strong, often offensive response to the author of a USENET message.

Freenet--An organization that typically provides free Internet access to certain people, such as libraries, etc.

File Transfer Protocol (FTP)--A particular method used to transfer files from one computer to another.

Gateway--A computer connection between two networks or

providers of the Internet, which provides data transfer between typically incompatible applications or networks.

Gopher--A menu-driven computer designed to aid in locating specific Internet resources.

GOV--A top-level domain that stands for a governmental organization.

Internet--A world-wide computer network connected using Internet protocol, providing electronic mail, file transfer, remote login, and newsgroups.

IP--Internet Protocol, or the method of communication utilized on the Internet.

Knowbot--An information-retrieval tool.

LAN--A local area network consisting of computers at one site.

Leased Line--A dedicated telephone line used to connect a location to an Internet service provider.

Listserv--A program that links interested parties to form discussion groups in a variety of topics.

MIL--A top-level domain that stands for military organizations.

Modem--A piece of equipment necessary for a computer to communicate with another computer--may be external or internal.

Mosaic--A search tool designed to aid in gaining access to documents, graphics, photographs, animation, and

video.

NET--A top-level domain that stands for centers that are involved in network management.

Network--A group of computers connected together in some type of configuration, to enable communication, such as local, remote and wide area networks.

NREN--The National Research and Education Network established to combine networks operated by various federal agencies.

NSFNET--The National Science Foundation Network, which is one of the networks incorporated in Internet.

Protocol--The means designated for computers to talk to one another.

Repeater--A hardware device that connects two like networks.

Router--A physical piece of equipment that transfers data between two different networks.

RS-232, RS-449--Cable and connectors used for a network.

Server--A computer typically dedicated to providing software and communication between nodes on a network.

Service Provider--An organization that provides Internet access.

Synchronous--Data communications sent at a fixed rate.

T1--Telephone line capable of sending transmissions at 1.544 megabits per second.

T3--Telephone line capable of sending transmissions at 44.736 megabits per second.

TAC (Terminal Access Controller)--A piece of hardware and program that connects terminals to the Internet using dialup modem connections.

TCP/IP--Transmission Control Protocol/Internet Protocol, which is one of the protocols Internet is based upon.

Telnet--A method of logging in to remote computers.

Twisted Pair--Computer cable made of a pair of insulated copper wires wrapped around each other to cancel the effects of electrical noise.

UNIX--A computer operating system that is prevalent in the Internet world.

USENET--An informal method of exchanging news, similar to a computer bulletin board.

WAIS--Wide-area information servers, useful in searching indexed databases.

White Pages--List of users that can be accessed through the Internet.

Wide Area Network (WAN)--Computer network that connects computers that are separated by a longer distance than local area networks.

WorldWide Web--A search tool that uses "hypertext" links to switch between related documents stored on different computers.

CHAPTER II

REVIEW OF RELATED MATERIAL

"A recent national survey of Directors of Admissions Counselors revealed that until 1991, parents' most asked question during campus visits focused on the library--accessibility, resources, relationships with neighboring libraries, etc. After 1991, the question most on the minds of parents concerned student accessibility to computers, computer labs, and ties to electronic resources like the Internet" (Bush & Neese, 1993, p. 20). As pressure mounts on administrators to provide such access, it is imperative to scrutinize the possibilities provided by Internet access. Decisions must be based on needs and available resources. As the government funding scenario changes, so changes the financial involvement of colleges and universities. This necessitates solicitous administrative plans. In order to make intelligent decisions, administrators must become fully educated in Internet capabilities. With that in mind, this paper attempted to trace the history and outline the components of this international computer network known as Internet.

Internet is loosely a collection of networks and gateways, which include the Advanced Research Projects Agency Network (ARPANET), the National Science Foundation Network (NSFnet), and other networks, which communicate

with one another using the Transmission Control Protocol/Internet Protocol suite, functioning as a seemingly single, virtual network. It owes its early existence to the ARPANET. According to Dern (1993), this highly experimental network, developed in the late 60's, was designed to aid in military research. Specifically, the network was designed to ascertain the methodology of building a computer network that could withstand potential power outages created by such things as bomb attacks.

The network was set up to utilize a system called Internet Protocol to send messages between often unlike computers. Messages could be sent using specific addresses. This network linked government installations with university, industrial, and research organizations. Later, the Department of Defense shifted its military operations to MILNET, designating it specifically as a military network. ARPANET was converted to a research only network.

In the 1980's the National Science Foundation, a United States governmental agency, set up the National Science Foundation Network (NSFNET). Five supercomputer centers were established and placed under the administrative jurisdiction of Merit, a consortium of Michigan universities, IBM, and MCI. By 1990, the ARPANET was dissolved, and the network load picked up by the National Science Foundation Network.

The NSFNET was based on the same Internet protocol technology as the ARPANET. Due to the expense of the line installation, a decision was made to create regional networks to provide Internet access to universities and other research institutions. The National Science Foundation funded connections, as long as access was made widely available. The NSFNET administrator, Merit, eventually formed a not-for-profit corporation called Advanced Network and Services (ANS) that presently oversees all functions of NSFNET, which has expanded to 19 major nodes running on high speed T3 network lines.

Although Merit serves as the technological backbone of Internet, there is no chief operating officer or ultimate authority figure for the network as a whole. There are, however, various boards that direct the general direction of the network, such as the Internet Society, the Internet Architecture Board, which sets up hardware standards, and the Internet Engineering Task Force, which addresses technical problems of the Internet. Even with the supervision of various boards, the information resources available is mind boggling. Charles McClure (1992) refers to this as "drinking from fire hoses". There literally is more information than we can possibly retrieve. Meanwhile, more information is added daily. The result is a never-ending supply of information resources that many people will never have the time or knowledge to access. "The

Internet may be used by millions of people, but it's not a mass medium. It's a formless, mostly unregulated system for linking computers" (Mossbert, 1993, p.1) Unlike commercial systems, such as America OnLine or CompuServe, complete directories of databases of subscribers is not available. Just the sheer volume of information precludes a master directory or information source for the Internet as a whole.

Originally, Internet access was offered to the United States' allies and overseas military bases. As world relations have improved, access has become more widely available. (Refer to Table I, for a partial listing of foreign domains.)

The Internet is typically broken down into specific services offered. Those services include electronic mail, Telnet, and File Transfer Protocol. Probably the most widely used component is electronic mail. In addition to the Internet itself, subsidiary networks also provide electronic Internet mail connections, such as America OnLine and CompuServe. For a monthly fee, subscribers may communicate with other Internet users.

One of the predecessors to electronic mail, is a network called BITNET, which stands for "Because It's Time or Because It's There Network". BITNET originated with the connection of Yale University and the City University of New York in 1981 (Nickerson, 1992, p. 33). Once a

formidable force in electronic mail communications, BITNET is now losing out, due to its restriction to electronic mail only. Although, BITNET does not play a key role in electronic mail communications in the U.S., it plays a more prominent role in overseas institutions, where much of the electronic mail traffic flows over BITNET (Wilson, 1993, p. A23). Some business consultants (e.g. Whitmyer, 1993), report that more than 40% of the Internet electronic mail traffic reaches outside the United States in 137 different countries.

In order for computers and users to communicate with other computer users, each entity, whether an institution or individual, must have an Internet address. This unique 32-bit address is represented by a combination of letters. It also has a numeric equivalent which is equally as effective in sending communication packets to other computers. The address is broken down into respective components, which have specific meaning (Refer to Figure 1: Internet Address Breakdown). From each address, it is possible to ascertain not only the user identification, but also the location of the computer, the specific computer network, and the type of domain (Refer to Table II, Typical Internet Domains).

Probably the most frequently used component of Internet is Electronic Mail or *E-Mail*, as it is frequently called. Messages may be sent to another Internet

subscriber, by addressing them to a specific individual's Internet address. Specific commands are dependent upon the provider's E-mail software. Once a person becomes accustomed to sending and receiving E-mail messages, they seem to be hooked. Cooke and Lehrer, 1993, refer to this phenomenon by saying, "Nobody has ever dropped off the network. Once they get on they get hooked. It's like selling drugs."

E-mail seems to be a strange and sometimes dangerous medium. Unlike face-to-face discussions or telephone conversations, the tendency is to write, with often little reflection on the content. Without a personal touch or the benefit of seeing one's reaction to a statement, intent can be misconstrued. "According to Geoff Huston, newly elected secretary of the Internet Society and technical manager of the Australian Academic and Research Network, the advent of E-mail as a form of communication is a case where technology is ahead of social behavior patterns. It has taken us 40 years to learn what you can and cannot do on the telephone, to behave appropriately. We are only just beginning to understand what is acceptable and unacceptable using the computer to communicate" (Maslen, 1993, p. A53).

As universities begin to offer classes in Internet functionality, more campuses will begin communications between faculty and students alike. Foreign students, in particular, look to this feature as the salvation for

communications to their home countries. Students often come expecting such conveniences. E-Mail can serve as a recruiting tool for faculty as well as students.

In addition to communicating with others through E-mail messages, it is possible to subscribe to electronic journals and participate in online discussion groups. Electronic publishing is in a relatively infant stage. Currently there are not only electronic journals, but also newsletters and digests available online. "Electronic networking has essentially demolished geographical barriers, redefined our concepts of time and distance, and, in library terms, begun the gradual shift in emphasis from local holdings to remote access" (Jul, 1992, p. 20). Myers, Wilson, and Lienhard, 1993, project that soon many of the mechanical engineering journals will exist only in that form.

As convenient and desirable as total electronic publishing might be, problems are inherent. Although gaining in popularity, electronic journals are not as widely accepted for professional or scholarly communication as traditionally circulated journals. Authors are, at times, hesitant to submit articles, because of the lack of audience, reward, and permanence. On the other hand, they feel a certain appeal, due to the speed that information can be distributed and the savings in printing charges. Universities that place great emphasis upon being

published, however, may not recognize electronic publishing. Because of the magnitude of information, directories are often lacking. Libraries also are not sure as of yet how to integrate electronic journal cataloging with present indexing methods. Once again, a decision is in order to determine if cost-cutting measures will result from electronic journals being made available to the campus community. Although interesting, this particular aspect of Internet access should not weigh heavily on the decision-making process.

In addition to E-mail messaging and electronic journals, E-mail also provides a means to subscribe to various discussion groups called *LISTSERV* groups or *newsgroups*. Listserv groups are also frequently referred to as distribution lists or mailing lists. Newsgroups are sometimes called computer conferences or electronic bulletin boards. A *LISTSERV* is actually a computer program that is resident on a computer directly connected to the Internet that organizes lists of people with similar interests. One particularly appealing aspect of participating in a *LISTSERV* list is the fact that the lists are available free upon request. Once a user has subscribed to a *LISTSERV* group, they will continue to receive copies of all messages addressed to the group. At times the sheer volume of messages can be overwhelming to the point that a person may choose to unsubscribe to the

LISTSERV. It is also possible to create newsgroups within a particular site to facilitate communication between colleagues.

One intriguing aspect of the prospect of providing Internet access to further communication with LISERV groups is the diversity in subject matter. Wright (1993), reports that there are between 2,500 and 6,000 newsgroups worldwide. As each name implies, the special interest groups can range from topics as sordid as alt.sex.fetish.feet, alt.conspiracy.jfk, alt.skinheads, and alt.fan.rush-limbaugh to fully legitimate groups (Wright, 1993, p. 24).

Internet mailing lists consist of three basic types of lists: unmoderated lists, where the subscribers participate in free-form discussions, moderated discussions, where one user is screening each message, and digested mailings, where messages sent to the list are gathered and sent out in batches. Typically moderated lists contain more relevant information and less "noise" than unmoderated lists. While LISERVS provide an interesting diversion and possibly a means for discussion with other professionals in a chosen field, it alone should hardly be the deciding factor on whether to offer Internet access.

Another particularly useful component of Internet is telnet or the ability to login to remote computers. By

typing telnet and an Internet address, it is possible to connect to computers around the world. Many remote locations offer easy to use menu-driven access. In addition, it is often possible to access a remote location and branch out far beyond the first connection by simply selecting another site from the menu. Library card catalogs are typically available for inspection by telnetting to that remote site. Most major universities and public government databases offer free availability through the telnet function. Not only are academic libraries accessible via Internet, but also the Library of Congress Information System, referred to as LOCIS, is available for users to examine nearly all of the files that a patron would be provided access to.

One particular network that is now accessible via Internet is the OCLC Online Computer Library Center. In the past, OCLC has required a dedicated line to access more than 26 million records about books, periodicals, audio recordings, and computer files. Libraries typically utilize this connection to locate a holding and duplicate it for their location, which means a time and money savings for the library. This particular aspect of Internet access should be weighed heavily in deciding between providing limited E-mail access and full access, including telnet. Libraries, in particular, stand to save money with Internet connections, due to paying less for telecommunications fees

and for commercial online services, not to mention the time savings.

One exceptional resource available on the Internet is file transfer protocol or FTP as it is commonly referred. File archives are available for exploration and retrieval throughout the system. These file archives include ASCII (standard format) text, graphics, and computer software (Harris, 1992, p. 50). Unfortunately, again there is no complete directory of the holdings available on the system as a whole.

Retrieving files is normally not a complicated process. From the Unix prompt, the command FTP and a domain address will access the remote computer for the purpose of downloading files. Once connected to the remote computer, access is made by logging in as *anonymous* and by giving the personal e-mail address as the password. Most public file archive sites contain one subdirectory called *pub*, *public*, *public_access*, or something similar. Once a file of interest is located, the command to retrieve that file to the host computer is *get* and the filename. The file will then be downloaded to the host computer. In order to download it to a personal computer, the file transfer process must be started on both the host computer and the personal computer to complete the process. Normally once the files are downloaded on a personal system, it will be necessary to *uncompress*, *unshar*, or

unzip them to make them useable (Fiedler, 1991, p. 286). FTP is a particularly interesting component of full Internet access--noteworthy in the decision as to whether to provide full access or e-mail only.

Because of the volume of files available via FTP, it would be mind-boggling to locate the desired location, much less a specific file. Tools have been developed, such as *Archie*, *Gopher*, *WAIS*, *WorldWide Web*, *Veronica* and *Jughead* to aid in such searches. The first tool developed to assist in file location was *Archie*, developed at McGill University by graduate students (Wilson, 1993, p. A18). A computer program was developed that contacts every anonymous FTP server on the Internet and updates a master list of available files. When a user identifies a specific key word in a file list, *Archie* supplies the address from which the file can be retrieved. As of the fall of 1991, it was estimated that there were 1 million files at 900 sites, amounting to over 70 gigabytes of information available for access, with five to 10 new sites added each week (Dern, 1992, p. 113).

Gophers provide a series of menus that ultimately lead users to a specific document of interest. By telnetting to a specific site and logging on as gopher, it is possible to take advantage of the menuing capabilities offered by this system. *Veronica*, on the other hand, is an indexer that queries every Gopher attached to the Internet. *Veronica*,

a tool that is used with Gopher, stands for "Very Easy Rodent-Oriented Netwide Index to Computerized Archives" (Wilson, p. A19). It was developed at the University of Nevada at Reno as an Archie to search Gopherspace. *Jughead* is similar to Veronica, but is designed to search files at one Gopher site. WAIS or Wide Area Information Servers can not only locate files, but also retrieve the files as well. Amazingly, WAIS allows nearly simultaneous searching across several different sites in an interdisciplinary approach. One special type of WAIS, a *KnowBot*, aids in locating specific Internet addresses. *WorldWide Web* is a network tool that allows users to link from one document to another, using hypertext.

At the present time, most files located by these search tools are text files. To offer location and retrieval of documents containing graphics, images, and sound, experimentation is underway to develop *Multipurpose Internet Mail Extensions (MIME)*. As more businesses and universities move toward multimedia presentations, files of this type will be in high demand. Another tool designed to function similar to WorldWide Web, but that allows for access of graphics, photographs, animation, and video is *Mosaic*, developed at the National Center for Supercomputing Applications on the University of Illinois campus.

With all of the capabilities of Internet, colleges and universities are not the only learning institutions

interested in gaining access to this mammoth information source. Public schools are also looking to the higher educational community for connections. Teachers at this level are interested in not only an exchange of lesson plans, but also an opportunity to exchange cultures with other countries, via the Internet. Polly, 1992 describes this as "having multiple foreign exchange students in the classroom all the time". These connections encourage an active, participatory learning method. As public schools continue to push for connections, more students will come to college expecting a continuation of their electronic horizons. Colleges and universities have a responsibility to plan carefully for this information influx.

Armed with a plethora of knowledge concerning Internet capabilities, universities are set to begin evaluating Internet access options. Internet connectivity can be broken down into four levels, based upon the degree of access. Lane, 1992, describes these levels as:

Phase Zero Connectivity: No access

Phase One Connectivity: Gateway access to the Internet (Have accounts, but are not directly connected, such as CompuServe)

Phase Two Connectivity: Remote access to the Internet. (Connects to a larger host system)

Phase Three Connectivity: Direct TCP/IP access to Internet. The most common type of connectivity

is Phase Two.

In the early history of Internet, most direct hookups were held by federal agencies, major universities, and some corporations involved in highly technical research. As the National Science Foundation continues to encourage connections by providing grants, more universities are able to provide their own direct hookups through either phase two or three connectivity. Another particularly helpful entity in aiding in direct hookup is the regional network responsible for furthering Internet connections. In the case of Oklahoma, that regional network is *OneNet*. Although in its formative stages, technical support is available.

Phase two connections involve contracting for a line to be put in place between the regional network provider and the campus. Once the line is in place, a router with the appropriate interface, two CSU/DSU units, and a computer system is necessary at the university. Charges, in addition to the physical equipment, include telephone line charges, as well as an annual fee to *OneNet*, based on a somewhat complicated formula.

If funds are not available for phase two connectivity, the next possibility is to provide phase three connectivity with access through dial-up providers. Providers typically price their services in three basic ways. "Base-level" pricing involves charging a set monthly rate for a certain

number of on-line hours. If the user exceeds the allotted number of hours, a charge is incurred for each additional hour. "Connect-hour" pricing involves a monthly fee, which is normally less than base-level pricing, plus an hourly charge for each hour spent on-line. This particular connection is normally the most expensive means of connection. The third type of pricing scheme is called "flat-rate" pricing. A set monthly charge is incurred for unlimited hourly usage. If available, this connection would be the safest and assuredly the least expensive per hour of the three types of services. Within a university community, it would be much simpler to administer flat-rate pricing than the other two possibilities.

Other possible charges that might be incurred by utilizing a dial-up arrangement are also a consideration. If the dial-up provider is not a local provider or one that supplies a toll-free number, long distance charges would be an additional expense. This would not be the optimum situation, as cost control would become extremely difficult to regulate. Other possible add-on charges might include start-up fees, functionality pricing, based on the level of services provided, and storage charges for the amount of disk space utilized by the account holders. Additional charges for storage space would be a cost control nightmare. The equipment outlay required for dial-up access would involve one or more computers equipped with

modems and communication software. Costs would vary depending on the speed of the equipment. In general, dial-up access is desirable only if funds are not available for providing remote access through a regional network, such as OneNet.

Once a decision has been made on the level of connectivity, there awaits a myriad of other considerations to be made by administration. Once electronic networks are introduced to the campus, issues such as password security, virus prevention, free speech and privacy must be addressed. Security measures have to be dealt with when campus-wide networks become vulnerable to outside examination. "Brute-force password decryption once took a week on a VAX; today's optimized cracking programs might take an afternoon" (Stoll, 1993, p. 274). Newly insecure campus networks have to become a bulwark against outside forces, including possible invasion by viruses.

Computer hackers become a force to be reckoned with. Anyone armed with a modem is capable of invading campus network systems and wreak havoc on precious files. Not only should a university be wary of intruders to their system, but also for intruders from their system that violate the security of other systems. Wilson, 1993, reports that some institutions, such as the University of New Mexico, turn over hackers to the local police to not only protect their systems, but also to protect themselves

from lawsuits from other connections that may have been affected by a hacker's use of a university computer system.

Computer security is aided by the Computer Emergency Response Team (*CERT*), headquartered at Carnegie Mellon University. This group tracks problems with computer security and works directly with computer hardware manufacturers and software publishers to prevent intrusions. In October, users of Sun Microsystems work stations with built-in microphones were warned by CERT that someone could electronically eavesdrop on conversations taking place near their computers (Markoff, 1993, p. 7). Even the Secret Service and the Federal Bureau of Investigation are actively pursuing computer criminals.

Once electronic mail becomes available on the campus, policies must be established concerning free speech and privacy. Will system administrators have the power to read messages, possibly to monitor for offensive messages or simply to control the volume and sheer size of files? At least one lawsuit has been filed concerning possible violation of First Amendment rights against the University of Texas at Dallas by a former Soviet Union graduate student. He charged that the university acted as a censor to prevent political dissidence (Wilson, 1993, A16).

In addition to setting up policies and safeguards for the new technology, it is of absolute necessity to provide training for Internet users. Whether the training is

provided by library staff or computer information system staff is inconsequential. Some type of organized training is vital to the success of the connection. It's true that people can rarely learn to navigate the Internet by sitting through lectures and discussions about capabilities. Once information is disseminated about possible uses, it is essential for users to have hands-on training as well. If it's not possible to conduct training sessions in labs with direct on-line connection, small group sessions can be held with demonstrations of specific connection protocol. Without a concerted effort to provide the necessary training, end-users will remain frustrated with the seemingly limitless capabilities.

As a part of the training provided, literature should be given outlining not only the history and specifics of Internet, but also definite addresses to use for trial sessions. A university guide is essential to the success of the venture. Bibliographies of books and related articles are also beneficial for user support (See Table III, Related Internet Books).

Providing access without instruction and encouragement rarely is successful. As McClure, 1992, explains, users do not want someone explaining to them how it works or why it works. All they want is for it to work. The formulation of training guides and sessions will necessarily remain in a state of constant revision. Feedback from participants

will be invaluable toward improving the training process.

Current governmental trends indicate a move toward less government subsidy to electronic networks and more direct user support. As this becomes more of a reality, universities must carefully weigh the costs against the potential benefits. In the White House press release on April 20, 1993, it was reported that "access to the Internet and developing NREN will be expanded to connect university campuses, community colleges, and K-12 schools to a high-speed communications network providing a broad range of information resources. Support will be provided for equipment allowing local networks in these learning institutions access to the network along with support for development of high-performance software capable of taking advantage of the emerging hardware capabilities." Specific new programs include the following:

1. Implementation of the High-performance Computing and Communications Program, established by the High-Performance Computing Act of 1991, introduced by Vice President Gore.
2. Create a Task Force on Information Infrastructure.
3. Create an Information Infrastructure Technology Program to assist industry in the development of the hardware and software needed to fully apply advanced computing and networking

technology in manufacturing, in health care, in life-long learning, and in libraries.

4. Provide funding for networking pilot projects through the National Telecommunications and Information Administration (NTIA) of the Department of Commerce. NTIA will provide matching grants to states, school districts, libraries, and other non-profit entities so that they can purchase the computers and networking connections needed for distance learning and for hooking into computer networks like the Internet.
5. Promote dissemination of Federal information.
6. Reform telecommunications policies. The administration is committed to accelerating the development of the National Information Infrastructure (NII) that the United States needs for the 21st century.

All of this will not come without a price. A portion of that price will be borne by colleges and universities, as well as regional providers. Once the government stops federal subsidy of the networks, the money to continue maintenance and improvement of the network will have to come from other sources. The phase out of government support is projected to be completed in the next four years (DeLoughry, 1993, p. A16). Because of this, eight of the regional networks announced the formation of a for-profit

company that has reached a five-year agreement with MCI Communications Corporation for a private backbone network to link the regionals. The plan is to insure that the network touches all parts of the country. The eight networks that are shareholders in the Corporation for Regional and Enterprise Networking (COREN) are:

(DeLoughry, 1993, p. A16)

BARRnet: San Francisco

CICnet: Midwest

MIDnet: Plains States

NEARnet: New England

NorthWestNet: Northwest

NYSERNet: New York

SURAnet: Southeast

Westnet: West

It will be essential for college and university administrators to take an active role in lobbying for continued network provisions. Economically, it could be devastating to have the cost of the network dumped in users' laps. One such group instrumental in overseeing the future of Internet as it relates to education is *EDUCOM*, a consortium of 600 colleges and universities involved in using technology.

In addition to following the progress of federal funding regression is the challenge to ensure that commercial advertisers don't seize the moment and make

Internet just another commercial advertising haven. Roberts, 1993, reported at the American Library Association's annual meeting in June that there are more computers hooked to the Internet than there are books published in the United States. What a potential bonanza for commercial advertising! It would be unfortunate to clutter the Internet with the same type advertising that permeates our society via television and radio. Technology advocates, including colleges and universities, should work to ensure that this does not happen.

In addition to monitoring progress to prevent commercial involvement, university administrators need to remain cognizant of potential changes before they are forced upon us. "A typewriter pioneer designed his keyboard so salesmen could easily hunt and peck the word TYPEWRITER. He put all those letters on the top row. By the time typing speed became an issue, change was unthinkable. Never mind that the much-used A lies under our weakest finger and the most-used letter E is off the home row. By 1890, today's awkward computer keyboard was determined. The typewriter keyboard was decided without user input. To get what we need, we must join and shape the process from the beginning" (Myers, Wilson, & Lienhard, 1993, p. 30D).

Technology will not wait for a timid few to step forward to direct the course of history. "The Council on

Competitiveness recently summed up why we need to move now: Advances in technology and the rise of international competition have made knowledge the new currency of the global economy... To a large extent, information infrastructure will determine the comparative advantage of nations in the information age" (Teresko, 1993, p. 34). The Japanese have announced an ambitious plan to spend \$400 billion on a fiber-optic network to connect the schools, businesses, and homes by the year 2015 (Teresko, p. 34). Singapore, France, and Germany have announced their own plans for a network infrastructure. As these countries expand their financial involvement in network technology, the United States' government is working to decrease federal spending on much the same. It remains to be seen what effect these two approaches will have on the technology infrastructure of each country.

Summary

This study was approached with guarded optimism. On one hand, there was a great deal of anticipation about the number of colleges and universities that had provided Internet access to their campuses. On the other hand, there remained a fear of being left behind in technological ashes. It's only the beginning to attempt to understand the network and its capabilities. The next step is to exercise one's judgement in assessing the needs of the institution. The only evidence of misguided judgement is to fail to act.

TABLE I

PARTIAL LISTING OF FOREIGN DOMAINS

af	Afghanistan	mx	Mexico
aq	Antarctica	nl	Netherlands
bm	Bermuda	om	Oman
ca	Canada	pg	Papua New Guinea
dj	Djibouti	qa	Qatar
eg	Egypt	ro	Romania
fi	Finland	sc	Seychelles
gl	Greenland	tg	Togo
hk	Hong Kong	ug	Uganda
il	Israel	vi	U.S. Virgin Islands
jp	Japan	wk	Wake Island
kr	Republic of Korea	yd	Democratic Yemen
li	Lichtenstein	zr	Zaire

TABLE II

TYPICAL DOMAINS

<u>com</u>	Usually a company or other commercial institution or organization.
<u>edu</u>	An educational institution.
<u>gov</u>	A government site.
<u>mil</u>	A military site.
<u>net</u>	Gateways and other administrative hosts for a network, example MidNet.
<u>org</u>	Private organizations.

TABLE III

RELATED INTERNET BOOKS

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- On internet 1994: An international guide to electronic journals, newsletters, books, & discussions lists on the internet. Westport, CT: Meckler.
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CHAPTER III

DESIGN OF THE STUDY

Subjects

Initially, a database was created, consisting of private church-supported four-year institutions with full-time enrollments of 1,000 to 3,000 students. This information was obtained from the 1992-93 Accredited Institutions of Post-secondary Education, Publication for the Council on Postsecondary Accreditation. The population to be studied was comprised of 283 institutions. Although many more colleges and universities could have been included in the population, the decision was made to exclude all that were not church supported. This afforded a better means for comparison of the connectivity trends to Southern Nazarene University, which was necessitated by job related responsibilities. The exclusion was critical to rule out all state supported universities, which typically would not be representative of universities dependent upon private funding sources. Because the study consisted of descriptive research, it was essential to narrow the population to parallel that at Southern Nazarene University, in order to make better recommendations concerning connectivity to administration. The 283 institutions were apportioned throughout the continental

United States, Alaska, and Hawaii.

The control variable in the study was the limitation of subjects to Christian four year institutions with full-time student populations from 1,000 to 3,000. The independent variables involved Internet connectivity, geographic location, and locale. The dependent variables involved the type of access provided, features most utilized, campus populations with accessibility, means of access, decision-makers, reasons for lack of access, and target date of connection.

Procedures

After the population was identified, a random sample of 100 participants was drawn from the population database. This was accomplished by assigning a numeric identification to each university. One hundred numbers were randomly drawn, that constituted the random sample. External validity was increased by ensuring that the sample was representative of the population. By using this sampling method, each member of the targeted population had an equal and independent chance of being included in the sample.

A contact letter, questionnaire, and stamped return envelope were mailed to each participant (Refer to Appendix A--Questionnaire and Appendix B--Initial Participant Contact Letter). The questionnaire design stressed simplicity, to encourage the maximum participation by the representative sample. The question design was flowcharted to ensure a smooth flow throughout, for those universities providing Internet connectivity, as well as for those without. Responses were indicated by a check mark in the appropriate box. Response time was minimized due to the questionnaire design. No written responses were required.

Treatment of the Data

Identification of particular respondents was not deemed necessary. Instead, respondents were identified only on the basis of their geographic location. This was necessary to track trends for specific geographical areas, in order to determine if there existed an appreciable difference between universities based on the four geographic areas. Each response was tallied on a master questionnaire sheet. A separate master tally was made, as well as tallies broken down by university size, geographic area, and locale description. Tallies were used to perform statistical analysis of the data, which is reported in the following section.

CHAPTER IV

ANALYSIS OF THE DATA

Of the 100 surveys mailed, 76 were returned. Of those 76, 66 responded and 2 declined to participate for undisclosed reasons. Three letters were returned by the postal service for incorrect addresses. Responses by five were not included in the study due to failure to meet the FTE requirements. Four indicated an FTE greater than 3,000, and one indicated FTE less than 1,000. A total of 66 were statistically analyzed. Letters were sent by three, indicating that the survey had been forwarded to another person on campus. In addition, one congratulatory letter and phone call were received. Two respondents sent their E-mail addresses for later communication. Generally, the response to the survey was excellent. This can be attributed to the simplicity in the survey design and the timeliness of the topic.

Participant Profiles in the Study

Not surprisingly, 100% of the respondents were familiar with Internet. Of the respondents, the majority, 66.7%, indicated that they were located in an urban area. The majority, 45.5% were located in the geographic area defined as the East. The geographic area with the greatest responses, 100%, came from the West. However, there were fewer random selections from that particular area as well. The majority of the respondents represented campuses with full-time enrollments from 1,000-1,500 students. Masters programs were offered by 63.6% of the campuses.

Surprisingly, Internet access was provided in some form by 77.3% of the campuses, of which full access was provided by 80.4%. The most heavily utilized feature was electronic mail, with 64.7% of the respondents indicating that particular aspect. Access was provided to 100% of the faculty, 68.6% of the undergraduates, and 35.3% of the graduate students. The latter figure was indicative of the low percentage of campuses that offered graduate programs. On-site access, or a connection to a regional provider, was indicated by 74.5% of the respondents. Administration was indicated by the majority of the respondents, 72.5%, as being most instrumental in the decision making process to provide access. Both electronic mail and research were indicated by 84.3% as the primary reasons for providing

access.

Of the 22.7% of respondents that did not provide any form of access, all indicated plans to add Internet access later. The majority, 100%, indicated a lack of funding for the project. A full 40.0% planned to provide access in the next six months, with 26.7% planning access in the next year.

Clearly, sample trends indicate a great interest in Internet as both a research and communication tool for Christian college campuses. (Full results listed in Table IV, Sample Profiles). In order to better understand the results, a break-down was done, using geographic area, locale, and university size. The results of those break-downs follow in the next section. These outcomes are indicative of the fact that most likely the targeted population was homogenous in nature, due to the selection of solely private Christian universities.

TABLE IV: SAMPLE PROFILES

Total Survey Response:

Responses	Returned	Refused	Invalid	Total
66	3	2	5	76

Geographic Location:

Urban	Rural	Total
44	22	66
66.7%	33.3%	

Respondents' Geographical Regions:

West	Central	East Alaska/Hawaii	
10	25	30	1
15.2%	37.9%	45.5%	1.5%
			66

Geographic Regions in Random Sample:

West	Central	East Alaska/Hawaii	
10	30	58	2
			100

Percentage of Response From Each Region:

West	Central	East Alaska/Hawaii
100.0%	83.3%	51.7%
		50.0%

FTE

1,000-1,500	1,501-2,000	2,001-2,500	2,501-3,000	
31	19	9	7	66
47.0%	28.8%	13.6%	10.6%	

Graduate Programs

Masters	Doctoral	None
42	5	13
63.6%	7.6%	19.7%

Acquainted with Internet--100%

Campus Provides Internet Access:

Yes	No
51	15
77.3%	22.7%

Level of Access Provided:

E-Mail	Full Access
10	41
19.6%	80.4%

Features Utilized:

E-Mail	Telnet	FTP
33	13	6
64.7%	25.5%	11.8%

Access provided to:

Undergrads	Grad Student	Faculty
35	18	51
68.6%	35.3%	100.0%

Means of Access:

Dial-up	On-site
13	38
25.5%	74.5%

Instrumental in Decision Making Process:

Admin	Faculty
37	28
72.5%	54.9%

Primary Purpose for Access:

Research	E-Mail	Both
4	3	43
7.8%	5.9%	84.3%

Plans to Add Access Later:

Yes
100.0%

Reason for Lack of Access:

Funding	Expertise	Interest
15	1	1
100.0%	6.7%	6.7%

Target Date to Add Access:

6 Months	1 Year	5 Years	Unsure
6	4	3	2
40.0%	26.7%	20.0%	13.3%

Figure 2-Internet Access by Locale

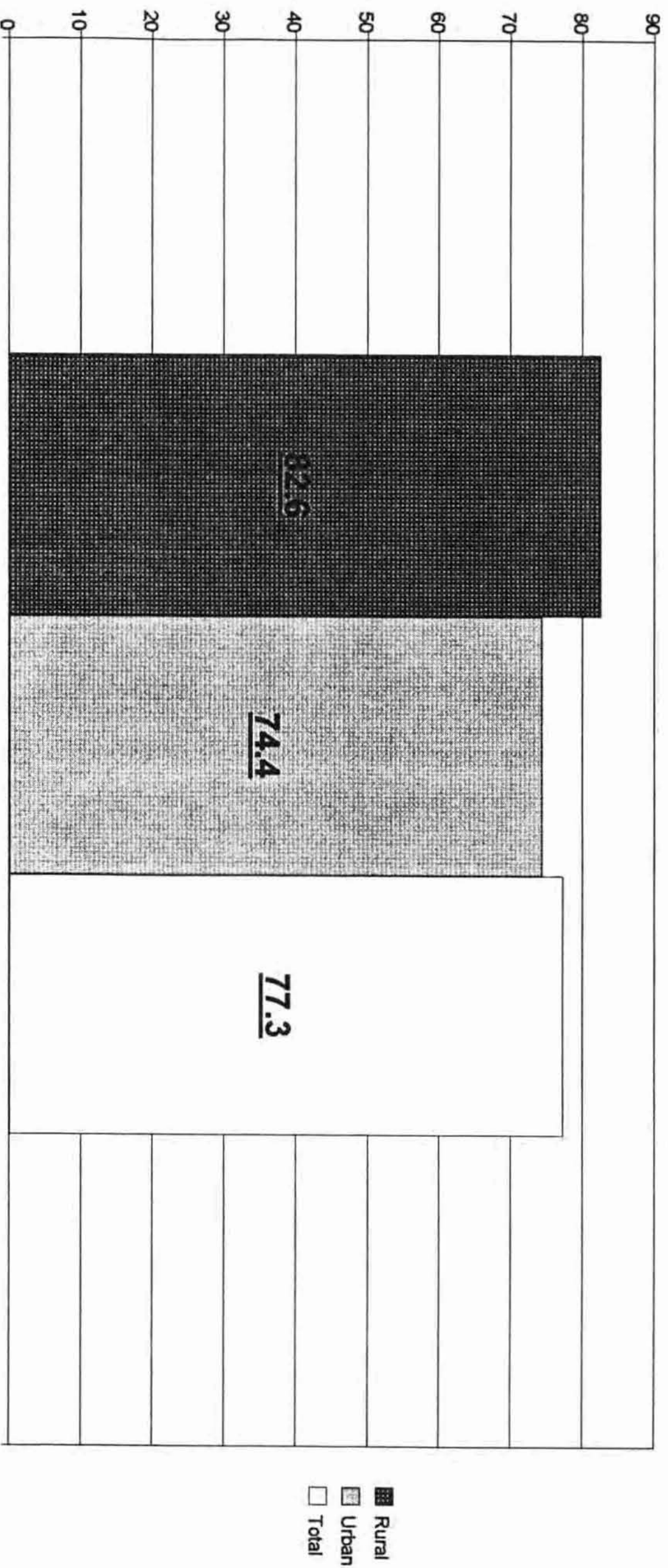


Figure 3--Internet Access by Geographic Region

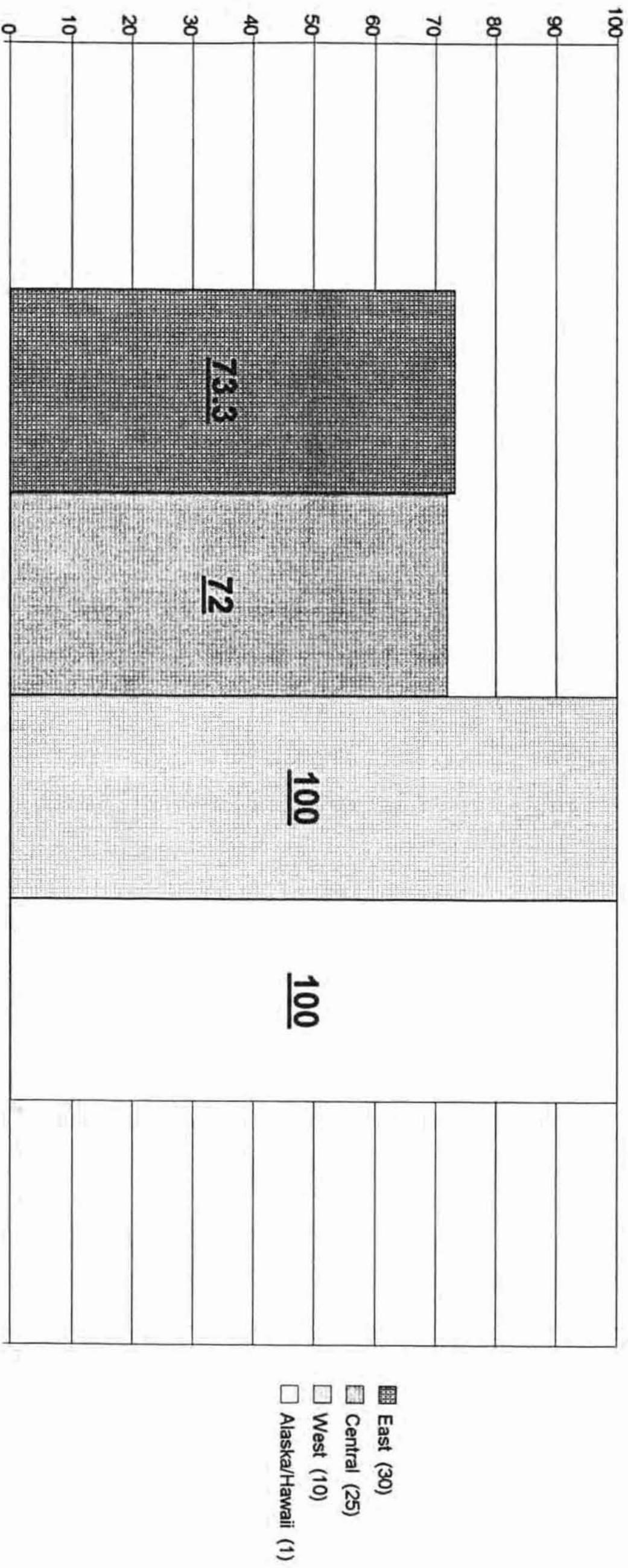
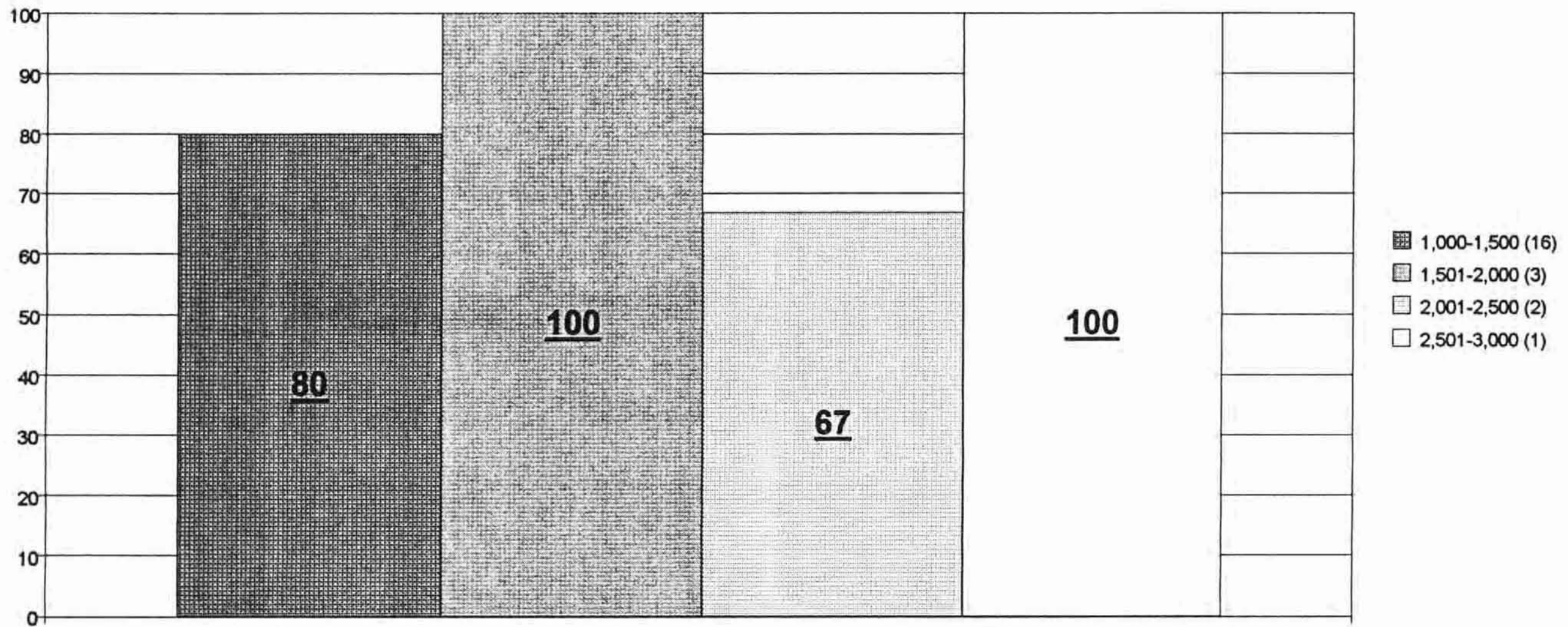
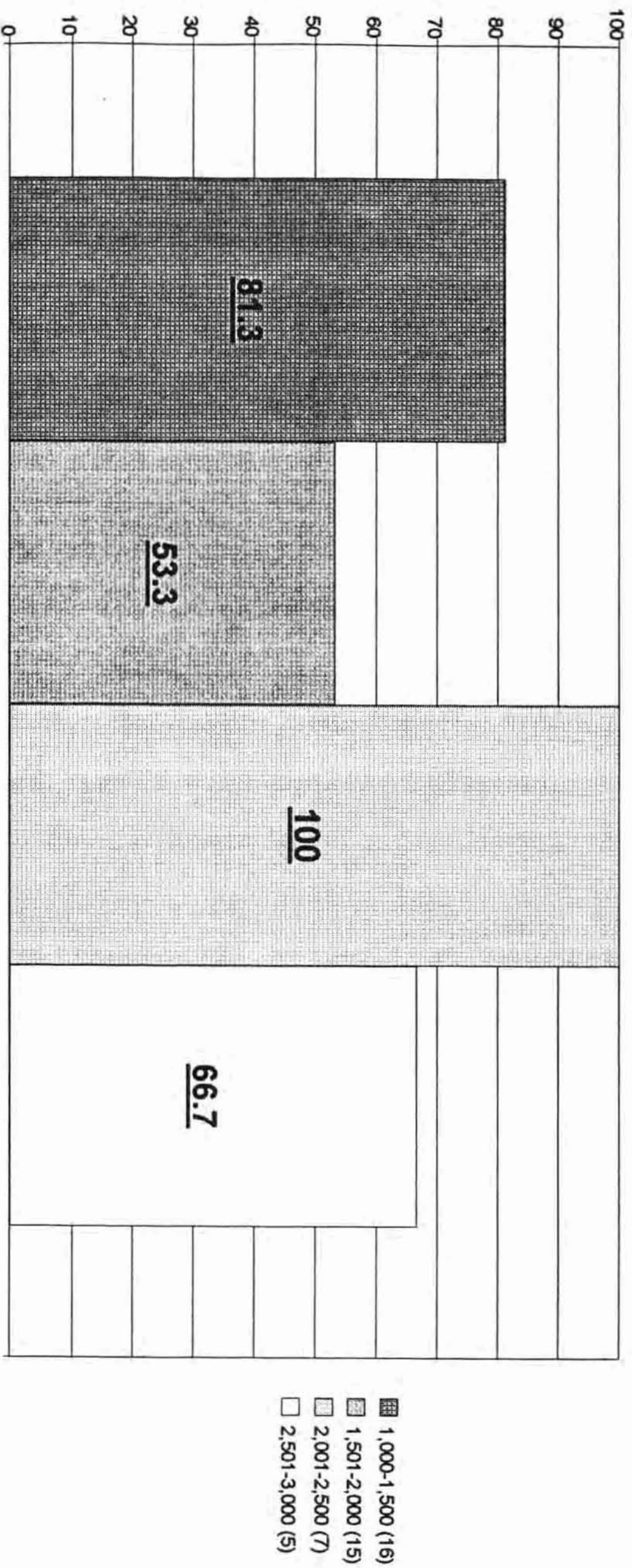


Figure 4--Rural Access by University Size



The number of universities of each size is in parenthesis.

Figure 5--Urban Access by University Size



CHAPTER V

SUMMARY AND SUGGESTIONS

Summary

After evaluating the access provided by targeted universities in each region, several conclusions could be drawn. Clearly the highest majority of participants that indicated Internet accessibility were located in the West or the non-mainland states, Alaska and Hawaii. Both areas, however had the fewest participants. Due to the extremely small number of participants, a noteworthy trend could not be established. Generally, the East and Central portions of the United States were equally balanced in their network provisions. Both numbers were sufficiently high to indicate a fairly strong correlation between area and access. This dispels the belief that people in the Central portion of the United States are slow to instigate new practices. The percentage of campuses providing access in the Central section was negligibly lower than the Eastern portion of the United States.

In comparing urban access to their rural counterparts, it was interesting to observe that again, there was not a great difference in the level of access provided by universities with FTE of 1,000 to 1,500. In the general comparison of Internet access by locale, it was significant

that rural area access was higher than its urban counterpart. This could be due in part to their desire to not feel isolated from the rest of their colleagues across the country. Internet, in this case, serves as the great equalizer of institutions. The vast amount of information available in a large research university's library card catalog becomes accessible to even the distant small university. It provides the isolated scholar an opportunity to access the same information as scholars from urban areas or from large universities. Internet is a powerful equalizer of location, size, titles, gender and race.

The thesis stated that the majority of targeted institutions did not offer full Internet access to faculty, students, and graduate students alike. The data did not substantiate that hypothesis.

Suggestions for Institutions Considering Providing Access to Internet

As Christian four-year institutions with full-time enrollments of 1,000-3,000 students move toward becoming a part of *The National Information Infrastructure*, yet remain within their budgetary constraints, it becomes essential to formulate a careful plan to ensure a fruitful entry. The following steps should assist in that process:

- 1) Select a small campus sample to become acquainted with Internet's capabilities. This should not be limited to research knowledge, but also exposure to hands-on workshops and presentations. Exposure improves the planning and training processes.
- 2) Begin gathering information on pricing as soon as possible. Administrators typically make budget decisions for the following academic year very early in the fiscal year. Decisions of this caliber must not be rushed.
- 3) Identify the regional network provider for the area. Because Phase Two connectivity is the optimum situation for a university, it is advisable to obtain estimates of charges for connection, as well as for the ongoing annual fee to the provider and the telephone line charges. Armed with this price information,

it is easier to make key economic decisions based on the information.

- 4) If prices offered by commercial providers are not satisfactory, investigate options for grants to subsidize funding. Although the government is pushing to exit from the networking subsidy business, many grants are available to encourage that very technology through the National Science Foundation, the Department of Commerce, and the Department of Education. Pursue all avenues of financial support.
- 5) Once the decision has been made to provide a connection, select a small target group to begin training sessions. Thorough training and system documentation is essential to the success of the venture. Schedule small hands-on training sessions that carefully cover one aspect of Internet each session. Guard against crash courses that fail to provide the necessary time to problem-solve the what-ifs.
- 6) Make specific suggestions to your librarian for the addition of Internet-related books. (Refer to TABLE III) In addition, request assistance from the library periodical assistant to watch for Internet related

articles in computer and educational journals.

- 7) Be prepared for the mushroom factor. Once news travels that access is available to administrators and faculty, be prepared for requests from students. Again, training is essential to the success of the venture. Consider adding specific classes aimed at Internet capabilities. These classes could become a part of the computer curriculum, as well as a component of library researching methods. Ensuring the training and preparation of library staff must be emphasized.
- 8) Aim for perfection, but be realistic in accepting the potential for nagging irritations inevitable with most any computer technology. Time and training eliminates most of these problems.
- 9) Continue to research the latest trends in networking. Be prepared for more decisions as the nation moves along the superhighway.

Suggestions for Future Research

As a result of the results of the present study, the following recommendations are in order:

- 1) Conduct a similar study with like-sized public institutions to determine accessibility.
- 2) Conduct a study of utilization practices to target purposes and extent of connectivity for faculty, graduate students, and staff.
- 3) Conduct a study of public land-grant schools to make comparisons in application and connectivity numbers.
- 4) Conduct a similar study with like-sized private institutions that are not church supported.
- 5) Conduct a similar study with samples drawn from public, private, and church supported institutions to compare accessibility.
- 6) Conduct experimental research on training methodology and related effectiveness. This would assist in isolating problem areas to avoid in future training endeavors.

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APPENDIXES

APPENDIX A

QUESTIONNAIRE

71

Internet Survey

Please check the appropriate answer.

1. Are you acquainted with Internet?

☐ Yes ☐ No

2. Does your campus provide Internet access?

☐ Yes ☐ No

If the answer is NO, skip to question 9.

3. What level of access is provided?

☐ Electronic Mail Only

☐ Full Access (Includes Electronic Mail, Telnet,
File Transfer Protocol)

4. Which features are utilized most frequently?

☐ Electronic Mail

☐ Telnet

☐ File Transfer Protocol

5. Who is provided access on the campus?
(Please check all that apply.)

☐ Undergraduate Students

☐ Graduate Students

☐ Faculty

6. Circle the means of access provided:

☐ Dial-up to commercial provider

☐ On-site

7. Who was instrumental in the decision-making process
for providing access? (Check all that apply.)

☐ Administration

☐ Faculty

8. What is the primary purpose behind providing access?

☐ Research ☐ Electronic Mail ☐ Both

Skip to question 12.

9. If access is not presently available, are there plans to add it later?

☐ Yes ☐ No

10. What is the primary reason for lack of access?
(Please check all that apply.)

☐ Funding ☐ Staff Expertise ☐ No Interest

11. If plans are to add access, what is the approximate target date?

☐ Within 6 months ☐ Within 5 years

☐ Within 1 year ☐ Unsure

12. Levels of graduate programs offered at this institution:

☐ Masters ☐ Doctoral

13. Full-time enrollment at this institution:

☐ 1,000-1,500 ☐ 2,501-3,000

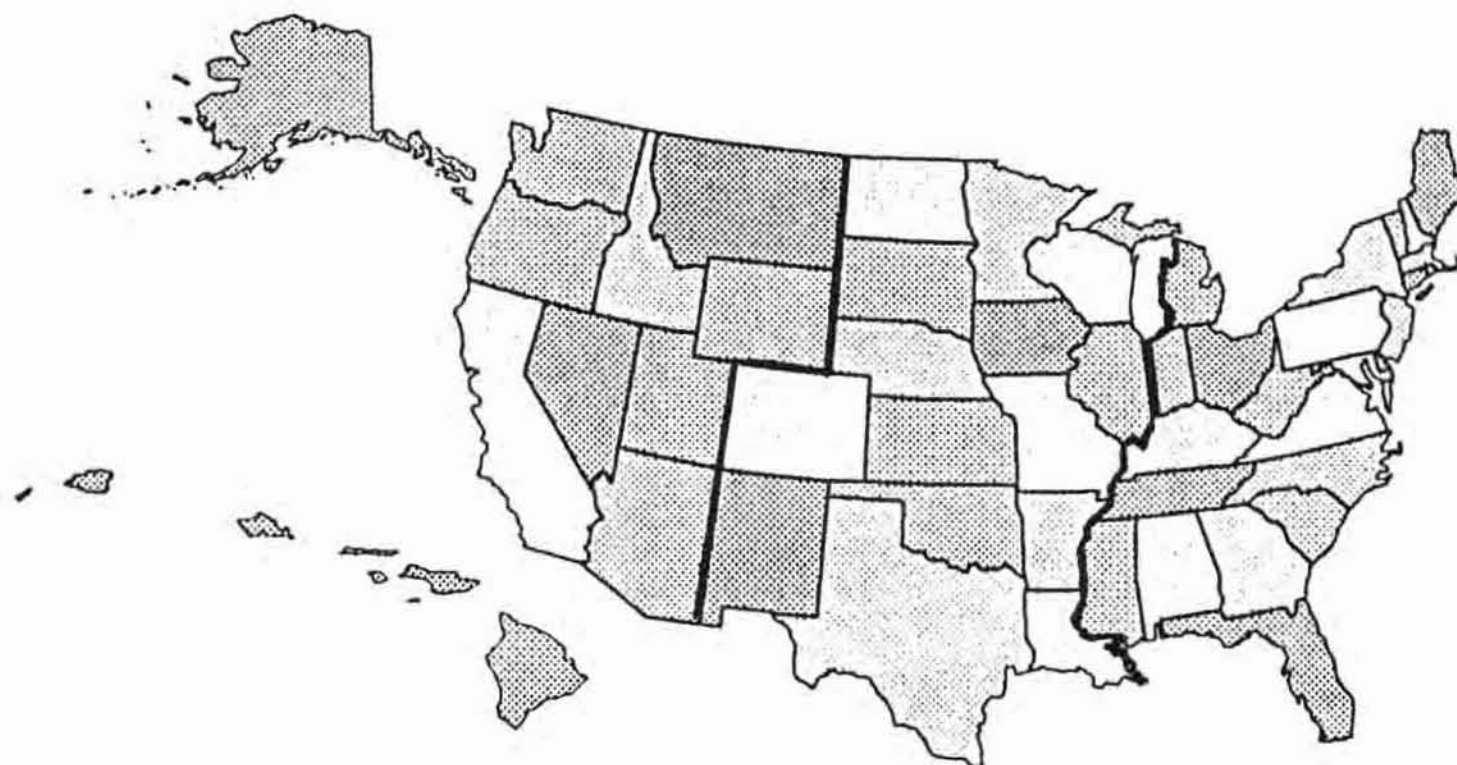
☐ 1,501-2,000 ☐ Above 3,000

☐ 2,001-2,500

14. Indicate primary characteristic of your community:

☐ Urban ☐ Rural

15. Place an X on the geographic location of your institution:



APPENDIX B

POPULATION DATABASEInstitution and Fall, 1992 FTE

Adrian College 110 S. Madison St. Adrian	MI	49221
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FTE, Fall 1992:	1143
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Alaska Pacific University 4101 University Dr. Anchorage	AK	99508
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FTE, Fall 1992:	1751
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Albertson College 2112 Cleveland Blvd. Caldwell	ID	83605
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FTE, Fall 1992:	1004
-----------------	------

Albright College P.O. Box 15234 Reading	OR	19612-5234
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FTE, Fall 1992:	1566
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Allentown College of St. Francis De Sales Station Ave. Center Valley	PA	18034
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FTE, Fall 1992:	2083
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Alma College Alma	MI	48801
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FTE, Fall 1992:	1193
-----------------	------

Alvernia College 400 St. Bernadine St. Reading	PA	19607
--	----	-------

FTE, Fall 1992:	1243
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Alverno College
 3401 S. 39th St., Box 343922
 Milwaukee WI 53234-3922

FTE, Fall 1992: 1893

Amber University
 1700 Eastgate Dr.
 Garland TX 75041

FTE, Fall 1992: 1610

Anderson University
 1100 E. Fifth St.
 Anderson IN 46012

FTE, Fall 1992: 1889

Andrews University
 Berrien Springs MI 49104

FTE, Fall 1992: 2510

Aquinas College
 1607 Robinson Rd., S.E.
 Grand Rapids MI 49506

FTE, Fall 1992: 1784

Asbury College
 1 Macklem Drive
 Wilmore KY 40390-1198

FTE, Fall 1992: 1095

Assumption College
 500 Salisbury St.
 Worcester MA 01615-0005

FTE, Fall 1992: 2197

Augustana College

Rock Island	IL	61201
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FTE, Fall 1992:	2158	
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Augustana College
29th St. and Summit Ave.
Sioux Falls SD

57197

FTE, Fall 1992:	1743	
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Aurora University
347 S. Gladstone Ave.
Aurora IL

60506

FTE, Fall 1992:	1439	
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Austin College
900 N. Grand Ave. Box 1177
Sherman TX

75091-1177

FTE, Fall 1992:	1522	
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Averett College
420 W. Main St.
Danville VA

24541

FTE, Fall 1992:	1362	
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Azusa Pacific University
901 East Alosta Ave.
Azusa CA

91702

FTE, Fall 1992:	1914	
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Baker University
P.O. Box 65
Baldwin City KS

66006-0065

FTE, Fall 1992:	1558	
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Beaver College Easton and Church Rds. Glenside PA	19038
FTE, Fall 1992:	2204
Belmont University 1900 Belmont Blvd. Nashville TN	37212-3757
FTE, Fall 1992:	2821
Bethel College 3900 Bethel Drive St. Paul MN	55112
FTE, Fall 1992:	1920
Biola University 13800 Biola Avenue La Mirada CA	90639
FTE, Fall 1992:	1846
Birmingham-Southern College 900 Arkadelphia Rd. Birmingham AL	35254
FTE, Fall 1992:	1765
Bloomfield College 467 Franklin St. Bloomfield NJ	7003
FTE, Fall 1992:	1858
Brewton-Parker College P.O. Box 197 Mount Vernon GA	30445-0197
FTE, Fall 1992:	2142

Brigham Young University--Hawaii Campus
 55-220 Kulanui St.
 Laie HI 96762

FTE, Fall 1992: 2047

Buena Vista College
 610 W. Fourth St.
 Storm Lake IA 50588

FTE, Fall 1992: 2086

Cabrini College
 610 King of Prussia Rd.
 Radnor PA 19087-3699

FTE, Fall 1992: 1557

Caldwell College
 9 Ryerson Ave.
 Caldwell NJ 07006-6195

FTE, Fall 1992: 1304

California Lutheran University
 60 Olsen Rd.
 Thousand Oaks CA 91360

FTE, Fall 1992: 2128

Calvin College
 3201 Burton Street S.E.
 Grand Rapids MI 49546

FTE, Fall 1992: 3461

Campbell University
 215 Main Street
 Buies Creek NC 27506

FTE, Fall 1992: 2023

Capital University 2199 E. Main St. Columbus	OH	43209
FTE, Fall 1992:	2745	
Carlow College 3333 Fifth Ave. Pittsburgh	PA	15213-3165
FTE, Fall 1992:	1363	
Carroll College N. Benton Ave. Helena	MT	59625
FTE, Fall 1992:	1297	
Carson-Newman College Russell Ave., P.O. Box 552 Jefferson City	TN	37760
FTE, Fall 1992:	1945	
Carthage College 2001 Alford Dr. Kenosha	WI	53140
FTE, Fall 1992:	1509	
Cedar Crest College 100 College Dr. Allentown	PA	18104
FTE, Fall 1992:	1051	
Cedarville College P.O. Box 601 Cedarville	OH	45314
FTE, Fall 1992:	2165	

Central College

Pella IA 50219

FTE, Fall 1992: 1591

Central Wesleyan College

One Wesleyan Drive

Central SC 29630-1020

FTE, Fall 1992: 1057

Chaminade University of Honolulu

3140 Waialae Ave.

Honolulu HI 96816

FTE, Fall 1992: 1396

Charleston Southern University

P.O. Box 10087, 9200 Univ. Blvd.

Charleston SC 29411

FTE, Fall 1992: 1824

Chestnut Hill College

Germantown and Northwestern Aves.

Philadelphia PA 19118-2695

FTE, Fall 1992: 1196

Christian Brothers University

650 East Pkwy. S.

Memphis TN 38104

FTE, Fall 1992: 1652

Coe College

Cedar Rapids IA 52402

FTE, Fall 1992: 1073

College Misericordia		
Lake St.		
Dallas	PA	18612
FTE, Fall 1992:	1610	
College of Great Falls		
Great Falls	MT	59405
FTE, Fall 1992:	1190	
College of Mount St. Joseph		
5701 Delhi Rd.		
Cincinnati	OH	45233-1670
FTE, Fall 1992:	1684	
College of St. Benedict		
37 S. College Ave.		
St. Joseph	MN	56374
FTE, Fall 1992:	1755	
College of St. Catherine		
2004 Randolph Ave.		
St. Paul	MN	55105
FTE, Fall 1992:	2700	
College of St. Elizabeth		
2 Convent Rd.		
Morristown	NJ	07960-6989
FTE, Fall 1992:	1202	
College of St. Francis		
500 N. Wilcox St.		
Joliet	IL	60435
FTE, Fall 1992:	1894	

College of St. Scholastica
1200 Kenwood Ave.
Duluth MN

55811

FTE, Fall 1992: 1719

College of the Holy Cross

Worcester MA 01610-2395

FTE, Fall 1992: 2721

College of the Ozarks

Point Lookout MO 65726

FTE, Fall 1992: 1558

Colorado Christian University
180 South Garrison Street
Lakewood CO

80226

FTE, Fall 1992: 1048

Columbia College
1301 Columbia College Dr.
Columbia SC

29203

FTE, Fall 1992: 1082

Columbia Union College
7600 Flower Ave.
Takoma Park MD

20912

FTE, Fall 1992: 1211

Concordia College
901 S. 8th St.
Moorhead MN

56562

FTE, Fall 1992: 2898

Concordia College
275 N. Syndicate St.
St. Paul MN 55104

FTE, Fall 1992: 1091

Concordia University
7400 Augusta St.
River Forest IL 60306

FTE, Fall 1992: 1327

Concordia University Wisconsin
12800 N. Lake Shore Dr.
Mequon WI 53092

FTE, Fall 1992: 2205

Cornell College
600 First St. W.
Mount Vernon IA 52314

FTE, Fall 1992: 1106

Culver-Stockton College
Canton MO 63435

FTE, Fall 1992: 1094

Cumberland College
6191 College Station Dr.
Williamsburg KY 40769

FTE, Fall 1992: 1568

Dallas Baptist University
3000 Mountain Creek Parkway
Dallas TX 75211-9299

FTE, Fall 1992: 1695

David Lipscomb University
 3901 Granny White Pike
 Nashville TN 37204-3951

FTE, Fall 1992: 2109

Davidson College
 P.O. Box 1719
 Davidson NC 28036

FTE, Fall 1992: 1547

Denison University
 P.O. Box B.
 Granville OH 43023

FTE, Fall 1992: 1886

DePauw University
 Greencastle IN 46135

FTE, Fall 1992: 2143

Dillard University
 2601 Gentilly Blvd.
 New Orleans LA 70122

FTE, Fall 1992: 1662

Doane College
 1014 Boswell Ave.
 Crete NB 68333

FTE, Fall 1992: 1242

Dordt College
 498 4th Avenue N.E.
 Sioux Center IA 51250

FTE, Fall 1992: 1052

Drew University Madison Ave., Rte. 24 Madison	NJ	7940
FTE, Fall 1992:	2068	
Earlham College 700 Broadway Fort Wayne	IN	47374
FTE, Fall 1992:	1144	
Eastern College 10 Fairview Drive St. Davids	PA	19087-3696
FTE, Fall 1992:	1147	
Eastern Mennonite College and Seminary 1200 Park Rd. Harrisonburg	VA	22801-2462
FTE, Fall 1992:	1060	
Eastern Nazarene College 23 E. Elm Ave. Quincy	MA	02170-2999
FTE, Fall 1992:	1168	
Eckerd College 4200 54th Ave. S. St. Petersburg	FL	33711
FTE, Fall 1992:	1787	
Edgewood College 855 Woodrow St. Madison	WI	53711
FTE, Fall 1992:	1058	

Elizabethtown College
 One Alpha Dr.
 Elizabethtown PA 17022-2298

FTE, Fall 1992: 1809

Evangel College
 1111 North Glenstone
 Springfield MO 65802

FTE, Fall 1992: 1369

Faulkner University
 5345 Atlanta Hwy.
 Montgomery AL 36109-378

FTE, Fall 1992: 1735

Felician College
 262 S. Main St.
 Lodi NJ 7644

FTE, Fall 1992: 1309

Florida Southern College
 111 Lake Hollingsworth Dr.
 Lakeland FL 33801

FTE, Fall 1992: 1970

Franciscan University of Steubenville
 Franciscan Way
 Steubenville OH 43952

FTE, Fall 1992: 1539

Freed-Hardeman University
 158 E. Main St.
 Henderson TN 38340-2399

FTE, Fall 1992: 1203

Friends University 2100 University St. Wichita	KS	67213
FTE, Fall 1992:	1488	
Furman University Poinsett Hwy. Greenville	SC	29613
FTE, Fall 1992:	2759	
Gardner-Webb College P.O. Box 897 Boiling Springs	NC	28017
FTE, Fall 1992:	1737	
Geneva College College Ave. Beaver Falls	PA	15010
FTE, Fall 1992:	1518	
George Fox College 414 North Meridian Street Newberg	OR	97132
FTE, Fall 1992:	1224	
Georgetown College 400 E. College St Georgetown	KY	40324-1696
FTE, Fall 1992:	1284	
Georgian Court College 900 Lakewood Ave. Lakewood	NJ	8701
FTE, Fall 1992:	2490	

Gordon College

Wenham	MA	01984
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FTE, Fall 1992:	1171
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Goshen College

Goshen	IN	46526
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FTE, Fall 1992:	1040
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Graceland College

Lamoni	IA	50140
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FTE, Fall 1992:	1640
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Grand Canyon University		
3300 West Camelback Road		
Phoenix	AZ	85061

FTE, Fall 1992:	1737
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Grand View College		
1200 Grandview Ave.		
Des Moines	IA	50316

FTE, Fall 1992:	1206
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Gustavus Adolphus College		
800 W. College Ave.		
St. Peter	MN	56082

FTE, Fall 1992:	2271
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Hamline University		
1536 Hewitt Ave.		
St. Paul	MN	55104

FTE, Fall 1992:	2228
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Hanover College
 P.O. Box 108
 Hanover IN 47243-0108

FTE, Fall 1992: 1069

Hardin-Simmons University
 2200 Hickory St.
 Abilene TX 79698

FTE, Fall 1992: 1501

Heidelberg College
 310 E. Market St.
 Tiffin OH 44883

FTE, Fall 1992: 1117

Heritage College
 3240 Fort Rd.
 Toppenish WA 98948

FTE, Fall 1992: 1041

High Point University
 University Sta., Montlieu Ave.
 High Point NC 27262-3598

FTE, Fall 1992: 2146

Hiram College
 Hiram OH 44234q

FTE, Fall 1992: 1209

Holy Family College
 Grant and Frankford Aves.
 Philadelphia PA 19114-2094

FTE, Fall 1992: 2216

Hope College
P.O. Box 9000
Holland MI 49422-9000

FTE, Fall 1992: 2505

Houghton College
One Willard Avenue
Houghton NY 14744

FTE, Fall 1992: 1146

Houston Baptist University
7502 Fondren Rd.
Houston TX 77074-3298

FTE, Fall 1992: 1934

Howard Payne University
1000 Fisk Ave.
Brownwood TX 76801

FTE, Fall 1992: 1249

Illinois Benedictine College
5700 College Rd.
Lisle IL 60532

FTE, Fall 1992: 1743

Illinois Wesleyan University
P.O. Box 2900
Bloomington IL 61702

FTE, Fall 1992: 1752

Immaculata College
Immaculata PA 19345

FTE, Fall 1992: 2345

Incarnate Word College
 4301 Broadway
 San Antonio TX 78209-6397

FTE, Fall 1992: 2142

Indiana Wesleyan University
 4201 South Washington
 Marion IN 46953

FTE, Fall 1992: 2300

John B. Stetson University
 401 N. Woodland Blvd.
 DeLand FL 32720

FTE, Fall 1992: 2830

John Carroll University
 20700 N. Park Blvd.
 University Heights OH 44118

FTE, Fall 1992: 1166

Johnson C. Smith University
 100 Beatties Ford Rd.
 Charlotte NC 28216

FTE, Fall 1992: 1239

Kalamazoo College
 1200 Academy St.
 Kalamazoo MI 49007

FTE, Fall 1992: 1271

King's College
 133 N. River St.
 Wilkes-Barre PA 18711

FTE, Fall 1992: 2294

La Roche College 9000 Babcock Blvd. Pittsburgh	PA	15237
FTE, Fall 1992:	1851	
La Sierra University 4700 Pierce St. Riversid	CA	92515
FTE, Fall 1992:	1191	
Lake Forest College 5001 Lake Land Blvd. Mattoon	IL	61938
FTE, Fall 1992:	1022	
Lakeland College P.O. Box 359 Sheboygan	WI	53082-0359
FTE, Fall 1992:	1439	
Lebanon Valley College 101 N. College Ave. Annville	PA	17003-0501
FTE, Fall 1992:	1488	
Lee College 1120 North Ocoee Street Cleveland	TN	37320-3450
FTE, Fall 1992:	1854	
LeMoyne-Owen College 807 Walker Ave. Memphis	TN	38126
FTE, Fall 1992:	1013	

Lenoir-Rhyne College
8th St. and 7th Ave. N.E.
Hickory NC 28603

FTE, Fall 1992: 1454

LeTourneau University
2100 South Mobberly
Longview TX 75607

FTE, Fall 1992: 1531

Lewis University
Rte. 53
Romeoville IL 60441

FTE, Fall 1992: 2606

Lindenwood College
209 S. Kingshighway Blvd.
St. Charles MO 63301

FTE, Fall 1992: 2145

Lindsey Wilson College
210 Lindsey Wilson St.
Columbia KY 42728

FTE, Fall 1992: 1343

Linfield College
McMinnville OR 97128

FTE, Fall 1992: 2645

Loma Linda University
Loma Linda CA 92350

FTE, Fall 1992: 2263

Loras College 1450 Alta Vista Dubuque	IA	52001
FTE, Fall 1992:	1644	
Luther College Decorah	IA	52101
FTE, Fall 1992:	2311	
Lycoming College Academy Street Williamsport	PA	17701
FTE, Fall 1992:	1405	
Lynchburg College 1501 Lakeside Dr. Lynchburg	VA	24501-3199
FTE, Fall 1992:	1994	
Macalester College 1600 Grand Ave. St. Paul	MN	55105
FTE, Fall 1992:	1776	
Madonna University 36600 Schoolcraft Rd. Livonia	MI	48150
FTE, Fall 1992:	2811	
Malone College 515 25th Street N.W. Canton	OH	44709
FTE, Fall 1992:	1462	

Manchester College
604 College Ave.
North Manchester IN 46962

FTE, Fall 1992: 1102

Marian College
3200 Cold Spring Rd.
Indianapolis IN 46222

FTE, Fall 1992: 1028

Marian College of Fond Du Lac
45 S. National Ave.
Fond du lac WI 54935

FTE, Fall 1992: 1680

Mars Hill College
Marshall St.
Mars Hill NC 28754

FTE, Fall 1992: 1236

Mary Baldwin College
Frederick and New St.
Staunton VA 24401

FTE, Fall 1992: 1060

Marygrove College
8425 W. McNichols Rd.
Detroit MI 48221

FTE, Fall 1992: 1112

Marylhurst College for Lifelong Learning
Marylhurst OR 97036

FTE, Fall 1992: 1189

Marywood College 2300 Adams Ave. Scranton	PA	18509
FTE, Fall 1992:	2929	
McMurray College S. 14th St. and Sayles Blvd. Abilene	TX	79697
FTE, Fall 1992:	1189	
Mercyhurst College 501 E. 38th Street Erie	PA	16546
FTE, Fall 1992:	2186	
Meredith College 3800 Hillborough St. Raleigh	NC	27607-5298
FTE, Fall 1992:	2321	
Merrimack College North Andover	MA	1845
FTE, Fall 1992:	2512	
Messiah College College Avenue Grantham	PA	17027
FTE, Fall 1992:	2225	
Methodist College 5400 Ramsey St. Fayetteville	NC	28311-1420
FTE, Fall 1992:	1325	

MidAmerica Nazarene College
 2030 E. College Way
 Olathe KS 66062-1899

FTE, Fall 1992: 1168

Millikin University
 1184 W. Main St.
 Decatur IL 62522

FTE, Fall 1992: 1959

Millsaps College
 1701 N. State St.
 Jackson MS 39210

FTE, Fall 1992: 1519

Mississippi College
 200 South Capital
 Clinton MS 39058

FTE, Fall 1992: 2121

Missouri Valley College
 500 E. College Dr.
 Marshall MO 65340

FTE, Fall 1992: 1032

Mobile College
 P.O. Box 13220
 Mobile AL 3663-0220

FTE, Fall 1992: 1257

Moravian College
 1200 Main Street
 Bethlehem PA 18018

FTE, Fall 1992: 1308

Morningside College 1501 Morningside Ave. Sioux City	IA	51106
FTE, Fall 1992:	1324	
Morris Brown College 643 Martin Luther King Jr. Dr. Atlanta	GA	30314
FTE, Fall 1992:	2015	
Mount Aloysius College One College Drive Cresson	PA	16630
FTE, Fall 1992:	1037	
Mount Mary College 2900 N. Menomonee River Pkwy. Milwaukee	WI	53222
FTE, Fall 1992:	1171	
Mount Mercy College 1330 Elmhurst Dr. N.E. Cedar Rapids	IA	52404
FTE, Fall 1992:	1145	
Mount St. Mary's College 12001 Chalon Rd. Los Angeles	CA	90049
FTE, Fall 1992:	1076	
Mount St. Mary's College and Seminary Emmitsburg	MD	21727-7797
FTE, Fall 1992:	1758	

Mount Union College 1972 Clark Ave. Alliance	OH	44601
FTE, Fall 1992:	1383	
Mount Vernon Nazarene College 800 Martinsburg Road Mount Vernon	OH	43050
FTE, Fall 1992:	1080	
Muhlenberg College 24th and Chew Sts. Allentown	PA	18104
FTE, Fall 1992:	1734	
Muskingum College New Concord	OH	43762
FTE, Fall 1992:	1119	
Nebraska Wesleyan University 5000 St. Paul Ave. Lincoln	NB	68504
FTE, Fall 1992:	1480	
Neumann College Concord Rd. Aston	PA	19014
FTE, Fall 1992:	1248	
North Carolina Wesleyan College 3400 N. Wesleyan Blvd. Rocky Mount	NC	27804
FTE, Fall 1992:	1637	

North Central Bible College

7411 85th Ave. N.

Brooklyn Park

MN

55445

FTE, Fall 1992:

1103

North Central College

30 N. Brainard St.

Naperville

IL

60566-7063

FTE, Fall 1992:

1934

North Park College and Theological Seminary

3225 W. Foster Ave.

Chicago

IL

60625

FTE, Fall 1992:

1014

Northwest Nazarene College

623 Holly Street

Nampa

ID

83686

FTE, Fall 1992:

1058

Northwestern College

101 Seventh Street S.W.

Orange City

IA

51041-1996

FTE, Fall 1992:

1014

Northwestern College

3003 Snelling Avenue North

St. Paul

MN

55113-1598

FTE, Fall 1992:

1208

Oakwood College

Oakwood Rd. N.W.

Huntsville

AL

35896

FTE, Fall 1992:

1206

Ohio Dominican College 1216 Sunbury Rd. Columbus	OH	43219
FTE, Fall 1992:	1133	
Ohio Northern University S. Main St. Ada	OH	45810
FTE, Fall 1992:	2727	
Ohio Wesleyan University 61 S. Sanusky St. Delaware	OH	43015
FTE, Fall 1992:	2007	
Oklahoma Baptist University 500 W. University Shawnee	OK	74801
FTE, Fall 1992:	1723	
Oklahoma Christian University of Science and Arts Box 11000 Oklahoma City	OK	73136
FTE, Fall 1992:	1532	
Olivet Nazarene University Kankakee	IL	60901
FTE, Fall 1992:	1769	
Otterbein College Westerville	OH	43081
FTE, Fall 1992:	2034	

Ouachita Baptist University

Arkadelphia AR 71998-0001

FTE, Fall 1992: 1269

Our Lady of the Lake University

411 SW 24th St.

San Antonio TX 78207-4666

FTE, Fall 1992: 1950

Pacific University

2043 College Way

Forest Grove OR 97116

FTE, Fall 1992: 1596

Palm Beach Atlantic College

901 South Flagler Drive

West Palm Beach FL 33416-4708

FTE, Fall 1992: 1467

Park College

8700 River Park Dr.

Parkville MO 64152

FTE, Fall 1992: 2171

Paul Quinn College

3837 Simpson Stuart Rd.

Dallas TX 75241

FTE, Fall 1992: 1009

Point Loma Nazarene College

3900 Lomaland Drive

San Diego CA 92106-2899

FTE, Fall 1992: 1891

Presbyterian College S. Broad St., P.O. Box 975 Clinton	SC	29325
FTE, Fall 1992:	1143	
Queens College 1900 Selwyn Ave. Charlotte	NC	28274
FTE, Fall 1992:	1106	
Quincy College 501 N. third St. Quincy	IL	62301
FTE, Fall 1992:	1153	
Randolph-Macon College P.O. Box 5005 Ashland	VA	23005-5505
FTE, Fall 1992:	1097	
Rhodes College 2000 North Pkwy. Memphis	TN	38112
FTE, Fall 1992:	1429	
Rivier College 420 S. Main St. Nashua	NH	03060-5086
FTE, Fall 1992:	1721	
Roanoke Colleg 221 College La. Salem	VA	24153
FTE, Fall 1992:	1571	

Rockhurst College 1100 Rockhurst Rd. Kansas City	MO	64110
FTE, Fall 1992:	1744	
 Rosary College 7900 W. Division St. River Forest	 IL	 60305
FTE, Fall 1992:	1207	
 Rust College 150 E. Rust Ave. Holly Springs	 MS	 38635-2328
FTE, Fall 1992:	1075	
 Sacred Heart University 5151 Park Ave. Fairfield	 CT	 06432-1023
FTE, Fall 1992:	2753	
 Salve Regina University 100 Ochre Point Ave. Newport	 RI	 02840-4192
FTE, Fall 1992:	1862	
 Seattle Pacific University 3307 Third Avenue West Seattle	 WA	 98119
FTE, Fall 1992:	2225	
 Seton Hill College Greensburg	 PA	 15601
FTE, Fall 1992:	1043	

Shenandoah University
1460 College Dr.
Winchester VA 22601

FTE, Fall 1992: 1092

Siena Heights College
1247 E. Siena Heights Dr.
Adrian MI 49221

FTE, Fall 1992: 1138

Simpson College
701 N. C. St.
Indianola IA 50125

FTE, Fall 1992: 1327

Southeastern College of the Assemblies of God
1000 Longfellow Blvd.
Lakeland FL 33801

FTE, Fall 1992: 1200

Southern College of Seventh-Day Adventists
P.O. Box 370
Collegedale TN 37315-0370

FTE, Fall 1992: 1534

Southern Nazarene University
6729 N.W. 39th Expressway
Bethany OK 73008

FTE, Fall 1992: 1275

Southwest Baptist University
1601 S. Springfield St.
Bolivar MO 65613

FTE, Fall 1992: 2230

Spring Arbor College

Spring Arbor	MI	49283
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FTE, Fall 1992:	1614	
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Spring Hill College

4000 Dauphin St.

Mobile	AL	36608
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FTE, Fall 1992:	1073	
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St. Ambrose College

518 W. Locust St.

Davenport	IA	52803
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FTE, Fall 1992:	1862	
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St. Anselm College

Manchester	NH	03102-1310
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FTE, Fall 1992:	1974	
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St. Augustine's College

1315 Oakwood Ave.

Raleigh	NC	27610-2298
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FTE, Fall 1992:	1811	
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St. Francis College

Loretta	PA	15940
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FTE, Fall 1992:	1853	
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St. John's University

Collegeville	MN	56321
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FTE, Fall 1992:	1906	
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St. Joseph College		
1678 Asylum Ave.		
West Hartford	CT	6117
FTE, Fall 1992: 1063		
St. Joseph's College		
Rensselaer	IN	47978
FTE, Fall 1992: 1021		
St. Joseph's College		
Windham	ME	04062-1198
FTE, Fall 1992: 2234		
St. Martin's College		
Lacey	WA	98503
FTE, Fall 1992: 1220		
St. Mary's College		
Notre Dame	IN	46556
FTE, Fall 1992: 1658		
St. Mary's College of Minnesota		
700 Terrace Heights		
Winona	MN	55987-1399
FTE, Fall 1992: 1960		
St. Michael's College		
Winooski Park		
Colchester	VT	5439
FTE, Fall 1992: 2149		

St. Norbert College
 100 Grant St.
 De Pere WI 54115-2099

FTE, Fall 1992: 1831

St. Thomas University
 16400 N.W. 32nd Ave.
 Miami FL 33054

FTE, Fall 1992: 1803

St. Vincent College and Seminary
 Frazier Purchase Rd.
 Latrobe PA 15650-2690

FTE, Fall 1992: 1263

St. Xavier University
 3700 W. 103rd St.
 Chicago IL 60655

FTE, Fall 1992: 2107

Stonehill College
 North Easton MS 2357

FTE, Fall 1992: 2304

Susquehanna University
 Selinsgrove PA 17870

FTE, Fall 1992: 1559

Taylor University
 500 W. Reade Avenue
 Upland IN 46989-1001

FTE, Fall 1992: 1842

Texas Wesleyan University
 1201 Wesleyan St.
 Fort Worth TX 76105-1536

FTE, Fall 1992: 1474

The Southern Baptist Theological Seminary
 2825 Lexington Rd.
 Louisville KY 40280

FTE, Fall 1992: 1844

The University of Dallas
 1845 E. Northgate Dr.
 Irving TX 75062

FTE, Fall 1992: 2239

The University of Findlay
 1000 N. Main St.
 Findlay OH 45840

FTE, Fall 1992: 1889

Trevecca Nazarene College
 333 Murfreesboro Rd.
 Nashville TN 37210

FTE, Fall 1992: 1318

Trinity College
 125 Michigan Ave. N.E.
 Washington DC DC 20017

FTE, Fall 1992: 1112

Truett McConnell College
 Rte. 6, Box 6000
 Cleveland GA 30528

FTE, Fall 1992: 1208

Union University
2447 Hwy. 45 By-Pass
Jackson TN 38305

FTE, Fall 1992: 2234

University of Dubuque
2000 University Ave.
Dubuque IA 52001

FTE, Fall 1992: 1016

University of Evansville
1800 Lincoln Ave
Evansville IN 47722

FTE, Fall 1992: 2556

University of Indianapolis
1400 E. Hanna Ave.
Indianapolis IN 46227

FTE, Fall 1992: 2597

University of Mary
7500 University Dr.
Bismarck ND 58504

FTE, Fall 1992: 1437

University of Mary Hardin-Baylor
Box 8001
Belton TX 76513

FTE, Fall 1992: 1557

University of St. Thomas
3800 Montrose Blvd.
Houston TX 77006

FTE, Fall 1992: 1624

University of the South
735 University Ave.
Sewanee TN 37375-1000

FTE, Fall 1992: 1170

Upsala College
Prospect St.
East Orange NJ 7019

FTE, Fall 1992: 1115

Ursuline College
2550 Lander Rd.
Pepper Pike OH 44124

FTE, Fall 1992: 1163

Virginia Union University
1500 N. Lombardy St.
Richmond VA 23220

FTE, Fall 1992: 1361

Virginia Wesleyan College
Wesleyan Dr.
Norfolk VA 23502-5599

FTE, Fall 1992: 1231

Walla Walla College
500 Tausick Way
Walla Walla WA 99362

FTE, Fall 1992: 1609

Walsh College
2020 Easton St. N.W.
Canton OH 44720

FTE, Fall 1992: 1275

Wartburg College

Waverly	IA	50677-1003
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FTE, Fall 1992:	1392	
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Wayland Baptist University
1900 W. Seventh St.

Plainview	TX	79072
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FTE, Fall 1992:	1456	
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Waynesburg College
51 W. College St.

Waynesburg	PA	15370
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FTE, Fall 1992:	1332	
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Wesley College
120 N. State St.
Dover

CT	19901
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FTE, Fall 1992:	1294	
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West Virginia Wesleyan College
College Ave.

Buckhannon	WV	26201
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FTE, Fall 1992:	1497	
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Westminster College
S. Market St.

New Wilmington	PA	16172
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FTE, Fall 1992:	1554	
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Westmont College
955 La Paz Road
Santa Barbara

CA	93108-1099
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FTE, Fall 1992:	1314	
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Wheaton College

Wheaton	IL	60187
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FTE, Fall 1992:	2266	
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 Wheeling Jesuit College
 316 Washington Ave.

Wheeling	WV	26003
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FTE, Fall 1992:	1114	
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Whitworth College

Spokane	WA	99251-0002
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FTE, Fall 1992:	1150	
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Willamette University

Salem	OR	97301
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FTE, Fall 1992:	2326	
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 William Carey College
 Tuscan Ave.

Hattiesburg	MS	39401
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FTE, Fall 1992:	1300	
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William Jewell College

Liberty	MO	64068
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FTE, Fall 1992:	1533	
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 Wilmington College
 Box 1185

Wilmington	OH	45177
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FTE, Fall 1992:	1584	
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Wingate College

Wingate	NC	28174-0157
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FTE, Fall 1992:	1321
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Wittenberg University

P.O. Box 720

Springfield	OH	45501
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FTE, Fall 1992:	2280
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Wofford College

429 N. Church St.

Spartanburg	SC	29303-3663
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FTE, Fall 1992:	1079
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APPENDIX C

RANDOM SAMPLE

<u>University--Denomination</u>	<u>State--1992 FTE</u>
Alaska Pacific University United Methodist	AK 1751
Anderson University Church of God	IN 1889
Aquinas College Roman Catholic	MI 1784
Asbury College Private	KY 1095
Assumption College Roman Catholic	MA 2197
Augustana College Lutheran	SD 1743
Aurora University Advent Christian	IL 1439
Austin College Presbyterian	TX 1522
Azusa Pacific University Independent	CA 1914
Bethel College Baptist General Conference	MN 1920
Biola University Independent	CA 1846
Brigham Young University--Hawaii Campus Latter-Day Saints	HI 2047
Buena Vista College United Presbyterian	IA 2086
California Lutheran University Evangelical Lutheran Church	CA 2128
Campbell University Southern Baptist	NC 2023

Capital University Lutheran	OH 2745
Carlow College Roman Catholic	PA 1363
Carroll College Roman Catholic	MT 1297
Cedarville College Baptist	OH 2165
Central Wesleyan College Wesleyan Methodist	SC 1057
Chaminade University of Honolulu Roman Catholic	HI 1396
Chestnut Hill College Roman Catholic	PA 1196
College of St. Elizabeth Roman Catholic	NJ 1202
College of the Ozarks Presbyterian	MO 1558
Colorado Christian University Independent	CO 1048
Columbia College United Methodist	SC 1082
Columbia Union College Seventh-Day Adventist	MD 1211
Concordia College Lutheran	MN 2898
Concordia University Lutheran-Missouri Synod	IL 1327
Cornell College United Methodist	IA 1106

Dallas Baptist University Southern Baptist	TX 1695
David Lipscomb University Churches of Christ	TN 2109
DePauw University United Methodist	IN 2143
Dillard University United Church of Christ/United Methodist	LA 1662
Doane College United Church of Christ	NB 1242
Dordt College Christian Reformed	IA 1052
Eastern Mennonite College and Seminary Mennonite	VA 1060
Elizabethtown College Church of Brethren	PA 1809
Faulkner University Church of Christ	AL 1735
Florida Southern College United Methodist	FL 1970
Friends University Friends	KS 1488
Furman University Southern Baptist	SC 2759
Gardner-Webb College Southern Baptist	NC 1737
George Fox College Private	OR 1224
Grand Canyon University Southern Baptist	AZ 1737

Hardin-Simmons University Southern Baptist	TX 1501
Heidelberg College United Church of Christ	OH 1117
Houghton College Wesleyan	NY 1146
Houston Baptist University Southern Baptist	TX 1934
Indiana Wesleyan University Wesleyan Methodist	IN 2300
Kalamazoo College Baptist	MI 1271
Lake Forest College United Presbyterian	IL 1022
Lebanon Valley College United Methodist	PA 1488
Lee College Churches of God	TN 1854
Malone College Friends	OH 1462
Marian College Roman Catholic	IN 1028
Marian College of Fond Du Lac Roman Catholic	WI 1680
Meredith College Southern Baptist	NC 2321
Mississippi College Southern Baptist	MS 2121
Mobile College Southern Baptist	AL 1257

Morris Brown College African Methodist Episcopal	GA 2015
Mount Aloysius College Roman Catholic	PA 1037
Mount Mary College Roman Catholic	WI 1171
North Carolina Wesleyan College United Methodist	NC 1637
North Park College and Theological Seminary Evangelical Covenant	IL 1014
Northwest Nazarene College Nazarene	ID 1058
Northwestern College Reformed Church in America	IA 1014
Northwestern College Private	MN 1208
Oakwood College Seventh-Day Adventist	AL 1206
Ohio Wesleyan University United Methodist	OH 2007
Oklahoma Baptist University Southern Baptist	OK 1723
Oklahoma Christian University of Science and Church of Christ	OK 1532
Ouachita Baptist University Southern Baptist	AR 1269
Pacific University United Church of Christ	OR 1596
Palm Beach Atlantic College Independent	FL 1467

Point Loma Nazarene College Nazarene	CA 1891
Rhodes College Presbyterian	TN 1429
Rockhurst College Roman Catholic	MO 1744
Rosary College Roman Catholic	IL 1207
Sacred Heart University Roman Catholic	CT 2753
Salve Regina University Roman Catholic	RI 1862
Seattle Pacific University Roman Catholic	WA 2225
Simpson College United Methodist	IA 1327
Southern College of Seventh-Day Adventists Seventh-Day Adventist	TN 1534
Southwest Baptist University Southern Baptist	MO 2230
St. Thomas University Roman Catholic	FL 1803
St. Xavier University Roman Catholic	IL 2107
Texas Wesleyan University United Methodist	TX 1474
The Southern Baptist Theological Seminary Southern Baptist	KY 1844
The University of Dallas Roman Catholic	TX 2239

Trevecca Nazarene College Nazarene	TN 1318
Trinity College	DC 1112
University of Evansville United Methodist	IN 2556
Upsala College Evangelical Lutheran	NJ 1115
Virginia Wesleyan College United Methodist	VA 1231
Walla Walla College Seventh-day Adventist	WA 1609
Wesley College United Methodist	CT 1294
West Virginia Wesleyan College United Methodist	WV 1497
Westminster College Presbyterian	PA 1554
William Carey College Southern Baptist	MS 1300
AVERAGE Fall 1992 FTE:	1622
MINIMUM Fall 1992 FTE:	1014
MAXIMUM Fall 1992 FTE:	2898

APPENDIX D

Initial Participant Contact Letter

February 7, 1994

Contact Person
University
Street Address
City, State Zip

Dear _____,

I am a graduate student at Oklahoma State University in the Department of Curriculum and Instruction. I am also the Director of Media and Information Technology at Southern Nazarene University. As a part of my graduate requirements, I am surveying private, church supported four year institutions with full-time enrollment consisting of 1,000 to 3,000 students to determine the level of Internet connectivity provided to the campus.

I have attempted to keep the survey short in hopes that the majority of respondents would take the time to answer the questions. If another person could better answer these questions, please forward to the appropriate department. I appreciate your help with my research.

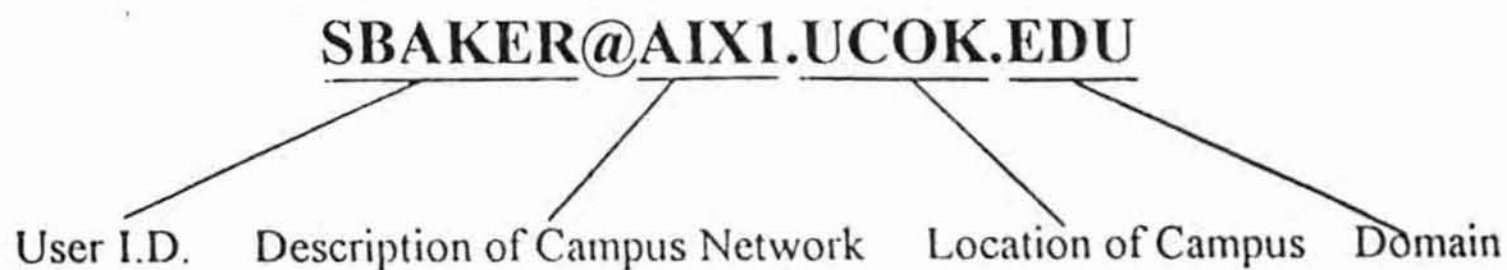
Sincerely,

Susan R. Baker

FIGURE 1

Figure 1--Internet Address Breakdown

A typical Internet address is broken down into the following components:



Depending upon the system, the location of the campus and the description of the campus network may be in reverse order. However, the User I.D. will always be first, and the domain will always be last.

VITA ²

Susan Ratzlaff Baker

Candidate for the Degree of
Master of Science

Thesis: INTERNET: A SIGNIFICANT RESEARCH TOOL FOR
PRIVATE ACADEMIA

Major Field: Curriculum and Instruction

Biographical:

Personal Data: Born in Enid, Oklahoma, on December
19, 1949, the daughter of Mr. and Mrs.
Loyd Ratzlaff.

Education: Graduated from Enid High School, Enid,
Oklahoma in May 1968; received Bachelor of
Science degree in Elementary Education from
Oklahoma State University, Stillwater, Oklahoma
in May 1971; received Bachelor of Science degree
in Computer Science from Central State
University, Edmond, Oklahoma in May 1984.
Completed the requirements for the Master of
Science degree with a major in Curriculum and
Instruction at Oklahoma State University in May
1994.

Professional Experience: Taught Special Reading at
McCord Public Schools, Ponca City, Oklahoma,
1971-1972; taught Kindergarten at McCord Public
Schools, Ponca City, Oklahoma, 1973-1975; taught
Math and Computer Science in Edmond Public
Schools, Edmond, Oklahoma, 1984-1992; Director of
Media and Information Technology at Southern
Nazarene University, Bethany, Oklahoma 1992 to
present.

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 03-22-94

IRB#: ED-94-078

Proposal Title: INTERNET: A SIGNIFICANT RESEARCH TOOL FOR PRIVATE
ACADEMIA

Principal Investigator(s): Bruce Petty, Susan Baker

Reviewed and Processed as: Exempt

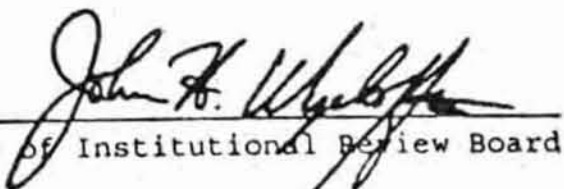
Approval Status Recommended by Reviewer(s): APPROVED

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT
MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR
RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY MODIFICATIONS
TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for
Deferral or Disapproval are as follows:

Signature:


Chair of Institutional Review Board

Date: March 22, 1994