CENTRAL OREGON ORGANIZATIONS TELECOMMUNICATIONS SURVEY, SUMMER 1999

Methodology and Results

By Patricia A. Gwartney, Ph.D., Founding Director,
with the assistance of Toshihiko Murata.

OSRL

INTRODUCTION

As one part of a continuing effort to better serve the needs of Central Oregon residents and businesses, the Central Oregon Telecommunications Task Force (COTEL) contracted with the Oregon Survey Research Laboratory (OSRL) to conduct a representative survey of organizations (businesses, educational institutions, government agencies, health care facilities, and other nonprofit organizations) on telecommunications issues. A telephone survey of 101 organizations in Jefferson, Crook, and Deschutes Counties was conducted in August 1999. This report summarizes the survey methodology and results.

SURVEY METHODOLOGY

SURVEY INSTRUMENT

The survey's goal was to obtain representative information from Central Oregon organizations about telecommunications-related characteristics, behaviors, plans, needs, and attitudes.

Survey questions were developed by OSRL in close consultation with COTEL representatives. Some questions replicate those in other surveys conducted previously by OSRL, to allow comparison, but many questions were OSRL originals.

The survey instrument was pretested using OSRL's standard three-pronged pretest procedure. This involves (a) potential members of the survey population, (b) OSRL's Questionnaire Review Committee, comprised of survey experts from our staff and university-wide advisory committee, and (c) potential users of the data at UO. Individual questions were pretested for clarity, accuracy, validity, and variability of response. The entire instrument was pretested for flow, length, comprehensiveness, and factors which affect informants' cooperation and attention. Based on these pretests, the survey instrument was revised and finalized, programmed into OSRL's computer-aided telephone interviewing system (CATI), and then tested again.

The organization telephone survey instrument comprised the following specific topics:

1. Organization computers, including number, network, Internet and World Wide Web access, Internet Service Provider (ISP), and quality of Internet service;
2. Modems, including type, speed, and upgrade plans;
3. Organization World Wide Web site, who created and maintains it, and importance;
4. Use or interest in use of the World Wide Web for selling services and products, buying services and products, providing information to clients or customers, allowing clients or customers to send messages, making employee travel arrangements, filing taxes, checking financial information, registering employees for colleges classes, having employees take college classes for credit, and having employees learn new skills;
5. Security concerns, including security of buying and selling things, email privacy, and employees using the WWW for things they should not during work hours;
6. Employees' ability to telecommute;
7. Best and worst things about the World Wide Web in open-ended narratives;
8. For organizations not connected to the Internet or World Wide Web, reasons why and plans to connect;
9. Organization's local and long-distance telephone provider, number of telephone lines, number of cell phones, plans to add an additional lines;
10. Phone features, including voice mail service, conference calling, call forwarding, an 800 number, and cell phone's phone features;
11. Pagers;
12. Fax machines and plans to add faxes;
13. Quality of telephone service, including open-ended narratives on how it could be improved;
14. Video teleconferencing capability and plans to add video teleconferencing;
15. Improving organization's telecommunications capabilities: importance and money available;
16. Quality of computer training opportunities in area;
17. Organizational characteristics, including part of nationwide firm, number of employees, industry, and zip code;
18. Informant's years of experience in organization.

SAMPLING

COTEL supplied OSRL with a list of 127 Central Oregon businesses, nonprofits, health care organizations, educational institutions, and government agencies and the names of contact persons within the organizations. Random sampling of businesses and organizations is very difficult and expensive, and COTEL decided it was too costly for the project budget. Thus, we cannot guarantee that the sample is truly random (i.e., that all organizations had a known and equal chance of selection). However, the sample shows good variability across types of organizations and firm size. The list sample was loaded into the CATI system and programmed to appear automatically on interviewers' computer screens.

Of the 127 telephone numbers provided, 4 were ineligible (2 wrong numbers and 2 fax/modem numbers). Ten could never be reached, and there were 6 refusals. Altogether, 812 dial attempts were made to complete 101 interviews. Up to 35 calls were made to each valid telephone number.

The net CASRO response rate was 85% and the refusal rate was 7%.[1] A complete sample and response rate report is provided in another section of the final report. The telephone interviews' average length was 7.8 minutes. All interviews were conducted in English.

Sampling error cannot be calculated, for the sample provided was not random.

DATA COLLECTION

Only interviewers who had been trained on August 4, 1999 for the parallel "Central Oregon Household Telecommunications Survey" were allowed to work on this project. Interviewer instructions are provided elsewhere in the final report. Interviewing was conducted 9:00 a.m. to 5:00 p.m. August 12th to August 31st until the target sample size of completed interviews was achieved.

A screening question ensured that all survey respondents worked in organizations whose main address is in Crook, Deschutes, and Jefferson Counties. The surveys were completely confidential. Human subjects' approval was obtained from the University's Committee for the Protection of Human Subjects.

The *"Central Oregon Organization Telecommunications Survey"* was conducted with the use of OSRL's computer-aided telephone interviewing system (CATI). In the CATI system, sampling, interviewing and data entry is accomplished interactively and seamlessly. The programmed survey instrument contains all survey questions, interviewer probes for consistency, and pre-coded answer categories. Skip logic is programmed into the system, preventing inappropriate or incorrect questions from being asked.

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[1] CASRO = Council of American Survey Research Organizations. CASRO response rates, the most rigorous industry standard, are calculated in following manner. Completed interview / (Eligible sample + ((Eligible sample / (Eligible sample + Ineligible sample)) * Sample with unknown status)). Source: Robert M. Groves, *Survey Errors and Survey Costs*, 1989.

In administering the survey, trained interviewers use telephone headsets in sound-reduced carrels at computer workstations connected by an NT network. Randomly distributed telephone numbers appear automatically at each workstation and are mated to pre-programmed survey instruments. Telephone calls are placed with a computer keystroke, preventing dialing errors. As respondents answer questions, interviewers enter the data into the CATI data file. Informants' names and telephone numbers were automatically stripped from the interview data to ensure confidentiality. The CATI system eliminates out-of-range responses and wild codes by validating each response interactively and not allowing inappropriate responses to be entered. Thus, the CATI system eliminates many routine and error-prone coding and data entry tasks and enables OSRL to maintain the highest quality control standards.

SURVEY RESULTS

The results section of this report is organized into nine parts. Part 1 summarizes the characteristics of organizations in the sample, to provide context for the substantive results. Part 2 presents various aspects of organizations' computers, including the number, networking, Internet and World Wide Web access, Internet Service Providers, and service quality. Part 2 also summarizes why some organizations do not have Internet and World Wide Web access. Part 3 covers modems, including type, speed, and upgrading plans. Part 4 provides information on organizations' World Wide Web sites, who constructed and maintains them, and the sites' importance to organizations. Part 5 summarizes the results of several questions concerning organizations' use of the World Wide Web, their interest in using it, and their lack of interest. Part 6 addresses organizations' security concerns about the Internet and World Wide Web. Part 7 discusses organizations' telephone service, including service providers; the number of phone lines, cell phones, pagers and fax lines; service quality; use of special telephone devices and services; video teleconferencing; and plans to add more devices and services.. Part 8 assesses organizations' perceptions of the importance of improving telecommunications capacity and cost issues. Part 9 presents organizations' perceptions of area computer training opportunities.

1: ORGANIZATION CHARACTERISTICS

For context, this section briefly describes the characteristics of the organizations in the sample, including county, part of a national organization, firm size, industry, employees' telecommuting capability, and zip code.

County: Three quarters of the organizations in this study have their main addresses in Deschutes County (76%), while 17% are in Crook County and 7% in Jefferson County. Those in Deschutes County tend to have fewer employees and are more likely to be businesses than organizations in the other two counties.

Nationwide: One quarter of the organizations in the sample are part of a nationwide organization and 75% are not.

Firm Size: The median size of organizations in this sample is 20-49 employees. Six percent have 4 or fewer employees, 9% have 5-9, 24% have 10-19, 20% have 20-49, 10% have 50-99, 11% have 100-249, 7% have 250-499, 11% have 500-999, and 3% have 1,000 or more employees. Three informants did not know the number of employees in their organization.

Industry: Sixty-two percent of the sample comprises for-profit businesses. Fifteen percent comprises local, state, or federal government agencies. Nine percent are educational institutions, 4% health care related institutions, and 8% are other nonprofits. Three organizations' industry is unknown; neither the interviewer nor the respondent could decide the best code category.

Telecommuting: Fifty-two percent of organizations allow their employees to "telecommute from home to work, for example, if they had a sick child, the weather was bad, or if they needed a stretch of uninterrupted time to complete a special project." Telecommuting is more often allowed in very small companies and nonprofits.

Zip Code: Thirty-six percent of the organizations in the sample are in zip code 97701 and 14% are in 97702. Seventeen percent are in 97754 and 12% in 97756. The other 22% are distributed in small numbers over six other zip codes: 3% in 97707, 4% in 97708, 4% in 97739, 5% in 97741, 4% in 97759, and 2% in 97761.

2: ORGANIZATION COMPUTERS

This section examines several dimensions of organizations' computers, including number, network, World Wide Web (WWW) access, Internet service providers, and Internet service quality. Results for modems are provided in the next section.

Number of Computers: Twenty-two percent of the organizations studied have 1-9 computers, 19% have 10-19, 13% have 20-29, 9% have 30-49, 8% have 50-69, 12% have 70-150, 13% have 151-550, and 5% have more than 550 computers. Organizations with more employees tend to have more computers, as do those in government, education and health care, and those that are part of a nationwide organization.

Networked Computers: Eighty-seven percent of the organizations studied have their computers connected together in a local area network. Smaller organizations, with fewer computers, are less likely to be networked.

Internet and WWW Access: Ninety-three percent of the organizations studied have computers that can connect to the Internet and World Wide Web (WWW). One organization has the capability but has never used it. Organizations without WWW access are likely to be part of a nationwide organization (67%, compared to 95% of those with access), all of them are small (5-19 employees), and all are for-profit businesses.

The seven organizations without Internet and WWW access were asked the most important reason why they don't have access. Two businesses said that they see no value. Five answered "other" and their narrative answers are supplied elsewhere in the final report. None

cited cost, fear, lack of skill, access at another location of their organization, or using public computers for access. Four said that they planned to connect to the WWW in the next 12 months.

Internet Service Providers (ISP): The major ISP for the organizations studied is EmpireNet at 23%, followed by BendNet at 13% and Bend Cable at 11%. Thirteen percent received Internet access from "other." Seven percent of the organizations provided their own Internet access, without an ISP. Several ISPs provide access for smaller percentages of the organizations studied: AOL 4%, Central Oregon Internet (COINET) 4%, Transport Logic 3%, OutlawNet 3%, MadrasNet 3%, KMX Corporation 2%, UniCom 2%, Microsoft Network 1%, and MtJeffNet 1%. Zero subscribe to Compuserv, Eagleslair, Ed-net, Crestview Cable, MCI or Palmain Communication. Eight informants did not know how their organization accesses the WWW. The larger, nationwide organizations, and government agencies, are more likely to have their own Internet access. For the Central Oregon businesses and nonprofit organizations studied, EmpireNet is the modal ISP, with 29% of businesses and 63% of nonprofits. For educational organizations, the modal ISP is BendNet, with 44%.

Asked to evaluate the quality of their Internet service, 35% said it is "excellent," 50% "good," 15% "fair," and 0% said "poor." Government and health care organizations, and organizations with a fewer than 10 computers, are less satisfied than other organizations. In open-ended questions, respondents were asked: "If there is one thing you could change or improve about your Internet service, what would it be?" This was programmed in CATI so that the answers of those who answered "excellent" or "good" are separated from those who said "fair" or "poor." In order to save money on this study, open-ended answers were not coded. But the narratives are provided in another section of this report.

3: MODEMS

Modem Type: Of the organizations that can connect to the WWW or Internet, 34% use a telephone dial-up modem, 14% use a cable modem, 48% have a T1/DSL direct network connection, 3% have "something else," and one informant did not know. T1/DSL connections are more common for large organizations, in government and education, with a large number of computers. Telephone dial-up modems are most common in small businesses and nonprofits, with fewer than 20 employees, and fewer than 10 computers. Cable modems are more common in small-to-medium businesses and health care organizations, with 30-49 computers.

Modem Speed: Of the organizations with telephone dial-up modems, modem speed is 56K for 54%, 28.8K for 20%, and 14.4K for 3%. Eight percent did not know their telephone modems' speed, and 11% reported an "other" speed.

Upgrading Plans: Within the 12 months following the survey, 49% of the organizations studied plan to upgrade their modems to connect to the WWW or Internet. Those most likely to plan to upgrade are the medium-to-large organizations in government and education who already have 50 or more computers.

4: OWN WORLD WIDE WEB SITE AND IMPORTANCE

Four-fifths of the organizations studied have their own WWW sites (81%). Those most likely to have WWW sites are educational organizations (100%), other nonprofits (88%), and businesses (82%). As the number of employees and the number of computers increases, organizations are more likely to have a WWW site.

About half of the organizations studied had an employee create the WWW site (49%). Another 39% contracted out the work, and 8% reported that both a contractor and an employee created the site. Health care and other nonprofit organizations, with fewer than 20 employees, and fewer than 20 computers are the most likely to contract out.

WWW site maintenance and updating is performed by an employee in 67% of the organizations studied. It is contracted out in 18%, and performed by both an employee and a contractor in 9%. One informant volunteered that their WWW site in not updated or maintained, and 3 did not know.

When asked "How important is the World Wide Web and the Internet to your (business/organization) these days?", 48% of informants said "very important," 36% "somewhat important," 15% "not very important," and one said "not at all important." Those who think the WWW is not important tend to be in small-to-medium size businesses and are much less likely to have WWW sites.


5: ORGANIZATIONAL USES OF THE WORLD WIDE WEB

In a series of 9 questions, we asked organizations about the ways in which they use, or might use, the WWW. Specifically, informants were asked if their organization has used the WWW for this purpose already, if they would like to be able to use it for this purpose, or if they are not interested in using the WWW for this purpose. Figure 1 summarizes these results. The 7 organizations without WWW access were not asked these questions.

First, we examine ways Central Oregon organizations already use the WWW. The items are ordered from high to low by frequency of response.

- 87% allowing customers and clients to see messages to the organization;
- 83% providing information to customers and clients;
- 69% buying services or products from other companies;
- 47% filing taxes or checking financial information, such as on-line banking, the stock market, or the value of employees' stocks or retirement funds;
- 46% selling services or products;
- 46% making travel arrangements for employees;
- 34% employees learning new skills or on-the-job training;
- 15% employees taking college classes for credit;
- 14% registering employees for college classes.

Figure 1: Things the WWW Can Be Used for: Already Use, Interested in Using, Not Interested
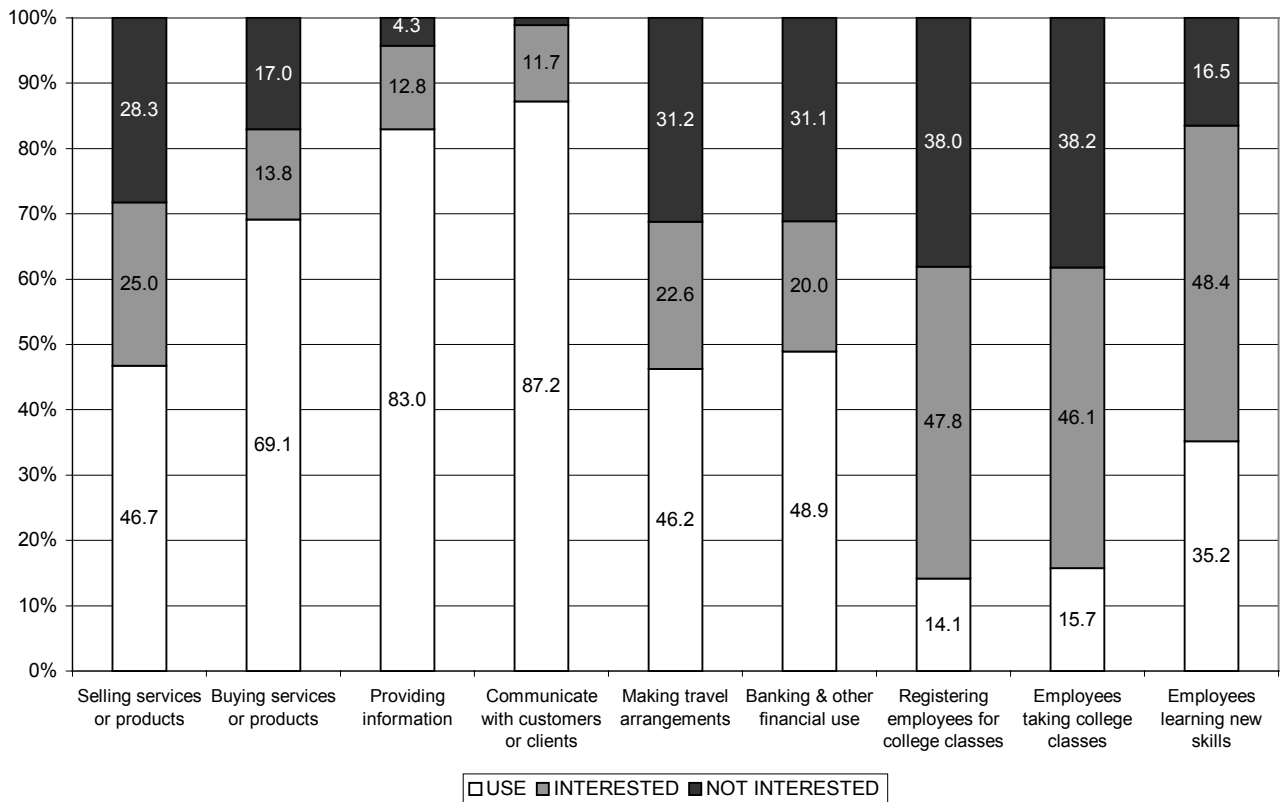
Patterns of use are quite varied across industry, firm size, number of computers, and whether the organization is part of a nationwide organization. Businesses are more likely than other types of organizations to already use the WWW for everything except the items related to employee education. Educational institutions rank higher than most other types of organizations in using the WWW for buying, providing information, communicating, making travel arrangements, financial uses, and educational functions. Health care organizations rank high in buying and selling services and products. Nonprofits rank high in providing information and communicating with customers and clients.

Next, we examine organizations' desire to be able to use the WWW for these purposes. Each number below indicates the percentage of organizations that do not already use the WWW for the purpose indicated would like to. Again, numbers are ordered from high to low by frequency of response.

- 47% employees learning new skills or on-the-job training;
- 47% registering employees for college classes.
- 44% employees taking college classes for credit;
- 24% selling services or products;
- 22% making travel arrangements for employees;

- 19% filing taxes or checking financial information, such as on-line banking, the stock market, or the value of employees' stocks or retirement funds;
- 14% buying services or products from other companies;
- 13% providing information to customers and clients;
- 12% allowing customers and clients to see messages to the organization;

The general patterns of the organizations who most desire to use the WWW are: government and health care agencies, the smallest organizations, and those with the fewest computers.

Finally, we examine the distribution of answers by the percentage of organizations *not* interested in using the WWW for each purpose.

- 37% registering employees for college classes.
- 36% employees taking college classes for credit;
- 31% making travel arrangements for employees;
- 30% filing taxes or checking financial information, such as on-line banking, the stock market, or the value of employees' stocks or retirement funds;
- 28% selling services or products;
- 17% buying services or products from other companies;
- 16% employees learning new skills or on-the-job training;
- 4% providing information to customers and clients;
- 1% allowing customers and clients to see messages to the organization;

The organizations with no desire to use the WWW for specific purposes are disproportionately: the government and education sectors for selling and for financial uses; business, health care and nonprofits for educational functions; medium size organizations for buying things and making travel arrangements; and very small organizations for educational functions. These patterns vary, of course, by item above, but these are the general patterns.

6: SECURITY CONCERNS ABOUT THE INTERNET AND WORLD WIDE WEB

Organizations were asked three questions about their security concerns regarding the Internet and WWW. The results are summarized in Figure 2.

When asked: "How concerned are you about the security of buying and selling things on the World Wide Web?" 35% said they are "very concerned," 41% "somewhat concerned," and 23% "not concerned." In response to a parallel question about the security of electronic mail, 34% said they are "very concerned," 33% "somewhat concerned," and 33% "not concerned." Finally, when asked "How concerned are you about employees the World Wide Web for things they shouldn't during work hours?" 34% said they are "very concerned," 41% "somewhat concerned," and 24% said "not concerned."

Figure 2: Internet Security Concerns
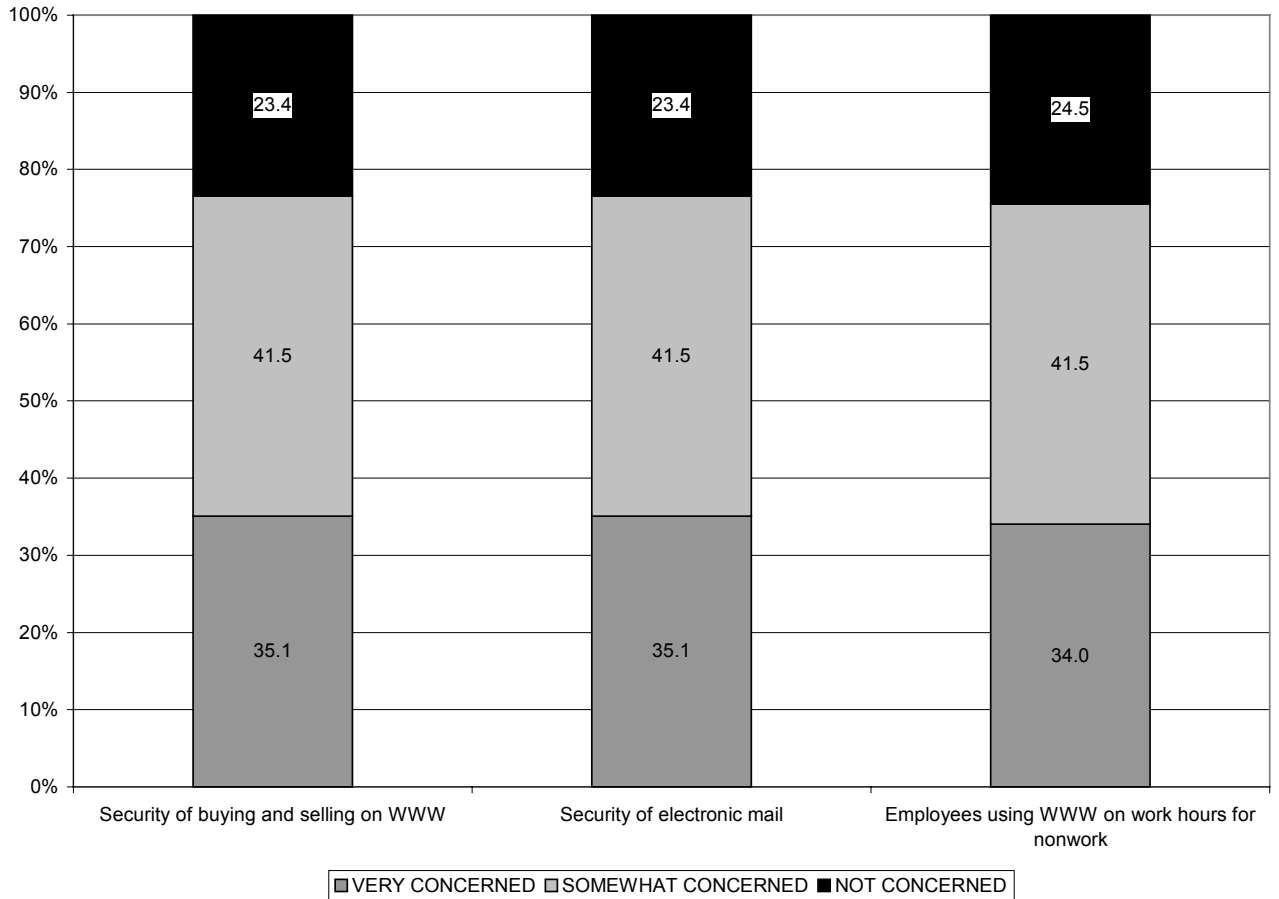
Businesses and nonprofits have the highest concerns about buying and selling and about electronic mail, while government agencies have the highest concern about employee behavior. Very small organizations, educational institutions, nonprofits, and organizations that allow employees to telecommute have the lowest concerns about employee behavior.

In two open-ended questions, organizations were asked to voice "the most positive quality" and "the one greatest problem or risk" of the WWW or Internet. These were not coded, in order to save money. But the open-ended narratives are available in another section of this report for detailed perusal.

7: TELEPHONE SERVICE

Local Telephone Service: For 66% of the organizations, USWest provides their local telephone service, 13% use Shared Communications, 11% use Unicom, 4% said "other," 2% indicated more than one provider, and 4% did not know. Businesses and nonprofits are somewhat less likely to have USWest than other types of organizations.

Long-distance Telephone Service: For long-distance telephone service, ATT provides service to 24% of the organizations studied, Unicom to 20%, USWest to 7%, MCI to 5%, Sprint to 3%, "other" to 5%, and 9% of the informants did not know. Large organizations and health care organizations are most likely to have ATT long-distance service. Government agencies are most likely to have Shared Communications.

Number of Telephone Lines and Cell Phones: The median number of telephone lines in the organizations studied is 19. Twenty-seven percent of the organizations studied have fewer than 10 telephone lines, 23% have 10-19 lines, 12% have 20-29 lines, 8% have 30-49 lines, 5% have 50-69 lines, 3% have 70-95 lines, and 22% have more than 95 telephone lines, including cell phones. The largest companies, mainly government agencies, have the most telephone lines.

Fifteen percent of the organizations studied have no cell phones. Twenty-eight percent have just 1-3 cell phones, 23% have 4-10, 15% have 11-20, and 15% have 21 or more, and 5% of informants did not know.

Forty percent of the organizations studied plan to add telephone lines within the next 12 months. Those organizations planning to add telephone line are disproportionately larger and in education and health care. Of those, 60% plan to add cell phones. The median number of cell phones organizations are planning to add is five, and the range is 1 to 50. Government agencies and educational institutions, in particular, are planning to add cell phones. Of those planning to add telephone lines, 97% are planning land lines. The median number of land lines organizations plan to add is 6.

Telephone Devices and Services: Every organization was asked about special telephone devices and services that they have, that they don't have but would like to have, and that they are not interested in. Below are the frequencies for each, ordered high to low. Also see Figure 3.
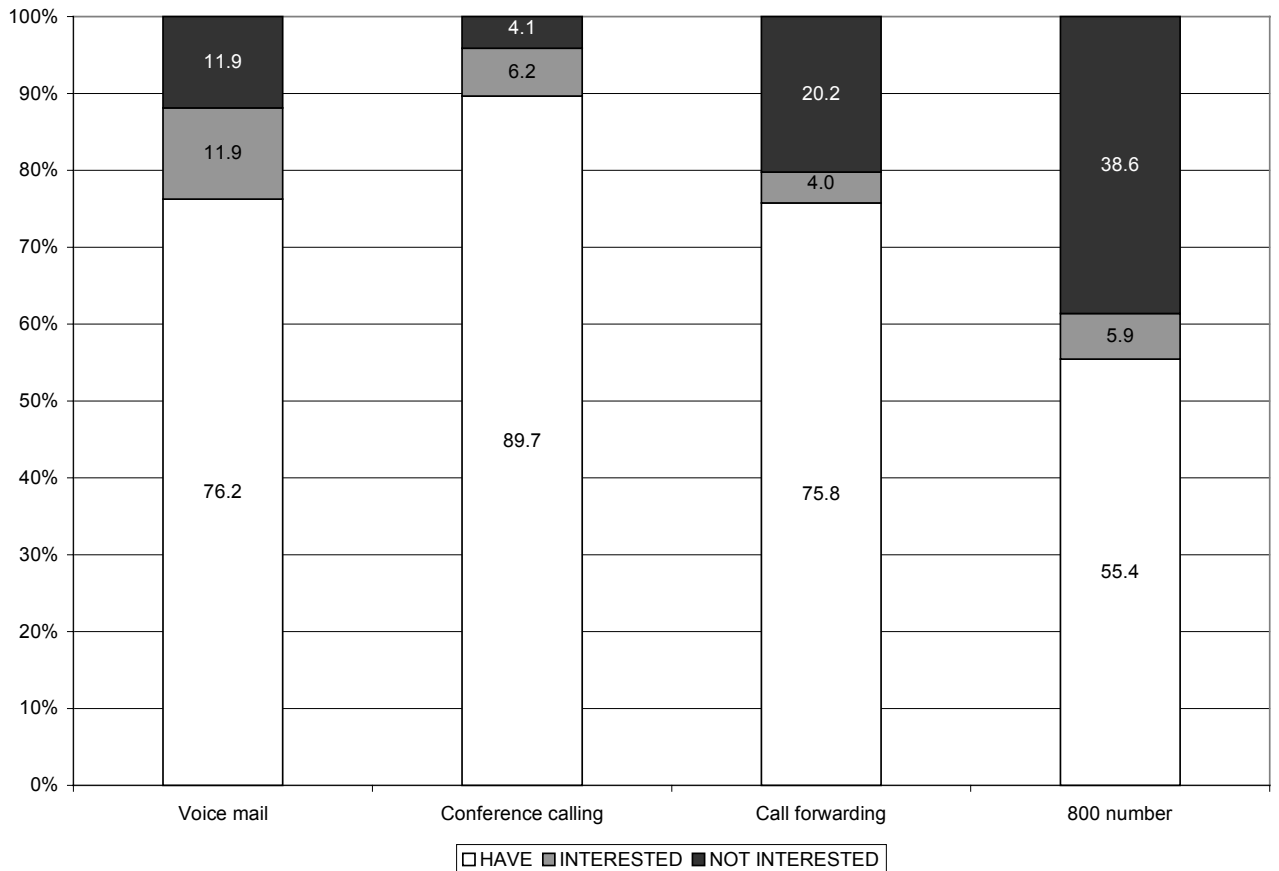
The telephone features organizations already have are, by frequency:

- 86% conference calling;
- 76% voice mail service (not including answering machines);
- 74% call forwarding;
- 55% an 800 number.

Below are the telephone features organizations do not have, but are interested in having:

- 12% voice mail service (not including answering machines);
- 6% conference calling;
- 6% an 800 number;
- 4% call forwarding.

Figure 3: Phone Features Business Already Have, Are Interested in Having, or Are Not Interested in Having

Below are the telephone features organizations are not interested in having:

- 39% an 800 number;
- 19% call forwarding;
- 12% voice mail service (not including answering machines);
- 4% conference calling.

There is a great deal of variation in patterns of use, interest and disinterest. Speaking very generally, small organizations, those not part of a national organization, which have few computers tend to be the least interested in new telephone features.

For cell phones, telephone features such as voice mail, caller ID, call waiting and call forwarding are available on 60% of organizations' cell phones and some subset of features are available on another 17%.

Pagers: Of the organizations studied, 57% provide pagers to some of their employees. The median number of pagers organizations have is 10. All health care organizations provide pagers to some employees, as well as 87% of government agencies and 67% of educational institutions, compared to just 52% of businesses studied and 25% of nonprofits. Pagers are more likely in larger than smaller organizations.

Fax Machines: All of the organizations studied can send faxes from their place of business. Thirty-six percent of organizations have one fax telephone line, 12% have two, 8% have three, 8% have four, 2% have five, and 35% have six or more lines. Small organizations tend to have fewer fax lines, and larger organizations have more.

Thirteen percent of the organizations studied plan to add more fax telephone lines within the next 12 months. Of those organizations, 23% plan to add one line, 38% plan to add two, zero plan to add three, 8% plan to add four, 8% plan to add five, 15% plan to add six or more, and 8% don't know. Medium to large organizations in education, government and health care most often plan to add new fax lines.

Quality of Telephone Service: Twenty percent of organizations rated the quality of their local telephone service "excellent," 49% "good," 23% "fair," and 9% "poor." Medium-size organizations in business and government gave the lowest ratings.

For the quality of their long-distance telephone service, 37% of organizations said "excellent," 58% "good," 5% "fair," and zero "poor." The lowest ratings show no distinct pattern by organization type or size.

Organizations also were asked open-ended questions about both their local and long-distance telephone services: "If there is one thing you could change or improve about your telephone service, what would it be?" The narrative answers are presented elsewhere and are separated by whether the organizations gave positive or negative quality ratings.

Video Teleconferencing: Only 17% of the organizations studied use video teleconferencing in their locations. It is most common in health care organizations (75%) and education (56%), particularly in very large and medium-size organizations. Of the remaining organizations, 15% plan to add video teleconferencing in their locations in the next 12 months. Government agencies and educational institutions are most likely to plan to add video teleconferencing.

8: IMPROVING TELECOMMUNICATIONS

All the organizations studied were asked "How important do you think it is for your (business/organization) to improve its telecommunications capacity?" Forty-four percent said "very important," 39% said "somewhat important," 13% said "not very important," and 4% said "not at all important." The organizations most likely to say "not at all important" are very small, not part of nationwide organizations, and in business and health care. Those most likely to say "very important" are organizations with 100 or more employees in government and education.

Money to improve telecommunications capacity is "readily available" for 22% of the organizations studied. For 58%, "money is tight but [they] could afford the right products." For 16%, "money is very scarce and [they] probably could not afford the right products." And for 4%, "no money at all is available." Organizations most strapped for funds to improve telecommunications are very small and disproportionately in health care. Those with money readily available are mainly in business.

9: AREA COMPUTER TRAINING OPPORTUNITIES

Finally, organizations were asked about the quality of computer training opportunities in their geographic area. Just 11% said "excellent," 41% said "good," 32% said "fair," and 14% said "poor." An additional 2% did not know and 1% said that no computer training opportunities are available in their geographic area. Those organizations most likely to say "fair" are small to medium in size and disproportionately in health care, government and nonprofits. Those organizations most likely to say "poor" are disproportionately medium size (20-99 employees), in business, and not part of national organizations.

CONCLUSIONS

This survey provides a wealth of information concerning various facets of telecommunications issues in Central Oregon businesses, educational institutions, government agencies, health care facilities, and other nonprofit organizations. In this report, we have paid particular attention to variation in the facets of computers, modems, Internet and WWW access, Internet and WWW use, a wide variety of telephone services, video teleconferencing, and organizations' telecommunications plans for the next 12 months. A great deal can be done with these data in terms of planning to meet the community's needs. If the results of this survey, and its companion household survey, result in changes, it would be possible to conduct a subsequent survey of organizations to help chart change over time, in particular change which can be attributed to particular innovations and policies.