

# **A Survey of Small Businesses' Telecommunications Use and Spending**

by

**by Stephen B. Pociask,  
TeleNomic Research, LLC**

for



under contract number SBA-HQ-02-M-0493

Release Date: March 2004

*The statements, findings, conclusions, and recommendations found in this study are those of the authors and do not necessarily reflect the views of the Office of Advocacy, the United States Small Business Administration, or the United States Government.*

# **A Survey of Small Businesses' Telecommunications Use and Spending**

## **Table of Contents**

	<b><u>Page</u></b>
<b>Executive Summary</b>	<b>i</b>
<b>I. Introduction</b>	<b>1</b>
<b>II. Background</b>	<b>1</b>
A. Changes Affecting Telecommunications	1
B. Industry Changes Have Disparate Effects on Customer Market Segments	2
C. Need For Better Data on Small Business Telecommunications Use	3
D. Study Purpose and Importance	4
<b>III. A Survey of Small Businesses' Telecommunications Use</b>	<b>5</b>
A. Response Rate and Representation	6
B. Sample Size Requirements	6
<b>IV. Composition of Survey Results</b>	<b>7</b>
A. Overall Description of the Survey Population	7
B. Understanding the Composition of Telecommunications Spending	9
C. Detailed Composition of Spending by Industry	25
<b>V. Market Penetration and Usage</b>	<b>43</b>
A. Telecommunications Services Penetration Rates	43
B. Expenditures of the Users of Telecommunications Services	44
<b>VI. Summary Analysis of the Results</b>	<b>59</b>
A. Effects of Firm Size and the Burden of Telecommunications Costs	59
B. Preference for Bundled Telecommunications Services	62
C. Factors in Selecting Telecommunications Providers	63
D. Average Expenditures per Unit	64

**Table of Contents**  
(Continued)

	<b><u>Page</u></b>
<b>VII. Survey Results on Important Current Topics</b>	<b>66</b>
A. Local Competition	66
B. Wireless Substitution	67
C. Voice-over-Internet Protocol (VoIP) Services	68
D. Internet Access and Broadband Services	69
<b>VIII. Summary</b>	<b>71</b>
<b>Appendices</b>	<b>73</b>
A. Survey Questionnaire and Related Materials	73
B. Comparisons of Industries by Type of Service For All Small Businesses	79
C. Average Spending and Quantity For Users of Services Only	87
D. Comparisons of Industries by Type of Service For Users of Services Only	104
E. Other supplemental Survey Information	111
<b>About the Author</b>	<b>112</b>

**A Survey of Small Businesses’  
Telecommunications Use and Spending  
TeleNomic Research, LLC\***

**Executive summary**

Small Businesses use a considerable amount and a wide variety of telecommunications services in the United States. Considering the many technological changes affecting the industry, as well as intense legislative and regulatory debates dealing with industry competition and high-speed Internet services, public policymakers require extensive information on how these changes affect consumers. However, public data on the small businesses’ use of telecommunications services are not well documented. Without adequate data on small businesses’ use of telecommunications services, the effects of technological and regulatory changes on small businesses cannot accurately be measured and understood. In order to address this deficiency, this report provides new data on small businesses, including the use of and expenditures for telecommunications services. This report defines a small business as one having fewer than 500 employees.

A mail survey was conducted and 458 small business owners responded, providing information on employment size, industry, use and expenditures for various telecommunications services, and other important aspects of small business perceptions. Based on the sample population of the study, most small businesses are very small, averaging less than 9 employees. In fact, 31% of small business owners reported just one employee or less, and 47% of small business owners reported less than \$200,000 in revenue in their latest year of operation. The sample of small businesses included respondents from the District of Columbia and forty-eight states, and these included a wide representation of industry groups, including construction, retail and service industries as the most numerous in the sample population.

The sample results provide a trove of information on telecommunications use and expenditures. The key findings of this information are as follows:

- Small businesses spend a considerable amount for telecommunications services. This report finds that small businesses spend on average \$543.17 per month for telecommunications services, 89% of which are for local, long distance and wireless telephone services. The finance and insurance industry spends on average \$1,803.99 per month, the highest among the major industries. Manufacturing (\$723.75), wholesale trade (\$786.09), transportation and warehousing (\$701.21), and real estate, renting and leasing (\$740.66) also spend substantially above average, while farming and agriculture (\$196.61), retail trade (\$383.31), and accommodation and food services (\$317.17) spend the least. This

---

\* TeleNomic Research, LLC is an economic consulting firm and a small business located in Herndon, VA. For more information see [www.TeleNomic.Com](http://www.TeleNomic.Com).

spending reflects, in part, the telecommunications intensity of the business, as well as differences in firm size among industries.

- The cost burden of telecommunications services appears to be higher for very small businesses. For example, firms with 0 to 4 employees spend \$82.81 per employee for local and long distance telephone service, while firms with 5-9 employees spend \$50.18 per employee and firms with 10-499 spend \$20.99 per employee. This difference in spending means that very small firms pay disproportionately more for telecommunications services than other firms when operating their businesses. As a result, public policies that increase business expenditures are likely to adversely affect smaller businesses more than other businesses.
- Signs of competition in the small business market segment for local telephone services appear evident from the survey data. Competitive Local Exchange Carriers (CLECs) now garner 22% of the small business market, with the remaining share belonging to incumbent local exchange carriers (ILECs). CLECs serve 29% of small businesses located in metropolitan areas, while only 11% of small businesses located in non-metropolitan areas.
- The use of wireless telecommunications by small businesses is substantial compared to other telecommunications services. Wireless services are now used by 73% of small businesses, and 25% of all small businesses spend more for wireless services than they do for local and long distance telephone services combined. In fact, 6% of the small businesses using wireless services report no long distance spending, while 4% report no local telecommunications spending. The construction industry (\$382.20), as well as the transportation and warehousing industry (\$371.33), spend on average twice as much for wireless services as they spend for other services (\$176.44).
- As far as online services, 27% of small businesses do not subscribe to any Internet access service. Among the various forms of Internet access, dialup services are used by 38% of small businesses, while cable modems, DSL, Satellite, T-1 and wireless broadband services are used by 26%, 21%, 4%, 4% and 3%, respectively. However, when combined, broadband services are used by 48% of small businesses, an indication that some small businesses use multiple forms of broadband services. Furthermore, some broadband users continue to subscribe to dialup access services.
- The survey reveals that cable modem service accounts for nearly half of the small business high-speed Internet market. The success of the cable market may reflect favorable pricing, access to home-based businesses and non-employer businesses, and successful efforts by cable companies to expand beyond residential video services into new offerings, such as voice and data, for business communities.
- 3.3% of small businesses use Voice-over-Internet services – services that use the Internet to carry telephone-like conversations while bypassing telephone company networks and billing.

The survey also gives information on firm size, use and expenditures and various aspects of small business perceptions. The survey results suggest that small businesses would prefer to buy combinations of telecommunications services (called *bundles*) from a single

provider. These bundles combine multiple services onto a single bill, usually at a price less than purchasing the services separately from different providers. For example, 79% of small businesses surveyed would prefer to buy telecommunications services in a bundle, and 85% of these small businesses would prefer their services combined on a single bill. From this, it appears that most small businesses want the convenience of a single bill and the savings from service bundling.

The survey also provides insight into how small businesses choose telecommunications providers. When asked to rank the factors they use for selecting of a telecommunications provider, small business owners reported that quality and reliability were the most important factors to consider, followed closely by price and customer service. The name brand of the provider was the least important factor, by far, in deciding which telecommunications provider to select.

Some data in this report have limitations in their use that future research should address. While the overall sample size of the data summarized in this report is sufficiently high to provide an accurate representation of small business telecommunications use, many of the tables shown in this report contain small sample sizes for various subgroups of industry, firm size and other factors. Because sample size is an important determinant of the statistical validity and reliability of the results, caution should be exercised for those subgroups containing a small sample size. However, subgroups with high sample sizes are subject to lower sampling error and higher reliability. Therefore, it is recommended that future surveys attempt to increase the sample size in order to provide more accurate insights into telecommunications use for these subgroups. Finally, periodic surveys of this nature would be useful in developing time series data and providing an important contribution to understanding the ongoing changes in the perception and consumption of telecommunications services.

In summary, this report provides new and much needed data on small businesses' use of telecommunications services. These data will be useful in understanding the wide variety of services and the magnitude of expenditures made by small businesses. The results of this survey will aid policymakers in understanding how regulatory, competitive and technological changes are affecting small businesses, and it can provide a basis to quantify disparate impacts on this important market segment.

# **A Survey of Small Businesses’ Telecommunications Use and Spending**

**TeleNomic Research, LLC\***

## **I. Introduction**

The goal of this report is to contribute to the collection of information on the use of telecommunications services by small businesses. In order to accomplish this goal, this report analyzes the results of a survey of 458 small businesses. The survey results provide rich detail on the use of telecommunications services by small businesses, including expenditures for local telephone, long distance telephone, wireless telecommunications and Internet access services. The survey responses provide useful insights into the consumption of telecommunications services as they pertain to geographic location, firm size and other pertinent factors. This report summarizes the highlights of the survey.

The report includes six major sections. The first section to follow, **Section II**, provides an explanation of the purpose and importance of the report, while the remaining sections of the report address the survey and its results. **Section III** of this report provides the technical background on the survey, **Section IV** summarizes average telecommunications expenditures for all firms (users and nonusers of services) sampled in the survey, and **Section V** provides details on the average expenditures for users (only) of telecommunications services. **Sections VI** and **Section VII** provide an examination of the results as they pertain to important policy areas, including analyzing telecommunications expenditures as a cost burden on small businesses, estimating the extent of local telecommunications competition in the small business market, and measuring the use of broadband services by small businesses. It is hoped that these data and results will aid analysts, policymakers, advocates and others in better understanding telecommunications use by small businesses.

## **II. Background**

### **A. Changes Affecting Telecommunications**

Sweeping changes in telecommunications public policies, competition and technology are having disparate effects on key consumer market segments – namely, residential, small

---

\* TeleNomic Research, LLC is an economic consulting firm and a small business located in Herndon, VA. For more information see [www.TeleNomic.Com](http://www.TeleNomic.Com). The author wishes to acknowledge Anne Danehy, president of Strategic Opinion Research for her comments on the survey and study design; Barbara Kasoff, president of GrassRoots Impact, Inc. for providing small business addresses during the survey pretest; and Dr. Radwan Saade, economist of the Office of Advocacy (Small Business Administration), for his helpful comments on this report. All errors and omissions are solely the responsibility of the author.

business and large business customers. Public policy changes have come about through changes in legislation, most notably from the passage and implementation of the Telecommunications Act of 1996 (*the Act*), and through changes in regulation, primarily at the direction of the Federal Communications Commission (FCC) and state public service commissions. Legislative and regulatory actions have affected market entry and competition, which have implications on prices, quality and availability of telecommunications services to consumers. Technical change has also greatly affected traditional telecommunications services, creating ongoing challenges for policymakers, who must discern the effects of these changes on various market segments.

### **B. Industry Changes Have Disparate Effects on Customer Market Segments**

The extent to which changes in regulation, competition and technology affect various customer market segments – including residential, small business and large business customers – is an area of great importance. Yet, public policies and regulations sometimes promulgate rules that affect and treat market segments differently. This is particularly evident in regulations that affect prices between residential and business market segments. For example, in order to promote universal service (e.g., make residential rates more affordable and widely available), state commissions tend to keep residential telephone rates low at the expense of business rates. The result of this is that ILECs charge their business customers nearly twice as much as they charge their residential customers for telephone service.<sup>1</sup> Therefore, small business customers are likely to pay more for a telephone line than residential customers.<sup>2</sup>

Firm size may be another major factor influencing expenditures.<sup>3</sup> Through bulk purchases and competitive discounts, larger businesses may have opportunities to benefit from economies of scale, whereas smaller businesses may not. For example, large businesses may be more likely than small ones to use alternatives like Public Branch Exchange (PBX) systems, local area networks (LANs) and dedicated high-speed data services, like T-1 and T-3 lines. These and other alternatives can result in savings for businesses by aggregating calls and data traffic, assuming the firm has sufficient traffic volume to make these alternatives cost-effective. Small businesses are less likely to achieve the volumes necessary to use these alternatives or attain bulk discounts. For these reasons, the percent burden of telecommunications expenses (per employee) may be higher for smaller firms than for larger firms.

---

<sup>1</sup> This is according to sample cities published in the Federal Communications Commission's *Reference Book on Rates, Price Indices and Expenditures for Telephone Services*, July 2003, tables 1.10 and 1.3. For example, residential rates (including usage) are \$26.01, \$20.40, \$22.24 and \$25.41 (per line) in Alabama, Alaska, Arizona and Arkansas, while business customers rates are \$48.94, \$34.71, \$44.31 and \$44.69, respectively.

<sup>2</sup> Of course, small business owners that operate out of their homes may be using and paying for a residential line for their business.

<sup>3</sup> This study will use the number of employees as a surrogate for firm size. For the purpose of standardizing costs across different sized firms, a measure of telecommunications expenses per employee will be used. *A per employee* standardization has been used in the past to measure cost burdens by firm size. For example, see W. Mark Crain and Thomas D. Hopkins, "The Impact of Regulatory Costs on Small Businesses," Report for the Office of Advocacy, U.S. Small Business Administration, RFP No. SBAHQ-00-R-0027, 2001.



Therefore, small businesses may spend more than residential customers, because of universal service pricing; and they may be spending more than larger business customers, because costs per employee are higher.<sup>4</sup> While this may seem to be a reasonable supposition, there is insufficient empirical data in the public domain to test whether small businesses are adversely impacted by these regulatory and economic influences.

### **C. Need For Better Data On Small Business Telecommunications Use**

Federal statistical agencies collect extensive information on industry and firm size, but they do not collect information on telecommunications used by small businesses.<sup>5</sup> Consumer expenditures for telecommunications services and telephone price indexes are publicly available, but similar coverage for small businesses is not. While there is extensive public data on small businesses, these data do not report information related to telecommunications use or expenditures.<sup>6</sup> While the FCC collects voluminous data from telecommunications service providers, these data are often too aggregated to provide insight into small businesses' use of telecommunications services. To the extent that public data for market segments exist, it is limited primarily to the residential customer market segment.

Outside of the government agencies, studies on small business telecommunications services are occasionally conducted. These studies are often proprietary, for-fee by consultants, limited in sample size and may under-represent the smallest of firms. Other studies focus on only one aspect of telecommunications or one particular service. In short, there is no publicly available comprehensive source of data on small business use of telecommunications services.

The lack of accurate and comprehensive data on small businesses use of telecommunications may leave policymakers guessing about how market segments are affected by legislative and regulatory actions. For example, when the FCC imposed different monthly subscriber line charges on single line business customers, secondary line customers and multi-line business customers, it did not know specifically how these rule changes would effect the small business market segment<sup>7</sup> In that instance, the FCC did not distinguish between small and large businesses, instead permitted phone

---

<sup>4</sup> Larger firms may have higher costs, but, after standardizing for size, telecommunications cost per employee may be lower, compared with smaller firms.

<sup>5</sup> For example, the U.S. Census Bureau compiles information on firm size in its County Business Patterns publication and its Economic Census, as well as information on firms with no employees its Nonemployer Statistics.

<sup>6</sup> For example, see *Small Business Economic Indicators for 2002*, Office of Advocacy, Small Business Administration, June 2003.

<sup>7</sup> The plan was proposed by the Coalition for Affordable Local and Long Distance Services and referred to as the *CALLS Plan*. For an example of the extent of residential and business data, as well as rural and urban data, see Stephen Pociask, "An Assessment of Consumer Welfare of the CALLS Plan," filed with FCC by the Alliance for Public Technologies (APT), Oct. 25, 1999.

companies to charge business customers differently depending on the number of telephone lines they subscribed to on their telephone account.<sup>8</sup>

Determining whether these regulatory and public policy changes adversely affect small businesses requires vastly more information on small businesses' telecommunications use than is available today from public sources. It requires knowing what services are purchased and how much is purchased by small businesses. Therefore, while regulatory rules make distinctions between market segments, information on these market segments is incomplete for making a proper assessment of those policy effects. Thus, policymakers need better information on small businesses' use of telecommunications services if they are to determine whether the promulgation of rules does, in fact, adversely affect small businesses.

#### **D. Study Purpose and Importance**

The purpose of this report is to add to the limited collection of information on small businesses as it pertains to the use and expenditures of telecommunications services. This information will include what services small businesses use, how consumption of telecommunications services varies by service type, revenue and employment size, location, industry and geography.

Specifically, better data of small business telecommunications use would provide valuable information on a number of important topics. This data would provide insight into the degree of competition in the small business market segment, and what factors small businesses consider when choosing a telecommunications provider. These data would provide a better understanding of small businesses use of high-speed data networks, wireless telecommunications and Internet-based telephony (referred to as Voice over Internet Protocol services), a new service that replaces more traditional telecommunications services.

Improved data on small businesses will aid in understanding and quantifying the effects of legislation and Federal regulations on small businesses, as required under Federal statutes. Congress established the Office of Advocacy in 1976 by Public Law No. 94-305 to represent the views and interests of small businesses within the Federal government.<sup>9</sup> The Office of Advocacy's statutory duties include serving as a focal point for the receipt of complaints concerning the government's policies as they affect small businesses, developing proposals for changes in Federal agencies' policies, and communicating these proposals to the agencies.<sup>10</sup> The Office of Advocacy is further required to measure the direct costs and other effects of government regulation on small businesses, and make legislative and non-legislative proposals for eliminating excessive or unnecessary

---

<sup>8</sup> Using the number of lines to distinguish a small business is very problematic. For example, a factory with 600 employees may have five lines, but a real estate company with four employees may have six lines. Furthermore, a large business may have thousands of employees but only a few employees at any one location. Moreover, a satellite office for a large international corporation may count as a single line business, even though it is not a small business at all. Lastly, a company can have multiple business accounts in multiple states, which can affect the monthly charges assessed by local telephone companies.

<sup>9</sup> Public Law No. 94-305 (codified as amended at 15 U.S.C. § 734 a-g, 637).

<sup>10</sup> 15 U.S.C. § 601c (1)-(4).

regulations on small businesses.<sup>11</sup> The Office of Advocacy also has a statutory duty to monitor and report to Congress on agencies' compliance with the Regulatory Flexibility Act of 1980 (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996. This report will provide statistical information that can be used to assess whether legislative and regulatory rules, as they pertain to telecommunications, create a cost burden on smaller businesses.

In short, better information on the small business market segment's use of and expenditures for telecommunications services will aid in the understanding of how changes in telecommunications regulations, competition and technology will affect small business users. It is the purpose of this report to contribute to the collection of this information.

### **III. Survey of Small Businesses' Telecommunications Use**

A mail survey was conducted with the intent of creating a body of data that will provide useful insight into characteristics of small businesses' use of telecommunications services.<sup>12</sup> This survey attempts to expand and improve on an earlier survey of telecommunications use.<sup>13</sup> The survey sample was selected from Survey Sampling International's (SSI) database, *Comprehensive Business Samples*.<sup>14</sup> The database was chosen because of its extensive coverage of businesses, totaling 12 million business establishments with representation across industries.<sup>15</sup>

A representative sample was drawn using a random start and systematic n<sup>th</sup> selection. Because SSI's database is so extensive and the sample size for the study large, the risks of under-representation were manageable. For this report, the single area where under-representation was a concern was with the subpopulation of firms having very few employees. These very small firms are sometimes harder to locate and may have their business location at the owner's home. However, since the distribution of small businesses are skewed and concentrated to the smallest of firms,<sup>16</sup> the under-representation of this subpopulation was not a major risk. Telephone calls were made to small businesses, resulting in 46 additional mailed surveys that were sent, for the purpose of balancing the representation of the sample population to the overall universe.

---

<sup>11</sup> 15 U.S.C. § 634 b (3).

<sup>12</sup> The questionnaire and cover letter are included in **Appendix A** of this report.

<sup>13</sup> One earlier study utilized extensive detail from on small business bills, although only 61 firms were sampled. See Paul S. Brandon, "Flow through of January 1, 1998 Access Charge Changes to Small Business Customers," NERA, Cambridge, MA, Sept. 17, 1998.

<sup>14</sup> For more information about the SSI database see [www.surveysampling.com](http://www.surveysampling.com).

<sup>15</sup> This represents more than half of the businesses in the U.S. As a common definition and one used in this study, a small business is one with fewer than 500 employees.

<sup>16</sup> According to the 1997 Economic Census and *Statistics of U.S. Business*, 48% of these firms had less than four employees. Therefore, very small firms make up the vast majority of small businesses. As mentioned earlier, a small business is one with fewer than 500 employees, a common definition in small business research statistics.

### **A. Response Rate and Representation**

The response rate of the survey was 10.3%. This is based on the 5,046 surveys that were mailed, minus 582 surveys that were returned as undeliverable. Thus, 4,465 surveys remained in circulation. Of these surveys, 458 surveys were completed (or partially completed) and returned. Thus, the response rate was calculated as the percent responses to total surveys in circulation or 10.3%.

A comparison of the distribution of firm size between the universe sample and the returned surveys found little difference. In making this comparison, the data for the universe of small businesses came from *Small Business Economic Indicators: 2000*, Office of Advocacy, Small Business Administration, Table A.1, p. 16, which showed that small business with less than 20 employees accounted for 89.8% of firms with less than 500 employees. The results of this survey showed that 87.7% of the respondents had less than 20 employees, an indication that the sample is representative of the universe. As a second check, data for the year 2000 was used to produce weights for firm sizes 0-4, 5-9 and 10-499.<sup>17</sup> Using a proportional weighting method, average expenditures for local telephone services increased from \$179.93 per firm (unweighted) to \$180.37 (weighted by firm size). Taking into account the confidence limits around the mean, the weighted and unweighted expenditures were not statistically different. Given the lack of evidence, no under-representation found in the results based on firm size and the results were not weighted.

### **B. Sample Size Requirements**

The data that will be compiled and shown will note the number of respondents for each question, referred to as the *sample size*. Sample size becomes an important determinant of the statistical validity and reliability of the results. Larger sample sizes give much more precision and confidence to the results of a survey, while smaller sample sizes mean that the results are subject to higher sampling error and a lower level of confidence. Therefore, the number of respondents provides a way to judge confidence in the accuracy of the results.<sup>18</sup>

The following sections will show the results of the survey. Many of the tables will show the sample size (labeled in the tables as *N*) for each subgroup, and provide an indication of the level of confidence associated with the sampled estimate. Caution should be exercised in the interpretation of results for any subgroups containing small sample sizes.

---

<sup>17</sup> For data on the universe of businesses by size, see [www.sba.gov/advo/stats/us\\_tot.pdf](http://www.sba.gov/advo/stats/us_tot.pdf), p. 1.

<sup>18</sup> Assuming a 10% error and the universe of small business to be 22 million firms, a sample size of 96 would be required to meet a confidence level of 95%, based on the NCS Pearson Survey Research Tool ([www.pearsonmcs.com/research-notes/](http://www.pearsonmcs.com/research-notes/)). This means that the results are accurate within a confidence interval of plus or minus 2.5% -- or a range of 5%. It also means that 5% of the time an erroneous conclusion will be drawn based on the sample's point estimate. Likewise, a sample size of 68 would be required to produce a confidence of 90% or accuracy within plus or minus 5%. Therefore, lower sample sizes produce less reliable results and should be used guardedly. Some of the detailed results shown in this study are below these acceptable levels and should be used with caution.

## **IV. Composition of Survey Results**

The survey's sample size (458) is sufficiently large to provide a desirable level of confidence, making the results a reasonably accurate representation of small businesses' use of telecommunications services. Several respondents were very selective on which questions to answer, some answering only a few questions. For this reason, the number of responses varies from question to question. For example, some respondents provided both the quantity used and expenditure incurred for each telecommunications service, while some provided only the quantity used, some provided only the expenditures incurred, and some provided neither. The figures in this report reflect the September/October 2003 time period, and all expenditure figures are monthly.

Because local and long distance services sometimes appear on the same bill, respondents were less likely to breakout charges for these two services. Numerous times the respondents indicated that they were paying a single price for a bundled (or combined) local and long distance service, and noted the single charge for both services.<sup>19</sup> As a result, some respondents provided local and long distance detail, while others provided one value for both services. Overall, there were approximately 281 responses that give detail on local and long distance use and expenditures, while 399 responses are shown for the combination of both services. For most other questions, there were between 400 and 450 responses.

### **A. Overall Description of the Survey Population**

The survey provided information on employment size, use of telecommunications services and other characteristics of small business perceptions. Based on the sample population of the study, and the known distribution of businesses by employment size, most small businesses are very small, averaging less than 9 employees per business. In fact, 31% of small businesses reported having zero or one employee, and 47% of the respondents reported less than \$200,000 in revenue in their latest year of operation.

The sample included 449 responses from the District of Columbia and forty-eight states, absent Wyoming and Delaware. In total, 247 businesses (57%) indicated that their business was in a metropolitan area, while 185 businesses (43%) indicated that their business was outside of a metropolitan area.<sup>20</sup> A total of 443 small businesses provided a response to the number of business locations (establishments). The average response was 1.2 locations per business, with most firms reporting only one location.

There appears to be a wide representation of industry groups, including construction (15%), retail and wholesale trade (21%), and services (40%) as the most numerous in the sample population. Within the service industry, the professional, scientific and

---

<sup>19</sup> Several telecommunications service providers have begun offering small business customers local telephone services and unlimited long distance calling for one price. Therefore, customers may not be able to distinguish the costs between these services. New bundling options are becoming available, including services such as Internet access and high-speed data services.

<sup>20</sup> In the survey, the small business owner (or key official of the business) was asked to judge for themselves whether they considered their primary business location to be in a metropolitan area or not.

professional industry accounted for 11% of all responses and about one-fourth of responses from the service industry. Least numerous in the survey population are small businesses in the mining, utility and public administration industries.

Employee size, as will be shown throughout this report, is a major explanatory variable for telecommunications expenditures. Based on the sample, the size of the average small business was 9.7 employees. However, the distribution in the sample exhibits a concentration of very small firms, with the median firm size of 3 employees and the mode of 1 employee.

Firm size, as measured by employment size, varied by geography, usage, industry and other factors. The survey results show that small businesses located in metropolitan areas tend to be larger than small businesses located in non-metropolitan areas. In addition, as will be discussed later in this report, small businesses that use competitive local exchange carriers (CLECs) tend to be larger than small businesses that use incumbent local exchange carriers (ILECs). In fact, firm size is a defining characteristic among industries. **Figure 1** (below) shows the average firm size by major industry grouping, called the North American Industry Classification System (NAICS). For these reasons, the average number of employees is an important factor in explaining variation in telecommunications consumption and will be referred to throughout this report.

**Figure 1: Average Employee Size for Major Industry**

<b>Industry</b>	<b>N</b>	<b>Employee Size</b>
<b>Farming/Agriculture</b>	10	0.60
<b>Construction</b>	65	28.93
<b>Manufacturing</b>	14	6.46
<b>Wholesale Trade</b>	13	6.46
<b>Retail Trade</b>	79	6.49
<b>Transportation and Warehousing</b>	9	8.33
<b>Information Services</b>	17	3.65
<b>Finance and Insurance</b>	16	14.13
<b>Real Estate, Renting and Leasing</b>	23	3.70
<b>Professional, Scientific and Technical</b>	50	3.75
<b>Administration, Waste and Remediation</b>	11	10.82
<b>Education, Entertainment and Pub. Admin.</b>	20	12.63
<b>Health Care and Social Assistance</b>	36	8.06
<b>Accommodation and Food Services</b>	22	24.32
<b>Repair, Maint., Laundry and Personal Services</b>	43	6.50
<b>All Industries</b>	432	8.79

## **B. Understanding the Composition of Telecommunications Spending**

This section reports survey results in terms of the composition of average expenditures for telecommunications services by small businesses. Telecommunications expenditures are composed of expenditures for local and long distance, wireless telephone, pager and beepers, high-speed cable modem, high-speed satellite, high-speed digital subscriber line (DSL), high-speed wireless, dedicated high-speed T-1 line, and other services. For each table presented in this section, the sum of average expenditures for all telecommunications services equals the total average telecommunications expenditures. One advantage of presenting the data in this way is that it permits the comparison of the relative size of spending for any telecommunications service to total spending for any subgroup or industry. Therefore, the data in this section will show total average expenditures and the composition (or makeup) of these expenditures.

However, because some small businesses use certain telecommunications services and others do not, the composition of expenditures may not accurately report the average expenditures of small business users of a particular service. Instead, the composition of expenditures reflects service expenditures by all small businesses – users and nonusers. To adjust for this shortcoming, **Section V** will show the survey results only for small businesses using a particular telecommunications service. While **Section V** will provide a better understanding of users of a particular service, keep mind that the sum of the expenditures for telecommunications services will no longer equal total spending for a subgroup or industry, as it will in this section of the report.

**Figure 2** (shown on page 10) provides a summary of average spending for all firms in the survey and estimates the average expenditures for all firms surveyed to be \$543.17 per month.<sup>21</sup> In terms of the composition of expenditures, **Figure 2** shows that local and long distance service expenditures (combined \$307.43 per month) and wireless expenditures (\$176.44 per month) account for 89% of the total telecommunications services (\$543.17 per month) purchased by small businesses. Interestingly, average wireless expenditures (\$176.44 per month) exceed long distance expenditures (\$150.47) for the small business market segment. Besides local, long distance and wireless telecommunications, the remaining share of expenditures for other telecommunications services represents a small part of the average total monthly expenditures, because these other services are not extensively used in the market. As previously mentioned, a discussion of the extent of telecommunications use (referred to as the penetration rate) will be explained in detail in **Section V** of this report.

---

<sup>21</sup> Please note that these results have a sufficiently high sample size for meeting the 95% level of confidence, as previously noted.

**Figure 2: Average Monthly Small Business Telecommunications Use  
All Firms**

		<u><b>N</b></u>	<u><b>All Firms</b></u>
<b>Local Telephone Services</b>	Number of Lines	408	3.44
	Expenditures	281	\$ 179.93
<b>Long Distance (LD)</b>	Number of Lines	408	3.44
	Expenditures	284	\$ 150.47
<b>Local and LD Combined</b>	Number of Lines	408	3.44
	Expenditures	399	\$ 307.43
<b>Wireless Telephone</b>	Quantity Reported	397	2.39
	Expenditures	407	\$ 176.44
<b>Pager and Beepers</b>	Quantity Reported	420	0.26
	Expenditures	423	\$ 4.62
<b>Cable Modem Services</b>	Quantity Reported	418	0.36
	Expenditures	393	\$ 11.27
<b>Satellite (High-Speed)</b>	Quantity Reported	424	0.04
	Expenditures	422	\$ 2.10
<b>DSL Services</b>	Quantity Reported	422	0.24
	Expenditures	399	\$ 11.73
<b>Wireless Broadband</b>	Quantity Reported	423	0.04
	Expenditures	419	\$ 1.12
<b>Dial-Up Internet Services</b>	Quantity Reported	418	1.46
	Expenditures	407	\$ 11.51
<b>T-1 Services</b>	Quantity Reported	424	0.06
	Expenditures	419	\$ 16.03
<b>Other Services</b>	Expenditures	421	\$ 0.91
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 543.17</b>



In order to understand more completely **Figure 2**, it is necessary to examine the details underlying these data. The relative importance of telecommunications services depends to a large extent upon detailed characteristics of the small business population. Indeed, there is a wide variance in spending based on various characteristics, such as employee size, revenue size and industry. Terms of employee size, details on telecommunications spending for small businesses are provided as **Figures 3** through **5** and are shown on pages 12 through 14 of this section.

**Figure 3** shows that small firms, those with four or less employees, spend \$256.25 per month, less than half as much as the average small business. **Figure 3** also shows that some services are less commonly used than other services. For instance, the smallest of businesses do not use dedicated high-speed lines called *T-1 lines*. Because some broadband services have low market penetration rates, they have a relatively small share of total average monthly spending. On the other hand, local telephone services (\$102.71 per month), long distance services (\$53.70 per month) and wireless services (\$72.70 per month) are used by most small businesses and, therefore, make up most of the composition of spending for these small businesses. Also note that the sum of expenditures for local and long distance services exceeds the expenditures for the category combining these services. This is potentially an indication that small businesses are saving on service bundling, although other reasons, including sampling error, may explain these differences as well.

As will become evident throughout this report, telecommunications spending increases with firm size, as measured by average employees per firm. As **Figure 4** shows, as firm size increases, spending increases. Firms with 5 to nine employees spend \$593.42 per month. As **Figure 5** shows, spending increases even further to an average of \$1,274.52 per month for small businesses with 10 to 499 employees. In fact, as firm size increases, spending increasing for most telecommunications services. Looking back at **Figure 3**, **Figure 4** and **Figure 5**, local telephone service, for example, increases from \$102.71 per month for firms with four or less employees, to \$208.65 per month for firms with five to nine employees, and increases even further to 396.82 per month for small businesses with more than 10 employees. Long distance and wireless spending also increases as the number of employees in the firm (its size) increases. For the larger sized businesses, firms with 10 to 499 employees, T1 Services account for the highest portion of broadband spending.

However, in some instances, consumption does not increase necessarily with firm size. For instance, firms with 10 and 499 employees tend to spend less on cable modems and more on DSL and T1 services than firms with five to nine employees. This suggests that some services have a higher propensity to be consumed depending on the size of the firm. It may be that cable modem services, because they are widely available in residential areas, are more likely to be purchased by home-offices and non-employer businesses. This will be addressed in detail later in this report.

**Figure 3: Average Monthly Small Business Telecommunications Use  
Firms with 0-4 Employees**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	230	1.97
	Expenditures	167	\$102.71
<b>Long Distance (LD)</b>	Number of Lines	230	1.97
	Expenditures	170	\$53.70
<b>Local and LD Combined</b>	Number of Lines	230	1.97
	Expenditures	230	\$153.20
<b>Wireless Telephone</b>	Quantity Reported	225	1.24
	Expenditures	233	\$72.70
<b>Pager and Beepers</b>	Quantity Reported	239	0.05
	Expenditures	240	\$0.98
<b>Cable Modem Services</b>	Quantity Reported	237	0.26
	Expenditures	227	\$9.07
<b>Satellite (High-Speed)</b>	Quantity Reported	240	0.03
	Expenditures	239	\$1.32
<b>DSL Services</b>	Quantity Reported	240	0.19
	Expenditures	229	\$7.27
<b>Wireless Broadband</b>	Quantity Reported	239	0.05
	Expenditures	235	\$0.77
<b>Dial-Up Internet Services</b>	Quantity Reported	235	0.44
	Expenditures	233	\$10.20
<b>T-1 Services</b>	Quantity Reported	239	0.01
	Expenditures	238	\$0.19
<b>Other Services</b>	Expenditures	239	\$0.56
<b>All Services</b>	<b>Expenditures</b>		<b>\$256.26</b>

**Figure 4: Average Monthly Small Business Telecommunications Use  
Firms with 5 - 9 Employees**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	75	3.95
	Expenditures	52	\$208.65
<b>Long Distance (LD)</b>	Number of Lines	75	3.95
	Expenditures	52	\$125.15
<b>Local and LD Combined</b>	Number of Lines	75	3.95
	Expenditures	72	\$344.96
<b>Wireless Telephone</b>	Quantity Reported	71	2.32
	Expenditures	74	\$180.61
<b>Pager and Beepers</b>	Quantity Reported	76	0.08
	Expenditures	78	\$4.07
<b>Cable Modem Services</b>	Quantity Reported	75	0.56
	Expenditures	68	\$18.53
<b>Satellite (High-Speed)</b>	Quantity Reported	77	0.06
	Expenditures	77	\$3.64
<b>DSL Services</b>	Quantity Reported	77	0.14
	Expenditures	73	\$8.48
<b>Wireless Broadband</b>	Quantity Reported	78	0.00
	Expenditures	78	\$0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	78	0.49
	Expenditures	76	\$10.04
<b>T-1 Services</b>	Quantity Reported	78	0.12
	Expenditures	77	\$21.17
<b>Other Services</b>	Expenditures	78	\$1.92
<b>All Services</b>	<b>Expenditures</b>		<b>\$593.42</b>

**Figure 5: Average Monthly Small Business Telecommunications Use  
Firms with 10-499 Employees**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	93	6.76
	Expenditures	55	\$396.82
<b>Long Distance (LD)</b>	Number of Lines	93	6.76
	Expenditures	55	\$476.24
<b>Local and LD Combined</b>	Number of Lines	93	6.76
	Expenditures	87	\$694.20
<b>Wireless Telephone</b>	Quantity Reported	91	5.31
	Expenditures	89	\$448.21
<b>Pager and Beepers</b>	Quantity Reported	94	0.95
	Expenditures	94	\$14.46
<b>Cable Modem Services</b>	Quantity Reported	95	0.47
	Expenditures	88	\$12.30
<b>Satellite (High-Speed)</b>	Quantity Reported	96	0.05
	Expenditures	95	\$3.05
<b>DSL Services</b>	Quantity Reported	94	0.47
	Expenditures	86	\$27.87
<b>Wireless Broadband</b>	Quantity Reported	95	0.07
	Expenditures	95	\$3.05
<b>Dial-Up Internet Services</b>	Quantity Reported	94	4.91
	Expenditures	89	\$16.12
<b>T-1 Services</b>	Quantity Reported	96	0.16
	Expenditures	93	\$54.19
<b>Other Services</b>	Expenditures	93	\$1.08
<b>All Services</b>	<b>Expenditures</b>		<b>\$1,274.52</b>

Another way to show the extent to which monthly telecommunications expenditures increase with size is to look at the size of small businesses in terms of their annual revenues. **Figures 6** through **9** (shown on pages 16 through 19) provide details on the composition of telecommunications services spending by revenue size. For example, **Figure 6** shows the smallest of firms, those with annual revenues of less than \$200,000, as spending on average only \$227.57 per month on telecommunications services. Comparing this result to **Figure 3** (showing firms with 0-4 employees) shows that small firms spend less in total on telecommunications services. Consistent with previous figures shown in this report, local, long distance and wireless telecommunications services make up the bulk of the spending for these small businesses. As **Figure 7** shows, small businesses with annual revenue between \$200,000 and \$1 million spend on average \$477.03 per month. When looking at those small businesses with revenues between \$1 and \$5 million, as **Figure 8** shows, as telecommunications spending increases further, reaching \$1,130.80.

**Figure 9** shows the last largest category of small business revenue size, those firms with the highest telecommunications intensity. Small businesses with annual revenues greater than \$5 million spend on average \$2,748.55 per month. Compared to **Figure 8**, the increase is primarily the result of more long distance and wireless spending. Note that these larger firms spend on average \$12.00 per month for cable modem service, indicating a low subscription level, while DSL services account for \$47.14 per month, indicating a higher subscription level. Also be aware that the sample size for some of these subgroups is small, and caution should be used before drawing definitive conclusions.

In general, **Figures 6** through **9** show the same patterns as observed in **Figures 3** through **5** – namely, firms with fewer employees and firms with lower revenues tend to spend less on telecommunications services. In other words, as firm size increases, telecommunications spending increases. Clearly larger firms are more apt to spend more, in general, and spend more on certain services than others. As firm size increases, these firms are more likely to use more expensive services than smaller firms, such as toll-free services, yellow page ads and T-1 services. Very small firms, such as work-at-home businesses, may be able to avoid paying higher local telephone business rates and, overall, appear to spend less. In summary, bigger firms, both in terms of employee size and revenues, have more economic activity and, as a result, higher telecommunications needs.

**Figure 6: Average Monthly Small Business Telecommunications Use  
Firms with Revenue Less Than \$200,000**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	183	1.68
	Expenditures	131	\$88.02
<b>Long Distance (LD)</b>	Number of Lines	183	1.68
	Expenditures	132	\$42.58
<b>Local and LD Combined</b>	Number of Lines	183	1.68
	Expenditures	184	\$132.86
<b>Wireless Telephone</b>	Quantity Reported	183	1.08
	Expenditures	187	\$66.10
<b>Pager and Beepers</b>	Quantity Reported	191	0.06
	Expenditures	192	\$1.35
<b>Cable Modem Services</b>	Quantity Reported	190	0.28
	Expenditures	177	\$9.34
<b>Satellite (High-Speed)</b>	Quantity Reported	192	0.03
	Expenditures	191	\$0.79
<b>DSL Services</b>	Quantity Reported	191	0.15
	Expenditures	185	\$6.65
<b>Wireless Broadband</b>	Quantity Reported	192	0.06
	Expenditures	187	\$0.59
<b>Dial-Up Internet Services</b>	Quantity Reported	188	0.43
	Expenditures	184	\$9.61
<b>T-1 Services</b>	Quantity Reported	192	0.01
	Expenditures	191	\$0.24
<b>Other Services</b>	Expenditures	191	\$0.05
<b>All Services</b>	<b>Expenditures</b>		<b>\$227.57</b>

**Figure 7: Average Monthly Small Business Telecommunications Use  
Firms With Revenues Between \$200,000 and \$1 Million**

		<u><b>N</b></u>	<u><b>All Firms</b></u>
<b>Local Telephone Services</b>	Number of Lines	134	3.42
	Expenditures	91	\$182.15
<b>Long Distance (LD)</b>	Number of Lines	134	3.42
	Expenditures	92	\$109.26
<b>Local and LD Combined</b>	Number of Lines	134	3.42
	Expenditures	133	\$296.75
<b>Wireless Telephone</b>	Quantity Reported	127	2.06
	Expenditures	135	\$135.61
<b>Pager and Beepers</b>	Quantity Reported	140	0.09
	Expenditures	141	\$1.83
<b>Cable Modem Services</b>	Quantity Reported	138	0.32
	Expenditures	131	\$10.45
<b>Satellite (High-Speed)</b>	Quantity Reported	141	0.05
	Expenditures	140	\$2.89
<b>DSL Services</b>	Quantity Reported	140	0.19
	Expenditures	134	\$7.93
<b>Wireless Broadband</b>	Quantity Reported	140	0.04
	Expenditures	140	\$0.79
<b>Dial-Up Internet Services</b>	Quantity Reported	139	0.52
	Expenditures	138	\$10.56
<b>T-1 Services</b>	Quantity Reported	140	0.04
	Expenditures	139	\$9.35
<b>Other Services</b>	Expenditures	141	\$0.89
<b>All Services</b>	<b>Expenditures</b>		<b>\$477.03</b>

**Figure 8: Average Monthly Small Business Telecommunications Use  
Firms with Revenues Between \$1 Million and \$5 Million**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	67	6.39
	Expenditures	44	\$416.41
<b>Long Distance (LD)</b>	Number of Lines	67	6.39
	Expenditures	45	\$257.62
<b>Local and LD Combined</b>	Number of Lines	67	6.39
	Expenditures	61	\$586.93
<b>Wireless Telephone</b>	Quantity Reported	62	5.31
	Expenditures	62	\$408.47
<b>Pager and Beepers</b>	Quantity Reported	64	1.25
	Expenditures	65	\$20.94
<b>Cable Modem Services</b>	Quantity Reported	65	0.66
	Expenditures	60	\$17.40
<b>Satellite (High-Speed)</b>	Quantity Reported	66	0.06
	Expenditures	66	\$4.09
<b>DSL Services</b>	Quantity Reported	66	0.44
	Expenditures	59	\$28.78
<b>Wireless Broadband</b>	Quantity Reported	66	0.00
	Expenditures	67	\$1.79
<b>Dial-Up Internet Services</b>	Quantity Reported	66	6.62
	Expenditures	61	\$19.19
<b>T-1 Services</b>	Quantity Reported	67	0.10
	Expenditures	66	\$40.91
<b>Other Services</b>	Expenditures	65	\$2.31
<b>All Services</b>	<b>Expenditures</b>		<b>\$1,130.80</b>



**Figure 9: Average Monthly Small Business Telecommunications Use  
Firms With Revenues Greater Than \$5 Million**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	15	10.07
	Expenditures	10	\$356.00
<b>Long Distance (LD)</b>	Number of Lines	15	10.07
	Expenditures	10	\$1,513.00
<b>Local and LD Combined</b>	Number of Lines	15	10.07
	Expenditures	14	\$1,542.14
<b>Wireless Telephone</b>	Quantity Reported	15	8.33
	Expenditures	15	\$968.49
<b>Pager and Beepers</b>	Quantity Reported	15	0.33
	Expenditures	15	\$5.19
<b>Cable Modem Services</b>	Quantity Reported	15	0.27
	Expenditures	15	\$12.00
<b>Satellite (High-Speed)</b>	Quantity Reported	15	0.07
	Expenditures	15	\$4.00
<b>DSL Services</b>	Quantity Reported	15	0.80
	Expenditures	14	\$47.14
<b>Wireless Broadband</b>	Quantity Reported	15	0.07
	Expenditures	15	\$8.67
<b>Dial-Up Internet Services</b>	Quantity Reported	15	1.13
	Expenditures	14	\$17.79
<b>T-1 Services</b>	Quantity Reported	15	0.33
	Expenditures	15	\$136.00
<b>Other Services</b>	Expenditures	14	\$7.14
<b>All Services</b>	<b>Expenditures</b>		<b>\$2,748.55</b>

Analyzing average telecommunications spending for firms located in metropolitan versus non-metropolitan areas provides some interesting insights. **Figure 10** and **Figure 11** (on page 21 and 22) show that small businesses located non-metropolitan areas tend to spend less than those in metropolitan areas. Because firms in non-metropolitan areas are typically smaller than firms located in metropolitan areas, the difference in spending can be attributed, in part, to firm size. For example, based on the survey, 249 small businesses reported their primary business to be located in a metropolitan area and had, on average, 11.31 employees, while 185 businesses reported their primary business to be located in a non-metropolitan area and had, on average, 8.05 employees. The difference in employment explains to a large degree why metropolitan area businesses spend more on local, long distance and wireless services than do non-metropolitan area businesses.

However, firm size may not explain all of the expenditure differences found between metropolitan and non-metropolitan areas. For instance, small businesses spend more on DSL services in metropolitan areas, but less in non-metropolitan areas, when compared with cable modem services. While the survey provides no insight into why the expenditures of high-speed services vary between geographic location, effects such as service availability, price, preferences and industry type may be among the contributing factors.

**Figure 12** and **Figure 13** (on page 23 and 24) show differences in small business spending when the small business is served by a CLEC or the ILEC. In general, when ILECs serve small businesses, local telephone expenditures (as well as total spending) appear to be less (\$520.31 per month) than when CLECs serve small businesses (\$634.57 per month). In fact, while ILEC-served small businesses pay less, based on a comparison of the number of lines in use, it appears that small businesses served by ILECs actually demand fewer lines as well.

One explanation for why small businesses spend more for local services provided by CLECs than they do for local services provided by ILECs is that CLECs are serving somewhat larger firms than the ILECs serve. Based on the sample returns, ILECs served 328 small businesses, while CLECs served 90 small businesses. On average, ILECs served small business with 8.50 employees per business, while CLECs served small businesses with 10.26 employees per business. In other words, CLECs are serving larger business customers, who, in turn, demand more services. This explains why small businesses spend less when ILECs serve them and more when CLECs serve them.

Later, this report will explore differences in market penetration between telecommunications services and analyze data on only those small businesses that use a particular telecommunications service. First, however, the next section will provide a detailed analysis of the composition of telecommunications spending for major industry groups.

**Figure 10: Average Monthly Small Business Telecommunications Use  
Firms Located in Non-Metropolitan Areas**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	173	2.76
	Expenditures	123	\$168.69
<b>Long Distance (LD)</b>	Number of Lines	173	2.76
	Expenditures	125	\$122.19
<b>Local and LD Combined</b>	Number of Lines	173	2.76
	Expenditures	169	\$282.98
<b>Wireless Telephone</b>	Quantity Reported	167	2.07
	Expenditures	171	\$147.48
<b>Pager and Beepers</b>	Quantity Reported	177	0.33
	Expenditures	177	\$7.04
<b>Cable Modem Services</b>	Quantity Reported	174	0.32
	Expenditures	168	\$12.60
<b>Satellite (High-Speed)</b>	Quantity Reported	178	0.06
	Expenditures	176	\$3.35
<b>DSL Services</b>	Quantity Reported	177	0.17
	Expenditures	169	\$8.43
<b>Wireless Broadband</b>	Quantity Reported	178	0.04
	Expenditures	177	\$0.62
<b>Dial-Up Internet Services</b>	Quantity Reported	177	2.71
	Expenditures	171	\$9.54
<b>T-1 Services</b>	Quantity Reported	178	0.04
	Expenditures	177	\$2.73
<b>Other Services</b>	Expenditures	177	\$0.28
<b>All Services</b>	<b>Expenditures</b>		<b>\$475.06</b>

**Figure 11: Average Monthly Small Business Telecommunications Use  
Firms Located in Metropolitan Areas**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	235	3.94
	Expenditures	158	\$188.67
<b>Long Distance (LD)</b>	Number of Lines	235	3.94
	Expenditures	159	\$172.70
<b>Local and LD Combined</b>	Number of Lines	235	3.94
	Expenditures	230	\$325.39
<b>Wireless Telephone</b>	Quantity Reported	230	2.62
	Expenditures	236	\$197.42
<b>Pager and Beepers</b>	Quantity Reported	243	0.21
	Expenditures	246	\$2.89
<b>Cable Modem Services</b>	Quantity Reported	244	0.39
	Expenditures	225	\$10.28
<b>Satellite (High-Speed)</b>	Quantity Reported	246	0.02
	Expenditures	246	\$1.20
<b>DSL Services</b>	Quantity Reported	245	0.29
	Expenditures	230	\$14.16
<b>Wireless Broadband</b>	Quantity Reported	245	0.04
	Expenditures	242	\$1.49
<b>Dial-Up Internet Services</b>	Quantity Reported	241	0.54
	Expenditures	236	\$12.94
<b>T-1 Services</b>	Quantity Reported	246	0.08
	Expenditures	242	\$25.75
<b>Other Services</b>	Expenditures	244	\$1.37
<b>All Services</b>	<b>Expenditures</b>		<b>\$592.89</b>

**Figure 12: Average Monthly Small Business Telecommunications Use  
Firms Served By A Local Telephone Competitor**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	86	4.53
	Expenditures	56	\$195.23
<b>Long Distance (LD)</b>	Number of Lines	86	4.53
	Expenditures	58	\$133.31
<b>Local and LD Combined</b>	Number of Lines	86	4.53
	Expenditures	79	\$368.89
<b>Wireless Telephone</b>	Quantity Reported	84	2.95
	Expenditures	83	\$190.78
<b>Pager and Beepers</b>	Quantity Reported	87	0.21
	Expenditures	87	\$3.16
<b>Cable Modem Services</b>	Quantity Reported	87	0.47
	Expenditures	80	\$10.26
<b>Satellite (High-Speed)</b>	Quantity Reported	88	0.02
	Expenditures	87	\$0.57
<b>DSL Services</b>	Quantity Reported	88	0.31
	Expenditures	80	\$15.45
<b>Wireless Broadband</b>	Quantity Reported	87	0.11
	Expenditures	85	\$1.88
<b>Dial-Up Internet Services</b>	Quantity Reported	86	0.44
	Expenditures	81	\$10.48
<b>T-1 Services</b>	Quantity Reported	88	0.11
	Expenditures	86	\$31.64
<b>Other Services</b>	Expenditures	86	\$1.45
<b>All Services</b>	<b>Expenditures</b>		<b>\$634.57</b>

**Figure 13: Average Monthly Small Business Telecommunications Use  
Firms Served By An Incumbent Local Telephone Company**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	322	3.14
	Expenditures	225	\$176.12
<b>Long Distance (LD)</b>	Number of Lines	322	3.14
	Expenditures	226	\$154.87
<b>Local and LD Combined</b>	Number of Lines	322	3.14
	Expenditures	320	\$292.25
<b>Wireless Telephone</b>	Quantity Reported	313	2.24
	Expenditures	324	\$172.76
<b>Pager and Beepers</b>	Quantity Reported	333	0.27
	Expenditures	336	\$5.00
<b>Cable Modem Services</b>	Quantity Reported	331	0.33
	Expenditures	313	\$11.53
<b>Satellite (High-Speed)</b>	Quantity Reported	336	0.04
	Expenditures	335	\$2.49
<b>DSL Services</b>	Quantity Reported	334	0.22
	Expenditures	319	\$10.80
<b>Wireless Broadband</b>	Quantity Reported	336	0.02
	Expenditures	334	\$0.93
<b>Dial-Up Internet Services</b>	Quantity Reported	332	1.72
	Expenditures	326	\$11.77
<b>T-1 Services</b>	Quantity Reported	336	0.05
	Expenditures	333	\$11.99
<b>Other Services</b>	Expenditures	335	\$0.78
<b>All Services</b>	<b>Expenditures</b>		<b>\$520.31</b>

### C. Detailed Composition of Spending by Industry

The previous section described the detailed composition of spending and how it varies by firm size, location to metropolitan area and local telephone provider. Another important factor influencing the consumption of telecommunications services by small businesses is the nature of the business – its industry. It is highly plausible that some industries require more telecommunications services than others in order to sell goods and services to their customers. This section will analyze how the composition of expenditures changes by industry and will be helpful in identifying telecommunication-intensive industries.

Earlier, **Figure 1** showed the distribution of employment size across various industry groups called *NAICS*. **Figure 14** (below) shows the sample’s 458 respondents distributed across these same industry groups. In general, construction, trade (predominantly retail trade) and services were the most frequently reported industries in the survey. Within the service industry, the professional, scientific and professional industry accounted for 11% of all responses and about one-fourth of responses from the service industry. Mining and utilities were among the least identified, as was public administration, possibly because these firms may often contain a larger numbers of employees than would constitute a small business.

**Figure 14: Distribution of Respondents by Industry  
Using the North American Industry Classification System (NAICS)**

<u>Industry</u>	<u>NAICS Code</u>	<u>N</u>
Agriculture, Forestry, Fishing and Hunting	11	10
Mining	21	1
Utilities	22	1
Construction	23	68
Manufacturing	31	14
Wholesale Trade	42	13
Retail Trade	44-45	84
Transportation and Warehousing	48-49	10
Information	51	17
Finance and Insurance	52	16
Real Estate and Rental and Leasing	53	23
Professional, Scientific and Technical Services	54	50
Management of Companies and Enterprises	55	0
Administrative, Waste Mgt. and Remediation	56	12
Educational Services	61	8
Health Care and Social Assistance	62	37
Arts, Entertainment and Recreation	71	8
Accommodation and Food Services	72	23
Repair, Maint., Laundry & Personal Services	81	44
Public Administration	92	5
<u>Other (not specified)</u>	<u>N.A.</u>	<u>14</u>
<b>Total Number of Responses</b>		<b>458</b>

There are two minor differences with the classification of industries as reported in this report. The NAICS uses the term *Other Services (except Public Administration)*, whereas **Figure 14** (and the figures to follow) refers to this industry more descriptively as *Repair, Maintenance, Laundry and Personal Services* industry. Also, for the purpose of brevity, the educational services, health care and social assistance, and public administration industries are combined into a single industry, because the sample size for these three groups was very low. Except for these two differences, the terminology in this report is consistent with the NAICS terminology.

As previously mentioned and shown in **Figure 2**, the average spending by small businesses was \$543.17 per month. The composition of spending for specific industries shows a wide range of telecommunications needs for small businesses. Again, since these figures show the composition of spending by telecommunication service type, the sum of the services will equal the total spending for the average small business for any particular industry. The relative importance of any telecommunications service can be calculated by comparing its monthly spending to that of the total spending within the industry.

**Figure 15** (on page 27) shows the composition of monthly expenditures for the agriculture, forestry, fishing and hunting industry (labeled in the figure as *Farming and Related*). The figure shows that this industry is not an extensive user of telecommunications services. Local telephone services (\$42.80 per month), long distance (76.20 per month) and wireless services (\$90.86 per month) makeup the major expenses for this industry, which totals \$196.61 per month. The sample size for this industry is low, indicating a very low level of confidence. As was the case in many of the earlier charts, the expenditures for the service category labeled *Local and LD Combined* is less than the sum of the expenditures for the separate categories labeled *Local Telephone services* and *Long Distance*, possibly reflecting the savings that small businesses receive on bundled services, although other explanations for these differences exist as well.

**Figure 16** (on page 28) shows the composition of monthly expenditures for the construction industry to be \$683.91 per month, higher than the full sample average and much higher than the farming industry. What is particularly interesting about the construction industry is its high consumption of wireless services. Wireless services account for 56% of all telecommunications spending, exceeding local and long distance spending.

As **Figure 17** (on page 29) shows, the manufacturing industry has above average monthly consumption of telecommunications services, with total spending totaling \$723.75. For the manufacturing industry, local, long distance and wireless telephone services are more even in terms of the level of expenditures, and the use of high-speed services is higher, compared with the construction industry. However, the sample size for this industry group is small.



**Figure 15: Average Monthly Small Business Telecommunications Use  
Firms in Farming and Related Industries**

		<b><u>N</u></b>	<b><u>All Firms</u></b>
<b>Local Telephone Services</b>	Number of Lines	8	1.63
	Expenditures	5	\$ 42.80
<b>Long Distance (LD)</b>	Number of Lines	8	1.63
	Expenditures	5	\$ 76.20
<b>Local and LD Combined</b>	Number of Lines	8	1.63
	Expenditures	8	\$ 91.25
<b>Wireless Telephone</b>	Quantity Reported	7	2.14
	Expenditures	7	\$ 90.86
<b>Pager and Beepers</b>	Quantity Reported	8	0
	Expenditures	8	\$ 0
<b>Cable Modem Services</b>	Quantity Reported	8	0.13
	Expenditures	8	\$ 4.38
<b>Satellite (High-Speed)</b>	Quantity Reported	8	0.25
	Expenditures	8	\$ 5.00
<b>DSL Services</b>	Quantity Reported	8	0
	Expenditures	7	\$ 0
<b>Wireless Broadband</b>	Quantity Reported	8	0
	Expenditures	8	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	8	0.25
	Expenditures	8	\$ 5.13
<b>T-1 Services</b>	Quantity Reported	8	0
	Expenditures	8	\$ 0
<b>Other Services</b>	Expenditures	8	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 196.61</b>

**Figure 16: Average Monthly Small Business Telecommunications Use  
Firms in the Construction Industry**

		<u><b>N</b></u>	<u><b>All Firms</b></u>
<b>Local Telephone Services</b>	Number of Lines	65	2.65
	Expenditures	43	\$ 210.14
<b>Long Distance (LD)</b>	Number of Lines	65	2.65
	Expenditures	44	\$ 69.20
<b>Local and LD Combined</b>	Number of Lines	65	2.65
	Expenditures	63	\$ 261.68
<b>Wireless Telephone</b>	Quantity Reported	63	4.70
	Expenditures	64	\$ 382.20
<b>Pager and Beepers</b>	Quantity Reported	65	0.60
	Expenditures	65	\$ 5.68
<b>Cable Modem Services</b>	Quantity Reported	66	0.26
	Expenditures	59	\$ 6.63
<b>Satellite (High-Speed)</b>	Quantity Reported	66	0.03
	Expenditures	66	\$ 1.97
<b>DSL Services</b>	Quantity Reported	65	0.29
	Expenditures	63	\$ 13.33
<b>Wireless Broadband</b>	Quantity Reported	66	0.02
	Expenditures	65	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	65	0.49
	Expenditures	64	\$ 12.42
<b>T-1 Services</b>	Quantity Reported	66	0.06
	Expenditures	65	\$ 0
<b>Other Services</b>	Expenditures	66	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 683.91</b>

**Figure 17: Average Monthly Small Business Telecommunications Use  
Firms in the Manufacturing Industry**

		<b><u>N</u></b>	<b><u>All Firms</u></b>
<b>Local Telephone Services</b>	Number of Lines	13	6.62
	Expenditures	9	\$ 163.33
<b>Long Distance (LD)</b>	Number of Lines	13	6.62
	Expenditures	9	\$ 207.22
<b>Local and LD Combined</b>	Number of Lines	13	6.62
	Expenditures	12	\$ 452.08
<b>Wireless Telephone</b>	Quantity Reported	12	2.50
	Expenditures	13	\$ 202.56
<b>Pager and Beepers</b>	Quantity Reported	13	0.31
	Expenditures	13	\$ 5.37
<b>Cable Modem Services</b>	Quantity Reported	13	0.15
	Expenditures	12	\$ 3.42
<b>Satellite (High-Speed)</b>	Quantity Reported	13	0.08
	Expenditures	12	\$ 0
<b>DSL Services</b>	Quantity Reported	13	0.46
	Expenditures	11	\$ 40.00
<b>Wireless Broadband</b>	Quantity Reported	13	0.08
	Expenditures	13	\$ 10.00
<b>Dial-Up Internet Services</b>	Quantity Reported	13	0.46
	Expenditures	12	\$ 7.25
<b>T-1 Services</b>	Quantity Reported	13	0.08
	Expenditures	13	\$ 3.07
<b>Other Services</b>	Expenditures	13	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 723.75</b>

**Figure 18** and **Figure 19** (shown on pages 31 and 32) provide the composition of spending for the wholesale and retail industries, respectively. Based on the survey, small businesses operating in the wholesale industry spend approximately \$786.09 per month, while the retail industry spends much less -- \$383.31 per month. **Figure 20** (on page 33) shows average spending for the transportation and warehousing industry (\$701.21 per month) to be higher than the average small businesses. This industry appears to use wireless telephone services very extensively, accounting for 53% of all of its spending. Higher overall spending in the transportation and warehousing industry cannot be explained by employment size alone.

The industries within the service-producing sector vary tremendously, as **Figures 21** through **29** (on pages 34 through 42) demonstrate. Average spending by small businesses in information services, finance and insurance, real estate (including renting and leasing), and administrative services (including waste and remediation) appears high, totaling \$684.90, \$1,803.99, \$740.66 and 639.77 per month, respectively. These firms appear to be extensive users of telecommunications services. Compared to other industries, finance and insurance appears to be the most telecommunication-intensive industry of all, accounting for \$1,211.67 per month for long distance services, as well as increased spending for high-speed data services.

On the other hand, professional services, health care (including social assistance), food services, and personal services (including repair, maintenance and laundry services) all spend less than average, totaling \$398.34, \$422.99, \$317.17 and \$401.28 per month, respectively. The combined spending of the education, arts, entertainment and public administration services was \$500.42 per month, just below the average for all industries (\$543.17 per month). As previously mentioned, industry results with small sample sizes cannot be depended upon for accuracy and are shown only to provide an understanding of the underlying data that makeup the survey results.

Firm size is certainly a major factor explaining the differences in expenditures across industries. As **Figure 1** showed earlier, firms in some industries tend to hire more employees. Because telecommunications spending has been shown to increase with the size of the firm, industries with a higher average employee size spend more on telecommunications. In fact, industries with a small average employment size, such as farming, retail trade and professional services, have low telecommunications expenditures on average. Likewise, industries that are typically larger in terms of employment, such as finance and manufacturing, have on average higher telecommunications expenditures.

However, differences in expenditures between industries cannot be entirely explained by employee size alone. Differences in telecommunications expenditures are likely to be attributable to differences in the production and sales of goods and services between industries. For some industries, telecommunications services may be a vital input in the firm's operations. As **Figures 18** to **29** show, finance, real estate (which include renting and leasing) and wholesale trade businesses clearly require more telecommunications services than other businesses do, and more than can be explained solely by size.

**Figure 18: Average Monthly Small Business Telecommunications Use  
Firms in the Wholesale Trade Industry**

		<b><u>N</u></b>	<b><u>All Firms</u></b>
<b>Local Telephone Services</b>	Number of Lines	12	4.83
	Expenditures	10	\$ 229.50
<b>Long Distance (LD)</b>	Number of Lines	12	4.83
	Expenditures	11	\$ 259.55
<b>Local and LD Combined</b>	Number of Lines	12	4.83
	Expenditures	11	\$ 581.82
<b>Wireless Telephone</b>	Quantity Reported	12	1.83
	Expenditures	13	\$ 131.54
<b>Pager and Beepers</b>	Quantity Reported	13	0.08
	Expenditures	13	\$ 0.38
<b>Cable Modem Services</b>	Quantity Reported	13	1.00
	Expenditures	12	\$ 20.50
<b>Satellite (High-Speed)</b>	Quantity Reported	13	0
	Expenditures	13	\$ 0
<b>DSL Services</b>	Quantity Reported	13	0.38
	Expenditures	11	\$ 14.55
<b>Wireless Broadband</b>	Quantity Reported	13	0.08
	Expenditures	12	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	12	0.33
	Expenditures	13	\$ 14.23
<b>T-1 Services</b>	Quantity Reported	13	0.08
	Expenditures	13	\$ 23.08
<b>Other Services</b>	Expenditures	13	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 786.09</b>

**Figure 19: Average Monthly Small Business Telecommunications Use  
Firms in the Retail Trade Industry**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	76	3.18
	Expenditures	50	\$ 148.79
<b>Long Distance (LD)</b>	Number of Lines	76	3.18
	Expenditures	51	\$ 92.06
<b>Local and LD Combined</b>	Number of Lines	76	3.18
	Expenditures	74	\$ 215.71
<b>Wireless Telephone</b>	Quantity Reported	76	1.64
	Expenditures	76	\$ 137.87
<b>Pager and Beepers</b>	Quantity Reported	79	0.01
	Expenditures	79	\$ 0.08
<b>Cable Modem Services</b>	Quantity Reported	77	0.25
	Expenditures	75	\$ 6.44
<b>Satellite (High-Speed)</b>	Quantity Reported	78	0.06
	Expenditures	79	\$ 4.43
<b>DSL Services</b>	Quantity Reported	79	0.20
	Expenditures	73	\$ 7.30
<b>Wireless Broadband</b>	Quantity Reported	79	0
	Expenditures	79	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	77	0.48
	Expenditures	74	\$ 9.21
<b>T-1 Services</b>	Quantity Reported	79	0
	Expenditures	79	\$ 0
<b>Other Services</b>	Quantity Reported	77	0.03
	Expenditures	77	\$ 2.27
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 383.31</b>

**Figure 20: Average Monthly Small Business Telecommunications Use  
Firms in the Transportation and Warehousing Industry**

		<b><u>N</u></b>	<b><u>All Firms</u></b>
<b>Local Telephone Services</b>	Number of Lines	9	3.33
	Expenditures	7	\$ 179.97
<b>Long Distance (LD)</b>	Number of Lines	9	3.33
	Expenditures	7	\$ 176.14
<b>Local and LD Combined</b>	Number of Lines	9	3.33
	Expenditures	9	\$ 294.20
<b>Wireless Telephone</b>	Quantity Reported	9	6.56
	Expenditures	9	\$ 371.22
<b>Pager and Beepers</b>	Quantity Reported	10	0.10
	Expenditures	10	\$ 1.00
<b>Cable Modem Services</b>	Quantity Reported	10	0.30
	Expenditures	10	\$ 8.60
<b>Satellite (High-Speed)</b>	Quantity Reported	10	0.10
	Expenditures	10	\$ 10.00
<b>DSL Services</b>	Quantity Reported	10	0.20
	Expenditures	10	\$ 8.00
<b>Wireless Broadband</b>	Quantity Reported	10	0
	Expenditures	10	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	10	0.40
	Expenditures	10	\$ 8.20
<b>T-1 Services</b>	Quantity Reported	10	0
	Expenditures	10	\$ 0
<b>Other Services</b>	Expenditures	10	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 701.21</b>

**Figure 21: Average Monthly Small Business Telecommunications Use  
Firms in the Information Industry**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	17	2.65
	Expenditures	14	\$ 181.64
<b>Long Distance (LD)</b>	Number of Lines	17	2.65
	Expenditures	14	\$ 86.79
<b>Local and LD Combined</b>	Number of Lines	17	2.65
	Expenditures	15	\$ 258.40
<b>Wireless Telephone</b>	Quantity Reported	16	2.44
	Expenditures	15	\$ 243.33
<b>Pager and Beepers</b>	Quantity Reported	16	0
	Expenditures	17	\$ 5.88
<b>Cable Modem Services</b>	Quantity Reported	17	0.59
	Expenditures	15	\$ 24.67
<b>Satellite (High-Speed)</b>	Quantity Reported	17	0.06
	Expenditures	16	\$ 0
<b>DSL Services</b>	Quantity Reported	17	0.35
	Expenditures	15	\$ 13.27
<b>Wireless Broadband</b>	Quantity Reported	16	0.19
	Expenditures	15	\$ 10.67
<b>Dial-Up Internet Services</b>	Quantity Reported	17	0.59
	Expenditures	16	\$ 31.81
<b>T-1 Services</b>	Quantity Reported	16	0.06
	Expenditures	16	\$ 96.88
<b>Other Services</b>	Expenditures	16	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 684.90</b>



**Figure 22: Average Monthly Small Business Telecommunications Use  
Firms in the Finance and Insurance Industry**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	11	6.36
	Expenditures	9	\$ 347.56
<b>Long Distance (LD)</b>	Number of Lines	11	6.36
	Expenditures	9	\$ 1,211.67
<b>Local and LD Combined</b>	Number of Lines	11	6.36
	Expenditures	12	\$ 1,243.25
<b>Wireless Telephone</b>	Quantity Reported	12	3.17
	Expenditures	12	\$ 255.00
<b>Pager and Beepers</b>	Quantity Reported	13	0.23
	Expenditures	12	\$ 1.42
<b>Cable Modem Services</b>	Quantity Reported	12	1.50
	Expenditures	12	\$ 41.17
<b>Satellite (High-Speed)</b>	Quantity Reported	13	0
	Expenditures	13	\$ 0
<b>DSL Services</b>	Quantity Reported	13	0.23
	Expenditures	13	\$ 11.15
<b>Wireless Broadband</b>	Quantity Reported	13	0
	Expenditures	13	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	13	32.00
	Expenditures	12	\$ 20.42
<b>T-1 Services</b>	Quantity Reported	13	0.62
	Expenditures	12	\$ 219.28
<b>Other Services</b>	Expenditures	13	\$ 12.31
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 1,803.99</b>

**Figure 23: Average Monthly Small Business Telecommunications Use  
Firms in the Real Estate, Renting and Leasing Industries**

		<b><u>N</u></b>	<b><u>All Firms</u></b>
<b>Local Telephone Services</b>	Number of Lines	22	5.14
	Expenditures	15	\$ 157.26
<b>Long Distance (LD)</b>	Number of Lines	22	5.14
	Expenditures	15	\$ 109.96
<b>Local and LD Combined</b>	Number of Lines	22	5.14
	Expenditures	20	\$ 482.67
<b>Wireless Telephone</b>	Quantity Reported	21	2.90
	Expenditures	21	\$ 176.82
<b>Pager and Beepers</b>	Quantity Reported	22	0.36
	Expenditures	22	\$ 7.84
<b>Cable Modem Services</b>	Quantity Reported	21	0.33
	Expenditures	20	\$ 10.25
<b>Satellite (High-Speed)</b>	Quantity Reported	22	0
	Expenditures	22	\$ 0
<b>DSL Services</b>	Quantity Reported	22	0.14
	Expenditures	21	\$ 3.33
<b>Wireless Broadband</b>	Quantity Reported	21	0.43
	Expenditures	20	\$ 5.50
<b>Dial-Up Internet Services</b>	Quantity Reported	21	0.48
	Expenditures	22	\$ 11.06
<b>T-1 Services</b>	Quantity Reported	22	0.14
	Expenditures	22	\$ 40.91
<b>Other Services</b>	Expenditures	22	\$ 2.27
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 740.66</b>

**Figure 24: Average Monthly Small Business Telecommunications Use  
Firms in the Professional, Scientific and Technical Industries**

		<u><b>N</b></u>	<u><b>All Firms</b></u>
<b>Local Telephone Services</b>	Number of Lines	48	3.04
	Expenditures	40	\$ 144.25
<b>Long Distance (LD)</b>	Number of Lines	48	3.04
	Expenditures	40	\$ 116.83
<b>Local and LD Combined</b>	Number of Lines	48	3.04
	Expenditures	48	\$ 247.04
<b>Wireless Telephone</b>	Quantity Reported	46	1.65
	Expenditures	48	\$ 100.67
<b>Pager and Beepers</b>	Quantity Reported	50	0.04
	Expenditures	50	\$ 1.12
<b>Cable Modem Services</b>	Quantity Reported	49	0.29
	Expenditures	47	\$ 11.18
<b>Satellite (High-Speed)</b>	Quantity Reported	50	0.02
	Expenditures	50	\$ 1.50
<b>DSL Services</b>	Quantity Reported	49	0.31
	Expenditures	48	\$ 15.31
<b>Wireless Broadband</b>	Quantity Reported	50	0.04
	Expenditures	50	\$ 1.00
<b>Dial-Up Internet Services</b>	Quantity Reported	49	0.59
	Expenditures	49	\$ 11.46
<b>T-1 Services</b>	Quantity Reported	50	0.08
	Expenditures	49	\$ 9.06
<b>Other Services</b>	Expenditures	49	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 398.34</b>

**Figure 25: Average Monthly Small Business Telecommunications Use  
Firms in the Administrative, Waste Mgt. And Remediation Industries**

		<b><u>N</u></b>	<b><u>All Firms</u></b>
<b>Local Telephone Services</b>	Number of Lines	9	3.00
	Expenditures	9	\$ 242.44
<b>Long Distance (LD)</b>	Number of Lines	9	3.00
	Expenditures	9	\$ 246.89
<b>Local and LD Combined</b>	Number of Lines	9	3.00
	Expenditures	11	\$ 418.09
<b>Wireless Telephone</b>	Quantity Reported	9	1.78
	Expenditures	10	\$ 137.00
<b>Pager and Beepers</b>	Quantity Reported	11	0.09
	Expenditures	11	\$ 1.23
<b>Cable Modem Services</b>	Quantity Reported	11	0.73
	Expenditures	11	\$ 16.64
<b>Satellite (High-Speed)</b>	Quantity Reported	11	0
	Expenditures	11	\$ 0
<b>DSL Services</b>	Quantity Reported	10	0
	Expenditures	11	\$ 6.81
<b>Wireless Broadband</b>	Quantity Reported	11	0
	Expenditures	11	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	11	0.36
	Expenditures	11	\$ 14.55
<b>T-1 Services</b>	Quantity Reported	11	0.09
	Expenditures	11	\$ 45.45
<b>Other Services</b>	Quantity Reported	11	0
	Expenditures	11	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 639.77</b>

**Figure 26: Average Monthly Small Business Telecommunications Use  
Firms in the Health Care and Social Assistance Industries**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	35	3.26
	Expenditures	18	\$ 258.33
<b>Long Distance (LD)</b>	Number of Lines	35	3.26
	Expenditures	18	\$ 148.17
<b>Local and LD Combined</b>	Number of Lines	35	3.26
	Expenditures	32	\$ 315.97
<b>Wireless Telephone</b>	Quantity Reported	32	1.03
	Expenditures	34	\$ 71.41
<b>Pager and Beepers</b>	Quantity Reported	34	0.06
	Expenditures	35	\$ 6.06
<b>Cable Modem Services</b>	Quantity Reported	34	0.24
	Expenditures	32	\$ 10.12
<b>Satellite (High-Speed)</b>	Quantity Reported	35	0.06
	Expenditures	34	\$ 1.76
<b>DSL Services</b>	Quantity Reported	35	0.17
	Expenditures	33	\$ 11.64
<b>Wireless Broadband</b>	Quantity Reported	35	0
	Expenditures	35	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	35	0.34
	Expenditures	34	\$ 6.03
<b>T-1 Services</b>	Quantity Reported	35	0
	Expenditures	35	\$ 0
<b>Other Services</b>	Expenditures	35	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 422.99</b>

**Figure 27: Average Monthly Small Business Telecommunications Use  
Firms in the Accommodation and Food Services Industries**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	21	3.33
	Expenditures	10	\$ 169.00
<b>Long Distance (LD)</b>	Number of Lines	21	3.33
	Expenditures	10	\$ 77.60
<b>Local and LD Combined</b>	Number of Lines	21	3.33
	Expenditures	20	\$ 212.55
<b>Wireless Telephone</b>	Quantity Reported	22	1.27
	Expenditures	21	\$ 72.29
<b>Pager and Beepers</b>	Quantity Reported	22	0
	Expenditures	22	\$ 0
<b>Cable Modem Services</b>	Quantity Reported	21	0.43
	Expenditures	20	\$ 17.75
<b>Satellite (High-Speed)</b>	Quantity Reported	22	0.05
	Expenditures	22	\$ 1.36
<b>DSL Services</b>	Quantity Reported	22	0.18
	Expenditures	21	\$ 3.86
<b>Wireless Broadband</b>	Quantity Reported	22	0.05
	Expenditures	22	\$ 0.91
<b>Dial-Up Internet Services</b>	Quantity Reported	21	0.43
	Expenditures	20	\$ 8.45
<b>T-1 Services</b>	Quantity Reported	22	0
	Expenditures	22	\$ 0
<b>Other Services</b>	Expenditures	22	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 317.17</b>

**Figure 28: Average Monthly Small Business Telecommunications Use  
Firms in the Repair, Maint., Laundry & Personal Services**

		<u>N</u>	<u>All Firms</u>
<b>Local Telephone Services</b>	Number of Lines	41	2.66
	Expenditures	27	\$ 135.89
<b>Long Distance (LD)</b>	Number of Lines	41	2.66
	Expenditures	27	\$ 110.20
<b>Local and LD Combined</b>	Number of Lines	41	2.66
	Expenditures	43	\$ 234.97
<b>Wireless Telephone</b>	Quantity Reported	40	1.53
	Expenditures	43	\$ 128.35
<b>Pager and Beepers</b>	Quantity Reported	42	0
	Expenditures	43	\$ 0.58
<b>Cable Modem Services</b>	Quantity Reported	43	0.30
	Expenditures	39	\$ 8.49
<b>Satellite (High-Speed)</b>	Quantity Reported	43	0
	Expenditures	43	\$ 0
<b>DSL Services</b>	Quantity Reported	43	0.19
	Expenditures	41	\$ 10.00
<b>Wireless Broadband</b>	Quantity Reported	43	0
	Expenditures	43	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	43	0.51
	Expenditures	42	\$ 10.76
<b>T-1 Services</b>	Quantity Reported	43	0.02
	Expenditures	43	\$ 8.14
<b>Other Services</b>	Expenditures	43	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 401.28</b>

**Figure 29: Average Monthly Small Business Telecommunications Use  
Firms in the Education, Arts, Entertainment and Public Administration**

		<b><u>N</u></b>	<b><u>All Firms</u></b>
<b>Local Telephone Services</b>	Number of Lines	18	4.72
	Expenditures	13	\$ 190.08
<b>Long Distance (LD)</b>	Number of Lines	18	4.72
	Expenditures	13	\$ 113.46
<b>Local and LD Combined</b>	Number of Lines	18	4.72
	Expenditures	17	\$ 273.76
<b>Wireless Telephone</b>	Quantity Reported	17	2.76
	Expenditures	17	\$ 130.00
<b>Pager and Beepers</b>	Quantity Reported	19	2.37
	Expenditures	19	\$ 42.11
<b>Cable Modem Services</b>	Quantity Reported	19	0.47
	Expenditures	17	\$ 21.24
<b>Satellite (High-Speed)</b>	Quantity Reported	19	0.05
	Expenditures	19	\$ 5.26
<b>DSL Services</b>	Quantity Reported	19	0.26
	Expenditures	17	\$ 11.18
<b>Wireless Broadband</b>	Quantity Reported	19	0
	Expenditures	19	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	19	0.68
	Expenditures	16	\$ 16.88
<b>T-1 Services</b>	Quantity Reported	19	0.11
	Expenditures	17	\$ 0
<b>Other Services</b>	Expenditures	19	\$ 0
<b>All Services</b>	<b>Expenditures</b>		<b>\$ 500.42</b>



Using all of the survey responses, **Section IV** has analyzed the composition of telecommunications expenditures for major industries and identified industries that spend extensive amounts for telecommunications services. **Appendix B** recompiles **Figures 15 to 29** and compares industry expenditures for each telecommunications service. The section to follow will make similar analyses, but focus only the subset of firms subscribing to specific telecommunications services.

## **V. Market Penetration and Usage**

Until now, this report has provided results showing the composition of spending by the small business market segment in terms of various characteristics, such as business size and industry classification. While these reports are useful in showing the total spending of small businesses and the relative importance of telecommunications services for these various characteristics, these tables do not reveal the spending patterns of only those small businesses subscribing to and paying for a particular telecommunication service. For example, according to the sample results, most small businesses subscribe to local and long distance services (390 firms), while only a dozen firms actually subscribe to T-1 services. As a result, T-1 service has a relatively small share of spending in the overall small business segment. However, for those small businesses using the service, T-1 spending represents a major purchase and a considerable part of their telecommunications needs. For this reason, this section is devoted to understanding the telecommunications use and expenditures for only those small businesses that subscribe to a particular service. Unlike the analysis of composition of expenditures, however, the telecommunications services listed in the tables cannot be summed to an industry or subgroup total.

### **A. Telecommunications Services Penetration Rates**

A common way of understanding the degree to which small businesses utilize telecommunications services is to measure the services *penetration rate*. For any particular service, the service penetration rate is measured as the ratio of the number of subscribing firms to the total number of firms in the population. Because survey participants identified which services they use, how much they use and how much they spend, results from the survey can be used to calculate penetration rates for each telecommunications service.

Wired telephone services, specifically local telephone services, are used by 98% of small business, a figure slightly higher than the 96% penetration in the residential market.<sup>22</sup> Wireless telephone services are used by 73% of small businesses, a rather interesting statistic for a service that was first introduced to the market only twenty years ago. However, pagers are used by only 6% of small businesses, and may have become a casualty of wireless telephony's success.

---

<sup>22</sup> "Telephone Subscribership in the United States," Industry Analysis and Technology Division, FCC, November 2002, Table 1, p. 5. The data for March 3003 was 95.5.

As for Internet and data services, overall, the penetration rates for these services are much lower than traditional wired telephone and wireless telephone services. According to the sample results, Internet dialup services are used by 38% of the small businesses survey. High-speed services are led by cable modem services (26%) and by Digital Subscriber Line (DSL) services (21%). Other high-speed alternatives, satellite (4%) and wireless broadband (3%) have very low penetration rates. T-1 data services are more popular with larger businesses, and, therefore, are only subscribed to by 4% of the small businesses in the survey. In summary, Internet services, particularly high-speed services, are not widely used by small businesses, for reasons not explicitly clear from the survey results. The possible reasons for these low service penetration rates may be due to price, consumer preferences, service availability and the nature of the small business. **Figure 30** (below) summarizes the penetration rates for major telecommunications services and indicates a substantial variation in penetration rates across telecommunications services.

**Figure 30: Penetration Rates for Telecommunications Services Used by Small Businesses**

<u>Service</u>	<u>N</u>	<u>Users Only</u>	<u>Penetration Rate</u>
Wired Telephone	408	399	98%
Wireless Telephone	397	299	73%
Pagers	420	27	6%
Cable Modems	418	109	26%
Satellite	424	16	4%
DSL	422	87	21%
Wireless Broadband	423	12	3%
Dial-Up Internet Access	418	158	38%
T-1	424	17	4%

**B. Expenditures of Users of Telecommunications Services**

**Section IV** of this report averages data across all small businesses in the survey, whether these businesses subscribe to a telecommunications service or not. Because of the large differences in penetration rates between services, eliminating those businesses that do not use a particular telecommunications service can provide some interesting insights into the expenditures for telecommunications by small business subscribers (labeled in **Figure 30** as *users only*).

For example, **Figure 31** (on page 45) shows the results of only those firms subscribing a telecommunications service, and indicates that wireless services (\$239.37 per month) are the single biggest expense for small businesses, followed by local telephone (\$185.88 per month) and long distance services (\$155.39 per month). Small business subscribers pay

about twice as much for high-speed services than they do for dialup services. Among the high-speed services, cable modem service expenditures are less, which may reflect lower priced cable modem services and explain, in part, why these penetration rates are higher than other services. This point will be investigated further in the next section, which analyzes telecommunications service prices using a measure of expenditures per unit.

**Figure 31: Average Monthly Expenditure of Small Businesses That Use and Pay For a Specific Telecommunications Service**

<u>Service</u>	<u>N</u>	<u>Only Firms Using Services</u>
Local Telephone Services	272	\$ 185.88
Long Distance Services	275	\$ 155.39
Local and Long distance (Added)	275	\$ 341.27
Local and Long distance (Combined)	390	\$ 314.52
Mobile (Wireless and PCS)	300	\$ 239.37
Pager and Beepers	30	\$ 65.20
Cable Modem Services	83	\$ 53.38
Satellite (High-speed)	13	\$ 68.07
DSL Services	69	\$ 67.84
Wireless Broadband	8	\$ 58.75
Dial-up Internet Services	147	\$ 31.88
T-1 Services	12	\$ 559.61
Other Services	4	\$ 77.00

**Figure 32** (on page 47) shows the average expenditures and quantities used by small businesses with less than four employees that subscribe to telecommunications services. For example, 223 small businesses had less than four employees and reported using local and long distance services. On average, these businesses reported using two lines and spent \$158.01 per month for both services. For these very small businesses, wireless service spending averages \$102.65 per month, an amount greater than spending for long distance services (\$56.01 per month).

As for larger-sized small businesses, ones with 5 to 9 employees and ones with 10 to 499 employees, **Figures 33 and 34** (on pages 48-49) show average expenditures and demand for only firms that use particular telecommunications services. Like **Figures 3 through 5**, **Figures 33 and 34** show that telecommunications expenditures increase with firm size. Larger firms tend to use broadband service, including T-1 services. As firm size increases, DSL spending increases, but the quantity of cable modems in use remains high. This may reflect, in part, the fact that DSL services are being priced higher than cable modem services in the small business market. This point will be investigated further, but later in this report. **Figure 34** also shows that small businesses reporting local and long distance spending separately pay much more than the combination of these services, an indication of the savings accrued to larger firms who bundle telecommunications services. Other factors may also influence this result, such as sampling differences, underreporting and sampling error.

**Figures 35 through 38** (on pages 50-53) show, once again, that as the revenue size increases, so does the consumption of telecommunications services. Again, these figures reflect expenditures and use for only those small businesses subscribing to a particular service. Because the sample size for some reporting subgroups are quite low, and, while informative about the makeup of the sample, provide a low level of confidence about the population at large.

**Figures 39 and 40** (on pages 54-55) show the expenditures of small businesses (that subscribe to telephone services) located in metropolitan and non-metropolitan areas. Comparing these two figures, it appears that metropolitan-based businesses spend more on traditional telecommunications services, such as local and long distance, but less on other services, such as beeper and pagers, as well as some high-speed data services. However, businesses located in non-metropolitan areas use fewer telephone lines in service, an indication that non-metropolitan businesses are smaller in general. Metropolitan-based businesses used more telephone lines and, accordingly, spend more for traditional telephone services. They also spend more on dial-up Internet access and T-1 services, because, as concluded earlier in this report, small businesses in metropolitan areas tend to be larger than those in non-metropolitan areas.

**Figure 32: Average Monthly Small Business Telecommunications Use  
Firms with 0-4 Employees**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	223	2.03
	Expenditures	160	\$107.20
<b>Long Distance (LD)</b>	Number of Lines	223	2.03
	Expenditures	163	\$56.01
<b>Local and LD Combined</b>	Number of Lines	223	2.03
	Expenditures	223	\$158.01
<b>Wireless Telephone</b>	Quantity Reported	157	1.78
	Expenditures	165	\$102.66
<b>Pager and Beepers</b>	Quantity Reported	9	1.33
	Expenditures	10	\$23.60
<b>Cable Modem Services</b>	Quantity Reported	57	1.09
	Expenditures	45	\$45.74
<b>Satellite (High-Speed)</b>	Quantity Reported	6	1.17
	Expenditures	5	\$62.99
<b>DSL Services</b>	Quantity Reported	43	1.05
	Expenditures	35	\$47.57
<b>Wireless Broadband</b>	Quantity Reported	8	1.38
	Expenditures	4	\$45.00
<b>Dial-Up Internet Services</b>	Quantity Reported	87	1.20
	Expenditures	85	\$27.96
<b>T-1 Services</b>	Quantity Reported	2	1.00
	Expenditures	1	\$45.00
<b>Other Services</b>	Expenditures	2	\$67.50

**Figure 33: Average Monthly Small Business Telecommunications Use  
Firms with 5 - 9 Employees**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	74	4.00
	Expenditures	51	\$212.74
<b>Long Distance (LD)</b>	Number of Lines	74	4.00
	Expenditures	51	\$127.60
<b>Local and LD Combined</b>	Number of Lines	74	4.00
	Expenditures	71	\$349.82
<b>Wireless Telephone</b>	Quantity Reported	50	3.30
	Expenditures	53	\$252.17
<b>Pager and Beepers</b>	Quantity Reported	5	1.20
	Expenditures	7	\$45.35
<b>Cable Modem Services</b>	Quantity Reported	24	1.75
	Expenditures	18	\$69.99
<b>Satellite (High-Speed)</b>	Quantity Reported	5	1.00
	Expenditures	4	\$70.00
<b>DSL Services</b>	Quantity Reported	11	1.00
	Expenditures	9	\$68.78
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	31	1.23
	Expenditures	29	\$26.32
<b>T-1 Services</b>	Quantity Reported	5	1.80
	Expenditures	4	\$407.58
<b>Other Services</b>	Expenditures	1	\$150.00

**Figure 34: Average Monthly Small Business Telecommunications Use**

**Firms with 10-499 Employees**

**# Served Only Firms Using Services**

<b>Local Telephone Services</b>	Number of Lines	93	6.76
	Expenditures	55	\$396.82
<b>Long Distance (LD)</b>	Number of Lines	93	6.76
	Expenditures	55	\$476.24
<b>Local and LD Combined</b>	Number of Lines	93	6.76
	Expenditures	87	\$694.20
<b>Wireless Telephone</b>	Quantity Reported	75	6.44
	Expenditures	73	\$546.44
<b>Pager and Beepers</b>	Quantity Reported	11	8.09
	Expenditures	11	\$123.54
<b>Cable Modem Services</b>	Quantity Reported	26	1.73
	Expenditures	19	\$56.95
<b>Satellite (High-Speed)</b>	Quantity Reported	5	1.00
	Expenditures	4	\$72.50
<b>DSL Services</b>	Quantity Reported	33	1.33
	Expenditures	25	\$95.88
<b>Wireless Broadband</b>	Quantity Reported	4	1.75
	Expenditures	4	\$72.50
<b>Dial-Up Internet Services</b>	Quantity Reported	34	13.59
	Expenditures	29	\$49.47
<b>T-1 Services</b>	Quantity Reported	10	1.50
	Expenditures	7	\$719.99
<b>Other Services</b>	Expenditures	3	\$50.00

**Figure 35: Average Monthly Small Business Telecommunications Use  
Firms with Revenue Less Than \$200,000**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	177	1.74
	Expenditures	125	\$92.25
<b>Long Distance (LD)</b>	Number of Lines	177	1.74
	Expenditures	126	\$44.60
<b>Local and LD Combined</b>	Number of Lines	177	1.74
	Expenditures	178	\$137.34
<b>Wireless Telephone</b>	Quantity Reported	118	1.67
	Expenditures	122	\$101.31
<b>Pager and Beepers</b>	Quantity Reported	8	1.38
	Expenditures	9	\$28.83
<b>Cable Modem Services</b>	Quantity Reported	50	1.08
	Expenditures	37	\$44.69
<b>Satellite (High-Speed)</b>	Quantity Reported	4	1.25
	Expenditures	3	\$50.00
<b>DSL Services</b>	Quantity Reported	27	1.07
	Expenditures	23	\$53.48
<b>Wireless Broadband</b>	Quantity Reported	8	1.38
	Expenditures	3	\$36.67
<b>Dial-Up Internet Services</b>	Quantity Reported	72	1.13
	Expenditures	68	\$26.01
<b>T-1 Services</b>	Quantity Reported	2	1.00
	Expenditures	1	\$45.00
<b>Other Services</b>	Expenditures	1	\$10.00



**Figure 36: Average Monthly Small Business Telecommunications Use  
Firms With Revenues Between \$200,000 and \$1 Million**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	133	3.44
	Expenditures	90	\$184.18
<b>Long Distance (LD)</b>	Number of Lines	133	3.44
	Expenditures	91	\$110.46
<b>Local and LD Combined</b>	Number of Lines	133	3.44
	Expenditures	132	\$298.99
<b>Wireless Telephone</b>	Quantity Reported	95	2.76
	Expenditures	103	\$177.74
<b>Pager and Beepers</b>	Quantity Reported	10	1.30
	Expenditures	11	\$23.40
<b>Cable Modem Services</b>	Quantity Reported	34	1.29
	Expenditures	26	\$52.65
<b>Satellite (High-Speed)</b>	Quantity Reported	7	1.00
	Expenditures	6	\$67.49
<b>DSL Services</b>	Quantity Reported	27	1.00
	Expenditures	22	\$48.31
<b>Wireless Broadband</b>	Quantity Reported	3	2.00
	Expenditures	3	\$36.67
<b>Dial-Up Internet Services</b>	Quantity Reported	56	1.29
	Expenditures	55	\$26.49
<b>T-1 Services</b>	Quantity Reported	5	1.20
	Expenditures	4	\$324.75
<b>Other Services</b>	Expenditures	1	\$125.00

**Figure 37: Average Monthly Small Business Telecommunications Use  
Firms With Revenues Between \$1 Million and \$5 Million**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	66	6.48
	Expenditures	43	\$426.09
<b>Long Distance (LD)</b>	Number of Lines	66	6.48
	Expenditures	44	\$263.48
<b>Local and LD Combined</b>	Number of Lines	66	6.48
	Expenditures	60	\$596.71
<b>Wireless Telephone</b>	Quantity Reported	54	6.09
	Expenditures	54	\$468.98
<b>Pager and Beepers</b>	Quantity Reported	6	13.33
	Expenditures	7	\$194.45
<b>Cable Modem Services</b>	Quantity Reported	20	2.15
	Expenditures	15	\$69.60
<b>Satellite (High-Speed)</b>	Quantity Reported	4	1.00
	Expenditures	3	\$90.00
<b>DSL Services</b>	Quantity Reported	24	1.21
	Expenditures	17	\$99.88
<b>Wireless Broadband</b>	Quantity Reported	0	0 *
	Expenditures	1	\$120.00
<b>Dial-Up Internet Services</b>	Quantity Reported	23	19.00
	Expenditures	18	\$65.04
<b>T-1 Services</b>	Quantity Reported	5	1.40
	Expenditures	4	\$675.00
<b>Other Services</b>	Expenditures	1	\$150.00

---

\* This is an example of where a respondent provided information on wireless expenditures but failed to note the number of wireless phones in use.

**Figure 38: Average Monthly Small Business Telecommunications Use  
Firms With Revenues Greater Than \$5 Million**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	15	10.07
	Expenditures	10	\$356.00
<b>Long Distance (LD)</b>	Number of Lines	15	10.07
	Expenditures	10	\$1,513.00
<b>Local and LD Combined</b>	Number of Lines	15	10.07
	Expenditures	14	\$1,542.14
<b>Wireless Telephone</b>	Quantity Reported	15	8.33
	Expenditures	15	\$968.49
<b>Pager and Beepers</b>	Quantity Reported	3	1.67
	Expenditures	3	\$25.94
<b>Cable Modem Services</b>	Quantity Reported	3	1.33
	Expenditures	3	\$60.00
<b>Satellite (High-Speed)</b>	Quantity Reported	1	1.00
	Expenditures	1	\$60.00
<b>DSL Services</b>	Quantity Reported	7	1.71
	Expenditures	6	\$110.00
<b>Wireless Broadband</b>	Quantity Reported	1	1.00
	Expenditures	1	\$130.00
<b>Dial-Up Internet Services</b>	Quantity Reported	4	4.25
	Expenditures	3	\$83.00
<b>T-1 Services</b>	Quantity Reported	2	2.50
	Expenditures	2	\$1,019.98
<b>Other Services</b>	Expenditures	3	\$50.00

**Figure 39: Average Monthly Small Business Telecommunications Use  
Firms Located in Non-Metropolitan Areas**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	172	2.77
	Expenditures	122	\$170.07
<b>Long Distance (LD)</b>	Number of Lines	172	2.77
	Expenditures	124	\$123.17
<b>Local and LD Combined</b>	Number of Lines	172	2.77
	Expenditures	168	\$284.67
<b>Wireless Telephone</b>	Quantity Reported	123	2.80
	Expenditures	127	\$198.57
<b>Pager and Beepers</b>	Quantity Reported	11	5.36
	Expenditures	11	\$113.23
<b>Cable Modem Services</b>	Quantity Reported	43	1.28
	Expenditures	35	\$60.48
<b>Satellite (High-Speed)</b>	Quantity Reported	10	1.10
	Expenditures	8	\$73.74
<b>DSL Services</b>	Quantity Reported	26	1.15
	Expenditures	20	\$71.25
<b>Wireless Broadband</b>	Quantity Reported	5	1.60
	Expenditures	4	\$27.50
<b>Dial-Up Internet Services</b>	Quantity Reported	66	7.26
	Expenditures	60	\$27.19
<b>T-1 Services</b>	Quantity Reported	5	1.40
	Expenditures	4	120.99
<b>Other Services</b>	Expenditures	1	50.00

**Figure 40: Average Monthly Small Business Telecommunications Use  
Firms Located in Metropolitan Areas**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	227	4.07
	Expenditures	150	\$198.74
<b>Long Distance (LD)</b>	Number of Lines	227	4.07
	Expenditures	151	\$181.85
<b>Local and LD Combined</b>	Number of Lines	227	4.07
	Expenditures	222	\$337.12
<b>Wireless Telephone</b>	Quantity Reported	167	3.61
	Expenditures	173	\$269.31
<b>Pager and Beepers</b>	Quantity Reported	16	3.13
	Expenditures	19	\$37.39
<b>Cable Modem Services</b>	Quantity Reported	66	1.45
	Expenditures	48	\$48.20
<b>Satellite (High-Speed)</b>	Quantity Reported	6	1.00
	Expenditures	5	\$59.00
<b>DSL Services</b>	Quantity Reported	61	1.15
	Expenditures	49	\$66.44
<b>Wireless Broadband</b>	Quantity Reported	7	1.43
	Expenditures	4	\$90.00
<b>Dial-Up Internet Services</b>	Quantity Reported	92	1.42
	Expenditures	87	\$35.11
<b>T-1 Services</b>	Quantity Reported	12	1.58
	Expenditures	8	\$778.92
<b>Other Services</b>	Expenditures	3	\$83.75

The survey questionnaire asked small businesses to identify whether a CLEC or ILEC provided their local telecommunications services. Based on the responses of telecommunication service users, a comparison of average expenditures was made. **Figures 41 and 42** (on pages 57 and 58) compare expenditures and use for those small businesses served by CLECs and ILECs, respectively. While small businesses that use CLECs as their local telecommunications provider tend to pay more than small businesses that use ILECs as their local telecommunications provider, they also tend to demand a higher quantity of service. For example small businesses that use a CLEC spend \$383.45 per month for local and long distance services, but use on average 4.7 lines per business. In contrast, small businesses that use an ILEC spend only \$236.18, but use on average 3.2 lines per business. From this and from the earlier analysis on the composition of expenditures, CLECs appear to be serving (on average) more telecommunication-intensive firms and larger sized firms than their ILEC counterparts. Later in this report (in **Section VII**) the market share of CLECs will be analyzed.

In summary, many small businesses do not subscribe to the full range of telecommunications services. Some services, such as local telephone services are used by 98% of small business firms, while other services, such as paging and beepers are used by only 6% of small businesses, according to this survey. This section has shown how much small businesses pay when they subscribe to a particular telecommunications service. Information on these *user-only* telecommunications expenditures are summarized on separate tables for each major industry in **Appendix C** of this report. Furthermore, data on these *user-only* telecommunications expenditures are also summarized on separate tables comparing each industry across the range of telecommunications services and can be found in **Appendix D** of this report.

Earlier sections in this report have provided considerable details on the underlying results of the telecommunications survey of small businesses. These details have included expenditure data for small businesses in terms of firm size and industry, as well as for small businesses located in metropolitan or non-metropolitan areas. In addition, this report has provided information on small businesses served by CLECs and ILECs. These data were provided for all firms, as well as for only those firms subscribing to a specific telecommunications service.

In the next section, however, the survey results will be summarized as a means to identify major insights into small business consumption of telecommunications services. Specifically, the next section will investigate whether small businesses pay a disproportionately higher cost burden than larger firms, whether small businesses have preferences for buying multiple services from a single provider, what factors small businesses consider when selecting a telecommunications provider, and what small businesses spend per unit for a telecommunications services.

**Figure 41: Average Monthly Small Business Telecommunications Use  
Firms Served By A Local Telephone Competitor**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	83	4.70
	Expenditures	53	\$206.28
<b>Long Distance (LD)</b>	Number of Lines	83	4.70
	Expenditures	55	\$140.58
<b>Local and LD Combined</b>	Number of Lines	83	4.70
	Expenditures	76	\$383.45
<b>Wireless Telephone</b>	Quantity Reported	64	3.88
	Expenditures	63	\$251.35
<b>Pager and Beepers</b>	Quantity Reported	7	2.57
	Expenditures	7	\$39.21
<b>Cable Modem Services</b>	Quantity Reported	26	1.58
	Expenditures	19	\$43.21
<b>Satellite (High-Speed)</b>	Quantity Reported	2	1.00
	Expenditures	1	\$50.00
<b>DSL Services</b>	Quantity Reported	21	1.29
	Expenditures	14	\$88.29
<b>Wireless Broadband</b>	Quantity Reported	4	2.50
	Expenditures	2	\$80.00
<b>Dial-Up Internet Services</b>	Quantity Reported	28	1.36
	Expenditures	23	\$36.90
<b>T-1 Services</b>	Quantity Reported	9	1.11
	Expenditures	7	\$388.75
<b>Other Services</b>	Expenditures	1	\$125.00

**Figure 42: Average Monthly Small Business Telecommunications Use  
Firms Served By An Incumbent Local Telephone Company**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	316	3.20
	Expenditures	219	\$180.94
<b>Long Distance (LD)</b>	Number of Lines	316	3.20
	Expenditures	220	\$159.09
<b>Local and LD Combined</b>	Number of Lines	316	3.20
	Expenditures	314	\$297.84
<b>Wireless Telephone</b>	Quantity Reported	226	3.10
	Expenditures	237	\$236.18
<b>Pager and Beepers</b>	Quantity Reported	20	4.55
	Expenditures	23	\$73.10
<b>Cable Modem Services</b>	Quantity Reported	83	1.33
	Expenditures	64	\$56.40
<b>Satellite (High-Speed)</b>	Quantity Reported	14	1.07
	Expenditures	12	\$69.58
<b>DSL Services</b>	Quantity Reported	66	1.11
	Expenditures	55	\$62.63
<b>Wireless Broadband</b>	Quantity Reported	8	1.00
	Expenditures	6	\$51.67
<b>Dial-Up Internet Services</b>	Quantity Reported	130	4.40
	Expenditures	124	\$30.95
<b>T-1 Services</b>	Quantity Reported	8	2.00
	Expenditures	5	\$798.80
<b>Other Services</b>	Expenditures	4	\$65.00



## VI. Summary Analysis of the Results

Thus far, this report has shown the survey results in much detail. In this section, the survey results will be summarized for the purpose of identifying key insights into small business consumption of telecommunications services.

### A. Effects of Firm Size and the Burden of Telecommunications Costs

Of survey respondents, 432 small businesses provided information on their firm's employee size. The average firm in the sample had 8.8 employees, but the median value was only 3, indicating the concentration of very small firms in the sample. In fact, most firms indicated that they had only one employee. This concentration of very small firms is evident in business statistics in general. As mentioned earlier in this report, by comparing the size distribution of the sample to the total population, the survey appears to be a reasonably accurate representation of the small business segment.

Earlier in this report, a question was raised as to the extent to which telecommunications costs are a disproportionately greater burden on small business vis-à-vis large businesses. As previously mentioned, large businesses can frequently buy services at volume discounts and can migrate to various technologies, like PBXs and LANs, that permit savings not possible for many smaller firms. In other words, because larger firms can achieve lower costs per unit, telecommunications costs may represent a smaller share of these businesses' total costs, compared to smaller firms. If very small firms do indeed pay disproportionately higher costs than other firms, then these small firms are said to face a higher *cost burden*. The results of this survey can be used to test this hypothesis – that the cost burden of telecommunications expenditures increases as firm size decreases.

In order to test this hypothesis, the small business sample results were segmented into three firm sizes – firms with 0 to 4 employees, firms with 5 to 9 employees and firms with 10 to 499 employees. As expected, **Figure 43** (on page 60) shows that average expenditures increase as firm size increases. The positive relation between firm size (defined either in terms of employment size or revenue size) has been evident throughout this report, and is affirmed once again.

While the survey data shows that costs *do* increase with size, it does not indicate whether the cost burden of these firms, in fact, either decreases or increases with size. A small business would face a cost burden if telecommunications costs as a percentage of total company costs increase as firm size decreases. In other words, if small businesses pay disproportionately more for telecommunications than larger businesses, then a cost burden is said to exist. However, assessing the cost burden of telecommunications expenditures upon small businesses requires that costs be standardized to control for the size of the firm.

**Figure 43: Average Monthly Expenditure By Firm Size  
(Sample Size Noted in Parenthesis Below Each Figure)**

<u>Service</u>	<b>Employment Size</b>		
	<u>0-4</u>	<u>5-9</u>	<u>10-499</u>
<b>Local Telephone Services</b>	\$ 102.71 (167)	\$ 208.65 (52)	\$ 363.82 (62)
<b>Long Distance (LD)</b>	\$ 53.70 (170)	\$ 125.15 (52)	\$ 437.02 (62)
<b>Local and LD (Combined)</b>	\$ 153.20 (230)	\$ 344.96 (72)	\$ 645.26 (97)
<b>Wireless Telephone</b>	\$ 72.70 (233)	\$ 180.61 (74)	\$ 415.06 (100)
<b>Pager and Beepers</b>	\$ 0.98 (240)	\$ 4.07 (78)	\$ 13.36 (105)
<b>Cable Modem Services</b>	\$ 9.07 (227)	\$ 18.53 (68)	\$ 11.35 (98)
<b>Satellite (High-speed)</b>	\$ 1.32 (239)	\$ 3.64 (77)	\$ 2.74 (106)
<b>DSL Services</b>	\$ 7.27 (229)	\$ 8.48 (73)	\$ 24.71 (97)
<b>Wireless Broadband</b>	\$ 0.77 (235)	N.A. (78)	\$ 2.74 (106)
<b>Dial-up Internet Services</b>	\$ 0.20 (233)	\$ 10.04 (76)	\$ 15.78 (98)
<b>T1 Service</b>	\$ 0.19 (238)	\$ 21.17 (77)	\$ 48.46 (104)
<b>Other Telecommunications Services</b>	\$ 0.56 (239)	\$ 1.92 (78)	\$ 0.96 (104)

In their study on the burden of regulatory costs on small businesses, Crain and Hopkins standardize costs by calculating these costs on a per employee basis.<sup>23</sup> **Figure 44** (shown

<sup>23</sup> Crain and Hopkins, 2001.

below) provides empirical evidence that the cost burden of telecommunications services (per employee) decreases with firm size. In other words, while total spending increases as the firm size increases, telecommunications costs per employee falls. Therefore, very small businesses have a disproportionately higher cost burden than larger small businesses. This supports the hypothesis that small firms are disadvantaged, relative to larger firms, in their ability to scale their costs in proportion to their business size.

**Figure 44: Average Monthly Expenditure Per Employee  
For Firms That Use and Pay For a Specific Telecommunications Service**

<u>Service</u>	<u>Employment Size</u>		
	<u>0-4</u>	<u>5-9</u>	<u>10-499</u>
<b>Local Telephone Services</b>	\$ 40.31	\$ 21.92	\$ 7.58
<b>Long Distance (LD)</b>	\$ 21.45	\$ 13.14	\$ 9.10
<b>Local and LD (Combined)</b>	\$ 82.81	\$ 50.18	\$ 20.99
<b>Wireless Telephone</b>	\$ 39.81	\$ 27.00	\$ 13.86
<b>Pager and Beepers</b>	\$ 0.55	\$ 0.64	\$ 0.47
<b>Cable Modem Services</b>	\$ 4.84	\$ 2.55	\$ 0.38
<b>Satellite (High-speed)</b>	\$ 0.74	\$ 0.57	\$ 0.10
<b>DSL Services</b>	\$ 3.91	\$ 1.25	\$ 0.83
<b>Wireless Broadband</b>	\$ 0.42	N.A.	\$ 0.10
<b>Dial-up Internet Services</b>	\$ 5.58	\$ 1.54	\$ 0.50
<b>T-I Services</b>	\$ 0.11	\$ 3.29	\$ 1.75
<b>Other Services</b>	\$ 0.32	\$ 0.30	\$ 0.03

Note: Averages exclude firms that do not subscribe to the services shown.

Considering that universal service subsidies tend to keep residential rates lower at the expense of businesses rates, the harm to small businesses is quite evident. While residential consumers benefit from lower (subsidized) local telephone rates and larger businesses benefit from economies of scale, small businesses are less likely to see either of these benefits. Therefore, telecommunications policies that charge higher business rates for the purpose of securing lower residential rates pass these higher rates to small businesses more so than other business groups. As a result, there is a disparate impact on small businesses resulting from these public policies.

**B. Preference for Bundled Telecommunications Services**

Another aspect of telecommunications use that has been overlooked by general telecommunications statistics deals with customer preferences for buying bundled services. Bundled services are a combination of services that telecommunications providers package and sell to consumers at prices generally lower than the cost of buying these services separately. These bundles can save some consumers money. For example, many telecommunications providers offer unlimited local and long distance calling to small business for a discounted price. For small businesses that make many long distance calls in a month, the saving from the bundle could be significant.

Of the 427 small businesses responding to this survey question, 338 (79.2%) indicated a preference for bundled services to be provided by a single telecommunications provider. However, as **Figure 45** (below) shows there appears to be little consensus on what that bundled service should be. Of the survey’s twenty-eight reported combinations of services, Local, long distance (LD), wireless and Internet services was the most often cited bundle with 12.2%.

**Figure 45: Service Bundles  
Most Often Cited By Small Business**

<u>Combination of Services</u>	<u>Percent Cited</u>
All services	6.8%
Local, LD, Internet, Wireless and Yellow Pages	10.8%
Local, LD, Internet, Wireless and Cable TV	5.6%
Local, LD, Internet and Wireless	12.2%
Local, LD and Internet	6.1%
Local, LD and Wireless	5.9%
Local and LD	5.9%
Local	8.7%
20 Miscellaneous Service Bundles	17.2%
Not Wanting Service Bundles	20.8%

Note: 7.3% of small businesses did not respond.

While there was little consensus on what services should makeup the bundle, **Figure 46** (on page 63) shows that local (75.6%) and long distance (66.5%) services were most likely to be part of the bundle that small businesses want. In addition, 85% of small

businesses (a figure not shown) want their services combined onto a single bill. The conclusion here is that small businesses demand service bundles and the simplicity of a single bill. However, as shown earlier in **Figure 45**, 20.8% of small businesses did not want their services bundled at all.

**Figure 46: Telecommunications Services Most Likely To be Included as Part of a Bundled Package**  
(Sample Size of 427 Firms)

<u>Service To Be Bundled</u>	<u>Frequency Included</u>	<u>Percentage Included</u>
Local Service	323	75.6%
Long Distance	284	66.5%
Internet and Data	213	49.0%
Wireless Telephone	199	46.6%
Yellow Pages	124	29.0%
Cable TV	67	15.7%

### C. Factors in Selecting Telecommunications Providers

The questionnaire asked small businesses to rank how important certain factors were to them when selecting of a telecommunications provider. **Figure 47** (on page 64) shows that quality and reliability are the most important factors in selecting a provider, closely followed by price and customer service. Customer care and billing accuracy were also very important considerations for small businesses in choosing the right telecommunications service providers. Interestingly, name brand proved to be least important in picking a provider. This question also permitted respondents to add and rank their own factors (listed as *other* in **Figure 47**). These additional factors are listed in the **Appendix E** located at the end of this report.

**Figure 47: Small Business Rank of Importance  
In Deciding a Telecommunications Provider  
(Not Important=1 and Very Important=5)**

<u>Attribute / Factor</u>	<u>Average</u>	<u>Median</u>	<u>Mode</u>	<u>N</u>
<b>Price</b>	4.6	5	5	424
<b>Quality &amp; Reliability</b>	4.8	5	5	424
<b>Customer Service</b>	4.6	5	5	402
<b>Name Brand</b>	2.5	3	3	406
<b>Choice of Services &amp; Features</b>	4.0	4	5	415
<b>Billing Accuracy and Options</b>	4.6	5	5	414
<b>Provider's Financial Stability</b>	3.9	4	5	410
<b>Installation &amp; Service Start Date</b>	3.9	4	5	411
<b>Recommendation by Others</b>	3.3	3	4	400
<b>Other (Specified in Appendix)</b>	3.6	4	5	31

#### **D. Average Expenditure Per Unit**

The questionnaire did not explicitly ask small businesses to provide the prices they paid for services. However, given that many provided the quantity of each service used and the expenditures for each service used, expenditure per unit was calculated. However, since this required the pairing of quantity and expenditures, the sample size for this data, shown as **Figure 48** (on page 65), is somewhat smaller, particularly at the subgroup level. Nonetheless, the results provide a benchmark of charges paid by small businesses for common telecommunications services. For example, average expenditure per line for local telephone services was nearly \$60 per month. As with all services here, these expenditures are likely to include numerous features and options. For local telephone services, for example, the average expenditure per unit may include such features and charges as basic service, usage, voice mail, automatic line hunt (rollover), value-added services (i.e., speed dialing and caller ID) and other fees (such as taxes, federal subscriber line charges and universal service fees). For this reason, expenditure per line is not truly a measure of price.

**Figure 48: Small Business Average Monthly Expenditure Per Unit**

<u>Service</u>	<u># Paired Observations</u>	<u>Expense Per Unit</u>
Local Telephone Services	259	\$ 59.71
Long Distance Services	259	\$ 50.25
Local and LD (Added Above)	259	\$ 109.96
Local and LD (Combined Reporting)	373	\$ 96.06
Wireless Telephone	273	\$ 76.67
Pager and Beepers	25	\$ 16.04
Cable Modem Services	79	\$ 38.34
Satellite (High-speed)	13	\$ 63.21
DSL Services	66	\$ 55.40
Wireless Broadband	6	\$ 31.11
Dial-up Internet Services	142	\$ 23.44
T-1 Services	12	\$ 419.71
Other Services	3	\$ 83.33

As previously noted, wireless expenditures exceed long distance expenditures for the small business segment. **Figure 48** shows that small businesses also pay more per wireless telephone than they do for long distance services per wire line. The data also indicate that small businesses reporting separate local and long distance information pay more than the average spending for combined local and long distance services. This provides some limited evidence that bundled services are priced lower. The survey data also indicates that small businesses pay less for cable modem services, which may explain, in part, why the penetration rate for this service is higher than other high-speed services.

This section summarized the remaining portions of the survey results, including information on the effects of size, telecommunications burden, preferences for bundled services, factors influencing the selection of telecommunications service providers and average expenditures per unit. The section to follow will use this information and information from previous sections to analyze several key telecommunications issues as they pertain to the small business market segment.

## VII. Survey Results on Important Current Topics

This survey provides some interesting insights into topics that involve ongoing legislative and regulatory debates. While the data from this survey do not solve these debates, they provide some useful information not previously known about the small business market segment and its use of telecommunications services.

The Telecommunications Act set out to achieve three major goals – to lower consumer prices, increase quality of service and accelerate the deployment of advanced services – all by means of decreasing regulations and increasing competition.<sup>24</sup> While much has changed as a result of the Act, little factual data has been presented as to the effects that the Act has had on small businesses. However, results from this survey will provide estimates of the degree of competition between CLECs and ILECs in the small business market, and the extent to which small businesses use Internet access services, particularly high-speed services. This section will also provide some insight into wireless substitution for wireline telecommunications, and the use of VoIP services by small businesses.

### A. Local Competition

According to FCC data, CLECs serve disproportionately more mid-size and large businesses customers than ILECs do.<sup>25</sup> The FCC reports indicate that 21.7% of ILEC customer lines serve larger business customers (with the remaining 78.3% of the customers defined as either residential customers or small businesses with three lines or less).<sup>26</sup> In comparison, 38.0% of CLEC customer lines are larger business customers.<sup>27</sup>

The FCC finding is corroborated by this survey. Based on 418 small businesses reporting both employee size and whether they are served by a CLEC or ILEC, 328 small businesses were served by ILECs and 90 small businesses were served by CLECs. These results show, on average, that ILEC-served small business had 8.50 employees, while CLEC-served small business had 10.26 employees. Thus, CLECs tend serve larger business customers and, as previously shown, customers that demand more telecommunications services.

Unfortunately, FCC data makes no distinction between residential consumers and small businesses, and, therefore, the information necessary to quantify the CLEC's small business market share is publicly unavailable. What is publicly available, however, are FCC estimates of CLECs' total market share, which was estimated to be 14.7%; CLECs' residential market share (including small businesses with three or less lines), which was

---

<sup>24</sup> As stated in the Telecommunications Act of 1996, preamble.

<sup>25</sup> The FCC defines a small business as a billing account with three lines or less, and includes these data with residential customers when reporting its results. This makes distinctions between small businesses and residential customers impossible to discern. Furthermore, as previously discussed, a definition of three lines or less does not accurately represent the small business market as defined as having fewer than 500 employees.

<sup>26</sup> For these data see "Local Telephone Competition: Status as of June 30, 2003, FCC, Dec. 2003, Table 2.

<sup>27</sup> Ibid.



estimated to be 12.0%; and CLECs' market share for other business customers (including mid-size businesses, large businesses and government accounts), which was estimated to be 23.2% as of June 30, 2003.<sup>28</sup> Because these figures are collected from larger local telephone service providers (both incumbents and competitors), the FCC has stated that its figures underreport CLEC lines as a percent of ILEC lines.<sup>29</sup> A survey of customers can avoid this underreporting.

The results of this survey provide an accurate view of market share of ILECs and CLECs for the small business market segment. **Figure 49** (below) shows that CLECs serve 22% of the small business market. The data also show that CLECs have a much greater market share in metropolitan areas (29%) than in non-metropolitan areas (11%). From this, one can conclude that new competitors are making inroads into the local telecommunications market, and, to a greater extent, targeting denser business communities.

	<u>Sample</u>	<u>% Share</u>
% Metro	244	29%
% Non-Metro	174	11%
Total	418	22%

### **B. Wireless Substitution**

This report has shown that wireless services have become a very important part of the telecommunications requirements of small businesses. This finding is of no surprise, considering that there are now 154 million wireless subscribers in the country.<sup>30</sup> The FCC, in fact, has indicated that, to some extent, wireless telecommunications are beginning to replace wireline communications:

“There is much evidence, however, that consumers are substituting wireless service for traditional wireline communications.”<sup>31</sup>

The survey provides some insight into the extent to which wireless substitution may be occurring in the small business market. Based on the survey, 3.7% of small businesses report expenditures for wireless telecommunications services and report no expenditures for telephone services. Similarly, 6.0% of small businesses report expenditures for

<sup>28</sup> “Local Telephone Competition: Status as of June 30, 2003, FCC, Dec. 2003, Tables 1 and 2.

<sup>29</sup> Ibid, p. 1, fn. 3. The FCC is not certain about the extent of this problem.

<sup>30</sup> According to the Cellular Telecommunications & Internet Association ([www.wow-com.com/](http://www.wow-com.com/) subscribers estimated as of January 14, 2004).

<sup>31</sup> “Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services,” FCC, Eighth Report, released July 14, 2003, par. 102.

wireless services, and report no expenditures for long distance services. From this it can be concluded that some small businesses are using wireless services instead of traditional wireline telecommunications services.

Data of where substitution may be occurring is evident in the construction and transportation/warehousing industries. As **Table B-4** (in **Appendix B**) shows, these two industries spend more for wireless telecommunications than any other industry, a fact not explainable by firm size alone. There is some logic to why these industries are extensive users of wireless services. The services that construction and transportation workers perform are not done at their business location. For example, plumbers perform their trade at their customers' locations and freight truck drivers perform their services while on the road. Therefore, neither plumbers nor truckers are readily accessible in their business offices during normal working hours. These businesses, as well as others of a similar nature, benefit by using wireless telecommunications over wireline telecommunications.

In summary, data provided throughout this report has shown that wireless telephone services are a very important component to the telecommunications needs of small businesses. For example, 25.2% of the firms in the survey spend more on wireless telecommunications services than local and long distance services combined. Therefore, public policies that influence wireless services can have a significant effect on the small business market segment. Beyond these rudimentary observations, the actual extent of wireless substitution requires more research.

### **C. Voice-Over-Internet Services**

Voice over Internet Protocol (VoIP) services are a fairly new technology, which converts voice communication into packets that are transmitted over the Internet and then converted back into voice communication. What users experience are normal voice communications services that are near telephone-like quality. The advantage of VoIP is that it bypasses traditional circuit switched networks, thereby avoiding the costs of traditional (circuit-switched) telephone communications. While still a nascent service for domestic and local calling, there is a sizable price advantage for VoIP in international calling, and some reports have noted, in the past, an increase in VoIP traffic.<sup>32</sup> In recent months, major companies have cited quality improvements in VoIP technology and have announced their intention to provide these services to the mass-market.<sup>33</sup> However, there is little public information available on the use of VoIP Service for the small business market.

The results of this survey provide a reference point for the use of VoIP by small businesses. Of 418 small businesses, 3.3% said that they do use VoIP service in their business. This does not mean that these small businesses have eliminated traditional voice service, but it does mean that VoIP is beginning to find its way into small

---

<sup>32</sup> "Voice over IP Used for 6% of Worldwide Telephone Traffic According to TeleGeography," ITXC, News Release, November 6, 2001.

<sup>33</sup> Matt Stump "MSOs, AT&T Set Table For VoIP Rollouts," Multichannel News, Dec. 15, 2003; and Ben Charny "Cox Communications Dives into VoIP," CNET News.com, Dec. 15, 2003.

businesses and, if it continues to grow, it may soon become a significant competitive threat to traditional telephony providers. VoIP may also be a threat to the entire system of subsidies, universal service, access fees, monthly subscriber line charges and government taxes that make their way onto consumer bills. It remains unclear whether VoIP operators will be subject to many of the same requirements placed upon telephone companies. As a result, this topic is one of increasing public policy debate.

#### **D. Internet Access and Broadband Services**

The Act calls for the timely deployment of advanced services.<sup>34</sup> To what degree are high-speed services, such as DSL and cable modem services, used by small businesses? The FCC reports that residential and small business customers account for 88% of high-speed lines in use.<sup>35</sup> However, the FCC data does not distinguish between residential, small business and other business segments.<sup>36</sup> The FCC does publish total market share statistics and finds cable with 58.3%, asymmetrical DSL with 32.7%, other wireline with 5.2%, fiber with 2.5% and satellite and fixed wireless services with 1.3% of lines in service.<sup>37</sup>

As for the market shares pertaining to the small business segment, again, there is insufficient public data. This survey, however, provides some useful insights for the use and expenditures of online services, as well as high-speed services. Earlier, **Figure 30** showed that high-speed service penetration was not widespread, accounting for 26%, 4%, 21%, 3% and 4% of small businesses using cable modem, satellite, DSL, wireless broadband and T-1 services, respectively. Using these penetration rates to estimate the number of small businesses using broadband services, the market share of broadband users can be estimated to be 45.2% for cable modems, 6.6% for satellite, 36.1 for DSL, 5% for wireless broadband and 7.1% for T-1 services. These market share figures are based on the number of small businesses using a particular broadband service as a percentage of total small businesses using any form of broadband service.

Besides using the number of broadband-subscribing small businesses to estimate broadband service market share, the number of broadband units in services, as well as the total expenditures incurred for each broadband service, provides two alternative ways to estimate market share.<sup>38</sup> For example, **Figure 50** (on page 70), shows DSL service as having a market share of 32.1%, when taking the number of DSL units as a percentage of all forms of broadband services. Similarly, **Figure 50** shows DSL service as having a

---

<sup>34</sup> These services are sometimes referred to as broadband services or high-speed services for Internet access.

<sup>35</sup> See “High-Speed for Internet Access: Status as of June 30, 2003,” FCC, December 2003, comparing Tables 1 and 3. This assumes services with speeds exceeding 200 kilobits per second in at least one direction.

<sup>36</sup> The FCC explains that its Form 477 does not report high-speed services by type of customer. The FCC assumes that advanced services are used by large businesses first and otherwise used by other segments, such as small businesses. See, *Op. Cit.* p. 3, fn. 8.

<sup>37</sup> “High-Speed Services for Internet Access: Status as of June 30, 2003,” FCC, December 2003, Table 1. Asymmetrical DSL are services that have much higher downloading speeds than uploading speeds. The FCC includes other (symmetrical) DSL services along with T-1 services in the category *other wireline*.

<sup>38</sup> The number of units is the quantity of broadband connections reported by the small business. In its periodic high-speed reports, the FCC refers to this (generically) as *high-speed lines*.

market share of 27.2%, when taking the total expenditures for DSL services as a percentage of total expenditures for all forms of broadband services.

	<u>% Units</u>	<u>% Expenditures</u>
Cable Modems	48.4	25.8
Satellite	5.4	5.2
DSL	32.1	27.2
Wireless Broadband	5.8	2.7
T-1	8.3	39.1
	100.0%	100.0%

**Figure 50** shows some interesting facts. First, cable modem services account for 48.4% of the small business market share in terms of units in use. This number is slightly less than the FCC figure (58.3%) cited earlier. One reason that the share in the small business market is lower than the share in the overall market is that cable companies have only recently began to target business customers.<sup>39</sup> Initially, cable operators built their networks to provide cable televisions services, making these services available to 97% of U.S. households.<sup>40</sup> However, with the advancement of cable networks capable of providing two-way communications, such as telephone services and high-speed Internet access, cable operators have expanded their reach well into the business community. Estimates suggest that cable modem networks are available to almost 75% of the business community, as well as 80% of households.<sup>41</sup> In addition, many home-based businesses, non-employer businesses and small business located near residential market are likely to have access to residential services.

Also, note the effect that average expenditures per unit (seen earlier in **Figure 48**) has on market share. Because small businesses spend less on average for cable modem service

<sup>39</sup> See Ahmet Ozalp, "Making the Case for Cable SMB Services: The Revenue Opportunity for Small-to-Medium Size Business Telecom Services Exceeds That of Today's Cable Television Business," Cable Datacom News, January 2002; "Comcast Bullish About Business Services," Cable Datacom News, April 2001; and "Cox and @Work Take Aim At Small Business Market," Cable Datacom News, March 1998.

<sup>40</sup> National Cable Telecommunications Association reports this figure at [www.ncta.com](http://www.ncta.com), citing *Broadband Cable TV Financial Databook*, 2002, p. 10.

<sup>41</sup> For an estimate of the availability of cable modem service to the business market see Barry Hardek, "Cable CLECs Poised To Fill Void," Cable Datacom News, August 2001, p. 1. For an estimate of households passed see the National Cable Telecommunications Association at [www.ncta.com](http://www.ncta.com), citing: Morgan Stanley, "Where There is a Willner... There's a Way," December 27, 2002, p.61; "Fruit Salad," April 7, 2003, p.42; and Kagan World Media, *Broadband Technology*, September 12, 2002, p.2.

than DSL service, cable modem market share in terms of units is higher than its market share in terms of expenditures, as depicted in **Figure 50**. As for T-1 services, the opposite is true – the market share for T-1 services in terms of units is relatively small, but in terms of expenditures is relatively high, because T-1 services are relatively pricy.

Whether it is DSL, cable modem, T-1, satellite or other wireless high-speed service, when combined, 48% of small business use some form of broadband service, an indication that some small businesses use multiple forms of broadband services. In contrast, dial-up services are still a very popular means for small businesses to connect to the Internet, accounting for 38% of small businesses. In fact, some broadband users continue to subscribe to dialup access services. However, 27% of small businesses do not subscribe to either broadband or dialup service.

The survey data does not provide enough insight to explain whether the choice of dial-up or broadband is based on preference, price or availability of services. This is an area that needs further research.

## **VIII. Summary**

This survey makes a contribution toward understanding small businesses' use of telecommunications services, an area where data, until now, has been lacking. This report and others like it will help provide a better understanding of how small business customers use telecommunications services – what they buy, how much they buy and how these expenditures are influenced by geography, industry and firm size. Furthermore, this survey provides a better understanding of influences from recent changes affecting telecommunications services, such as local service competition, the emergence of VoIP services and the degree to which small businesses use high-speed data services for Internet access. The major findings in this report are:

- Industry differences and firm size account for much of the variation in telecommunications consumption. Small businesses located in non-metropolitan areas tend to be smaller and spend less for telecommunications services. Smaller firms are sometimes more apt to buy certain services over others.
- Wireless services represent a major portion of small businesses' telecommunications consumption. For some industries, wireless spending rivals and exceeds spending of wireline services (local and long distance) 25% of the time.
- The burden of telecommunications costs on small businesses appears to increase as the size of firms decrease. In other words, very small firms face a disproportionately higher cost burden (cost per employee) than larger businesses. This may suggest that policies that increase business prices in order to decrease residential prices are disadvantaging small business owners.
- This report provides market share statistics on the local exchange market and finds that CLECs now serve 22% of small businesses, including 29% in metropolitan areas and 11% in non-metropolitan areas. On average, small businesses served by CLECs tend to be somewhat larger in terms of employment

and these businesses tend to purchase more telecommunications services than small businesses served by ILECs.

- VoIP services are now used by 3% of small businesses, indicating the first signs that this nascent service may be finding its way into small business telecommunications users.
- Dialup Internet access is used by 38% of small businesses. Broadband services have not found widespread use in the small business market, although cable modem services (26%) and DSL services (21%) are most commonly found.
- The survey finds that small business want service bundles and prefer to have multiple telecommunications services on one bill. This survey also finds that small business rank quality and service first, and price second when considering what factors are most important in picking a telecommunications provider. Name brand was of least importance, according to the survey results.

It is hoped that, as changes in competition, technology and public policy occur, these data can help legislators, regulators and advocates quantify the impacts of these changes on the small business market segment. However, more research is needed to better understand these trends affecting use and expenditures of telecommunications services. One limitation of this report was its sample size, an area that future studies should address. The attainment of additional survey research in this area would be useful in providing periodic updates for an ever-changing industry, as well as eventually creating a time series data, which would permit a better understanding of how changes in policy, technology and competition affect small businesses perception and consumption of telecommunications services.

## **Appendix A**

### **Survey Questionnaire and Additional Survey Materials**

1. Explanation of the questionnaire, information on the mailing and timing of the mailing;
2. Cover Letter;<sup>42</sup>
3. Questionnaire.

---

<sup>42</sup> Please note, the cover letter and survey included an OMB number and date in the upper right hand corner. The copy in **Appendix A** omits this information.

## Appendix A

### The Questionnaire and Timing of the Mailing

5,000 surveys were sent to a sample of randomly selected small businesses. The envelope and enclosed cover letter were addressed to each small business by company name and address, including the name of a key executive at the small business, generally the company owner or president. The cover letter, which follows this section of the **Appendix A**, describes the purpose of the study, its connection to a Small Business Administration contract and when the survey would be due. The letter also mentioned that the survey was voluntary, and it included the relevant OMB code and date, as required for government sponsored data collection.

The survey was mailed in early September and included a pre-paid envelope for responses. A follow-up postcard was sent 10 days later to remind those who received the survey to return it. The survey asked respondents to return the survey by October 9<sup>th</sup>. Based on the volume and date of returns, the end of September would appear to be the period most closely associated with the median date of the results.

Like the cover letter, the survey questionnaire is shown in this **Appendix**. The survey included *eight question areas* that often required multiple responses from survey participants. The eight question areas covered are as follows:

#### 1. Employee Size

This question area was used to identify under-representation of responses relative to the sample universe. Responses to this question were also used to link employment size to telecommunications use, which provided insight into the degree of economies of scale within the small business segment.

#### 2. Location

This question area asks for the number of business locations, the location of the primary business and whether the location is in a metropolitan area. The number of business locations provides the count of the number of establishments, a unit of measure common in Federal business statistics. By identifying which businesses do not operate in metropolitan areas, this survey attempts to identify those areas more likely to be rural, and, accordingly, higher cost for ILECs and CLECs to serve. Universal service policies frequently deal with rural customer issues.

#### 3. Industry

Telecommunications spending may vary by industry.<sup>43</sup> Including this variable in the survey will permit a better understanding of how telecommunications use differs for these broad industries for the small business market segment.

---

<sup>43</sup> This study uses new the North American Industry Classification system (NAICS).



#### **4. Preference for Bundling Telecommunications Services**

Many telecommunications providers are competing for customers by offering bundled or packaged services, such as a combination of local, long distance, Internet access and cable television programming services. These packages frequently offer lower prices than services offered separately or through multiple service providers. The goal of bundling is to attract and retain customers by offering them a wider range of services and providing them the simplicity of a single bill. This survey will collect data on the extent to which customers want bundled services, which services (if any) they want bundled, and whether they prefer a single bill for these services.

#### **5. Factors Influencing the Choice of a Telecommunications Provider**

This question area asks small businesses to identify the most important factors used to select a telecommunications service provider. The factors include price, quality, customer services, and other factors. This question is important, since regulations sometimes deal with areas of affordability and set quality standards. This question will provide insight into what factors small businesses perceive to be most important.

#### **6. Telecommunications Use and Expenditures by Service Type**

This question area asks small businesses to identify for each service – what they buy, how much they buy and how much they spent in the most recent month. Later, this data can be cross-tabulated with other key variables, such as industry type and employment size. This is the most important question area, but also the most difficult for small businesses to answer. The questionnaire includes a subpart question that asks respondents whether or not they use a new technology platform called *Voice-over-Internet Services*. This service uses Internet packet technology to simulate telephone-like voice services – providing local, long distance and international calling and bypassing traditional telecommunications networks, billing, taxes and regulatory fees.

#### **7. Market Share for Local Telephone Services**

One of the more important aspects of the Act of 1996 was the opening of local telecommunications services market to competitors. This question asks small businesses whether they use a competitor (CLEC) or a long established incumbent local telephone company (ILEC). Since the FCC does not keep market share statistics for small businesses, this question area is an important addition to the collection of data on telecommunications use.<sup>44</sup>

#### **8. Revenue Size**

This question area, similar to employment size, asks respondents to classify their business in terms of revenue size. This variable will help in understanding how the survey respondents differ in terms of the total output of the firm.

---

<sup>44</sup> The FCC does collect market share data on residential competition that includes businesses with less than four lines.

**TeleNomic Research, LLC**  
*Strategic and Economic Consulting Services*

September 25, 2003

Dear Small Business Owner:

The Office of Advocacy of the United States Small Business Administration (SBA/OA) has requested a research study (Request No. SBAHQ-020Q-0025) to analyze small businesses' use of telecommunication services. TeleNomic Research is under contract by the SBA/OA to conduct this important study.

Your firm was randomly selected to complete a short voluntary questionnaire. We ask that you fill out the enclosed questionnaire and return it in the enclosed envelope. Your timely response to this survey is necessary and essential for SBA/OA to advocate on behalf of small businesses against adverse changes in telecommunication public policy, legislation, taxes, and regulation.

Our field-testing indicates that this should not take more than 5 minutes of your time. However, if you have any comments or questions regarding the accuracy of this burden estimate or any suggestions for reducing the burden, we invite you to contact Dr. Radwan Saade, Regulatory Economist of the U.S. Small Business Administration, Office of Advocacy, 409 3rd Street, SW, Suite 7800; Washington, DC, 20416 (email: [Radwan.Saade@sba.gov](mailto:Radwan.Saade@sba.gov).) Because the envelope and questionnaire have not been marked or coded, your survey responses will remain anonymous.

Please complete (or have your office manager complete) the attached survey and return it in the enclosed postage-paid envelope **by October 9, 2003**. Thank you for your time.

Best Regards,

Steve Pociask  
President

P.S. – Your timely response to this survey is **essential** in helping the SBA/OA be responsive to small business issues.

*Please note that on the top right hand corner of this page and the enclosed questionnaire there is an OMB control number and an expiration date. Neither the SBA nor any other agency of the Federal government is permitted to conduct or sponsor (and an individual is not required to respond to) a collection of information unless it displays a currently valid OMB control number and expiration date.*

**SBA-Study, P.O. Box 710624, Herndon, VA 20171**  
**Email: [SBA-Survey@TeleNomic.Com](mailto:SBA-Survey@TeleNomic.Com)**



Small Business Administration Questionnaire – Page 2

6A. Please provide a **current estimate** of your company’s **monthly use and expense** (include all usage charges, fees and taxes) for the following services. Please leave blank, any services that you do not use.

	<u>Number of units in use</u>	<u>Monthly expenditures</u>
Local telephone service lines	# _____	\$ _____
Long distance telephone service	N/A	\$ _____
Mobile (incl. PCS, Cellular, and others)	# _____	\$ _____
Pagers and beepers	# _____	\$ _____
Cable modems in service	# _____	\$ _____
High-speed satellite data links	# _____	\$ _____
DSL lines	# _____	\$ _____
Wireless broadband	# _____	\$ _____
Dial-up Internet service accounts	# _____	\$ _____
High-speed T1 data lines (incl. PRIs)	# _____	\$ _____
High-speed T3 data lines in service	# _____	\$ _____
Other (e.g., ISDN, BRI, VG services) (Specify _____)	# _____	\$ _____

6B. Does your company use Voice-over-Internet communication?  Yes  No

7. What best describes your businesses’ **local telephone** company provider:

- The long-established (**incumbent**) local telephone company
- A **competitor** of the incumbent local telephone company

8. What was your firm’s **total revenue** (sales) for last year: (**Check only one**)

- A. Less than \$200,000
- B. Between \$200,000 and \$1 Million (M)
- C. Between \$1M and \$5M
- D. Greater than \$5M

**Please mail the survey back to us by October 9, 2003. Thank you!**  
Please send questions by email to [SBA-Survey@TeleNomic.Com](mailto:SBA-Survey@TeleNomic.Com) or call (703) 471-3954.

## **Appendix B**

### **Comparisons of Industries by Type of Telecommunications Service All Reporting Small Businesses\***

**Table B1: Local Telephone Services by Industry**

**Table B2: Long Distance Services (LD) by Industry**

**Table B3: Long Distance and LD Services by Industry**

**Table B4: Wireless Telephone Services by Industry**

**Table B5: Pager and Beeper Services by Industry**

**Table B6: Cable Modem Services by Industry**

**Table B7: Satellite (High-Speed) Services by Industry**

**Table B8: DSL Services by Industry**

**Table B9: Wireless Broadband Services by Industry**

**Table B10: Dial-up Internet Services by Industry**

**Table B11: T-1 Services by Industry**

**Table B12: Other Services by Industry**

**Table B13: All Service Expenditures by Industry**

\* - These tables average results for all reporting small businesses – both subscribers and nonsubscribers.

## Appendix B

**Table B1: Average Monthly Expenditures  
Local Telephone Services**

<b><u>Industry</u></b>	<b><u>N</u></b>	<b><u>All Firms</u></b>
Farming/Agriculture	5	\$42.80
Construction	43	\$210.14
Manufacturing	9	\$163.33
Wholesale Trade	10	\$229.50
Retail Trade	50	\$148.79
Transportation and Warehousing	7	\$179.97
Information Services	14	\$181.64
Finance and Insurance	9	\$347.56
Real Estate, Renting and Leasing	15	\$157.26
Professional, Scientific and Tech.	40	\$144.25
Administrative, Waste and Remediation	9	\$242.44
Education, Entertainment, Public Admin.	13	\$190.08
Health Care and Social Assistance	18	\$258.33
Accommodation and Food Services	10	\$169.00
Repair, Laundry and Personal Services	27	\$135.89
All Industries	281	\$179.93

**Table B2: Average Monthly Expenditures  
Long Distance (LD)**

<b><u>Industry</u></b>	<b><u>N</u></b>	<b><u>All Firms</u></b>
Farming/Agriculture	5	\$76.20
Construction	44	\$69.20
Manufacturing	9	\$207.22
Wholesale Trade	11	\$259.55
Retail Trade	51	\$92.06
Transportation and Warehousing	7	\$176.14
Information Services	14	\$86.79
Finance and Insurance	9	\$1,211.67
Real Estate, Renting and Leasing	15	\$109.96
Professional, Scientific and Tech.	40	\$116.83
Administrative, Waste and Remediation	9	\$246.89
Education, Entertainment, Public Admin.	13	\$113.46
Health Care and Social Assistance	18	\$148.17
Accommodation and Food Services	10	\$77.60
Repair, Laundry and Personal Services	27	\$110.20
All Industries	284	\$150.47

## Appendix B

**Table B3: Average Monthly Expenditures  
Local and LD Combined**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$91.25
Construction	63	\$261.68
Manufacturing	12	\$452.08
Wholesale Trade	11	\$581.82
Retail Trade	74	\$215.71
Transportation and Warehousing	9	\$294.20
Information Services	15	\$258.40
Finance and Insurance	12	\$1,243.25
Real Estate, Renting and Leasing	20	\$482.67
Professional, Scientific and Tech.	48	\$247.04
Administrative, Waste and Remediation	11	\$418.09
Education, Entertainment, Public Admin.	17	\$273.76
Health Care and Social Assistance	32	\$315.97
Accommodation and Food Services	20	\$212.55
Repair, Laundry and Personal Services	43	\$234.97
All Industries	399	\$307.43

**Table B4: Average Monthly Expenditures  
Wireless Telephone**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	7	\$90.86
Construction	64	\$382.20
Manufacturing	13	\$202.56
Wholesale Trade	13	\$131.54
Retail Trade	76	\$137.87
Transportation and Warehousing	9	\$371.22
Information Services	15	\$243.33
Finance and Insurance	12	\$255.00
Real Estate, Renting and Leasing	21	\$176.82
Professional, Scientific and Tech.	48	\$100.67
Administrative, Waste and Remediation	10	\$137.00
Education, Entertainment, Public Admin.	17	\$130.00
Health Care and Social Assistance	34	\$71.41
Accommodation and Food Services	21	\$72.29
Repair, Laundry and Personal Services	43	\$128.35
All Industries	407	\$176.44

## Appendix B

**Table B5: Average Monthly Expenditures  
Pager and Beepers**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$0.00
Construction	65	\$5.68
Manufacturing	13	\$5.37
Wholesale Trade	13	\$0.38
Retail Trade	79	\$0.08
Transportation and Warehousing	10	\$1.00
Information Services	17	\$5.88
Finance and Insurance	12	\$1.42
Real Estate, Renting and Leasing	22	\$7.84
Professional, Scientific and Tech.	50	\$1.12
Administrative, Waste and Remediation	11	\$1.23
Education, Entertainment, Public Admin.	19	\$42.11
Health Care and Social Assistance	35	\$6.06
Accommodation and Food Services	22	\$0.00
Repair, Laundry and Personal Services	43	\$0.58
All Industries	423	\$4.62

**Table B6: Average Monthly Expenditures  
Cable Modem Services**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$4.38
Construction	59	\$6.63
Manufacturing	12	\$3.42
Wholesale Trade	12	\$20.50
Retail Trade	75	\$6.44
Transportation and Warehousing	10	\$8.60
Information Services	15	\$24.67
Finance and Insurance	12	\$41.17
Real Estate, Renting and Leasing	20	\$10.25
Professional, Scientific and Tech.	47	\$11.18
Administrative, Waste and Remediation	11	\$16.64
Education, Entertainment, Public Admin.	17	\$21.24
Health Care and Social Assistance	32	\$10.12
Accommodation and Food Services	20	\$17.75
Repair, Laundry and Personal Services	39	\$8.49
All Industries	393	\$11.27



## Appendix B

**Table B7: Average Monthly Expenditures  
Satellite (High-Speed)**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$5.00
Construction	66	\$1.97
Manufacturing	12	\$0.00
Wholesale Trade	13	\$0.00
Retail Trade	79	\$4.43
Transportation and Warehousing	10	\$10.00
Information Services	16	\$0.00
Finance and Insurance	13	\$0.00
Real Estate, Renting and Leasing	22	\$0.00
Professional, Scientific and Tech.	50	\$1.50
Administrative, Waste and Remediation	11	\$0.00
Education, Entertainment, Public Admin.	19	\$5.26
Health Care and Social Assistance	34	\$1.76
Accommodation and Food Services	22	\$1.36
Repair, Laundry and Personal Services	43	\$0.00
All Industries	422	\$2.10

**Table B8: Average Monthly Expenditures  
DSL Services**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	7	\$0.00
Construction	63	\$13.33
Manufacturing	11	\$40.00
Wholesale Trade	11	\$14.55
Retail Trade	73	\$7.30
Transportation and Warehousing	10	\$8.00
Information Services	15	\$13.27
Finance and Insurance	13	\$11.15
Real Estate, Renting and Leasing	21	\$3.33
Professional, Scientific and Tech.	48	\$15.31
Administrative, Waste and Remediation	11	\$6.81
Education, Entertainment, Public Admin.	17	\$11.18
Health Care and Social Assistance	33	\$11.64
Accommodation and Food Services	21	\$3.86
Repair, Laundry and Personal Services	41	\$10.00
All Industries	399	\$11.73

## Appendix B

**Table B9: Average Monthly Expenditures  
Wireless Broadband**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$0.00
Construction	65	\$0.00
Manufacturing	13	\$10.00
Wholesale Trade	12	\$0.00
Retail Trade	79	\$0.00
Transportation and Warehousing	10	\$0.00
Information Services	15	\$10.67
Finance and Insurance	13	\$0.00
Real Estate, Renting and Leasing	20	\$5.50
Professional, Scientific and Tech.	50	\$1.00
Administrative, Waste and Remediation	11	\$0.00
Education, Entertainment, Public Admin.	19	\$0.00
Health Care and Social Assistance	35	\$0.00
Accommodation and Food Services	22	\$0.91
Repair, Laundry and Personal Services	43	\$0.00
All Industries	419	\$1.12

**Table B10: Average Monthly Expenditures  
Dial-Up Internet Services**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$5.13
Construction	64	\$12.42
Manufacturing	12	\$7.25
Wholesale Trade	13	\$14.23
Retail Trade	74	\$9.21
Transportation and Warehousing	10	\$8.20
Information Services	16	\$31.81
Finance and Insurance	12	\$20.42
Real Estate, Renting and Leasing	22	\$11.06
Professional, Scientific and Tech.	49	\$11.46
Administrative, Waste and Remediation	11	\$14.55
Education, Entertainment, Public Admin.	16	\$16.88
Health Care and Social Assistance	34	\$6.03
Accommodation and Food Services	20	\$8.45
Repair, Laundry and Personal Services	42	\$10.76
All Industries	407	\$11.51

## Appendix B

**Table B11: Average Monthly Expenditures  
T-1 Services**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$0.00
Construction	65	\$0.00
Manufacturing	13	\$3.07
Wholesale Trade	13	\$23.08
Retail Trade	79	\$0.00
Transportation and Warehousing	10	\$0.00
Information Services	16	\$96.88
Finance and Insurance	12	\$219.28
Real Estate, Renting and Leasing	22	\$40.91
Professional, Scientific and Tech.	49	\$9.06
Administrative, Waste and Remediation	11	\$45.45
Education, Entertainment, Public Admin.	17	\$0.00
Health Care and Social Assistance	35	\$0.00
Accommodation and Food Services	22	\$0.00
Repair, Laundry and Personal Services	43	\$8.14
All Industries	419	\$16.03

**Table B12: Average Monthly Expenditures  
Other Services**

<u>Industry</u>	<u>N</u>	<u>All Firms</u>
Farming/Agriculture	8	\$0.00
Construction	66	\$0.00
Manufacturing	13	\$0.00
Wholesale Trade	13	\$0.00
Retail Trade	77	\$2.27
Transportation and Warehousing	10	\$0.00
Information Services	16	\$0.00
Finance and Insurance	13	\$12.31
Real Estate, Renting and Leasing	22	\$2.27
Professional, Scientific and Tech.	49	\$0.00
Administrative, Waste and Remediation	11	\$0.00
Education, Entertainment, Public Admin.	19	\$0.00
Health Care and Social Assistance	35	\$0.00
Accommodation and Food Services	22	\$0.00
Repair, Laundry and Personal Services	43	\$0.00
All Industries	421	\$0.91

## Appendix B

**Table B13: Average Monthly Expenditures  
All Services**

<b><u>Industry</u></b>	<b><u>All Firms</u></b>
Farming/Agriculture	\$196.61
Construction	\$683.91
Manufacturing	\$723.75
Wholesale Trade	\$786.09
Retail Trade	\$383.31
Transportation and Warehousing	\$701.21
Information Services	\$684.90
Finance and Insurance	\$1,803.99
Real Estate, Renting and Leasing	\$740.66
Professional, Scientific and Tech.	\$398.34
Administrative, Waste and Remediation	\$639.77
Education, Entertainment, Public Admin.	\$500.42
Health Care and Social Assistance	\$422.99
Accommodation and Food Services	\$317.17
Repair, Laundry and Personal Services	\$401.28
All Industries	\$543.17

## **Appendix C**

### **Average Spending and Quantity Users of Services Only**

**Figure C1: Farming and Related Industries**

**Figure C2: Construction**

**Figure C3: Manufacturing**

**Figure C4: Wholesale Trade**

**Figure C5: Retail Trade**

**Figure C6: Transportation and Warehousing**

**Figure C7: Information Services**

**Figure C8: Finance and Insurance**

**Figure C9: Real Estate, Renting and Leasing**

**Figure C10: Professional, Scientific and Technical**

**Figure C11: Administrative, Waste Management and Remediation**

**Figure C12: Health Care and Social Assistance**

**Figure C13: Accommodation and Food Services**

**Figure C14: Repair, Maintenance, Laundry and Personal Services**

**Figure C15: Education, Arts, Entertainment and Public Administration**

**Figure C16: Firm Size by Major Industry**

Note: Expenditures reported in these charts are not additive, since they may reflect a different sample of users from service to service.

## Appendix C

**Figure C1: Average Monthly Small Business Telecommunications Use  
Firms in Farming and Related Industries**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	8	1.63
	Expenditures	5	\$ 42.80
<b>Long Distance (LD)</b>	Number of Lines	8	1.63
	Expenditures	5	\$ 76.20
<b>Local and LD Combined</b>	Number of Lines	8	1.63
	Expenditures	8	\$ 91.25
<b>Wireless Telephone</b>	Quantity Reported	6	2.50
	Expenditures	6	\$ 106.00
<b>Pager and Beepers</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Cable Modem Services</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 35.00
<b>Satellite (High-Speed)</b>	Quantity Reported	1	2.00
	Expenditures	1	\$ 40.00
<b>DSL Services</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	2	1.00
	Expenditures	2	\$ 20.50
<b>T-1 Services</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C2: Average Monthly Small Business Telecommunications Use  
Firms in the Construction Industry**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	62	2.77
	Expenditures	40	\$ 225.90
<b>Long Distance (LD)</b>	Number of Lines	62	2.77
	Expenditures	41	\$ 74.27
<b>Local and LD Combined</b>	Number of Lines	62	2.77
	Expenditures	60	\$ 274.76
<b>Wireless Telephone</b>	Quantity Reported	59	5.02
	Expenditures	60	\$ 407.68
<b>Pager and Beepers</b>	Quantity Reported	9	4.33
	Expenditures	9	\$ 41.01
<b>Cable Modem Services</b>	Quantity Reported	14	1.21
	Expenditures	9	\$ 43.44
<b>Satellite (High-Speed)</b>	Quantity Reported	2	1.00
	Expenditures	2	\$ 65.00
<b>DSL Services</b>	Quantity Reported	13	1.46
	Expenditures	12	\$ 70.00
<b>Wireless Broadband</b>	Quantity Reported	1	1.00
	Expenditures	0	\$ 0
<b>Dial-Up Internet Services</b>	Quantity Reported	28	1.14
	Expenditures	27	\$ 29.44
<b>T-1 Services</b>	Quantity Reported	1	4.00
	Expenditures	0	\$ 0.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C3: Average Monthly Small Business Telecommunications Use  
Firms in the Manufacturing Industry**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	12	7.17
	Expenditures	8	\$ 183.75
<b>Long Distance (LD)</b>	Number of Lines	12	7.17
	Expenditures	8	\$ 233.13
<b>Local and LD Combined</b>	Number of Lines	12	7.17
	Expenditures	11	\$ 493.18
<b>Wireless Telephone</b>	Quantity Reported	10	3.00
	Expenditures	11	\$ 239.39
<b>Pager and Beepers</b>	Quantity Reported	2	2.00
	Expenditures	2	\$ 34.91
<b>Cable Modem Services</b>	Quantity Reported	2	1.00
	Expenditures	1	\$ 41.00
<b>Satellite (High-Speed)</b>	Quantity Reported	1	1.00
	Expenditures	0	\$ 0.00
<b>DSL Services</b>	Quantity Reported	6	1.00
	Expenditures	4	\$ 110.00
<b>Wireless Broadband</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 130.00
<b>Dial-Up Internet Services</b>	Quantity Reported	5	1.20
	Expenditures	4	\$ 21.74
<b>T-1 Services</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 39.95
<b>Other Services</b>	Expenditures	0	\$ 0.00



## Appendix C

**Figure C4: Average Monthly Small Business Telecommunications Use  
Firms in the Wholesale Trade Industry**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	12	4.83
	Expenditures	10	\$ 229.50
<b>Long Distance (LD)</b>	Number of Lines	12	4.83
	Expenditures	11	\$ 259.55
<b>Local and LD Combined</b>	Number of Lines	12	4.83
	Expenditures	11	\$ 581.82
<b>Wireless Telephone</b>	Quantity Reported	8	2.75
	Expenditures	9	\$ 190.00
<b>Pager and Beepers</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 5.00
<b>Cable Modem Services</b>	Quantity Reported	6	2.17
	Expenditures	5	\$ 49.20
<b>Satellite (High-Speed)</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>DSL Services</b>	Quantity Reported	5	1.00
	Expenditures	3	\$ 53.33
<b>Wireless Broadband</b>	Quantity Reported	1	1.00
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	3	1.33
	Expenditures	4	\$ 46.24
<b>T-1 Services</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 300.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C5: Average Monthly Small Business Telecommunications Use  
Firms in the Retail Trade Industry**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	74	3.27
	Expenditures	48	\$ 154.99
<b>Long Distance (LD)</b>	Number of Lines	74	3.27
	Expenditures	49	\$ 95.82
<b>Local and LD Combined</b>	Number of Lines	74	3.27
	Expenditures	72	\$ 221.70
<b>Wireless Telephone</b>	Quantity Reported	57	2.19
	Expenditures	57	\$ 183.82
<b>Pager and Beepers</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 6.00
<b>Cable Modem Services</b>	Quantity Reported	14	1.36
	Expenditures	11	\$ 43.91
<b>Satellite (High-Speed)</b>	Quantity Reported	5	1.00
	Expenditures	5	\$ 69.99
<b>DSL Services</b>	Quantity Reported	13	1.23
	Expenditures	8	\$ 66.62
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	31	1.19
	Expenditures	28	\$ 24.35
<b>T-1 Services</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Other Services</b>	Expenditures	2	\$ 87.50

## Appendix C

**Figure C6: Average Monthly Small Business Telecommunications Use  
Firms in the Transportation and Warehousing Industry**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	9	3.33
	Expenditures	7	\$ 179.97
<b>Long Distance (LD)</b>	Number of Lines	9	3.33
	Expenditures	7	\$ 176.14
<b>Local and LD Combined</b>	Number of Lines	9	3.33
	Expenditures	9	\$ 294.20
<b>Wireless Telephone</b>	Quantity Reported	9	6.56
	Expenditures	9	\$ 371.22
<b>Pager and Beepers</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 10.00
<b>Cable Modem Services</b>	Quantity Reported	3	1.00
	Expenditures	3	\$ 28.66
<b>Satellite (High-Speed)</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 100.00
<b>DSL Services</b>	Quantity Reported	2	1.00
	Expenditures	2	\$ 40.00
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	3	1.33
	Expenditures	3	\$ 27.32
<b>T-1 Services</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C7: Average Monthly Small Business Telecommunications Use  
Firms in the Information Industry**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	16	2.81
	Expenditures	13	\$ 195.62
<b>Long Distance (LD)</b>	Number of Lines	16	2.81
	Expenditures	13	\$ 93.46
<b>Local and LD Combined</b>	Number of Lines	16	2.81
	Expenditures	14	\$ 276.86
<b>Wireless Telephone</b>	Quantity Reported	13	3.00
	Expenditures	12	\$ 304.17
<b>Pager and Beepers</b>	Quantity Reported	0	0
	Expenditures	1	\$ 100.00
<b>Cable Modem Services</b>	Quantity Reported	8	1.25
	Expenditures	6	\$ 61.67
<b>Satellite (High-Speed)</b>	Quantity Reported	1	1.00
	Expenditures	0	\$ 0.00
<b>DSL Services</b>	Quantity Reported	6	1.00
	Expenditures	4	\$ 49.75
<b>Wireless Broadband</b>	Quantity Reported	3	1.00
	Expenditures	2	\$ 80.00
<b>Dial-Up Internet Services</b>	Quantity Reported	7	1.43
	Expenditures	6	\$ 84.83
<b>T-1 Services</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 1,550.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C8: Average Monthly Small Business Telecommunications Use  
Firms in the Finance and Insurance Industry**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	11	6.36
	Expenditures	9	\$ 347.56
<b>Long Distance (LD)</b>	Number of Lines	11	6.36
	Expenditures	9	\$ 1,211.67
<b>Local and LD Combined</b>	Number of Lines	11	6.36
	Expenditures	12	\$ 1,243.25
<b>Wireless Telephone</b>	Quantity Reported	8	4.75
	Expenditures	8	\$ 382.50
<b>Pager and Beepers</b>	Quantity Reported	2	1.50
	Expenditures	1	\$ 17.00
<b>Cable Modem Services</b>	Quantity Reported	6	3.00
	Expenditures	6	\$ 82.33
<b>Satellite (High-Speed)</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>DSL Services</b>	Quantity Reported	3	1.00
	Expenditures	3	\$ 48.33
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	3	138.67
	Expenditures	2	\$ 122.50
<b>T-1 Services</b>	Quantity Reported	3	2.67
	Expenditures	2	\$ 1,315.67
<b>Other Services</b>	Expenditures	1	\$ 80.00

## Appendix C

**Figure C9: Average Monthly Small Business Telecommunications Use  
Firms in the Real Estate, Renting and Leasing Industries**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	22	5.14
	Expenditures	15	\$ 157.26
<b>Long Distance (LD)</b>	Number of Lines	22	5.14
	Expenditures	15	\$ 109.96
<b>Local and LD Combined</b>	Number of Lines	22	5.14
	Expenditures	20	\$ 482.67
<b>Wireless Telephone</b>	Quantity Reported	18	3.39
	Expenditures	18	\$ 206.29
<b>Pager and Beepers</b>	Quantity Reported	4	2.00
	Expenditures	4	\$ 43.13
<b>Cable Modem Services</b>	Quantity Reported	6	1.17
	Expenditures	4	\$ 51.25
<b>Satellite (High-Speed)</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>DSL Services</b>	Quantity Reported	3	1.00
	Expenditures	2	\$ 35.00
<b>Wireless Broadband</b>	Quantity Reported	3	3.00
	Expenditures	2	\$ 55.00
<b>Dial-Up Internet Services</b>	Quantity Reported	6	1.67
	Expenditures	7	\$ 34.77
<b>T-1 Services</b>	Quantity Reported	2	1.50
	Expenditures	2	\$ 450.00
<b>Other Services</b>	Expenditures	1	\$ 50.00

## Appendix C

**Figure C10: Average Monthly Small Business Telecommunications Use  
Professional, Scientific and Technical Industries**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	47	3.11
	Expenditures	39	\$ 147.95
<b>Long Distance (LD)</b>	Number of Lines	47	3.11
	Expenditures	39	\$ 119.82
<b>Local and LD Combined</b>	Number of Lines	47	3.11
	Expenditures	47	\$ 252.30
<b>Wireless Telephone</b>	Quantity Reported	35	2.17
	Expenditures	37	\$ 130.59
<b>Pager and Beepers</b>	Quantity Reported	2	1.00
	Expenditures	2	\$ 28.00
<b>Cable Modem Services</b>	Quantity Reported	14	1.00
	Expenditures	11	\$ 47.77
<b>Satellite (High-Speed)</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 75.00
<b>DSL Services</b>	Quantity Reported	13	1.15
	Expenditures	12	\$ 61.25
<b>Wireless Broadband</b>	Quantity Reported	2	1.00
	Expenditures	2	\$ 25.00
<b>Dial-Up Internet Services</b>	Quantity Reported	21	1.38
	Expenditures	21	\$ 26.73
<b>T-1 Services</b>	Quantity Reported	4	1.00
	Expenditures	3	\$ 148.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C11: Average Monthly Small Business Telecommunications Use  
Administrative, Waste Mgt. And Remediation Industries**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	9	3.00
	Expenditures	9	\$ 242.44
<b>Long Distance (LD)</b>	Number of Lines	9	3.00
	Expenditures	9	\$ 246.89
<b>Local and LD Combined</b>	Number of Lines	9	3.00
	Expenditures	11	\$ 418.09
<b>Wireless Telephone</b>	Quantity Reported	6	2.67
	Expenditures	7	\$ 195.71
<b>Pager and Beepers</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 13.50
<b>Cable Modem Services</b>	Quantity Reported	5	1.60
	Expenditures	5	\$ 36.60
<b>Satellite (High-Speed)</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>DSL Services</b>	Quantity Reported	0	0
	Expenditures	1	\$ 74.95
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	-	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	4	1.00
	Expenditures	4	\$ 40.00
<b>T-1 Services</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 500.00
<b>Other Services</b>	Expenditures	0	\$ 0.00



## Appendix C

**Figure C12: Average Monthly Small Business Telecommunications Use  
Health Care and Social Assistance Industries**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	35	3.26
	Expenditures	18	\$ 258.33
<b>Long Distance (LD)</b>	Number of Lines	35	3.26
	Expenditures	18	\$ 148.17
<b>Local and LD Combined</b>	Number of Lines	35	3.26
	Expenditures	32	\$ 315.97
<b>Wireless Telephone</b>	Quantity Reported	16	2.06
	Expenditures	18	\$ 134.89
<b>Pager and Beepers</b>	Quantity Reported	2	1.00
	Expenditures	3	\$ 70.67
<b>Cable Modem Services</b>	Quantity Reported	8	1.00
	Expenditures	6	\$ 53.99
<b>Satellite (High-Speed)</b>	Quantity Reported	2	1.00
	Expenditures	1	\$ 60.00
<b>DSL Services</b>	Quantity Reported	5	1.20
	Expenditures	5	\$ 76.80
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	10	1.20
	Expenditures	9	\$ 22.77
<b>T-1 Services</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C13: Average Monthly Small Business Telecommunications Use  
Accommodation and Food Services Industries**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	21	3.33
	Expenditures	10	\$ 169.00
<b>Long Distance (LD)</b>	Number of Lines	21	3.33
	Expenditures	10	\$ 77.60
<b>Local and LD Combined</b>	Number of Lines	21	3.33
	Expenditures	20	\$ 212.55
<b>Wireless Telephone</b>	Quantity Reported	13	2.15
	Expenditures	12	\$ 126.50
<b>Pager and Beepers</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Cable Modem Services</b>	Quantity Reported	7	1.29
	Expenditures	6	\$ 59.17
<b>Satellite (High-Speed)</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 30.00
<b>DSL Services</b>	Quantity Reported	4	1.00
	Expenditures	3	\$ 27.00
<b>Wireless Broadband</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 20.00
<b>Dial-Up Internet Services</b>	Quantity Reported	7	1.29
	Expenditures	6	\$ 28.17
<b>T-1 Services</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C14: Average Monthly Small Business Telecommunications Use  
Repair, Maint., Laundry & Personal Services**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	41	2.66
	Expenditures	27	\$ 135.89
<b>Long Distance (LD)</b>	Number of Lines	41	2.66
	Expenditures	27	\$ 110.20
<b>Local and LD Combined</b>	Number of Lines	41	2.66
	Expenditures	43	\$ 234.97
<b>Wireless Telephone</b>	Quantity Reported	20	3.05
	Expenditures	23	\$ 239.96
<b>Pager and Beepers</b>	Quantity Reported	0	0
	Expenditures	1	\$ 25.00
<b>Cable Modem Services</b>	Quantity Reported	8	1.63
	Expenditures	4	\$ 82.75
<b>Satellite (High-Speed)</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>DSL Services</b>	Quantity Reported	8	1.00
	Expenditures	6	\$ 68.33
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	20	1.10
	Expenditures	19	\$ 23.78
<b>T-1 Services</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 350.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C15: Average Monthly Small Business Telecommunications Use  
Education, Arts, Entertainment and Public Administration**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	17	5.00
	Expenditures	12	\$ 205.92
<b>Long Distance (LD)</b>	Number of Lines	17	5.00
	Expenditures	12	\$ 122.92
<b>Local and LD Combined</b>	Number of Lines	17	5.00
	Expenditures	16	\$ 290.87
<b>Wireless Telephone</b>	Quantity Reported	11	4.27
	Expenditures	11	\$ 200.91
<b>Pager and Beepers</b>	Quantity Reported	1	45.00
	Expenditures	1	\$ 800.00
<b>Cable Modem Services</b>	Quantity Reported	7	1.29
	Expenditures	5	\$ 72.20
<b>Satellite (High-Speed)</b>	Quantity Reported	1	1.00
	Expenditures	1	\$ 100.00
<b>DSL Services</b>	Quantity Reported	4	1.25
	Expenditures	2	\$ 95.00
<b>Wireless Broadband</b>	Quantity Reported	0	0
	Expenditures	0	\$ 0.00
<b>Dial-Up Internet Services</b>	Quantity Reported	8	1.63
	Expenditures	5	\$ 54.00
<b>T-1 Services</b>	Quantity Reported	2	1.00
	Expenditures	0	\$ 0.00
<b>Other Services</b>	Expenditures	0	\$ 0.00

## Appendix C

**Figure C16: Average Monthly Small Business Telecommunications Use  
Firms in All Industries**

		<u># Served</u>	<u>Only Firms Using Services</u>
<b>Local Telephone Services</b>	Number of Lines	399	3.51
	Expenditures	272	\$ 185.88
<b>Long Distance (LD)</b>	Number of Lines	399	3.51
	Expenditures	275	\$ 155.39
<b>Local and LD Combined</b>	Number of Lines	399	3.51
	Expenditures	390	\$ 314.52
<b>Wireless Telephone</b>	Quantity Reported	290	3.27
	Expenditures	300	\$ 239.37
<b>Pager and Beepers</b>	Quantity Reported	27	4.04
	Expenditures	30	\$ 65.20
<b>Cable Modem Services</b>	Quantity Reported	109	1.39
	Expenditures	83	\$ 53.38
<b>Satellite (High-Speed)</b>	Quantity Reported	16	1.06
	Expenditures	13	\$ 68.07
<b>DSL Services</b>	Quantity Reported	87	1.15
	Expenditures	69	\$ 67.84
<b>Wireless Broadband</b>	Quantity Reported	12	1.50
	Expenditures	8	\$ 58.75
<b>Dial-Up Internet Services</b>	Quantity Reported	158	3.86
	Expenditures	147	\$ 31.88
<b>T-1 Services</b>	Quantity Reported	17	1.53
	Expenditures	12	\$ 559.61
<b>Other Services</b>	Expenditures	4	\$ 77.00

## **Appendix D**

### **Comparisons of Industries by Type of Telecommunications Service For Only Small Businesses Using the Services Listed\***

**Table D1: Local Telephone Services by Industry**

**Table D2: Long Distance Services (LD) by Industry**

**Table D3: Long Distance and LD Services by Industry**

**Table D4: Wireless Telephone Services by Industry**

**Table D5: Pager and Beeper Services by Industry**

**Table D6: Cable Modem Services by Industry**

**Table D7: Satellite (High-Speed) Services by Industry**

**Table D8: DSL Services by Industry**

**Table D9: Wireless Broadband Services by Industry**

**Table D10: Dial-up Internet Services by Industry**

**Table D11: T-1 Services by Industry**

**Table D12: Other Services by Industry**

**Table D13: All Service Expenditures by Industry**

\* - These tables average results for only those all small businesses subscribing to the particularly telecommunications service.

## Appendix D

**Table D1: Average Monthly Expenditures  
Local Telephone Services**

<b><u>Industry</u></b>	<b><u>N</u></b>	<b><u>Users Only</u></b>
Farming/Agriculture	5	\$42.80
Construction	40	\$225.90
Manufacturing	8	\$183.75
Wholesale Trade	10	\$229.50
Retail Trade	48	\$154.99
Transportation and Warehousing	7	\$179.97
Information Services	13	\$195.62
Finance and Insurance	9	\$347.56
Real Estate, Renting and Leasing	15	\$157.26
Professional, Scientific and Tech.	39	\$147.95
Administrative, Waste and Remediation	9	\$242.44
Education, Entertainment, Public Admin.	12	\$205.92
Health Care and Social Assistance	18	\$258.33
Accommodation and Food Services	10	\$169.00
Repair, Laundry and Personal Services	27	\$135.89
All Industries	272	\$185.88

**Table D2: Average Monthly Expenditures  
Long Distance (LD)**

<b><u>Industry</u></b>	<b><u>N</u></b>	<b><u>Users Only</u></b>
Farming/Agriculture	5	\$76.20
Construction	41	\$74.27
Manufacturing	8	\$233.13
Wholesale Trade	11	\$259.55
Retail Trade	49	\$95.82
Transportation and Warehousing	7	\$176.14
Information Services	13	\$93.46
Finance and Insurance	9	\$1,211.67
Real Estate, Renting and Leasing	15	\$109.96
Professional, Scientific and Tech.	39	\$119.82
Administrative, Waste and Remediation	9	\$246.89
Education, Entertainment, Public Admin.	12	\$122.92
Health Care and Social Assistance	18	\$148.17
Accommodation and Food Services	10	\$77.60
Repair, Laundry and Personal Services	27	\$110.20
All Industries	275	\$155.39

## Appendix D

**Table D3: Average Monthly Expenditures  
Local and LD Combined**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	8	\$91.25
Construction	60	\$274.76
Manufacturing	11	\$493.18
Wholesale Trade	11	\$581.82
Retail Trade	72	\$221.70
Transportation and Warehousing	9	\$294.20
Information Services	14	\$276.86
Finance and Insurance	12	\$1,243.25
Real Estate, Renting and Leasing	20	\$482.67
Professional, Scientific and Tech.	47	\$252.30
Administrative, Waste and Remediation	11	\$418.09
Education, Entertainment, Public Admin.	16	\$290.87
Health Care and Social Assistance	32	\$315.97
Accommodation and Food Services	20	\$212.55
Repair, Laundry and Personal Services	43	\$234.97
All Industries	390	\$314.52

**Table D4: Average Monthly Expenditures  
Wireless Telephone**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	6	\$106.00
Construction	60	\$407.68
Manufacturing	11	\$239.39
Wholesale Trade	9	\$190.00
Retail Trade	57	\$183.82
Transportation and Warehousing	9	\$371.22
Information Services	12	\$304.17
Finance and Insurance	8	\$382.50
Real Estate, Renting and Leasing	18	\$206.29
Professional, Scientific and Tech.	37	\$130.59
Administrative, Waste and Remediation	7	\$195.71
Education, Entertainment, Public Admin.	11	\$200.91
Health Care and Social Assistance	18	\$134.89
Accommodation and Food Services	12	\$126.50
Repair, Laundry and Personal Services	23	\$239.96
All Industries	300	\$239.37



## Appendix D

**Table D5: Average Monthly Expenditures  
Pager and Beepers**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	0	\$0.00
Construction	9	\$41.01
Manufacturing	2	\$34.91
Wholesale Trade	1	\$5.00
Retail Trade	1	\$6.00
Transportation and Warehousing	1	\$10.00
Information Services	1	\$100.00
Finance and Insurance	1	\$17.00
Real Estate, Renting and Leasing	4	\$43.13
Professional, Scientific and Tech.	2	\$28.00
Administrative, Waste and Remediation	1	\$13.50
Education, Entertainment, Public Admin.	1	\$800.00
Health Care and Social Assistance	3	\$70.67
Accommodation and Food Services	0	\$0.00
Repair, Laundry and Personal Services	1	\$25.00
All Industries	30	\$65.20

**Table D6: Average Monthly Expenditures  
Cable Modem Services**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	1	\$35.00
Construction	9	\$43.44
Manufacturing	1	\$41.00
Wholesale Trade	5	\$49.20
Retail Trade	11	\$43.91
Transportation and Warehousing	3	\$28.66
Information Services	6	\$61.67
Finance and Insurance	6	\$82.33
Real Estate, Renting and Leasing	4	\$51.25
Professional, Scientific and Tech.	11	\$47.77
Administrative, Waste and Remediation	5	\$36.60
Education, Entertainment, Public Admin.	5	\$72.20
Health Care and Social Assistance	6	\$53.99
Accommodation and Food Services	6	\$59.17
Repair, Laundry and Personal Services	4	\$82.75
All Industries	83	\$53.38

## Appendix D

**Table D7: Average Monthly Expenditures  
Satellite (High-Speed)**

<b><u>Industry</u></b>	<b><u>N</u></b>	<b><u>Users Only</u></b>
Farming/Agriculture	1	\$40.00
Construction	2	\$65.00
Manufacturing	0	\$0.00
Wholesale Trade	0	\$0.00
Retail Trade	5	\$69.99
Transportation and Warehousing	1	\$100.00
Information Services	0	\$0.00
Finance and Insurance	0	\$0.00
Real Estate, Renting and Leasing	0	\$0.00
Professional, Scientific and Tech.	1	\$75.00
Administrative, Waste and Remediation	0	\$0.00
Education, Entertainment, Public Admin.	1	\$100.00
Health Care and Social Assistance	1	\$60.00
Accommodation and Food Services	1	\$30.00
Repair, Laundry and Personal Services	0	\$0.00
All Industries	13	\$68.07

**Table D8: Average Monthly Expenditures  
DSL Services**

<b><u>Industry</u></b>	<b><u>N</u></b>	<b><u>Users Only</u></b>
Farming/Agriculture	0	\$0.00
Construction	12	\$70.00
Manufacturing	4	\$110.00
Wholesale Trade	3	\$53.33
Retail Trade	8	\$66.62
Transportation and Warehousing	2	\$40.00
Information Services	4	\$49.75
Finance and Insurance	3	\$48.33
Real Estate, Renting and Leasing	2	\$35.00
Professional, Scientific and Tech.	12	\$61.25
Administrative, Waste and Remediation	1	\$74.95
Education, Entertainment, Public Admin.	2	\$95.00
Health Care and Social Assistance	5	\$76.80
Accommodation and Food Services	3	\$27.00
Repair, Laundry and Personal Services	6	\$68.33
All Industries	69	\$67.84

## Appendix D

**Table D9: Average Monthly Expenditures  
Wireless Broadband**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	0	\$0.00
Construction	0	\$0.00
Manufacturing	1	\$130.00
Wholesale Trade	0	\$0.00
Retail Trade	0	\$0.00
Transportation and Warehousing	0	\$0.00
Information Services	2	\$80.00
Finance and Insurance	0	\$0.00
Real Estate, Renting and Leasing	2	\$55.00
Professional, Scientific and Tech.	2	\$25.00
Administrative, Waste and Remediation	0	\$0.00
Education, Entertainment, Public Admin.	0	\$0.00
Health Care and Social Assistance	0	\$0.00
Accommodation and Food Services	1	\$20.00
Repair, Laundry and Personal Services	0	\$0.00
All Industries	8	\$58.75

**Table D10: Average Monthly Expenditures  
Dial-Up Internet Services**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	2	\$20.50
Construction	27	\$29.44
Manufacturing	4	\$21.74
Wholesale Trade	4	\$46.24
Retail Trade	28	\$24.35
Transportation and Warehousing	3	\$27.32
Information Services	6	\$84.83
Finance and Insurance	2	\$122.50
Real Estate, Renting and Leasing	7	\$34.77
Professional, Scientific and Tech.	21	\$26.73
Administrative, Waste and Remediation	4	\$40.00
Education, Entertainment, Public Admin.	5	\$54.00
Health Care and Social Assistance	9	\$22.77
Accommodation and Food Services	6	\$28.17
Repair, Laundry and Personal Services	19	\$23.78
All Industries	147	\$31.88

## Appendix D

**Table D11: Average Monthly Expenditures  
T-1 Services**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	0	\$0.00
Construction	0	\$0.00
Manufacturing	1	\$39.95
Wholesale Trade	1	\$300.00
Retail Trade	0	\$0.00
Transportation and Warehousing	0	\$0.00
Information Services	1	\$1,550.00
Finance and Insurance	2	\$1,315.67
Real Estate, Renting and Leasing	2	\$450.00
Professional, Scientific and Tech.	3	\$148.00
Administrative, Waste and Remediation	1	\$500.00
Education, Entertainment, Public Admin.	0	\$0.00
Health Care and Social Assistance	0	\$0.00
Accommodation and Food Services	0	\$0.00
Repair, Laundry and Personal Services	1	\$350.00
All Industries	12	\$559.61

**Table D12: Average Monthly Expenditures  
Other Services**

<u>Industry</u>	<u>N</u>	<u>Users Only</u>
Farming/Agriculture	0	\$0.00
Construction	0	\$0.00
Manufacturing	0	\$0.00
Wholesale Trade	0	\$0.00
Retail Trade	2	\$87.50
Transportation and Warehousing	0	\$0.00
Information Services	0	\$0.00
Finance and Insurance	1	\$80.00
Real Estate, Renting and Leasing	1	\$50.00
Professional, Scientific and Tech.	0	\$0.00
Administrative, Waste and Remediation	0	\$0.00
Education, Entertainment, Public Admin.	0	\$0.00
Health Care and Social Assistance	0	\$0.00
Accommodation and Food Services	0	\$0.00
Repair, Laundry and Personal Services	0	\$0.00
All Industries	4	\$77.00

## Appendix E

### Other Supplemental Survey Information

Question #5 asked respondents to rank the importance of the following factors when they choose a telecommunications service provider:

- Price
- Quality and reliability
- Customer service
- Name brand
- Choice of services and features
- Billing accuracy and options
- Provider's financial stability
- Installation and service start date
- Recommended by others

However, respondents were permitted the option of adding other factors, though few did. The following are those additional factors noted by respondents:

- "Company phone answered by human being"
- "Human contact"
- "Availability"
- "Sales rep., someone who knows us"
- "Honesty"
- "Social responsibility"
- "Not have term contract (pay monthly and be able to cancel without penalty)"
- "Service level agreement"
- "Understandable bills"
- "Easy to understand invoices"
- "Moderate and predictable rate"
- "Consistency"
- "No telemarketing"

## **About the Author**

For over twenty years, Mr. Pociask has worked in and consulted for telecommunications and high-tech industries. As president of TeleNomic Research, a consulting firm specializing in public policy analysis for information technology industries, he is responsible for a wide variety of applied economic studies. A number of his studies are filed at both federal and state regulatory commissions, and recently have included topics such as rate reform, deregulation and productivity incentive plans. Mr. Pociask has appeared before the FCC in its open forums and at its staff meetings. He has spoken to numerous state and local legislators on broadband issues, and testified before the Congressional Subcommittee for Telecommunications, Trade and Consumer Protection on Internet and broadband legislation. He has written about deregulation, long-distance industry cost structure, local exchange competition, the economics of multimedia data networking and cable competition. His study, "MCI WorldCom's Sprint Toward Monopoly: An Analysis of the Proposed Telecommunications Merger," co-authored with Dr. Jack Rutner and sponsored by the Economic Policy Institute, accurately predicted the Department of Justice's decision to block the merger. He has appeared numerous times in the media, including Bloomberg News, CNBC, Telecommunications Reports, Telephony, Congressional Quarterly, America's Network, NetworkMagazine and CNET Radio.

Mr. Pociask previously served as chief economist and executive vice president for Joel Popkin and Co., an economic consulting firm in Washington, DC. Before this assignment, he was chief economist for a major telecommunications provider. He has completed his Ph.D. coursework in economics and has an M.A. in economics from George Mason University.

Mr. Pociask can be reached at (703) 471-3954 or [Steve@TeleNomic.Com](mailto:Steve@TeleNomic.Com).