

**Content Analysis of City Government World-Wide-Web Pages in the State of Texas**

**Applied Research Project**

By

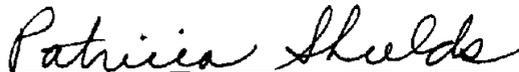
**Jeffrey T. Kirchhoff**

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Faculty Approval:



Patricia M. Shields, Ph.D.



George M. Weinberger, Ph.D.

For my Wife and editor Jacey,  
Dr. Shields, Dr. Weinberger and  
all those whose support I relied  
on throughout the MPA program.

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## **Chapter 1: Introduction**

The Internet is the vast collection of interconnected networks of computers that span the entire globe. Since the late 1980's, this network that was once reserved for use by the scientific elite has grown in size exponentially, with access now available to just about anyone with a computer.

Many tools and utilities are available for accessing information over the Internet. One of these tools is called the World-Wide-Web (WWW). The WWW assigns every bit of information and resource on the Internet a Uniform Resource Locator (URL). URL's are the addresses used to locate information and resources. Using a WWW Browser, such as Netscape Navigator or Internet Explorer, one can enter the desired URL and view that address's contents. One can also use search engines, like Yahoo or AltaVista, for searching the Internet for information on a desired topic using keywords.

City governments have not been immune to the rapid growth of the Internet and the WWW. Like many private entities, city governments are scrambling to establish a presence or "home-page" on the Internet as a way to attract business and people to their city (Newcombe 1997, 48). These city government sites often offer very similar content when compared to each other, but with the diversity of technical ability and the variety of methods for creating web-pages and utilizing technology, each page has its own unique style. Some pages have very simple content and use few resources, while others push the boundaries of available technology to the limit.

The focus of this project will be to determine what are the level of content and the level of utilization of technology in the Web pages that are posted on-line by the Cities of

Texas. Cities in Texas are in a unique position with regard to the Internet because of its concentration of computer and telecommunication related industries. For this reason, more local governments in Texas have a broader access to the Internet and the technologies that it makes available.

The next chapter of this project is a literature review. This chapter explores the literature related to the history of the computers and the Internet. Next, the policies that define how the use of this new medium is approached by governments at all levels are reviewed. The impact of computers and the Internet on the public sector is discussed next. Then, the chapter briefly examines the use of the Internet and the World-Wide-Web by governments. Finally, a conceptual framework for the design of the project is discussed. This **framework** defines three conceptual categories for the examination of web pages, they are: Content, Design, and Technology.

Chapter three offers a discussion on the methodology of analyzing how cities in Texas are utilizing the Internet and the World-Wide-Web. The use of content analysis is discussed and a description of the sample is presented. Subsequently, groups of questions are offered in each of the conceptual categories of content, design, and technology. Next, these questions are outlined in the content analysis coding scheme. Finally, descriptive hypotheses for each of the questions are discussed.

The results of the content analysis are presented in chapter four. First, the results of the pre-test are discussed. Then, the results of the full content analysis are discussed for each conceptual category. Next, the chapter discusses the overall results of the content analysis. The last part of this chapter presents and discusses charts of the overall city scores.

Chapter five offers some final discussion and the conclusion of the project. First, some positive and negative aspects of the research are presented along with some examples of good and bad web pages. Then, some suggestions for further research in this area are offered. Finally, some suggestions for an Ideal Type web page are offered and discussed.

## **Chapter 2: Literature Review**

### **Introduction**

Computers, information systems, and the Internet have **fundamentally** changed how we interact with our governing bodies. This change has occurred recently and rapidly. The focus of this chapter is to examine the literature involving computers, the Internet, and information systems and how they relate to the public sector.

This chapter first examines the development and growth of the Internet. Second, existing policies regarding the use and development of the Internet are reviewed. This section addresses policy issues that need to be considered for the **future**. Finally, the impact of the Internet on the way we interact with government is discussed.

### **The Internet**

#### **History of Computers**

This section briefly examines the history of computers and reviews their increasing role in government. There have been four major generations of computers. The first was the **Univac**, which was used from 1951 to 1958. This first generation computer ran solely on vacuum tubes. The second generation, **from 1959-1964**, saw hardware advances in the areas of: transistors, magnetic core memory, magnetic tapes, and magnetic disks. Third generation computers (1965 to 1970) used integrated circuits. Finally, fourth generation computers (1971 to the present) have used microprocessors or computers on a chip (Lacle, 1996, 10).

Computers are increasingly important to both public and private sector organizations. Computers are now a tool for managing information, a tool that is technologically sophisticated, and one which continues to experience rapid technological change (Bretschneider, 1990,536). In the past two decades, we have seen the rise in prominence of information technologies in the public sector. These technologies are increasingly being seen in the areas of providing service, monitoring regulations and creating and monitoring of policies and programs (Caudle, 1990, 515). Computers have been used for many applications including paying employees, sending utility bills, analyzing demographic data, and routing vehicles. During the 1990s, computers have been used in the new role of transforming the interactions between organizations and people (Lacle, 1996, 11).

### **History of the Internet**

The ever increasing use of computers in government began when networks started connecting existing computers together resulting in what we know today as the Internet. This section examines the evolution of the Internet.

One author compares the evolution of the Internet with Gutenberg's invention of the movable type printing press in the mid-fifteenth century. The printing press made possible the production of a larger number of manuscript copies, in a more consistent form, and at a far lower cost than possible by professional copyists (Giles, 1996, 613). Giles (1996, 613) goes on to say that "The creation of the Internet and particularly the world wide web with its graphic interface provides the basis for another revolution in communications, one that will rival if not exceed that spawned by Gutenberg." The rapid

rise of information technology can be seen as the dividing line between modem and post-modem communication because it has reached “a decisive stage in a relatively short period of time” (Kirshenblatt, 1996, 21).

Less than thirty years ago, computers began to be connected to each other through networks. The result is the Internet (or network of networks) that we see today.

Kirshenblatt states that:

A Rand Corporation report of 1964 proposed 'A network technology sufficiently decentralized that a network could survive arbitrary loss of links or nodes, as for instance nuclear war'. Such a network was funded in 1968 and running in 1969 in the form of ARPANET 'the first distributed packet switching network' (1996, 24).

To get where it is today, the Internet went through several phases outlined by McGarty and Haywood:

**The Simple Internet** (1968-1974): Beginning as an experiment in networking, in this period the Internet's predecessor, the ARPANET, was a simple network consisting of 56kbs circuits interconnected by Interface Message Processors, or IMPs.

**The Internet Goes Global** (1973-1981): In this period the TCP/IP protocol was developed and layered on top of the existing datagram network. Although originally aimed at remote logon and file transfer (FTP), the afterthought, email, became 95% or more of the total network traffic. This allowed Internet to become a distributed conversational medium, not just a remote processing vehicle.

**Military and Nonmilitary Split** (1982-1986): During this phase the nonmilitary Internet evolved. The Department of Defense separated its network and the residual was spun off into a larger user community. The nonmilitary user community expanded, allowing access to new user communities. The backbone also grew to T1 rate (1.544 Mbps).

**The Mitotic Period** (1986-1992): "Cell division" of the network occurred. DS3 (45Mbps) circuits were added, and local and regional networks were adopted. Access closer to the end-user spread, personal computers proliferated, and the number of hosts grew explosively. The number of networks grew from about 100 in 1988 to over 5,000 in 1992.

**"New User" Access Era** (1993-Present): This era is the era of New User access and the proliferation of commercial users and hosts and networks. The user community is expanding from the computer literate

and comfortable to the infrequent user community and those whose expertise is frequently exceeded by their enthusiasm and expectations.

**The Distributed Open Network (1996-):** The network moves into a gigabit-per-second backbone, allowing for the first time real-time access to such applications as multimedia processing, video, and supercomputer networking.

Several factors have contributed to the rapid growth of the Internet over the past decade. First, the availability of faster, cheaper and more powerful personal computers have allowed computers to be available for use to a wide population. Second, the adoption of the Internet Protocol has allowed for all of these computers to have a standard way to communicate with each other. Third, the expansion of the telecommunications infrastructure of fiber-optic cables has allowed for increased digital communication over greater distances. Thus, allowing organizations and businesses greater connectivity and interaction. Finally, as computers have become easier to use and the general public has become more computer literate, computers have found their way into every part of our daily lives. From the ATM machine at the bank to the portable computer used by a commuter to work on the road, computers and the Internet are an ingrained part of our lives. (Kirshenblatt, 1996, 25, Kraemer and Dedrick, 1997, 89).

The National Information Infrastructure or Information Superhighway is made up of a collection of hardware, software, protocols, personnel and facilities that place vast amounts of information at users fingertips (Cameli, 1996, 1). In the emerging digital environment, connection speed or bandwidth may vary from a dial-up line with a 2400 baud modem to a leased T-3 line at 45 megabits per second (Kahin, 1995, 7). These vast speed differences represent the variety of computers from the home user with a modem to the large corporations that use leased lines to connect their entire business on-line. The

major difference between what is called the Internet and its closest cousins, the telephone and cable networks, is that these older networks are based on hard-wired facilities. The **Internet** is an assembly of distributed resources that are overlaid onto the existing infrastructure (Kahin, 1995 9).

### **The Growth and Use of the Internet**

As of December 1994, more than 55 million people were estimated to be connected to the Internet (Kirshenblatt, 1996, 26). Currently, about 4% of US citizens have access to the Internet, and the number of users on the Internet has been doubling every year since 1988. It is estimated that by 1998, 16% of US citizens will be on the web and 64% will have access by 2000 (Hopper, 1996, 23). The users of the internet form the largest most directly connected community in the world with 15-25 million users worldwide, a majority of which are from the United States (Kahin, 1995, 4, Kirshenblatt, 1996, 26).

Laudon (1996,350) outlines several uses of the Internet. First, communication is the primary use of the Internet. The second main use of the Internet is information retrieval. Hundreds of libraries are accessible through the net, and information in many databases is easily searchable. The main method for accessing information on the Internet is called the World-Wide-Web(WWW). The WWW is a "set of standards for storing, retrieving, formatting, and displaying information using a **client/server** architecture (Laudon, 1996, 351)." A home page is the special HTML formatted document that is accessed by the WWW. Many organizations have created home-pages to display information about themselves (Laudon 1996,355). The tool that is used to

view home-pages is called a Browser. This software supports graphics and hypertext links and is necessary for navigating the WWW (Laudon, 1996, 357).

### **Future of the Internet**

The potential for the Internet is enormous. As telecommunications systems increase their bandwidth, the possibilities of the WWW with increased speed and ease of use should become a reality (Laudon, 1996,364). For example, Cameli (1996, 4) notes that:

"In order to carry interactive video services, some portions of the telecommunications infrastructure require greater capacity. High-capacity "broadband" fiber-optic cable, which could carry many Information Superhighway services, exists in the interstate, long-distance portion of the infrastructure. However, the local infrastructure, largely consists of copper telephone wire and coaxial cable television wire, has lower capacity."

The rapid expansion of information technology worldwide is beginning to cause the boundaries between computing, telephony, television and publishing to become more blurred (Cameli, 1996, 57). The eventual result of this merging of technologies will be a single appliance that allows for access to all of these services.

### **Public Policy on Computers and Internet**

#### **Overview of Policies**

In 1990, Caudle (1990, 516) suggested that policy regarding computers should have four components: 1) A mandate and central direction for development of a program; 2) A well-defined organizational structure that ensures coverage of information technology and information management areas; 3) A structured planning process for identifying mission-related information priorities; 4) A policy formation process that focuses on information sharing and information technology resources

interoperability. The goal of this framework is to provide the most effective access to information, built on the current available technology with the ability to expand as new information technology becomes available (Caudle, 1990, 520).

McConnell (1996, 223) also has some observation on policy regarding the Internet. First, he points out that "History teaches that change will occur faster than anyone expects. The frustration with policy is that it usually addresses today's problem. Fortunately, the Paperwork Reduction Act of 1995 provides a strong framework for policy development." Second, he suggests that "the Federal Records Act (44 USC 21, 29, 33) is fundamentally sound. It creates a framework that permits agencies to manage and sustain information of record."

Several policies on the use of the Internet have been adopted in the last few years. This section examines these policies. On September 15, 1993, the Clinton Administration formally launched its National Information Infrastructure initiative, an initiative that, in rhetorical terms if not in dollars, ranks with the space race as a major technology-centered policy initiative (Kahin, 1995, 3). In the year since this initiative appeared, it has become broadly apparent that the Internet is a model for the future and a rapidly evolving platform, already widely implemented and based on mature, affordable, and adaptable technologies (Kahin 1995, 3). Two relevant policies that are examined in this section of the chapter, they are Clinton's Executive Order 13011 and the Paperwork Reduction Act of 1995.

Appendix 1 contains the relevant sections of President Clinton's Executive Order 13011. The purpose of this order is to outline the President's vision for the future of

information technology in the United States. The order emphasizes the need for public officials to outline a clear structure for the management and operation of information resources. The President also stresses the need for interagency cooperation when it comes to the sharing of information resources and technology.

Appendix 2 contains selected parts of the Paperwork Reduction Act. The main goals of this act are, as the name implies, to reduce paperwork in government. The Act outlines goals to reduce the paperwork of the government's customers and to improve productivity and efficiency of government agencies. The Act stresses that information technology should be used wherever possible to reduce the paperwork burden on the public.

Both of the policies above are the core of the National Information Infrastructure, which is one of the major goals to the Clinton Administration. Each of these policy guidelines has the components that Caudle suggested several years earlier. They both have a directive for central development. Each requires a structured planning process and a policy formation process based on the future needs of an organization.

### **Policy Issues to Address**

The literature suggests that there are several areas of policy that must be addressed when dealing with information and the Internet. This section of the chapter examines the areas of security, centralization, training, copyright, and sustaining information.

The first policy area has to do with security. Several problems with regard to the Internet that users face stem from the relative immaturity of the technology in use (Laudon, 1996, 361). "The Internet is a highway that carries a great deal of personal and

organizational information and data, much of it sensitive or proprietary (Laudon 1996, 361)" which is vulnerable to thieves and vandals. The Internet is global in scale and eventually we will be able to identify one-to-one the host and user, but the user may be identified through many hosts. This situation makes the possibility of security problems real. As the Internet grows, security concerns will expand as well (McGarty and Haywood, 1995,257). Cameli (1996, 58) was cited earlier as suggesting that policy must "ensure the security and privacy of databases and users' communications, and provide a high degree of interoperability and reliability." As security policy improves on the Internet, it should become easier for users to verify a document's authenticity and origin (Hopper, 1996, 25).

The second policy area to be discussed involves centralization of computing resources. Kraemer and Dedrick offer that "Technology tends to be effective when it is used as a tool to change and improve the way the public organization carries out its various functions (1997, 95)." Those in favor of decentralization say that the policy brings computer resources under the control of the actual users, and they are able to better grasp and utilize the technology to meet the needs of their organization. The introduction of personal computers and client-server computing, based on standard software packages, has strengthened the argument for decentralized computing (Kraemer and Dedrick, 1997, 95).

Advocates of centralization believe that it increases economies of scale in acquiring equipment, and it enhances interagency coordination of data while giving managers control over resources (Kraemer and Dedrick, 1997, 96). Centralization is a

remnant of earlier computing strategies that relied on large centralized mainframe computers for all of an agency's applications. The Internet is, at its core, a prime example of decentralized computing.

The next issue involves questions about whether computing should be centralized or broken into smaller departmental units. Some argue that centralization of managerial control rather than facilities and services is the key factor (Kraemer and Dedrick, 1997, 96). "If information is power, then centralized computing concentrates power at higher levels in the organization, while decentralized computing devolves more power to sub-units within the organization (Kraemer and Dedrick, 1997, 97)." Either way centralization is an issue that must be addressed at the policy level with regard to computing resources.

Training is the third policy area that is reviewed. Innovations in information technology are only valuable to organizations when they are actually utilized effectively by the individuals within that organization (Kraemer and Dedrick, 1997, 91). "Training can overcome limitations in employee experience with computing. In fact, users' computer literacy and prior training are more important than the number of years employees have used computers (Kraemer and Dedrick, 1997, 93)." Finally, without the proper training, information technology cannot be used to its full potential. Access to the Internet is of little use if the users do not have a basic knowledge of computers and the resources available on the Internet (Kurland and Egan, 1996, 391).

The next policy issue deals with the Internet and copyright. Access to, and use of copyrighted information has historically been addressed in public libraries, not by

telecommunications carriers. "In certain respects, it is addressed by copyright law and, in the case of government information, by a variety of instruments and institutions (Kahin, 1995, 7)." Existing copyright law does apply to the Internet, with few modifications needed to make them applicable to an on-line environment. "Copyright and intellectual property rights are threatened when on-line users may easily access files, print them out, and use or sent them on to another user without the permission of the original author (Stowers, 1996, 124)." Copyright protection can be applied to both published and unpublished material, with the exception of U.S. Government documents, which means that most material available on the Internet can be subject to copyright (Stowers, 1996, 125). Finally, Stowers (1996, 125) offers that:

The public administration community should be aware of these important new sources of information and on-line documents, and how to access them, Public administrators also need to be aware of the many new and different policy issues being created by these new forms of publications and communications areas.

This comment highlights the need for administrators to address policy issues with regard to information they post on the Internet and how the public receives and uses that information.

The last policy area that is discussed involves the issue of sustaining information.

McConnell (1996,218) defines sustaining information this way:

Once created and distributed, electronic information products must be sustained if they are to retain their value. Sustaining includes maintaining the information's currency, availability, location, and integrity. Currency means keeping it up to date. Currency is complimented by availability – the retention and preservation of information for future users. Both require the ability to locate the information and to validate its integrity.

The primary challenge for public organizations is that they must maintain the information they post on the Internet. Information must be current, consistently available, and its integrity or security must be monitored. These issues need to be addressed at the policy level (McConnell, 1996,222). Kahin (1995, 7) points out that control of information has traditionally fallen under the duties of libraries. For any policy to be effective, it must contain "Partnerships among stakeholders – all levels of government, industry, the universities, the libraries, and users generally – means sharing responsibility, costs and risks (McConnell, 1996, 222)."

### **Impact of Computers and the Internet on Public Sector**

The last section of this chapter addresses some of the perceived needs and changes that computers and the Internet bring to government. Specifically, red tape in government, the emergence of new political systems, changes in the publication of documents, and the use of the World-Wide-Web in local government are examined.

### **Red Tape and Information Costs**

Pandey and Bretschneider (1997, 113) point out that public organizations often have more red tape, or administrative delay, than private organizations. Information technology, such as the computers and the Internet, are seen as ways to streamline the communication processes of public organizations thereby reducing the amount of red tape (Pandey and Bretschneider, 1997, 118). A final point that Pandey and Bretschneider (1997, 119) make is that the larger an organization the more likely there is going to be some slack in the organizational structure to allow for some innovation by using technology. The transformation in information technology we are seeing is stimulated by the use of

computers. This change is being continued by our ability to use information technology to reduce communications and information processing costs (Reschenthaler and Thompson, 1996, 125). The computer is continuing to erode economies of scale in public administration and, thereby, the relative advantage of a hierarchical and a bureaucratic system. Finally, by using computers and technology, organizations are able to provide customizable services at mass production prices (Reschenthaler and Thompson, 1996, 131).

### **New Political Systems**

This section examines how the Internet and computers are changing the traditional political systems at every level.

There is a new political system is rising in the United States. America is turning into an electronic republic, a democratic system that is increasing the people's day-to-day influence on the decisions of the government (Grossman, 1995, 3).

The emerging electronic republic will be a political hybrid. Citizens not only will be able to select those who govern them, as they always have, but increasingly they also will be able to participate directly in making the laws and policies by which they are governed. Telecommunications technology has reduced the traditional barriers of time and distance. In the same way it can also reduce the traditional Constitutional barriers of checks and balances and separation of powers, which James Madison thought the very size and complexity of the new nation would help to preserve (Grossman, 1995, 4).

With continuing increase in the use of the Internet, it is rapidly approaching 'mass media' status, in the same way that television did earlier this century (Hopper, 1996, 24).

Electronic networks are mobilizers in various ways in the real world—to volunteer help in time of need, or as a tool of political mobilization, lobbying, or activism on behalf of a wide range of issues (Kirshenblatt, 1996, 29). “In the US, political organizations,

candidates, and public office holders are linking up to allow citizens to correspond with them through electronic mail (Kurland and Egan, 1996, 387).” Kurland and Egan state that “The potential for the Net to enhance democratic participation may largely turn on the decisions we make regarding who controls the net. Increased use of the market to regulate the Net is likely to inhibit its utility for enhancing democratic participation (1996, 399).”

## **Publications**

This section examines the impact the Internet and computers have had on government publications and scholarly publications. The area of on-line documents is the precursor to government's full use of the Internet as an on-line presence.

On-line publications or documents placed on the Internet are being used by constituents and other governments to reach segments of the population that previously did not have access to those documents (Stowers, 1996, 121). Stowers continues with the following insights:

“Still lagging behind the private sector, governments are beginning to take advantage of these new technologies to allow managers and citizens access to up-to-date government information quickly and cheaply. More governments today are taking advantage of on-line communication and publications to provide citizens easier access to information, easier communication with officials, and new ways of providing services (1996, 121).”

The Census Bureau in February of 1995 announced that several publications, previously only published in paper format, would now only be available via the Internet. The Bureau's intent was to make these reports available in a more cost-effective and timely manner (Cornwell, 1996 299).

The widespread increase in the use of the World Wide Web, which was originally developed for the purpose of sharing academic research, the use of on-line publishing for distributing scholarly research has also increased (Ball, 1997, 13). "On-line publication of scholarship presents an opportunity to realize three primary advantages over paper publication: cost reduction, time savings, and, above all, flexibility in delivery and content. (Ball, 1997, 14)." One disadvantage of on-line publication is that use of this forum is not considered a "real publication" in the eyes of academics (Ball, 1997, 15). The use of on-line publications allows for greater variety and flexibility in the review process for both authors and readers. Traditional thinkers may still choose to read only the top journals, but they will have faster more reliable access to them if the journals are on-line (Ball, 1997, 25).

Giles (1996, 615) explains the traditional model of scholarly publication which involves discussing an idea among peers, anonymous review of submitted journal articles, and presentation of ideas at conventions before publication. This model is being slowly phased out with the advent of what Giles calls the Cyberspace Model. Within the Cyberspace Model, scholarly communication is done electronically via the Internet. The central element of this model is the server. The server is a site on the Internet where papers can be posted and retrieved (Giles, 1996, 615). "The emerging model carries tremendous promise for efficiency in the research enterprise, the speed of scholarly exchange and the openness of scholarly debate (Giles, 1996, 625)." Information technology can increase the effectiveness of peer review. Ultimately, the integrity of electronic works will be assured by getting them directly from secure and trusted sources (McConnell, 1996, 219).

## **Use of the World-Wide-Web in Local Government**

Local governments have been creative in their use of the Internet to convey information to constituents. This section of the chapter examines some of their implementations. The city of Seattle, Washington has had a site on the Internet since 1996. The site started by the City Clerk's office has far exceeded expectations for its use. The site was originally developed to make city codes, current legislation, and historical documents available to the many city agencies that frequently requested this information. To start the site, the city required, as part of the Paperwork Reduction Act, that all documents submitted to the Clerk's office be in electronic form. The Clerk's office then posted all of this electronic information on-line. To the surprise of the City Clerk's office, the public also found the on-line information useful. They report that many local business owners, lawyers, librarians, and citizens use the site frequently to gather information on issues ranging from vehicle codes to land use codes. In the future, the Clerk's office plans to expand the site to include administrative rules, guides for interpreting tax codes, and even live video links to pending legislation (Dykhouse (1), 1997, 28)

The City of San Diego, California has a site on the Internet that was developed for both residents and visitors. The site was the result of the city council wanting to give city residents greater access to their government. Content on the site is divided into areas titled Elected Officials, City Organization, Business Centers, and City Services. The site's initial success prompted many city departments to request permission to post

information on the site. The departments provide the basic content for the site, and professional graphic designers in the city's print shop design the actual pages that are posted. The most popular pages on the site are the Police Department and the Libraries. People can see the most current operations of the police department and on the library page they can browse card catalogs, indexes, and view some books on-line. Residents can fill out **comment/complaint** forms on-line to report successes or problems directly to city council, often with quick results. The City is currently planning to offer live audio of City Council meetings on the site (Dykhouse (2), 1997, 34).

Many local governments post web pages **as** an economic development tool to attract people and businesses to their location. The Internet has developed into a powerful marketing tool that is ideal for this purpose. If you utilize one of the many Internet search tools using the keywords "economic development" and "government", the results will be literally hundreds of possible sites to visit. Internet sites offer city governments a low-cost way to potentially reach millions of people in a way that they can revise and change at a moments notice. The only indirect cost of posting information on the Internet is planning. Web pages must be **carefully** thought out and information gathered before the page is posted to avoid annoying "under construction" signs. Successful sites must also provide enough pertinent links to other sites in the area to give visitors as much information as possible. Newcombe (1996, 48) quotes Tom Kneeshaw, in regard to Internet marketing, as saying "It's about learning to use new tools to do business in different ways, it's not just about computers."

## **Conceptual Framework**

There is little literature available on the actual content of web pages designed and posted by cities. Most information available is more in the context of reviewing individual web-sites. The purpose of this project is to describe and compare the content of many city government web-sites to determine the extent of similar content available and the utilization of advances in technology in the presentation of web pages. A secondary goal of this examination will be to determine what is the most common content and what would be the definition of an ideal web-page.

To organize the examination of the web-sites, the conceptual **framework** of Conceptual Categories has been chosen. Three categories are used, they include: Content, Design, and Technology. These three areas were chosen because each examines the web page and its organization from a different perspective.

### **Content**

A wide variety of content can be offered on any particular web-page. What one city offers on its site may be completely different or similar to what another city offers on its web site. The content of a web page is a factor that identifies what audience a city is aiming at with its site. Some cities may be aiming at attracting business, while others are focused on tourism.

### **Design**

Design of a web will be examined because how a page is put together and organized is also closely linked to the goals and objectives of the site. A business oriented site offers more information with regard to demographics, tax, and business

codes, while a tourism site offers for pictures, historical information, and interesting local places to visit. The design of a site also indicates the effort and thought put into its development. Well thought out pages are easy to navigate and clearly reflect the goals and objectives of the site. Hastily created pages are often difficult to navigate and do not clearly identify the purpose of the site.

### **Technology**

The technology that is utilized by a web-site indicates the level of commitment a city has to the use of the Internet, as well as the technical sophistication of the city itself. Elaborate sites with extensive use of available technology need the full support of the city government to be made possible. Sites that do not utilize the available technology may not have the support of the city government or they may indicate that the required levels of technical resources are not available to that city.

### **Conclusion**

This chapter has examined many issues that apply to the Internet and its influence on government. The rapid growth of the Internet has brought dramatic changes to the way we interact with our government. Today, anyone with a computer can go on-line and speak directly to their government representatives. The growth also means that policies and regulation need to catch up with what is happening. Issues such as security, training, and who will sustain the information on the Internet must be addressed in this new medium. This chapter has laid the groundwork for an exploration into how governments are using the Internet today. In the next chapter, a methodology is offered for the examination of how city governments in Texas are utilizing the Internet.

## **Chapter 3: Methodology**

### **Introduction**

The purpose of this chapter is to discuss the methodology for the content analysis portion of the research project. First, the reason for using the content analysis research design is discussed. Next, there is a discussion of the sample and the questions for each conceptual category (content, design, and technology). Finally, descriptive hypotheses for the results of the content analysis are reviewed.

Content analysis was chosen as the research design for this project for two main reasons illustrated by Babbie. First, content analysis can be conducted on virtually any social artifact or form of communication (Babbie, 1992,313). Second, as a research method, content analysis offers economy and ease of use. If it is found that the original analysis instrument is flawed, corrections can be made and the analysis repeated with little expense or loss of time (Babbie, 1992,328).

Babbie (1992, 312) defines content analysis as when researchers gather and examine a class of social documents, typically printed material. While they exist in a virtual environment, web pages are written documents and are appropriate for this type of examination as defined by Babbie. Content analysis is the most appropriate research design for this project because it is the most adaptable to this rapidly changing medium. In other methods, such as survey research or experimental design, the survey or design may be obsolete by the time the research is completed. With content analysis, if a major

flaw is discovered or new information becomes relevant, it can be incorporated into the analysis.

## **Sample**

The unit of analysis for this project is a web page that is posted by a city in the State of Texas. The nature of these documents is that they are posted on-line by cities, and they are accessed via the Internet for review. This project will examine all of the approximately sixty city web pages that are linked to the State of Texas home-page at <http://www.state.tx.us/cities.html>. Appendix 3 shows this page and lists the cities that were reviewed. There is no limit on the size of the cities reviewed. Cities in the sample range from small rural towns to major metropolitan areas in Texas. One source of bias for this group of cities is that it excludes cities that are not directly linked to the State of Texas page. Some possible sources of error for this group include: some of the sites listed may no longer be accessible; some of the sites may be listed in error; some of the sites may not be available at the time of review. At the time this analysis was conducted, the final number of reviewed sites was sixty-nine. The next three sections of this chapter discuss questions for each conceptual category.

## **Content Questions**

The questions posed in the category of content are directed at what information is actually available at a particular web-site. Questions for the **content** category are labeled CQ1 through CQ8. CQ1 "Is initial information detailed or general?" is based on the concept offered by Weil (1997, 30) that site information should be presented in a "minimalistic" fashion. CQ2 through CQ7 are general content questions based on initial

observations of common characteristics of city web pages. CQ8 is based on Dykhous's (1997(b), 34) idea that a city's web-site should reflect a specified set of goals and objectives.

### **Design Questions**

Design questions examine how a page is put together and organized. Questions for the **design** category are labeled DQ1 through DQ6. DQ1 and DQ2 are based on personal experience in designing web pages. These questions reflect characteristics that determine how easy a site is to navigate. DQ3 pertains to the need for each page in a site to have a method of navigation on the page itself in case the page is bookmarked by a user and directly accessed later without going through the main page of a site. DQ4 reflects Dykhous's (1997(b), 34) assertion that web pages designed in-house will better reflect what the city wishes to put on the web. DQ5 reflects the point made by Dykhous (1997(b), 34) that organization and navigability are signs of a quality web-site. DQ6 stems from Weil's(1997, 30) comment that a web-site's graphics should be congruous with the message the site is intending to convey. Sites that use pictures and animated graphics to convey the sites message more clearly than simple graphics and icons. DQ7 focuses on the use of **frames** in the web site. The use of **frames** by a site illustrates a higher level of commitment to the design and arrangement of information on the site.

### **Technology Questions**

Questions related to the category of technology are used to determine how advanced the technological resources utilized by the web-site are. Questions applying to the **technology** category are labeled TQ1 through TQ8 on the coding scheme. TQ1

through TQ3 represent the basic areas of technology available for inclusion on a web page. TQ1 looks for a search tool on the site to aid in navigation. TQ2 asks if area maps are available to visitors. TQ3 identifies if the site uses a counter to measure the number of visits to the page. TQ4 and TQ5 represent Dykhous's (1997(a), 28) assertion that the availability of forms and permits on-line are signs of a site maximizing its use of technology. TQ6 and TQ7 are both possible high-technology solutions that have been discussed for possible use. Finally, TQ8 is the result of Bresnahan's (1997, 29) observation that any web-site has the need for an "e-mail query line" for questions and comments.

### **Coding Scheme**

The preliminary content analysis coding scheme as discussed above is shown in Table 3.1. This coding scheme is designed to result in a final total score for each city: the higher the score, the more technologically sophisticated the site is. Mean scores for each question are also calculated, and the total of these scores is considered a base score. Finally, a standard deviation is calculated and all of the sites analyzed are ranked above and below the base score.

**Table 3.1: Content Analysis Coding Scheme\***

City:	CQ1 Is the initial information offered 1-Detailed or 2=General	CQ2 Availability of city executive contact information.'	CQ3 Availability of City demographic information.'	CQ4 Link to Chamber of Commerce. <sup>1</sup>
City:	CQ5 Information on city services. <sup>1</sup>	CQ6 Information on permits and fees. <sup>1</sup>	CQ7 Tourist Information. <sup>1</sup>	CQ8 Clear Goals and Objectives of the site. <sup>1</sup>
City:	DQ1 Complexity of site hierarchy. <sup>3</sup>	DQ2 Three clicks or less on CQ's <sup>4</sup>	DQ3 Use of navigation bars. <sup>4</sup>	DQ4 Outsourcing of page design. 0=unknown 1=yes 2=no
City:	DQ5 General Organization and Navigation. <sup>3</sup>	DQ6 Art pictures and animated icons utilized.'	DQ7 Does the design of the site include frames.'	
City:	TQ1 Search tool available 1=no 2=yes	TQ2 Are maps available 1=no 2=yes	TQ3 Is a visit counter used. 1=no 2=yes	TQ4 Forms Available. <sup>2</sup>
City:	TQ5 Permits available on-line.	TQ6 Rate calculators for city services. <sup>2</sup>	TQ7 Ability to Vote On-line.	TQ8 Is an e-mail address offered for questions or comments. <sup>4</sup>

\*Question Labels: CQ=Content Question, DQ=Design Question, TQ=Technology Question.

Common Coding Schemes

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find, 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> 0=unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> 0=never, 1=sometimes, 2=always

Babbie (1992, 319) points out that "No coding scheme should be used in content analysis until it has been carefully pre-tested." For this reason, a pre-test of the coding scheme is planned. A random sample of fifteen sites from the State of Texas web page are selected and a pre-test of the content analysis is done. The next section of this chapter discusses the expectations or hypotheses for each of the questions in the content analysis.

## **Descriptive Hypotheses**

### **Content Hypotheses**

The questions dealing with content are expected to have the widest range of scores out of the three categories. This variety is expected because this group of questions deals with a wider scope of information than the other categories. The first question on the detail level of initial information offered by a site is expected to have about the same number of cities with detailed information as with general information. This is expected because web sites, in general, usually are split evenly between the two responses. Responses for the next question on executive contact information are expected to fall mainly in the 'moderate' area, with an even distribution between the responses. CQ3 on demographic information is expected to have strong responses in the 'easy to find' category because this type of information is readily available from many sources and easy to translate into a web page. The question about Chambers of Commerce is also expected to have more responses in the 'easy to find' category, since this type of organization is present and active in most cities, often with web-pages of their own. The questions regarding information on city services, permits and fees are expected to have more responses in the difficult to moderate categories. This is expected because these types of information is more complex and would take more time and effort for a city to get them posted on a web page. Responses to the question on tourist information are expected to fall in the 'easy to find' category, because the information is readily available and easy to post on-line. The final question on goals of the site is expected to

have the greatest range of responses because of the general nature of the question and the wide range of possible presentations cities can make on-line.

**Table 3.2**

<b>Content Questions</b>	<b>Expectation of Scores</b>
<b>CQ1</b> Is the initial information offered 1= <b>Detailed</b> or 2= <b>General</b>	Even split between detailed and general.
<b>CQ2</b> Availability of city executive contact information. <sup>1</sup>	Moderately difficult.
<b>CQ3</b> Availability of City demographic information. <sup>1</sup>	Easy to find
<b>CQ4</b> Link to Chamber of Commerce. <sup>1</sup>	Easy to find
<b>CQ5</b> Information on city services. <sup>1</sup>	Difficult to Moderate
<b>CQ6</b> Information on permits and fees. <sup>1</sup>	Difficult to Moderate
<b>CQ7</b> Tourist Information. <sup>1</sup>	Easy to Find
<b>CQ8</b> Clear Goals and Objectives of the site. <sup>1</sup>	Large standard deviation

Common Coding Schemes

<sup>1</sup> 0=**None/Not Found**, 1=**Difficult** to find, 2=**moderately difficult** to find, 3=**easy** to find

0=**Not used**, 1=**limited** use, 2=**moderate** use, 3=**extensive** use.

<sup>3</sup> 0=**unknown**, 1=**Complex**, 2=**Moderate**, 3=**Simple**.

<sup>4</sup> 0=**never**, 1=**sometimes**, 2=**always**

## **Design Hypotheses**

The next category of questions dealing with site design is expected to have a lower standard deviation because each item should be a part of most web page designs.

The question on site complexity is expected to have an even distribution from 'simple' to 'complex' because web sites in general are distributed this way. The question about finding information in three clicks or less is expected to have most responses in the 'always' area. This response is expected because the nature of hyper-linked web-sites offers the ability to find information quickly. The next question on the use of navigation bars is expected to have responses spread evenly between 'never' and 'always' because

this design feature is either used or not and in rare cases only sometimes used.

Outsourcing of page design is expected to have most of the responses fall into the 'no' category because most cities have the computer and personnel resources internally to put a web page together. The general organization question is expected to have the greatest range of responses for this category because of the variety of ways that information can be presented and organized among different cities. The question dealing with the use of graphics on a site is expected to have most of its responses fall in the 'moderate use' category. This is expected because web pages are a graphical medium to begin with, and cases should be rare where graphics are not used at all or used on a limited basis. The last question (DQ7) in this section has to do with the use of frames in the design of a page. Responses to this question are expected to fall into the 'limited use' category because frames are a more advanced design feature of web pages, and it is not expected that most cities will use this feature.

**Table 3.3**

<b>Design Questions</b>	<b>Expectation of Scores</b>
DQ1 Complexity of site hierarchy. <sup>3</sup>	Even distribution from simple to complex.
DQ2 Three clicks or less on CQ's <sup>4</sup>	Mostly always.
DQ3 Use of navigation bars. <sup>4</sup>	Even distribution between never and always.
DQ4 Outsourcing of page design. 0=unkown, 1=yes 2=no	Mostly no.
DQ5 General Organization and Navigation. <sup>3</sup>	Large standard deviation.
DQ6 Are pictures and animated icons utilized. <sup>2</sup>	Mainly moderate use.
DQ7 Does the design of the site include frames. <sup>2</sup>	Mainly limited use.

**Common Coding Schemes**

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find, 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> 0=unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> 0=never, 1=sometimes, 2=always

**Technology Hypotheses**

The last category of questions deals with the level of technology used by cities in their web-pages. This group of questions is expected to have the lowest response rate of all of the categories. First, because most of the responses are either 'yes' or 'no', and second, many of these features are state of the art and only used on a limited basis on web-pages in general. The first question asks if a site has a search tool available. The majority of responses for this question are expected to be 'no' because most sites probably do not contain the level of detail and content that would make a search device useful. The next question asks if maps are available. Responses for this category should still be low, but a 'yes' response is expected to be prevalent in this category because maps are relatively simple to post on-line. The question on the use of 'hit', or visit counters, should have the most 'yes' responses in this category because they are an older

technology that is relatively easy to use in a web site. The availability of forms, either electronic or downloadable, is explored by another question. This feature is expected to be a rare occurrence because of both the resources and the technology required. The same is true for the questions on permits, rate calculators, and on voting. Each of these features has been used by cities elsewhere in the U.S., but they are high technology items and not expected to be found in this sample. The final question on the use of an e-mail address on the site is expected to have the highest response rate for this section because they are normally included in web-pages in general and they are a low technology item. In the next chapter of this paper, the results of the content analysis are examined and compared to the hypotheses.

**Table 3.4**

<b>Technology Questions</b>	<b>Expectation of Scores</b>
<b>TQ1</b> Search tool available 1=no, 2=yes	Mostly no.
<b>TQ2</b> Are maps available 1=no, 2=yes	Some yes responses.
<b>TQ3</b> Is a visit counter used. 1=no, 2=yes	Mostly yes.
<b>TQ4</b> Forms Available. <sup>2</sup>	Rare occurrence.
<b>TQ5</b> Permits available on-line. <sup>2</sup>	Very Rare occurrence.
<b>TQ6</b> Rate calculators for city services. <sup>2</sup>	Not expected to be found.
<b>TQ7</b> Ability to Vote On-line. <sup>2</sup>	Not expected to be found.
<b>TQ8</b> Is an e-mail address offered for questions or comments. <sup>4</sup>	Mostly always.

**Common Coding Schemes**

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find, 3=easy to find

0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> 0=unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> 0=never, 1=sometimes, 2=always

## Chapter 4: Summary of Results

The purpose of this chapter is to present the results of the pretest and the full content analysis. This chapter first presents and discusses the pretest of the coding scheme. Then, the responses for each question in the content analysis are discussed. Finally, the overall results and statistics of the content analysis are reviewed.

### Discussion of the Pretest

A pretest of the coding scheme was performed using fifteen randomly selected cities (see Table 4.1). This section first examines each category of questions to see if results were in line with expectations. Next, overall results of the pretest are discussed and analyzed. Finally, any unexpected results or changes to the coding scheme are discussed.

Table 4.1: Results of Pretest

City	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100
Bridgeway	1	3	2	3	3	3	1	3	19	2	1	0	2	2	1	0	0	1	1	1	1	0	0	0	0	0	1	4	26																																																																							
Canton	1	0	2	0	0	0	2	2	7	3	1	1	1	3	1	0	0	1	1	1	0	0	0	0	0	0	1	4	16																																																																							
Durham	2	0	0	3	0	0	3	2	10	3	2	1	1	3	1	0	0	1	1	1	0	0	0	0	0	0	0	5	25																																																																							
El Paso	2	3	0	0	1	0	2	1	9	3	2	1	1	3	0	0	0	1	1	1	0	0	0	0	0	1	4	20																																																																								
Grand Prairie	2	0	1	0	1	1	3	1	9	2	1	2	0	2	2	0	0	2	1	1	0	0	0	0	0	1	5	20																																																																								
Greenwich	2	3	3	2	3	1	2	3	19	1	1	2	2	3	2	0	0	2	1	1	0	0	0	0	0	1	3	32																																																																								
Hartsville	2	3	1	3	0	0	3	2	14	2	1	2	2	2	2	0	0	2	1	2	0	0	0	0	0	1	6	26																																																																								
Lubbock	2	3	3	3	2	1	3	2	19	3	2	0	1	2	1	0	0	1	2	2	0	1	0	0	0	1	7	32																																																																								
McAllen	2	0	3	3	1	0	0	3	12	3	2	1	1	3	3	0	0	1	1	1	0	0	0	0	0	2	9	27																																																																								
North Richland Hills	2	3	3	0	3	1	3	2	17	3	2	2	2	3	1	0	0	2	2	1	0	0	0	0	0	1	6	32																																																																								
Plano	2	0	0	3	0	0	1	1	7	3	2	0	1	3	1	0	0	1	1	1	0	0	0	0	0	0	3	17																																																																								
Richardson	1	3	3	3	2	1	3	3	15	2	2	2	2	2	2	0	0	2	2	1	1	0	0	0	0	2	6	36																																																																								
Springer	2	2	3	3	0	0	1	1	12	3	2	0	0	3	1	0	0	1	1	2	0	0	0	0	0	1	5	23																																																																								
Three Rivers	2	0	0	0	0	0	0	2	4	3	0	0	1	3	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0																																																																							
White Oak	2	0	0	0	0	0	0	2	4	3	2	2	0	2	1	0	0	1	1	1	0	0	0	0	0	0	2	16																																																																								
Mean	1.8	1.53	1.6	1.73	1.07	0.53	1.8	2	12.07	2.6	1.53	1.07	1.13	2.6	1.33	0	10.27	1.33	1.2	1.2	0.07	0.07	0	0	1	4.87	24.2	Mean																																																																								
Median	2.00	2.00	2.00	3.00	1.00	0.00	2.00	2.00	12.00	3.00	2.00	1.00	1.00	3.00	1.00	0.00	10.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	23.00	Median																																																																							
Mode	2.00	3.00	3.00	3.00	0.00	0.00	3.00	2.00	19.00	3.00	2.00	2.00	1.00	3.00	1.00	0.00	10.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	26.00	Mode																																																																							
sd	0.4	1.45	1.31	1.44	1.18	0.81	1.17	0.73	5.322	0.61	0.62	0.65	0.72	0.49	0.7	0	1.526	0.47	0.4	0.4	0.25	0.25	0	0	0.63	1.41	6.966501	sd																																																																								

## **Content Questions**

The possible totals for this section ranged from zero to twenty-three. Actual totals ranged from four to twenty-three. The responses to the content questions did have the greatest standard deviation (5.12) of total scores as expected. The average score for this category was 12.07. The first question about initial site information had more 'general' responses than expected, with only three sites getting a 'detailed' rating. Responses for the question on executive contact information also differed from expectations with most sites either scoring a 3 or a zero, and only one site scoring a 2. The results for the question on demographic information found that it was 'easy to find' at most sites. The next question on chamber of commerce information did have more responses in the 'easy to find' category, but the distribution of responses was greater than expected with more than six sites scoring zero. Most sites did not have information about city services, but at the sites that did have the information it was 'easy to find'. The same was true for cities providing information on permits and fees. The question on tourist information had a greater range of responses than expected, but the most common score was 'easy to find'. Question eight on goals and objectives had the range of responses expected with the most common response being 'moderate'.

## **Design Questions**

The totals for the design category had a lower standard deviation (2.03). The lowest score for this section was an 8 and the highest was 13. The first question dealing

site complexity had a higher number of sites with a simple structure than expected.

Question two had the expected response of 'always' for the ability to find information within three clicks. The next question on the use of navigation bars had more sites than expected use them 'always'. The results for the question on outsourcing found that more sites than expected outsourced the design of their web site. The question on general organization and navigation did not have the range of responses expected, with most sites scoring a simple or a moderate. More sites than expected were found to use graphics on a limited basis (DQ6). The last question found the expected response when it came to sites containing frames. No sites in this sample used them.

### **Technology Questions**

The highest score for technology was eight and the lowest score was three. Results for the first question found that most sites did not have a search tool, as expected; however, five sites in this sample did have some form of search engine, which was more than expected. Answers to the question about maps found that fewer sites than expected had maps available, with only three out of fifteen having them. Fewer sites than expected used counters (TQ3). Only one site in the sample had forms available on-line which is what was expected in the fourth question. The results for question on permits found one site that had permits available on-line, which is what was expected. The sixth and seventh questions both had no sites that had rate calculators or the ability to vote on-line, as expected. The final question in this category on the use of e-mail for questions or

comments found that this was the most commonly used piece of technology on city web pages in the sample, which was expected.

### **Overall Results**

Responses to the pretest were in line with expectations. The range of responses to each group of questions was within expectations. There was a good range of total scores. The highest total score was thirty-six and the lowest was twelve. The average total score was 24.2. The range and distribution of scores in this pretest show that the coding scheme will be effective in classifying and ranking city web pages.

### **Problems**

One problem with the coding scheme arose in the technology questions. Questions TQ1, TQ2, and TQ3 were coded '1=no' and '2=yes' which was inconsistent with the coding of the rest of the questions that had zero for a negative response. This resulted in a higher point total for these questions even though the site did not have that technology feature. The coding was corrected to 0=no and 1=yes for the full content analysis. The only other problem with the pretest was that one city in the sample, Vidor, was not available on-line. Even though this was expected to happen in the full sample, a replacement was chosen at random to make the number of cities in the pretest sample come out to fifteen.

### **Discussion of the Results**

The coding scheme was used to complete a content analysis on the Texas cities listed on the State's web-site (Appendix 3). The total number of cities reviewed was

sixty-nine. This section first examines the results for each category of questions. Next, the overall results and statistics of the analyses are discussed.

### Content Questions

The results for the first question, dealing with initial information, did not agree with expectations. Seventy-five percent of city sites analyzed provided general information on the first page of their site. Several of the pages that had detailed information on their initial page had only one page or a small web site. Sites with general information on their initial page tended to have larger, more complex web sites. Table 4.1 shows the statistical results for the responses to the content questions.

**Table 4.1**

Content Questions	N=69	Mode	Mean	Std. Dev.
CQ1 Is the initial information offered 1=Detailed or 2=General		2	1.75	.43
CQ2 Availability of city executive contact information. <sup>1</sup>		3	1.67	1.38
CQ3 Availability of City demographic information. <sup>1</sup>		3	1.88	1.2
CQ4 Link to Chamber of Commerce. <sup>1</sup>		3	2.04	1.24
CQ5 Information on city services. <sup>1</sup>		0	1.48	1.25
CQ6 Information on permits and fees. <sup>1</sup>		0	.62	.93
CQ7 Tourist Information. <sup>1</sup>		3	2.23	1.07
CQ8 Clear Goals and Objectives of the site. <sup>1</sup>		3	2.39	.69

Common Coding Schemes

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find, 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use

<sup>3</sup> 0=unknown, 1=Complex, 2=Moderate, 3=Simple

<sup>4</sup> 0=never, 1=sometimes, 2=always

Results for the question on executive contact information also differed from the hypothesis. Responses were expected to mainly be in the 'moderate' category. Instead, thirty-eight percent of the sites had no information, forty-six percent had the information

place prominently, while sixteen percent of sites had the information, but it was 'moderate' or 'difficult to find'. This shows that when the information is provided, it is considered important enough to place within easy view of visitors.

The results for city demographic question were as expected. Forty-five percent of cities had demographic information clearly available, twenty percent of sites rated moderate, thirteen percent of sites rated difficult, and twenty-two percent of sites had no demographic information. These results agree with the assumptions that the demographic information is readily available and easy to transfer to a web-page format.

The responses to the question on the chamber of commerce also agreed with expectations. Fifty-seven percent of cities had chamber of commerce information prominently displayed. Twenty percent of the sites rated either 'moderate' or 'difficult to find', and twenty-three percent did not contain any information. Many cities developed their web-pages in cooperation with the chamber of commerce or an economic development council. In a few cities, the entire site was developed and posted by these agencies without the city's involvement.

When it came to posting information about city services, sixty-six percent of the cities posted some information. Thirty-two percent of the cities rated 'easy', seventeen percent rated 'moderate', seventeen percent rated 'difficult'. Forty-four percent had no information on services. This question had more responses than expected in the 'easy' category. This shows that more cities believe it is important to provide this information for their visitors.

Fewer sites than expected provided information on permits and fees. The results for CQ6 found that sixty percent of sites had no information in this area at all, while forty percent of the sites had some information but it was mostly 'moderate' or 'difficult' to find. The low response to this question shows that in most cities this information is more detailed than required in an on-line environment.

The results for the tourist information question agreed with expectations about finding tourist information. Fifty-eight percent of the sites had the information 'easy to find', twenty percent scored 'moderate', nine percent scored 'difficult', and only thirteen percent had no tourist information. This shows that cities find that a web site is an ideal place to provide tourist information. These responses also show that tourist information is readily available and easy to translate into an on-line environment.

Finally, the last question found that a majority of the sites analyzed had clearly discernable goals for their web-page. Fifty-one percent of the cities rated 'easy', thirty-eight percent rated 'moderate', eleven percent rated 'difficult' and none had no discernable goal for their site. Most sites were clearly aimed at tourism. The next most common goal for a site was to provide business and economic information. Finally, the remaining sites provided general information about the city and not much else. This type of information was mainly found cities that only had one web-page posted. Table 4.2 compares the expected responses for the content questions to the actual results.

**Table 4.2**

<b>Content Questions</b>	<b>Expectation of Scores</b>	<b>Actual Results</b>
<b>CQ1</b> Is the initial information offered 1= <b>Detailed</b> or 2= <b>General</b>	Even split between detailed and general.	Mostly general.
<b>CQ2</b> Availability of city executive contact information. <sup>1</sup>	Moderately difficult.	Difficult to Moderate.
<b>CQ3</b> Availability of City demographic information. <sup>1</sup>	Easy to find.	As expected.
<b>CQ4</b> Link to Chamber of Commerce. <sup>1</sup>	Easy to find.	As expected.
<b>CQ5</b> Information on city services. <sup>1</sup>	Difficult to Moderate.	Moderate to easy.
<b>CQ6</b> Information on permits and fees. <sup>1</sup>	Difficult to Moderate.	Difficult to Not Found.
<b>CQ7</b> Tourist Information. <sup>1</sup>	Easy to Find.	As expected.
<b>CQ8</b> Clear Goals and Objectives of the site. <sup>1</sup>	Large standard deviation.	<b>Mostly</b> easy to find.

**Common Coding Schemes**

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find, 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> 0=unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> 0=never, 1=sometimes, 2=always

**Design Questions**

The first question, dealing with site complexity, found that most sites were less complex than expected. Fifty-nine percent of the cities rated 'simple', thirty-five percent rated 'moderate', and only six percent were rated as 'complex'. The high number of 'simple' sites has to do with the fact that several small cities only had one page posted, simple. The site that received 'complex' rating were large cities, such as Austin and Houston, that have very large web sites.

The second question expected to find that most sites present information so it can be located in three clicks or less. Only forty percent of sites rated always in this question with sixty percent of cities rating 'sometimes'. These responses indicate that cities are organizing the information on their web pages in a more complex way than is necessary

in the on-line environment. Table 4.3 shows the statistical information for the responses to the design questions.

**Table 4.3**

<b>Design Questions</b>	<b>N=69</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Dev.</b>
<b>DQ1</b> Complexity of site hierarchy. <sup>3</sup>		3	2.54	.6
<b>DQ2</b> Three clicks or less on CQ's <sup>4</sup>		1	1.35	.53
<b>DQ3</b> Use of navigation bars. <sup>4</sup>		0	.94	.88
<b>DQ4</b> Outsourcing of page design. 0=unknown, 1=yes 2=no		1	1.13	.72
<b>DQ5</b> General Organization and Navigation. <sup>3</sup>		3	2.58	.57
<b>DQ6</b> Are pictures and animated icons utilized.'		1	1.61	.77
<b>DQ7</b> Does the design of the site include frames. <sup>2</sup>		0	.29	.76

Common Coding Schemes

<sup>1</sup> 0=None/Not Found. 1=Difficult to find. 2=moderately difficult to find. 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> &unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> 0=never, 1=sometimes, 2=always

The next question on the use of navigation bars found the results that were expected. Sites were divided between either not having navigation bars (42%) or having them sometimes (22%) or always (36%). Navigation bars or aides on web pages are becoming more necessary as web pages become more complicated. The results of this question show that cities are realizing this need.

Outsourcing of page design was explored by the fourth question. The results disagreed with the expectation that most cities would design their own pages. Forty-six percent of cites outsource the design of their pages either partially or entirely. Thirty-three percent of the cities designed their own pages, and in twenty-one percent of the cases, the designer could not be determined. The large number of outsource pages has to

do with local internet providers doing small web sites for the communities in the area they serve. These pages were most often the single page sites.

The range of responses for the question on organization and navigation was not as great as expected. Sixty percent of sites were rated 'simple', thirty-five percent of sites were rated 'moderate', and only five percent of sites were rated as 'complex'. These results show that cities are using the hyper-linked medium of the world-wide-web effectively to organize their information effectively for browsing on-line. Sites that were rated 'complex' did not use hyperlinks much and tried to organize too much information without them. **Bryan/College Station** tried to combine information about two municipalities without linking to both cities' individual pages.

The question dealing with the use of graphics found more responses in the 'limited' category than expected. Forty-eight percent of sites used graphics on a 'limited' basis, while thirty-five percent had 'moderate' use, fourteen percent of sites had 'extensive' use and only three percent had no graphics. More sites were rated in the 'limited' category because, although they had graphic content, the graphics were not as complex as the other sites that had animated icons or graphical navigation bars.

The results for the question on the use of frames found that they were only used by a few sites as expected. Fourteen percent of the sites out of the entire sample had frames in some form, and as expected their use was limited at these sites. **Farmers Branch** and **Waco** are two cities that used frames extensively and effectively to organize the content of their web-pages. As sites become more complicated and cities put more

effort into the design of their pages, it is expected that the use of frames will increase.

Table 4.4 shows the comparison between the expected responses and the results for the design questions.

**Table 4.4**

<b>Design Questions</b>	<b>Expectation of Scores</b>	<b>Actual Results</b>
<b>DQ1</b> Complexity of site hierarchy.	Even distribution from simple to complex.	Less complex than expected.
<b>DQ2</b> Three clicks or less on CQ's	Mostly always.	Mostly sometimes.
<b>DQ3</b> Use of navigation bars. <sup>4</sup>	Even distribution between never and always.	As expected.
<b>DQ4</b> Outsourcing of page design. 0=unknown, 1=yes 2=no	Mostly no.	More outsourcing than expected.
<b>DQ5</b> General Organization and Navigation. <sup>3</sup>	Large standard deviation.	Smaller standard deviation than expected.
<b>DQ6</b> Are pictures and animated icons utilized. <sup>1</sup>	Mainly moderate use.	More 'limited' responses than expected.
<b>DQ7</b> Does the design of the site include frames. <sup>1</sup>	Mainly limited use.	As expected.

**Common Coding Schemes**

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find, 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> 0=unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> 0=never, 1=sometimes, 2=always

**Technology Questions**

Results for the first question found that only twenty-two percent of the cities had some form of search tool on their site. This is the result that was expected. Cities only need a search device when their web-site becomes large and contains a wide variety of information, which was the case with the Austin web-site. The Austin site offers a wide variety of information ranging from city services to local entertainment schedules, and the search tool allows visitors to quickly access the specific information they are interested in. The following pages show the home page of the Austin site.

## Example 4.1

[Text-only Version](#)

Welcome to the [Austin City Connection](#), a service of the City of Austin, Texas. Our mission is to connect you with information, services and the people who make Austin the [most livable community](#) in the country.

Search Austin City Connection

Search!

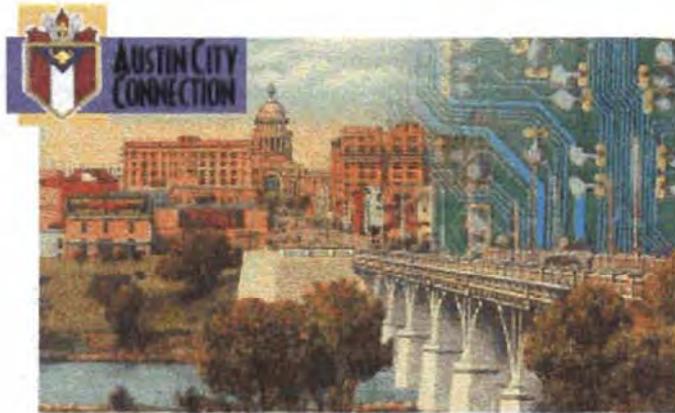
[Topic Directory](#)

[E-mail Directory](#)

City of Austin  
P.O.Box 1088  
Austin, TX 78767  
(512) 499-2000

[Austin City Connection](#)  
[E-mail](#)

[Connections Around Austin](#)  
[Business](#)  
[City Jobs](#)  
[City Services](#)  
[Council & Community Development Process](#)  
[Education](#)  
[Government](#)  
[Help](#)  
[Health](#)  
[Library](#)  
[News](#)  
[Planning](#)  
[Public Safety](#)



Quick On \_\_\_\_\_

Select Item From List Below

Go!

### Today's News

#### [City of Austin employees give something back to community](#)

The totals are in and City of Austin employees contributed a record amount in their 1997 Greater Austin Combined Charities Campaign. The money raised will help hundreds of Central Texas, national and international charities.

#### [Questions about the current annexation process?](#)

The [Annexation Overview](#) site features information about proposed 1997 annexations, annexation Q & A's, and annexation information sheets. The [annexation site](#) is being frequently updated; check often for additional information.

#### [Looking for neighborly services?](#)

The Austin City Connection now offers an easy-to-use, searchable database of information about community groups, including 300-plus Austin neighborhood associations. Called the Community Registry, the database includes group contacts, meeting schedules, neighborhood boundaries and more. The Community Registry is one of many new neighborly services the City of Austin provides on-line.

### Mom News...

[Council approves new lights for ballfields](#) | [City reduces size of 11th and 12th Street Project Area Survey](#) | [October 1997 Downtown Report](#) | [Dell gift brightens](#)

## Example 4.1 Continued

Survey: Help Build  
the Connection



[Austin's Trail of Lights](#) | [Election Information site](#) | [What's New on AMN](#) | [Mayor announces plan to get Austin traffic moving again](#) | [City of Austin Kicks Off Toilet Rebate Campaign](#) | [Fire Department makes historic appointment](#) | [R/UDAT Austin Implementation: A Call to Action](#) | [Bird's-eye view Map of E. 6th St](#) | [Air cargo facility opens at Austin-Bergstrom](#) | [The Connection extends to Bulgaria](#) | [Stop by RoadWorks before you drive](#)

We are registered with



[City.Net](#) and with  [USA CityLink](#).

The City of Austin is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations, including equal access to communications, will be provided upon request. For more information, call the City of Austin ADA coordinator at 512-499-3256 or 499-2445 (TTY-text telephone).

Source: City of Austin

Modified: 12/01/97 02:43:21 PM CST

This document was rendered by the Austin City Connection Web Publisher system

**Table 4.5**

<b>Technology Questions</b>	<b>N=69</b>	<b>Mode</b>	<b>Mean</b>	<b>Std. Dev.</b>
TQ1 Search tool available 1=no, 2=yes		0	.22	.41
TQ2 Are maps available 1=no, 2=yes		0	.36	.48
TQ3 Is a visit counter used. 1=no, 2=yes		0	.32	.47
TQ4 Forms Available. <sup>2</sup>		0	.23	.46
TQ5 Permits available on-line. <sup>2</sup>		0	.04	.2
TQ6 Rate calculators for city services. <sup>2</sup>		0	.01	.12
TQ7 Ability to Vote On-line. <sup>2</sup>		0	0	0
TQ8 Is an e-mail address offered for questions or comments. <sup>4</sup>		1	1.04	.65

Common Coding Schemes

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find. 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> +unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> +never, 1=sometimes, 2=always

Maps were found on thirty-six percent of the pages in the results for the second question. This result was more than was expected. Maps are an effective graphical tool for a web page, and their use in web pages is steadily on the rise. They have a variety of uses, such as, displaying demographic information or showing the locations of tourist attractions and local businesses.

Thirty-two percent of the sites were found to use a visit or hit counter in the results of the third question. This is the result that was expected. The use of counters is on the decline because the information they provide is really only of use to the owner of the page to monitor traffic. Page designers find that leaving the counter off the page and using other tools to monitor traffic allows the page to be viewed more quickly by visitors, and it allows the page to be viewed correctly on a wider range of software. Counters do not always display correctly from one web browser to another.

The responses to the forms question found only twenty-two percent of the sites used some type of form on their web-page. This was the expected result. Forms come in two types on web pages. The first type is the form where you enter information on-line, such as work requests or surveys. The second type is of form you download, such as tax forms and applications for permits. The City of Cedar Park had an interesting on-line form that allowed residents to request city services on-line.

Only four percent of the sites were found, in the responses to the permits question, to have some form of permits available online. This limited result was expected because this service requires more of a technology commitment from the city. Responses to the sixth question found one city that had a rate calculator, which was one more than expected. Austin has a limited tool that electric utility customers can use to interpret electric meter readings. More of this type of service is expected in the future as web-sites become more secure and technically savvy.

Results for the next question found that no sites that allowed voting on-line. The use of this type of service in the future is also expected to rise. Finally, the results for (TQ8) indicated that eighty-one percent of cities offered an e-mail address for questions on comment on the web-site. The sites that did not have this feature were the small one-page sites that only contained brief information on the city. Table 4.6 compares the expected results to the actual responses for the technology questions.

**Table 4.6**

<b>Technology Questions</b>	<b>Expectation of Scores</b>	<b>Actual Results</b>
<b>TQ1</b> Search tool available 1=no, 2=yes	Mostly no.	As expected.
<b>TQ2</b> Are maps available 1=no, 2=yes	Some yes responses.	More than expected.
<b>TQ3</b> Is a visit counter used. 1=no, 2=yes	Mostly yes.	As expected.
<b>TQ4</b> Forms Available. <sup>2</sup>	Rare occurrence.	As expected.
<b>TQ5</b> Permits available on-line. <sup>2</sup>	Very Rare occurrence.	As expected.
<b>TQ6</b> Rate calculators for city services. <sup>2</sup>	Not expected to be found.	One found.
<b>TQ7</b> Ability to Vote On-line. <sup>2</sup>	Not expected to be found.	As expected
<b>TQ8</b> Is an e-mail address offered for questions or comments. <sup>4</sup>	Mostly always.	As expected.

**Common Coding Schemes**

<sup>1</sup> 0=None/Not Found, 1=Difficult to find, 2=moderately difficult to find, 3=easy to find

<sup>2</sup> 0=Not used, 1=limited use, 2=moderate use, 3=extensive use.

<sup>3</sup> +unknown, 1=Complex, 2=Moderate, 3=Simple.

<sup>4</sup> 0=never, 1=sometimes, 2=always

**Overall Results**

In general, the results of the content were close to expectations. The final total of sites analyzed was sixty-nine. The following cities were removed from the analysis because they were no longer on-line or were always unavailable when the analysis was conducted: Georgetown, Granbury, Longview, Pearland, **Perryton**, San Antonio, Temple, and Vidor. More than three attempts were made to contact these cities' pages. Alternate paths to these cities were also attempted using the Yahoo search engine with the city name as the keyword before the city was removed from the analysis. The entire data set is located in Appendix 5.

Overall scores ranged from forty-one in **Denton** and Waco to twelve in Mt. Pleasant and Three Rivers. **Denton** and Waco both scored very high in the content and

design sections, while scoring only a one in the technology section. This information suggests that quality sites can be constructed and presented without the use of the more advanced features of the Web. The two lowest scoring cities each had pages that were only a paragraph of information about their city and nothing else. The median overall score was a twenty-six. The most common overall score was thirty-six. The main difference between cities in the median category and those that fell in the mode category is the higher scores in the content and technology sections. This information shows that the cities that put more thought into the contents of their page and used a little higher technology came out with a better overall site.

The mean total for Content questions was 14.1 with a high score of twenty-three and low score of four. These scores had the greatest range of all three categories as expected. Design questions had a mean total of 10.4 with a high of fifteen and a low of seven. Technology questions had a mean of **2.23** with a high score of six and a low of zero. This information shows that at this time cities are focusing on the content and design of their web pages rather than including the latest technology.

The charts on the following pages illustrate the combined score of each city divided by category. These scores show that content was the primary determining factor in the overall score of the city with design and technology score serving to better distinguish the best sites from the worst. Overall, these results show that the factors used in the content analysis were effective in rank ordering the web pages offered by cities in Texas (see Appendix 6).

Chart 4.1

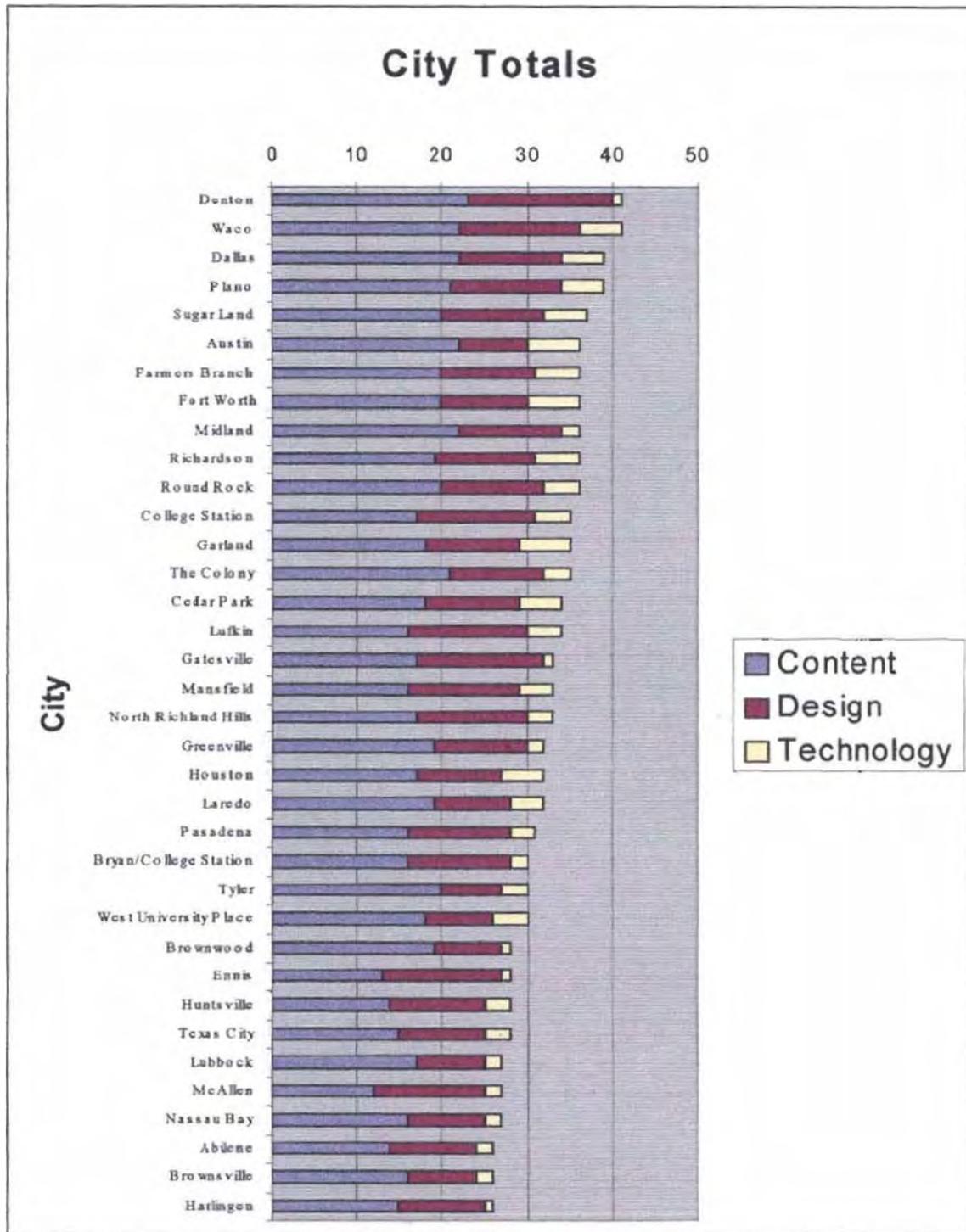
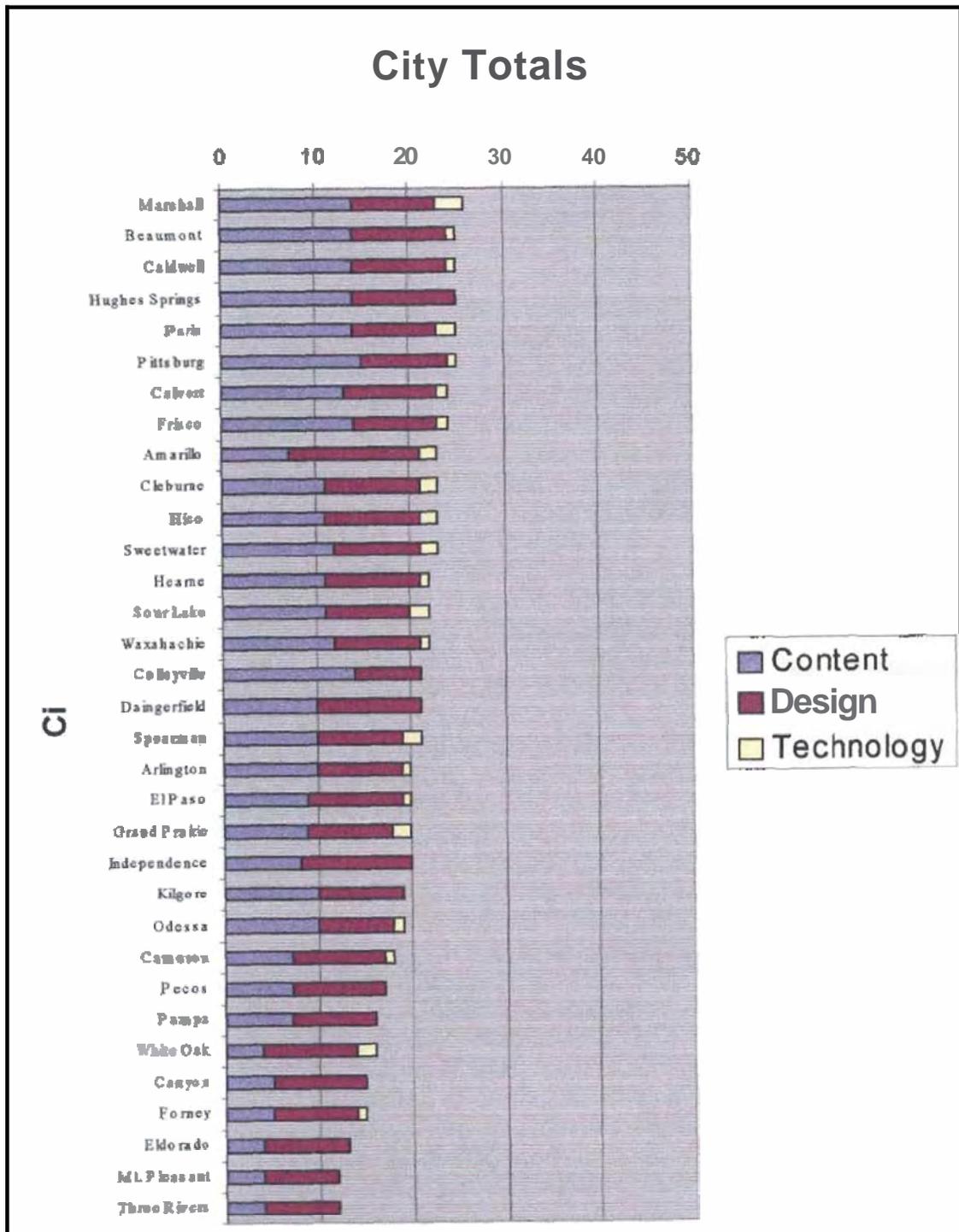


Chart 4.1 Continued



## **Chapter 5: Discussion/Conclusion**

This final chapter of the project discusses several different areas. First, the positive and negative aspects of the research design are examined. Next, some suggestions for future research are made. Then, some suggestions for an ideal web page for a city are offered. Finally, the conclusion offers some closing remarks on the research project in general.

### **Positive/Negative Aspects of the Research**

Several positive and negative attributes of the research design became evident during the course of this project. One positive aspect was that the sample chosen for the content analysis. The sample offered a good representative cross section of the available web pages posted by cities in Texas. The results of the content analysis on this sample provided a good range of scores. The size of the sample was just large enough to allow for a good analysis.

Another positive aspect of the research was the evidence that several cities put a lot of effort into the design of their web pages. The web-sites offered by some cities showed a clear, high level of commitment to the technology and its future expanding use. The research also found that cities which design and produce their own web pages scored far higher than cities that allowed the design to be outsourced. Cities like **Denton** and **Austin** are prime examples of how to put together an effective web-site. Each offers a

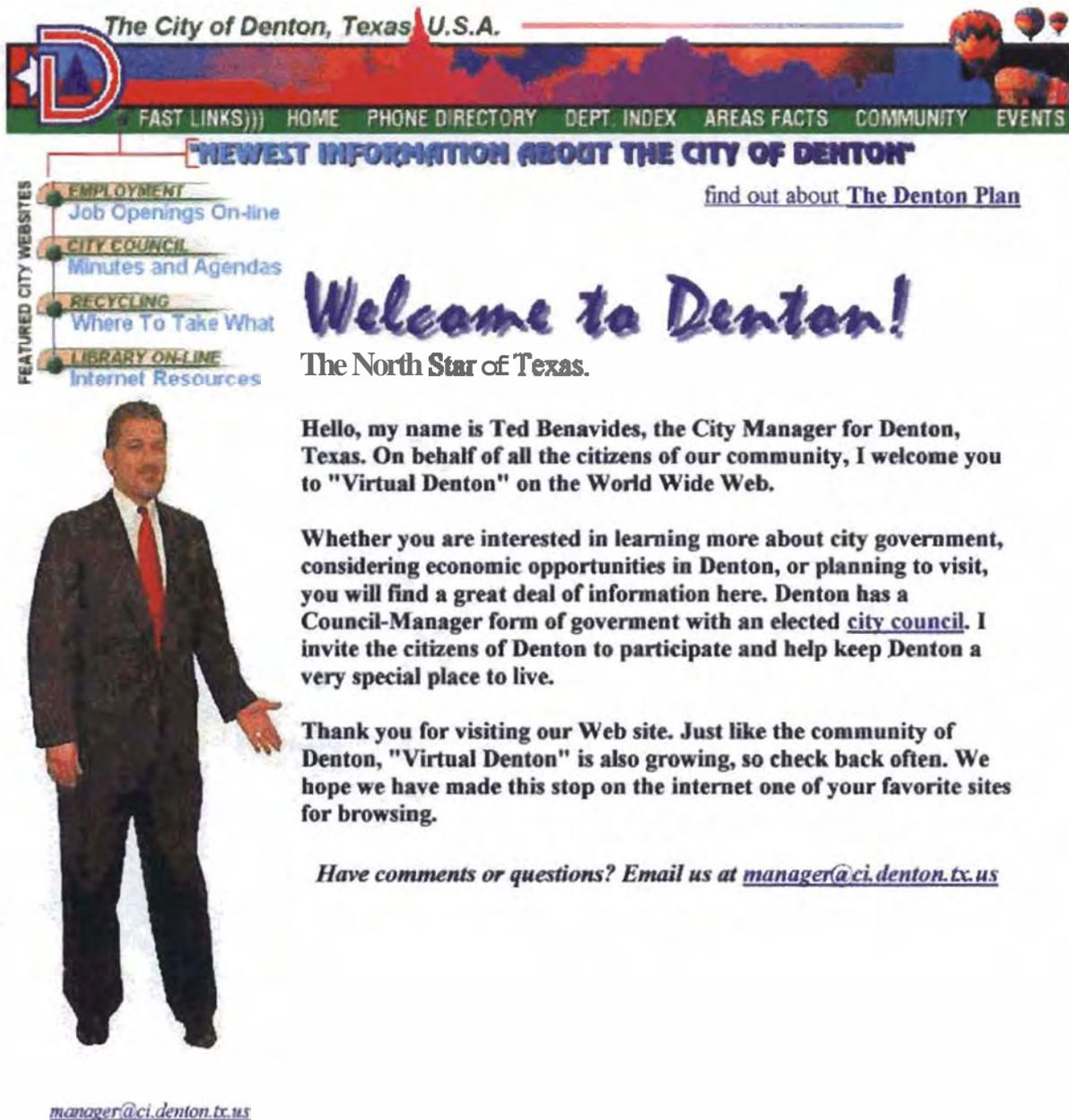
diverse **amount** of information from tourism and commerce to city services and information. **Denton** offers a large amount of information on local attractions and available resources for businesses. Example 5.1 shows the welcome page of **Denton's** web site. Austin's unique offering is its guide to local entertainment and media.

One major negative aspect of the research design was that not all cities in Texas that have web pages were included on the State's index, which was the sample for the content analysis. Some notable omissions were: San Marcos, Galveston, Corpus Christi, and several others. The lack of these cities in the sample probably did not effect the final results, but each of these cities may have had a valuable contribution to make to the design and content of city web pages.

Another negative aspect of the sample was the fact that several small cities only posted one page with little more than a descriptive paragraph about the city. Most of these small pages were produced by local Internet Service Providers and, most likely, were posted as a service to the community where they are located. These sites often had little or no obvious input from the city itself. Three Rivers, El Dorado, and Canyon (see Example 5.2) are all examples of these types of sites.

The rapid change of information posted on the Internet is another negative aspect of this research process. Eight cities, including San Antonio, were listed on the State's index, but their sites could not be contacted. Several more cities would have been on this list if not for the many tries to contact them over several weeks. Cities that scored low

## Example 5.1 Denton



The City of Denton, Texas U.S.A.

FAST LINKS))) HOME PHONE DIRECTORY DEPT. INDEX AREAS FACTS COMMUNITY EVENTS

**NEWEST INFORMATION ABOUT THE CITY OF DENTON**

find out about [The Denton Plan](#)

**WELCOME TO DENTON!**  
The North Star of Texas.

**HELLO, my name is Ted Benavides, the City Manager for Denton, Texas. On behalf of all the citizens of our community, I welcome you to "Virtual Denton" on the World Wide Web.**

Whether you are interested in learning more about city government, considering economic opportunities in Denton, or planning to visit, you will find a great deal of information here. Denton has a Council-Manager form of government with an elected city council. I invite the citizens of Denton to participate and help keep Denton a very special place to live.

Thank you for visiting our Web site. Just like the community of Denton, "Virtual Denton" is also growing, so check back often. We hope we have made this stop on the internet one of your favorite sites for browsing.

*Have comments or questions? Email us at [manager@ci.denton.tx.us](mailto:manager@ci.denton.tx.us)*

[manager@ci.denton.tx.us](mailto:manager@ci.denton.tx.us)

**FEATURED CITY WEBSITES**

- EMPLOYMENT**  
Job Openings On-line
- CITY COUNCIL**  
Minutes and Agendas
- RECYCLING**  
Where To Take What
- LIBRARY ON-LINE**  
Internet Resources

**THE CITY OF DENTON, DENTON, TEXAS - "Dedicated to quality service."**

[HOME](#) | [DIRECTORY](#) | [INDEX](#) | [FACTS](#) | [COMMUNITY](#) | [EVENTS](#)



## WorldWideWeb Home Page



### Under construction

We're building as fast as we can. Expected Grand opening date - September 1995.

This WEBTex Page is provided as a public service to all citizens of Canyon and the world. We hope that you find exactly the item of information, service, product, home or person you're looking for here. If not, email us as Panhandle Plains Historical Museum

TEXAS - World's GREATEST Summer Musical!

First State Bank a hometown, homeowned bank - with an eye on the future.

Canyon Travel Center Canyon's on-line, full-service travel agency.

You can find us, and other Cities of the WorldWideWeb at the following places:

-  <http://www.neosoft.com/CityLink>
-  <http://www.City.Net>

*This WEBTex page developed and maintained by WEBTex Technologies. Comments, suggestions, or requests for more information should be emailed to [webtex@webtex.com](mailto:webtex@webtex.com)*

*Last updated 4/20/95 - sdh*

[\[Return\]](#) to Webtex Home Page

throughout this analysis may now have a more elaborate site available and highly scored sites may have changed their content and may now score differently.

### **Suggestions for Further Research**

One way to better understand city web-pages would be to monitor their content over time. An initial content analysis could be done and the results updated at specific intervals to show either the improvement or decline of sites over time. Another possibility would be to monitor one city from the creation of a site to its updates and adaptations to improvements in technology over time. Research could also be done using a larger list of cities, then find which cities have actual web sites and doing a content analysis on those sites. Finally, a researcher could survey cities with good web sites about the development and maintenance of those sites.

### **Proposal for an Ideal Type**

An ideal web site needs to have clear goals and objectives from the beginning. A site can choose to focus on tourism, attracting business, information for local resident, or a site can choose to combine aspects of all of these areas into one site. Whatever the focus of the site is, information must be carefully chosen, edited and organized to be appropriate for the new medium of the World-Wide-Web.

After the content is determined, consideration needs to be given to the design of a web page. Graphics and pictures need to be chosen and designed with the goals of the site in mind. Tourism sites may have more maps and pictures of local attractions.

Business sites could present information in charts and graphs. Sites focused on local

residents could include pictures of officials and local events. All sites, despite their goals, need to focus on a clear design of the graphics used for moving around the site. Animated icons offer an idea of what information could be found by clicking there. Navigation bars that are consistent and similar throughout a site ease a visitor's movement around that site.

Site designers next need to consider the use of interactive technologies appropriate to the goals of their site. Tourism oriented sites could offer video guided tours of attractions. Business oriented sites could offer on-line forms and the ability to request additional information. Audio and video messages can also be placed on-line directed at a business audience. Sites focusing on local residents could offer a multi-media view of local government. Search tools and indexes on the site would be essential no matter what the goals and objectives of the site.

Finally, cities need to use the existing resources and talent within their organizations to develop and maintain their web site. Most cities of any size have the information services and business **development/marketing** services necessary to design and implement a quality web-site without the extra cost of using outside vendors. Developing the web-site in house allows for greater control over the continuous maintenance that a web site needs to be effective.

## **Conclusion**

The focus of this project has been on the current content of web pages posted by cities in the State of Texas. The analysis found a great diversity in the content and

quality of these pages throughout the State. The Internet and the world-wide-web are wonderful tools that cities can utilize for many purposes. With the rapid growth of the technology, these tools may soon become vital to the daily operations of cities. They allow for greater one-on-one interaction between the city government and its constituents. Web pages also allow for the dissemination of large amounts of information in a format that allows individual to access specifically what they want, without exhaustive searching of unnecessary information.

## Appendix 1: Executive Order 13011

### Executive Order 13011.

A Government that works better and costs less requires efficient and effective information systems. The **Paperwork** Reduction Act of 1995 and the Information Technology Management Reform Act of 1996 provide the opportunity to improve significantly the way the Federal Government acquires and manages information Technology. Agencies now have the clear authority and responsibility to make measurable improvements in mission performance and service delivery to the public through the strategic application of information technology. A coordinated approach that builds on existing structures and successful practices is needed to provide maximum benefit across the Federal Government **from** this technology.

Section 1. Policy. It shall be the policy of the United States Government that executive agencies shall: (a) significantly improve the management of their information systems, including the acquisition of information technology, by implementing the relevant provisions of the Paperwork Reduction Act of 1995 (Public Law 104-13), the Information Technology Management Reform Act of 1996 (Division E of Public Law 104-106) ("Information Technology Act"), and the Government Performance and Results Act of 1993 (Public Law 103-62);

(b) refocus information technology management to support directly their strategic missions, implement an investment review process that drives budget formulation and execution for information systems, and rethink and restructure the way they perform their functions before investing in information technology to support that work;

(c) establish clear accountability for information resources management activities by creating agency Chief Information Officers (CIOs) with the visibility and management responsibilities necessary to advise the agency head on the design, development, and implementation of those information systems. These responsibilities include: (1) participating in the investment review process for information systems; (2) monitoring and evaluating the performance of those information systems on the basis of applicable performance measures; and, (3) as necessary advising the agency head to modify or terminate those systems;

(d) cooperate in the use of information technology to improve the productivity of Federal programs and to promote a coordinated, interoperable, secure, and shared Governmentwide infrastructure that is

provided and supported by a diversity of private sector supplies and a well-trained corps of information technology professionals

(e) establish an interagency support structure that builds on existing successful interagency efforts and shall provide expertise and advice to agencies; expand the skill and career development opportunities of information technology professionals; improve the management and use of information technology within and among agencies by developing information technology procedures and standards and by identifying and sharing experiences, ideas, and promising practices; and provided innovative, multi-disciplinary, project-specific support to agencies to enhance interoperability, minimize unnecessary duplication of effort, and capitalize on agency successes.

**Sec. 2. Responsibilities of Agency Heads.** The head of each executive agency shall (a) effectively use information technology to improve mission performance and service to the public;

(b) strengthen the quality of decision about the employment of information resources to meet mission needs through integrated analysis, planning, budgeting, and evaluation processes, including:

(1) determining, before making investments in new information systems, whether the Government should be performing the function, if the private sector or another agency should support the function, and if the function needs to be or has been appropriately redesigned to improve its efficiency;

(2) establishing mission-based performance measures for information systems investments, aligned with agency performance plans prepared pursuant to the Government Performance and Results Act of 1993 (Public Law 103-62);

(3) establishing agency-wide and project-level management structures and processes responsible and accountable for managing, selecting, controlling, and evaluating investments in information systems, with authority for terminating information systems when appropriate;

(4) supporting appropriate training of personnel; and

(5) seeking the advice of, participating in, and supporting the interagency support structure set forth in this order; (Clinton, 1996).

## Appendix 2: Paperwork Reduction Act

### Paperwork Reduction Act

#### Sec. 3501. Purposes

(1) minimize the paperwork burden for individuals, small businesses, educational and nonprofit institutions, Federal contractors, State, local and tribal governments, and other persons resulting from the collection of information by or for the Federal Government;

(2) ensure the greatest possible public benefit from and maximize the utility of information created, collected, maintained, used, shared and disseminated by or for the Federal Government;

(3) coordinate, integrate, and to the extent practicable and appropriate, make uniform Federal information resources management policies and practices as a means to improve the productivity, efficiency, and effectiveness of Government programs, including the reduction of information collection burdens on the public and the improvement of service delivery to the public;

(4) improve the quality and use of Federal information to strengthen decision making, accountability, and openness in Government and society;

(5) minimize the cost to the Federal Government of the creation, collection, maintenance, use, dissemination, and disposition of information;

(6) strengthen the partnership between the Federal Government and State, local, and tribal governments by minimizing the burden and maximizing the utility of information created, collected, maintained, used, disseminated, and retained by or for the Federal Government;

(7) provide for the dissemination of public information on a timely basis, on equitable terms, and in a manner that promotes the utility of the information to the public and makes effective use of information technology;

(8) ensure that the creation, collection, maintenance, use, dissemination, and disposition of information by or for the Federal Government is consistent with applicable laws, including laws relating to—

(A) privacy and confidentiality, including section 552a of title 5;

(B) security of information, including the Computer Security Act of 1987 (Public Law 100-235); and

(C) access to information, including section 552 of title 5;

(9) ensure the integrity, quality, and utility of the Federal statistical system;

(10) ensure that information technology is acquired, used, and managed to improve performance of agency missions, including the reduction of information collection burdens on the public; and

(11) improve the responsibility and accountability of the Office of Management and Budget and all other Federal agencies to Congress and to the public for implementing the information collection review process, information resources management, and related policies and guidelines established under this chapter (GPO, 1995, 1).

## State of Texas: Government Information

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### Cities

The links below point to government information. For additional information try the links at the bottom of the page.

- [Abilene](#)
- [Amarillo](#)
- [Arlington](#)
- [Austin](#)
- [Beaumont](#)
- [Brownsville](#)
- [Brownwood](#)
- [Bryan/College Station](#)
- [Caldwell](#)
- [Calvert](#)
- [Cameron](#)
- [Canyon](#)
- [Cedar Park](#)
- [Cleburne](#)
- [College Station](#)
- [Colleyville](#)
- [Daingerfield](#)
- [Dallas/Fort Worth](#)
- [Denton](#)
- [Eldorado](#)
- [El Paso](#)
- [Ennis](#)
- [Farmers Branch](#)
- [Forney](#)
- [Frisco](#)
- [Garland](#)
- [Gatesville](#)
- [Georgetown](#)
- [Granbury](#)
- [Grand Prairie](#)
- [Greenville](#)
- [Harlingen](#)
- [Hearne](#)
- [Hico](#)
- [Houston](#)
- [Hughes Springs](#)
- [Huntsville](#)
- [Independence](#)
- [Jasper](#)
- [Kilgore](#)
- [Laredo](#)
- [Lonpview](#)
- [Lubbock](#)
- [Lufkin](#)

- [Mansfield](#)
- [Marshall](#)
- [McAllen](#)
- [Midland](#)
- [Mt. Pleasant](#)
- [Nassau Bay](#)
- [North Richland Hills](#)
- [Odessa](#)
- [Pampa](#)
- [Paris](#)
- [Pasadena](#)
- [Pearland](#)
- [Pecos](#)
- [Perryton](#)
- [Pittsburg](#)
- [Plano](#)
- [Richardson](#)
- [Round Rock](#)
- [San Antonio](#)
- [Sour Lake](#)
- [Spearman](#)
- [Sugar Land](#)
- [Sweetwater](#)
- [Temple](#)
- [Texas City](#)
- [The Colony](#)
- [Three Rivers](#)
- [Tyler](#)
- [Vidor](#)
- [Waco](#)
- [Waxahachie](#)
- [West University Place](#)
- [White Oak](#)

For additional information try:

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[Yahoo Texas Cities](#)

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Go to: [Texas Home Page](#) - [Subject index](#) - [Agency Index](#)

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Please send comments or suggestions to [webmaster@www.state.tx.us](mailto:webmaster@www.state.tx.us)

Last Revision: September 13, 1997

Appendix 4: —ion of Sample Cities



## Appendix 5: Content Analysis Data

City	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Abilene	2	3	1	3	2	0	1	2	14	2	2	1	0	2	1	2	10	0	0	1	0	0	0	0	1	2	26													
Arriño	2	0	0	0	0	0	3	2	7	3	2	2	1	3	2	1	14	0	0	0	0	0	0	0	2	2	23													
Arlington	2	0	0	2	0	0	3	3	10	3	2	0	0	3	1	0	9	0	0	0	0	0	0	0	1	1	20													
Austin	1	3	3	3	3	3	3	3	22	1	1	1	2	1	2	0	8	1	1	0	1	0	1	0	2	5	36													
Beaumont	2	0	3	3	1	0	3	2	14	3	2	0	0	3	2	0	10	0	0	1	0	0	0	0	0	1	26													
Brownsville	2	2	2	3	2	0	3	2	16	2	1	0	2	2	1	0	8	0	0	1	0	0	0	0	1	2	26													
Brownwood	1	3	2	3	3	3	1	3	19	2	1	0	2	2	1	0	8	0	0	0	0	0	0	0	1	1	28													
Bryan/College Station	2	1	1	3	2	1	3	3	16	2	1	2	1	1	3	2	12	1	0	0	0	0	0	0	1	2	30													
Calwell	2	0	3	1	2	1	2	3	14	3	1	1	1	3	1	0	10	0	0	0	0	0	0	0	1	1	25													
Calvert	1	0	3	2	2	1	2	2	13	3	1	1	1	3	1	0	10	0	0	0	0	0	0	0	1	1	24													
Cameron	1	0	2	0	0	0	2	2	7	3	1	1	1	3	1	0	10	0	0	0	0	0	0	0	1	1	18													
Canyon	2	0	0	0	0	0	2	1	5	3	2	0	1	3	1	0	10	0	0	0	0	0	0	0	0	0	15													
Cedar Park	1	3	3	1	3	3	1	3	18	2	2	2	1	2	2	0	11	0	1	0	2	1	0	0	1	6	34													
Odessa	2	3	2	3	0	0	0	1	11	3	1	0	1	3	2	0	10	0	0	1	0	0	0	0	1	2	23													
College Station	1	2	2	3	3	0	3	3	17	3	1	2	1	3	2	2	14	1	0	1	0	0	0	0	2	4	36													
Colleyville	2	3	0	3	3	1	0	2	14	3	1	0	0	3	0	0	7	0	0	0	0	0	0	0	0	0	21													
Dangerfield	2	0	0	3	0	0	3	2	10	3	2	1	1	3	1	0	11	0	0	0	0	0	0	0	0	0	21													
Dallas	2	3	3	3	2	3	3	22	2	2	1	2	3	3	0	12	1	1	0	1	0	0	0	0	2	5	39													
Darton	2	3	3	3	3	3	3	23	3	2	2	2	3	3	2	17	0	0	0	0	0	0	0	0	1	1	41													
Edinburg	1	0	0	0	0	0	0	3	4	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	0	0	13													
El Paso	2	3	0	0	1	0	2	1	9	3	2	1	1	3	0	0	10	0	0	0	0	0	0	0	1	1	20													
Ennis	2	0	1	2	2	0	3	3	13	3	1	0	2	3	2	3	14	0	0	0	0	0	0	0	1	1	28													
Farmers Branch	1	3	3	3	3	1	3	3	20	2	1	0	0	3	2	3	11	1	1	0	1	0	0	0	2	5	36													
Forney	1	0	0	0	0	0	2	2	5	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	1	1	16													
Fort Worth	1	3	3	3	2	2	3	3	20	2	1	1	2	2	2	0	10	1	1	0	1	1	0	0	2	6	36													
Frisco	2	3	2	0	3	0	2	2	14	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	1	1	24													
Garland	2	3	2	2	3	0	3	3	18	2	1	0	2	3	3	0	11	1	1	1	1	0	0	0	2	5	35													
Odessa	2	2	2	2	3	1	2	3	17	3	2	2	2	3	3	0	16	0	0	0	0	0	0	0	1	1	33													
Grand Prairie	2	0	1	0	1	1	3	1	9	2	1	2	0	2	2	0	9	1	0	0	0	0	0	0	1	2	20													
Greenville	2	3	3	2	3	1	2	3	19	1	1	2	2	3	2	0	11	1	0	0	0	0	0	0	1	2	32													
Hartigan	2	1	3	3	0	0	3	3	15	2	1	1	1	2	3	0	10	0	1	0	0	0	0	0	0	1	26													
Heane	1	0	1	3	0	0	3	3	11	3	1	0	1	3	2	0	10	0	0	0	0	0	0	0	1	1	22													
Hico	2	0	0	3	0	0	3	3	11	3	1	0	0	3	3	0	10	0	0	1	0	0	0	0	1	2	21													
Houston	2	2	3	2	2	2	2	2	17	1	1	2	2	2	2	0	10	1	1	0	1	0	0	0	2	5	32													
Hughes Springs	2	2	1	2	1	0	3	3	14	3	2	1	1	3	1	0	11	0	0	0	0	0	0	0	0	0	25													
Huntsville	2	3	1	3	0	0	3	2	14	2	1	2	2	2	2	0	11	1	0	1	0	0	0	0	1	3	28													
Independence	2	0	0	0	0	0	3	3	8	3	1	2	2	3	1	0	12	0	0	0	0	0	0	0	0	0	21													
Higgin	2	0	1	3	0	0	2	2	10	3	2	0	0	3	1	0	9	0	0	0	0	0	0	0	0	0	19													
Laredo	2	3	3	3	2	1	3	2	19	3	2	0	1	2	1	0	9	0	1	1	0	1	0	0	1	4	32													
Lubbock	2	3	2	3	1	0	3	3	17	3	1	0	0	3	1	0	8	0	1	0	0	0	0	0	1	2	27													
Lubin	2	2	3	3	1	0	3	2	16	3	2	1	2	3	3	0	14	0	1	1	0	0	0	0	2	4	34													
Marshall	2	3	3	3	2	0	0	3	15	2	2	2	2	3	2	0	13	0	1	1	1	0	0	0	1	4	33													
Marshall	1	1	3	2	1	0	3	3	14	2	1	0	2	2	2	0	9	0	0	1	1	0	0	0	1	3	28													
McAllen	2	0	3	3	1	0	0	3	12	3	2	1	1	3	3	0	13	0	0	0	0	0	0	0	2	2	27													
Midland	2	3	3	3	3	2	3	3	22	3	1	2	2	2	2	0	12	0	1	0	0	0	0	0	1	2	36													
Mt. Pleasant	1	0	0	0	0	0	0	3	4	3	0	0	1	3	1	0	8	0	0	0	0	0	0	0	0	0	12													
Nassau Bay	2	2	3	2	1	0	3	3	16	1	1	2	1	1	3	0	9	0	0	1	0	0	0	0	1	2	27													
North Richland Hills	2	3	3	0	3	1	3	2	17	3	2	2	2	3	1	0	13	1	1	0	0	0	0	0	1	3	33													
Odessa	2	0	1	3	0	0	3	1	10	2	1	0	2	2	1	0	8	0	0	0	0	0	0	0	1	1	19													
Pampa	2	0	0	0	2	0	0	3	7	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	0	0	16													
Paris	2	0	3	3	1	0	3	2	14	3	1	2	0	2	1	0	9	0	0	1	0	0	0	0	1	2	25													
Pasadena	2	3	2	1	3	1	2	2	16	2	1	2	2	2	2	1	12	0	1	0	1	0	0	0	1	3	31													
Peecos	2	0	0	3	0	0	1	1	7	3	2	0	1	3	1	0	10	0	0	0	0	0	0	0	0	0	17													
Pittsburg	2	3	2	3	1	0	3	1	15	2	1	2	1	2	1	0	9	0	0	0	0	0	0	0	1	1	25													
Piero	2	3	3	3	3	1	3	3	21	2	2	2	2	3	2	0	13	1	1	0	1	0	0	0	2	5	39													
Richardson	1	3	3	3	2	1	3	3	19	2	2	2	2	2	2	0	12	1	1	0	1	0	0	0	2	5	36													
Round Rock	1	3	3	3	1	3	3	20	2	2	2	2	3	1	0	8	0	1	1	0	0	0	0	0	2	4	36													
Sour Lake	2	3	2	0	0	0	2	2	11	3	1	1	0	3	1	0	9	0	0	1	0	0	0	0	1	2	22													
Spasman	2	0	2	0	1	0	2	3	10	3	1	0	1	3	1	0	9	0	1	0	0	0	0	0	1	2	21													
Sugar Land	2	3	3	3	3	1	3	2	20	2	2	2	1	2	1	1	12	0	1	1	1	0	0	0	2	5	37													
Shedwater	2	2	3	3	0	0	1	1	12	3	2	0	0	3	1	0	9	0	0	1	0	0	0	0	1	2	23													
Texas City	1	3	3	3	0	0	3	2	16	2	1	2	1	2	2	0	10	0	1	1	0	0	0	0	1	3	28													
The Colony	2	3	3	3	3	1	3	3	21	3	2	2	0	2	2	0	11	0	1	1	0	0	0	0	1	3	36													
Three Rivers	2	0	0	0	0	0	0	2	4	3	0	0	1	3	1	0	8	0	0	0	0	0	0	0	0	0	12													
Tyler	2	3	3	3	3	1	3	2	20	2	1	0	1	2	1	0	7	0	1	1	0	0	0	0	1	3	30													
Vico	1	3	3	3	3	3	3	3	22	2	2	1	1	3	2	3	14	1	1	0	1	0	0	0	2	5	41													
Waxahatchie	2	0	2	3	0	0	3	2	12	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	1	1	22													
West University Place	2	3	3	1	3	3	1	2	13	3	1	0	1	2	1	0	8	0	1	1	1	0	0	0	1	4														

## Appendix 6: Data Descending by Overall Total

City	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	T01	T02	T03	T04	T05	T06	T07	T08	Total	City Total		
Denton	2	3	3	3	3	3	3	3	3	28	3	2	2	2	3	3	2	17	0	0	0	0	0	0	1	41		
Waco	1	3	3	3	3	3	3	3	3	22	2	2	1	1	3	2	3	14	1	1	0	1	0	0	0	2	5	41
Dallas	2	3	3	3	3	2	3	3	3	22	2	1	1	2	3	3	0	12	1	1	0	1	0	0	0	2	5	36
Pleco	2	3	3	3	3	1	3	3	3	21	2	2	2	2	3	2	0	13	1	1	0	1	0	0	0	2	5	36
Sugar Land	2	3	3	3	3	1	3	2	3	20	2	2	2	1	2	2	1	12	0	1	1	1	0	0	0	2	5	37
Austin	1	3	3	3	3	3	3	3	3	22	1	1	1	2	1	2	0	8	1	1	0	1	0	0	0	2	5	36
Farmers Branch	1	3	3	3	3	1	3	3	3	20	2	1	0	0	3	2	3	11	1	1	0	1	0	0	0	2	5	36
Fort Worth	1	3	3	3	2	2	3	3	3	20	2	1	1	2	2	2	0	10	1	1	0	1	1	0	0	2	6	36
Midland	2	3	3	3	2	3	2	3	3	22	3	1	2	2	2	2	0	12	0	1	0	0	0	0	0	1	2	36
Richardson	1	3	3	3	2	1	3	3	3	19	2	2	2	2	2	2	0	12	1	1	0	1	0	0	0	2	5	36
Round Rock	1	3	3	3	3	1	3	3	3	20	2	2	2	2	3	1	0	12	0	1	1	0	0	0	0	2	4	36
College Station	1	2	2	3	3	0	3	3	3	17	3	1	2	1	3	2	2	14	1	0	1	0	0	0	0	2	4	36
Grand	2	3	2	2	3	0	3	3	3	18	2	1	0	2	3	3	0	11	1	1	1	1	0	0	0	2	6	36
The Colony	2	3	3	3	3	1	3	3	3	21	3	2	2	0	2	2	0	11	0	1	1	0	0	0	0	1	3	36
Cedar Park	1	3	3	1	3	3	1	3	3	18	2	2	2	1	2	2	0	11	0	1	0	2	1	0	0	1	5	34
Lufkin	2	2	3	2	1	0	3	2	3	16	3	2	1	2	3	3	0	14	0	1	1	0	0	0	0	2	4	34
Gatesville	2	2	2	2	3	1	2	3	3	17	3	2	2	2	3	3	0	15	0	0	0	0	0	0	0	1	1	33
Mansfield	2	3	3	3	2	0	0	3	3	16	2	2	2	2	3	2	0	13	0	1	1	1	0	0	0	1	4	33
North Richland Hills	2	3	3	0	3	1	3	2	3	17	3	2	2	2	3	1	0	13	1	1	0	0	0	0	0	1	3	33
Georgetown	2	3	3	2	3	1	2	3	3	19	1	1	2	2	3	2	0	11	1	0	0	0	0	0	0	1	2	32
Houston	2	3	2	2	2	2	2	2	2	17	1	1	2	2	2	2	0	10	1	1	0	1	0	0	0	2	5	32
Laredo	2	3	3	3	2	1	3	2	3	19	3	2	0	1	2	1	0	9	0	1	1	0	1	0	0	1	4	32
Pasadena	2	3	2	1	3	1	2	2	3	16	2	1	2	2	2	2	1	12	0	1	0	1	0	0	0	1	3	31
Bryan College Station	2	1	1	3	2	1	3	3	3	16	2	1	2	1	1	3	2	12	1	0	0	0	0	0	0	1	3	30
Tyler	2	3	3	3	3	1	3	2	3	20	2	1	0	1	2	1	0	7	0	1	1	0	0	0	0	1	3	30
West University Place	2	3	3	1	3	3	1	2	3	18	3	1	0	1	2	1	0	8	0	1	1	1	0	0	0	1	4	30
Brownwood	1	3	2	3	3	3	1	3	3	19	2	1	0	2	2	1	0	6	0	0	0	0	0	0	0	1	1	28
Ennis	2	0	1	2	2	0	3	3	3	13	3	1	0	2	3	2	3	14	0	0	0	0	0	0	0	1	1	28
Huntsville	2	3	1	3	0	0	3	2	3	14	2	1	2	2	2	2	0	11	1	0	1	0	0	0	0	1	3	28
Texas City	1	3	3	3	0	0	3	2	3	15	2	1	2	1	2	2	0	10	0	1	1	0	0	0	0	1	3	28
Lubbock	2	3	2	3	1	0	3	3	3	17	3	1	0	0	3	1	0	8	0	1	0	0	0	0	0	1	2	27
McAllen	2	0	3	3	1	0	0	3	3	12	3	2	1	1	3	3	0	13	0	0	0	0	0	0	0	2	2	27
Nassau Bay	2	2	3	2	1	0	3	3	3	16	1	1	2	1	1	3	0	9	0	0	1	0	0	0	0	1	2	27
Abilene	2	3	1	3	2	0	1	2	3	14	2	2	1	0	2	1	2	10	0	0	1	0	0	0	0	1	2	26
Brownsville	2	2	2	3	2	0	3	2	3	16	2	1	0	2	2	1	0	8	0	0	1	0	0	0	0	1	2	26
Hearings	2	1	3	3	0	0	3	3	3	15	2	1	1	1	2	3	0	10	0	1	0	0	0	0	0	0	1	26
Mesquite	1	1	3	2	1	0	3	3	3	14	2	1	0	2	2	2	0	9	0	0	1	1	0	0	0	1	3	26
Euromont	2	0	3	3	1	0	3	2	3	14	3	2	0	0	3	2	0	10	0	0	1	0	0	0	0	0	1	25
Colwell	2	0	3	1	2	1	2	3	3	14	3	1	1	1	3	1	0	10	0	0	0	0	0	0	0	1	1	25
Hughes Springs	2	2	1	2	1	0	3	3	3	14	3	2	1	1	3	1	0	11	0	0	0	0	0	0	0	0	0	25
Pear	2	0	3	3	1	0	3	2	3	14	3	1	2	0	2	1	0	9	0	0	1	0	0	0	0	1	2	25
Frisburg	2	3	2	3	1	0	3	1	3	15	2	1	2	1	2	1	0	9	0	0	0	0	0	0	0	1	1	25
Calvert	1	0	3	2	2	1	2	2	3	13	3	1	1	1	3	1	0	10	0	0	0	0	0	0	0	1	1	24
Frisco	2	3	2	0	3	0	2	2	3	14	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	1	1	24
Amarillo	2	0	0	0	0	0	3	2	3	7	3	2	2	1	3	2	1	14	0	0	0	0	0	0	0	2	2	23
Odessa	2	3	2	3	0	0	0	1	3	11	3	1	0	1	3	2	0	10	0	0	1	0	0	0	0	1	2	23
Hico	2	0	0	3	0	0	3	3	3	11	3	1	0	0	3	3	0	10	0	0	1	0	0	0	0	1	2	23
Sweetwater	2	2	3	3	0	0	1	1	3	12	3	2	0	0	3	1	0	9	0	0	1	0	0	0	0	1	2	23
Hame	1	0	1	3	0	0	3	3	3	11	3	1	0	1	3	2	0	10	0	0	0	0	0	0	0	1	1	22
Shur Lake	2	3	2	0	0	0	2	2	3	11	3	1	1	0	3	1	0	9	0	0	1	0	0	0	0	1	2	22
Wahatchie	2	0	2	3	0	0	3	2	3	12	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	1	1	22
Odleyville	2	3	0	3	3	1	0	2	3	14	3	1	0	0	3	0	0	7	0	0	0	0	0	0	0	0	0	21
Dangerfield	2	0	0	3	0	0	3	2	3	10	3	2	1	1	3	1	0	11	0	0	0	0	0	0	0	0	0	21
Speerman	2	0	2	0	1	0	2	3	3	10	3	1	0	1	3	1	0	9	0	1	0	0	0	0	0	1	2	21
Arlington	2	0	0	2	0	0	3	3	3	10	3	2	0	0	3	1	0	9	0	0	0	0	0	0	0	1	1	20
El Paso	2	3	0	0	1	0	2	1	3	9	3	2	1	1	3	0	0	10	0	0	0	0	0	0	0	1	1	20
Grand Prairie	2	0	1	0	1	1	3	1	3	9	2	1	2	0	2	2	0	9	1	0	0	0	0	0	0	1	2	20
Independence	2	0	0	0	0	0	3	3	3	8	3	1	2	2	3	1	0	12	0	0	0	0	0	0	0	0	0	20
Higley	2	0	1	3	0	0	2	2	3	10	3	2	0	0	3	1	0	9	0	0	0	0	0	0	0	0	0	19
Odessa	2	0	1	3	0	0	3	1	3	10	2	1	0	2	2	1	0	8	0	0	0	0	0	0	0	1	1	19
Cameron	1	0	2	0	0	0	2	2	3	7	3	1	1	1	3	1	0	10	0	0	0	0	0	0	0	1	1	18
Pecos	2	0	0	3	0	0	1	1	3	7	3	2	0	1	3	1	0	10	0	0	0	0	0	0	0	0	0	17
Pampa	2	0	0	0	2	0	0	3	3	7	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	0	0	16
White Oak	2	0	0	0	0	0	0	2	3	4	3	2	2	0	2	1	0	10	0	0	0	0	0	0	0	2	2	16
Canyon	2	0	0	0	0	0	2	1	3	5	3	2	0	1	3	1	0	10	0	0	0	0	0	0	0	0	0	15
Forney	1	0	0	0	0	0	2	2	3	5	3	1	0	1	3	1	0	9	0	0	0	0	0	0	0	1	1	15
Eldorado	1	0	0	0	0																							

## Bibliography

- Babbie, Earl *The Practice of Social Research*. 6<sup>th</sup> ed. Wadsworth: Belmont, CA. 1992.
- Ball, William J. "Political Science: The State of the Art in On-Line Publishing and (Slightly) Beyond." *Social Science Computer Review*. Spring 1997 13-26.
- Bresnahan, Jennifer "So Many Ideas, So Little Site." *WebMaster*. July 1997: 26-31.
- Bretschneider, Stuart "Management Information Systems in Public and Private Organizations: An Empirical Test" *Public Administration Review*. November/December 1990: 536-45.
- Cameli, A. P. *The Information Superhighway: Issues and Challenges*. Nova Science Publishers, Inc. Commack, New York: 1996
- Caudle, Sharon "Managing Information Resources in State Government." *Public Administration Review*. November/December 1990: 515-24.
- Clinton, William J. "Executive Order 13011 of July 16, 1996." *Federal Register* (vol. 61, no. 140 p. 37657-37662.
- Cornwell, Gary T. "The Dissemination of Federal Government Information: Prospects for the Immediate Future." *Journal of Government Information*, Vol. 23 pp. 299-306. 1996
- Duncan, George T. "Is My Research Ethical?." *Communications of the ACM, Special Issue on Internet in the Home*, December, 1996. 67-68.
- Dykhouse, Christine (a) "Online and Sleepless in Seattle." *Government Technology*. July 1997: 28-30.
- Dykhouse, Christine (b) "The First Great City of the 21<sup>st</sup> Century." *Government Technology*. August 1997: 34.
- Giles, Michael W. "From Gutenberg to Gigabytes: Scholarly Communication in the Age of Cyberspace." *The Journal of Politics*, vol. 58, No, 3, August 1996, Pp. 613-26.
- Government Printing Office. "Paperwork Reduction Act of 1995." *P.L. 104-13, 44 U.S.C. ch. 35*. Cited from "<http://policyworks.gov/org/main/mi/library/pr.htm>"
- Grossman, Lawrence K. *The Electronic Republic: Reshaping Democracy in the Information Age*. Viking: New York. 1995.
- Hopper, Nick. "Politics on the Web: Making Political Candidates Flies Instead of

- Spiders." *Computers and Society*, September 1996, Pp. 23-27.
- Kahin, Brian. "The Internet and the National Information Infrastructure." *Public Access to the Internet*. Brian Kahin and James Keller eds. MIT Press: Cambridge: 1995: 3-23.
- Keller, James "Public Access Issues: An Introduction." *Public Access to the Internet*. Brian Kahin and James Keller eds. MIT Press: Cambridge: 1995: 34-48.
- Kirshenblatt-Gimblett, Barbara. "The Electronic Vernacular" *Connected: Engagements With Media*, George E. Marcus ed. The University of Chicago Press: Chicago. 21-66.
- Kraemer, Kenneth J. and Jason Dedrick. "Computing and Public Organizations" *J-PART* 7(1997):1: 89-111.
- Kurland, Nancy B. and Terri D. Egan. "Engendering Democratic Participation via the Net: Access, Voice, and Dialogue." *The Information Society* 1996: 387-406.
- Lacle, Juan Carlos. "Public Access Information Systems in Local Governments: A Case Study of the City of San Marcos, Texas." *Applied Research Project*. Southwest Texas State University: Fall 1996.
- Laudon, Kenneth C. and Jane P. Laudon. *Management Information Systems: Organization and Technology*. 4th ed. Upper Saddle River, New Jersey. Prentice-Hall:1996. 349-365
- McConnell, Bruce W. "New Wine in Old Wineskins: U.S. Government Information in a networked world." *Journal of Government Information*, Vol. 23, pp 217-225, 1996.
- McGarty, Terrence P. and Carole Haywood. "Internet Architectural and Policy Implications for Migration from High-End User to the "New User"." *Public Access to the Internet*. Brian Kahin and James Keller eds. MIT Press: Cambridge: 1995: 234-268.
- Newcombe, Tod "Web Economics Make Sense: State and local governments have been quick to use the Web as a way to attract and keep business and people." *Government Technology*. June 1997: 48-50.
- Pandey, Sanjay K. and Stuart I. Bretschneider. "The Impact of Red Tape's Administrative Delay on Public Organizations Interest in New Information Technologies." *J-PART* 7(1997):1: 112-130.
- Reschenthaler, G. B. and Fred Thomson. "The Information Revolution and the New Public Management." *J-PART* 6(1996):1: 125-143.

Stowers, Genie. "Moving Governments On-Line: Implementation and Policy Issues."  
*Public Administration Review*. January/February, 1996.

Weil, Deborah. *Site Tips*. Internet Publication. 1997. Cited from  
"<http://www.wordbiz.com/sitetips.html>"