

Wireless LAN Adoption: A Quantitative Analysis



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1.0 Management Summary

People in the technology business are a cynical lot. When we see a technology has been around for more than a few years, and it hasn't gone mainstream, we tend to be very dismissive. We point to examples of technologies that never lived up to their original hockey stick forecasts—products like Network Computers (NCs) and Switched Multimegabit Data Service (SMDS) come to mind.

Wireless LANs (WLANs) are sometimes seen in this beleaguered class of products. After all, WLAN products have been available for years yet actual use is often limited to very niche applications. Up until recently, that is.

It is unusual for a dark horse in the technology race to come from behind, but this is exactly what's happening with wireless LANs. Key factors related to supply and demand are converging. The result: a product category that isn't new, but is newly energized.

1.1 Supply and Demand Converge

Four key developments have taken place that are contributing to WLAN market development:

1. Standards are established. The 802.11 standards have been stable since 1997 and are widely supported by several manufacturers.
2. Technology has advanced. Wireless LAN developers have made significant strides in addressing issues of security, reliability, speed and distance.
3. Key vendors have added credibility. With companies like 3Com, Alcatel, Breezecom, Cisco, Enterasys, and Wavelink all shipping products, the category is far more credible.
4. Competition has resulted in reduced prices. Wireless LAN access points and NICs can be purchased today for \$600 and \$200 respectively.

On the demand side, four key factors are contributing to growing WLAN opportunity:

1. Laptop-equipped employees need network access. In fact, as Section 3.1.4 shows, the need to support laptop-equipped workers is a key driver for WLAN adoption.
2. PDA-equipped employees increasingly need network access. Increasingly widespread use of PDAs is creating a whole new category of WLAN demand, as Section 3.1.4 shows.

3. LAN-related moves/add/changes are costly and disruptive. Much of this difficulty relates to the cabling itself. Cabling infrastructure requires ongoing expansion and sometimes even replacement. In the last six years, Sage has conducted four surveys about premises cabling.¹ Each year Sage conducted the study, over half of organizations report that they are making cabling changes—whether to support new workgroups or to upgrade existing cable to support greater performance demands. WLANs are perceived as a way to avoid these challenges.
4. WLANs are increasingly perceived as a viable substitute to wired LANs. Awareness of, and favorability to, the category is rising. In fact, over 40% believe their organizations will use WLANs as commonly as they do wired by the year 2003 (see Section 3.1.2).

This confluence of supply and demand-side developments is helping to overcome the traditional sales objections to WLAN technology. In fact, the results of this and other studies conducted by Sage show that wireless LANs are soundly making the transition from a niche technology relegated to early adopters to a mainstream technology with broad appeal. Perhaps the time has come for wireless LANs to make a splash—later than the forecasters might have predicted, but timely for those organizations needing to support increasingly common mobile technologies.

¹ The most recent report in this series is titled, “Network Cabling 2001: A Quantitative Analysis,” published in June 2001.

2.0 Methodology

This report is based on a quantitative study of U.S. organizations. To ensure valid data, the survey was pre-tested before being finalized, and results were aggregated to ensure privacy and unbiased responses.

2.1 Survey Sample

The survey population is composed of 129 organizations from various industries, all within the United States. The sample primarily represents organizations with over 100 employees; in fact, over one-quarter are from those with 10,000 or more.

Participants were screened for relevant areas of responsibility before qualifying to take the survey.

Sample size requirements were calculated based on the variability within the target population (the standard deviation). The sample size requirement for this study is based on a standard deviation of **1.023**, and the following formula was used to calculate the sample needed for a 95% confidence interval:

$$n = \frac{z^2}{H^2} (est.S)^2$$

Where,

- z is two standard deviations to get a 95% confidence interval
- H is the desired level of precision, assuming a five-point scale and desired precision of +/- .2
- σ is the standard deviation

The final sample size of **129** exceeds the requirement of **105** for a 95% confidence interval. This means that for any of the questions analyzed, the mean will be representative of 95% of the target population within +/- .2 on a 5-point scale. So, if the mean to a question is 3.5, the population mean is 3.3 to 3.7 with 95% confidence.

Data was analyzed with SPSS, a statistical package that has a wide variety of tests. These tests produce results that are meaningful and reliable.

3.0 Wireless LANs

Strictly speaking, wireless LAN products have been available for years. However, actual use has only expanded from beyond very niche applications in just the past two years. In fact, as the results in this section show, WLAN adoption is no longer an anomaly, but a common technology choice.

3.1 Current Use Of Wireless LANs

Wireless networking has made significant inroads onto the premises. Nearly one-third of organizations have at least some wireless in their campus backbones or horizontal networks (Figure 1). There is some overlap; of organizations with *any* type of wireless network (campus *or* horizontal), 38% use it for *both* the horizontal and campus.²

These strong results are consistent with other studies conducted by Sage Research.³ The conclusion is obvious: wireless LANs are no longer limited to niche applications and early adopters.

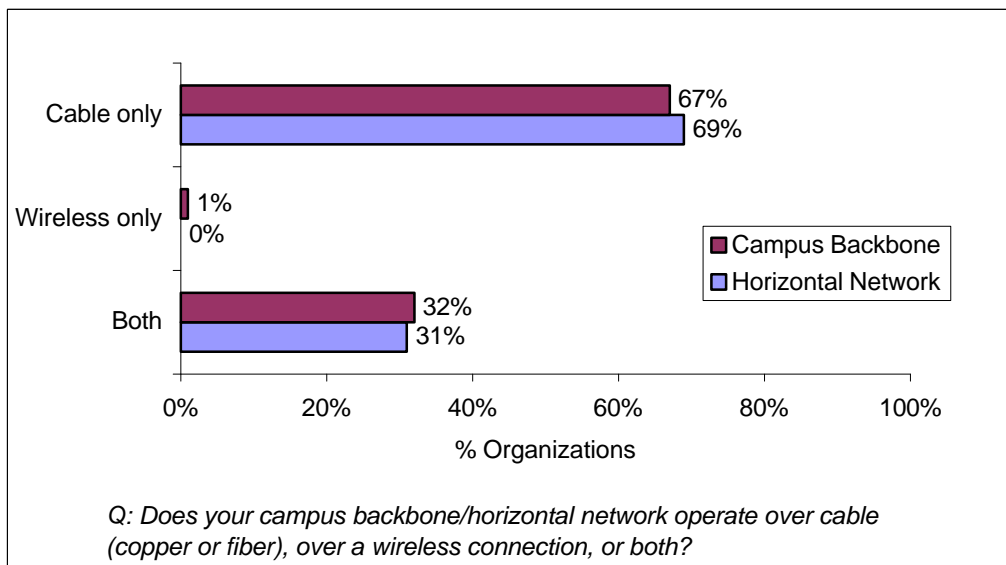


Figure 1 • Wireless LANs are Common

² Of course, the wireless technology used in a campus implementation is not generally 802.11 based. Still, the widespread use of wireless technology in both the campus and the horizontal parts of customer networks reflects overall favorability towards wireless networking technology.

³ In research conducted last year (August 2000), Sage learned that 19% of organizations with under 500 employees have deployed wireless LANs.

3.2 WLANs vs. Wired LANs By 2003

A widely held assumption about the wireless LAN market is that security and reliability concerns have been a demand deterrent. To some extent, Sage has found that such views are common.⁴ Despite these concerns, 44% agree that, “by the year 2003, [they] will use wireless LANs as commonly as [they] use wired LANs” (see Figure 2). That nearly half agree with such a bold statement about the future of WLANs indicates a confidence that wireless LANs will be able to meet their needs, particularly with regard to supporting PDAs, laptops and handheld computers (as Figure 4 will show).

Perceptions of wireless to wired LAN parity does not vary by organization size. Information technology professionals from large organizations are just as likely to agree with this statement, as are those from mid-sized ones.

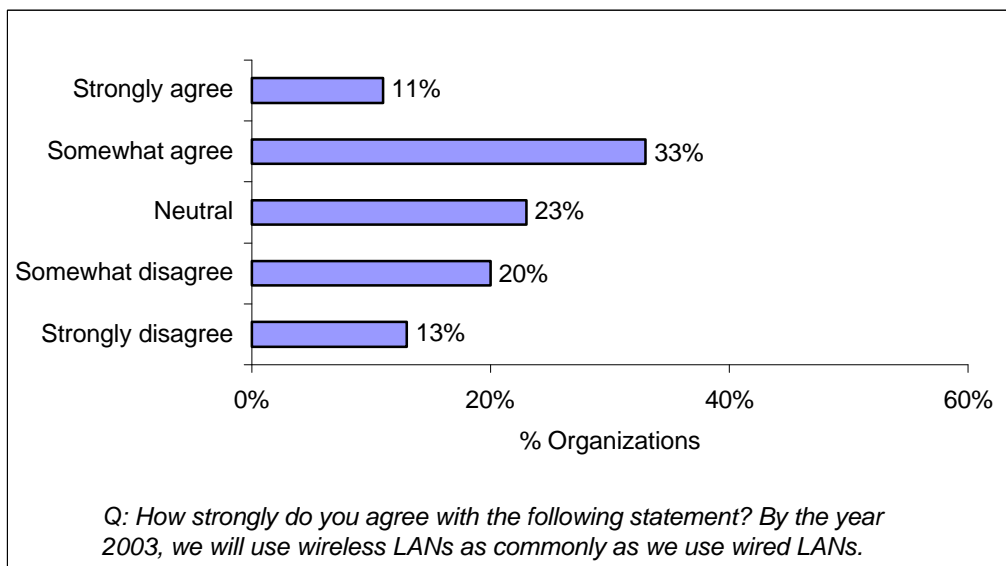


Figure 2 • Organizations Divided on Outlook for Wireless LANs

⁴ In research conducted last year (August 2000), Sage learned that only 27% agree that WLANs are just as secure as traditional wired LANs.

3.3 WLAN Installation Plans

Consistent with the results in Figure 2, Figure 3 shows that many organizations have plans to install a wireless LAN. In fact, 57% of organizations have plans to install one in the next two years (whether or not they have one already installed). It is worth noting that large companies are more likely than other companies to have WLAN plans. In fact, 64% of companies with over 1,000 employees are likely to be installing WLANs within 2 years compared to 42% of those with fewer than 1,000 employees.

Further, if we look only at those that do not currently have a wireless LAN, 48% report plans to install one. While actual deployment is unlikely to live up to these aggressive plans, the data reflect a recurring theme in this research: wireless LANs are perceived as a viable option for premises networks.

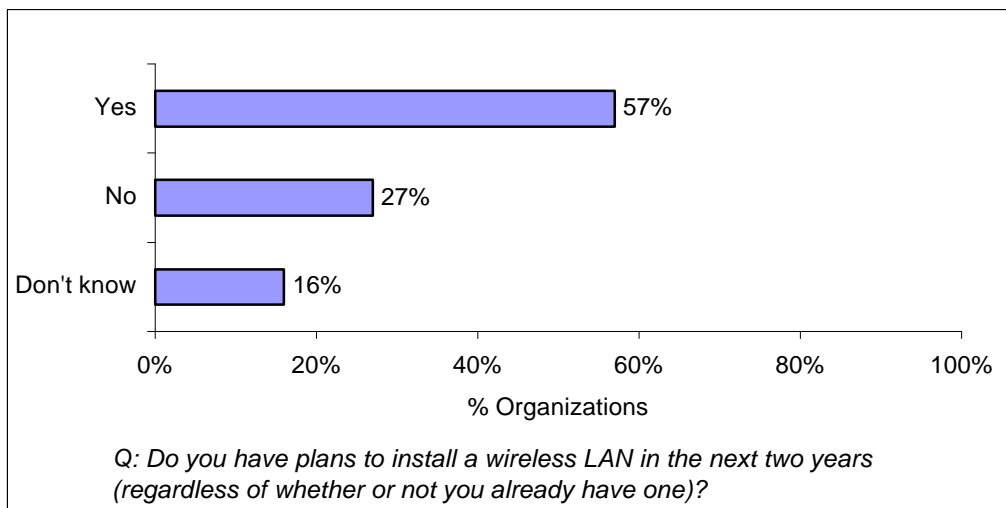


Figure 3 • Majority Plan to Install/Expand Wireless LAN

3.4 WLAN Drivers

Workers who use PDAs, laptops and handheld computers need efficient and reliable network access—just as do other office workers. And clearly, as Figure 4 displays, support for these workers is a primary WLAN demand driver. In fact, 86% of companies planning to install a wireless LAN in the next two years report that they are doing so in order to support workers with laptops or handheld computers. Not quite as many, but still over half (57%), are doing so to support workers with PDAs—which are apparently becoming a tool for business applications and not just an executive toy.

Another important wireless LAN driver is the reduction of cabling changes necessitated by employee moves/adds/changes. Sixty percent agree this is a factor in their decision to install a wireless LAN. This result suggests that some customers are adopting WLANs to support employees equipped with traditional PCs—not just those with mobile devices.

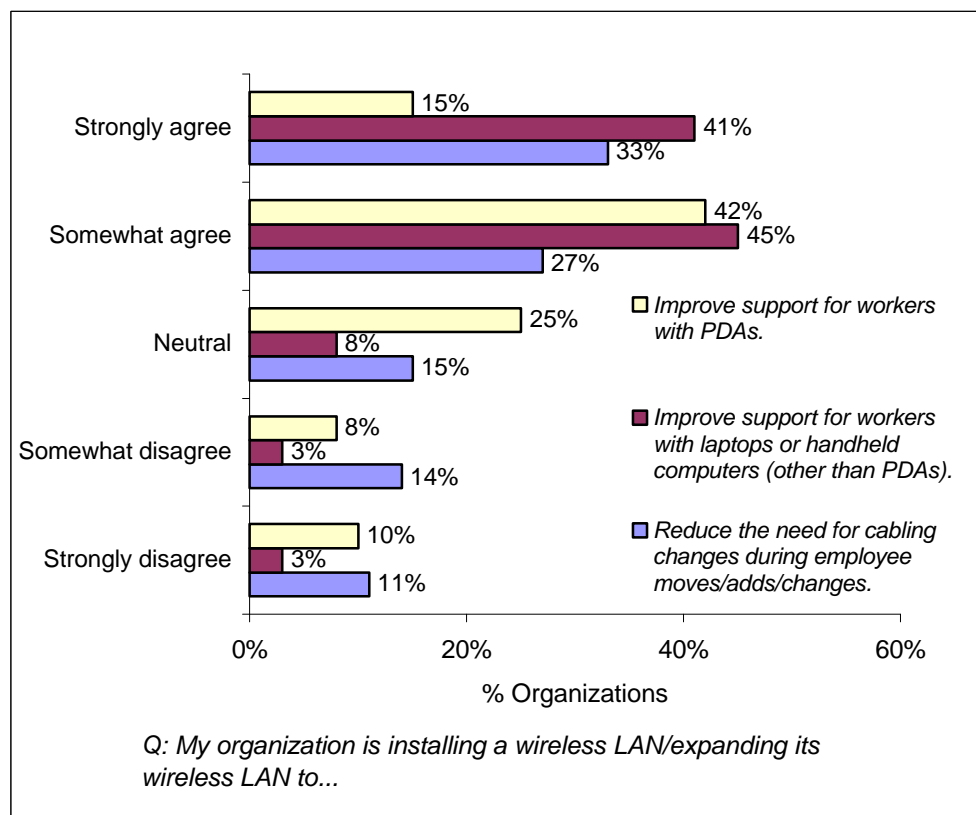


Figure 4 • Laptops Driving Wireless LAN Installations

3.5 Bluetooth

Until recently, few vendors were actively marketing Bluetooth products—so awareness of the technology has been limited. Further, Bluetooth has received some mixed publicity, and has been declared “not ready for prime time” by some industry observers. Given these factors, it is very impressive that 34% of organizations say they *are* likely to support Bluetooth devices, even if only 9% say they are *very likely* (see Figure 5). The high percent of neutral responses reflects lack of familiarity with the technology.

Clearly, marketers of Bluetooth products face some challenges. But these results show that some awareness and favorability do exist—and it will be worthwhile to track how these attitudes spread as leading vendors promote their Bluetooth products.

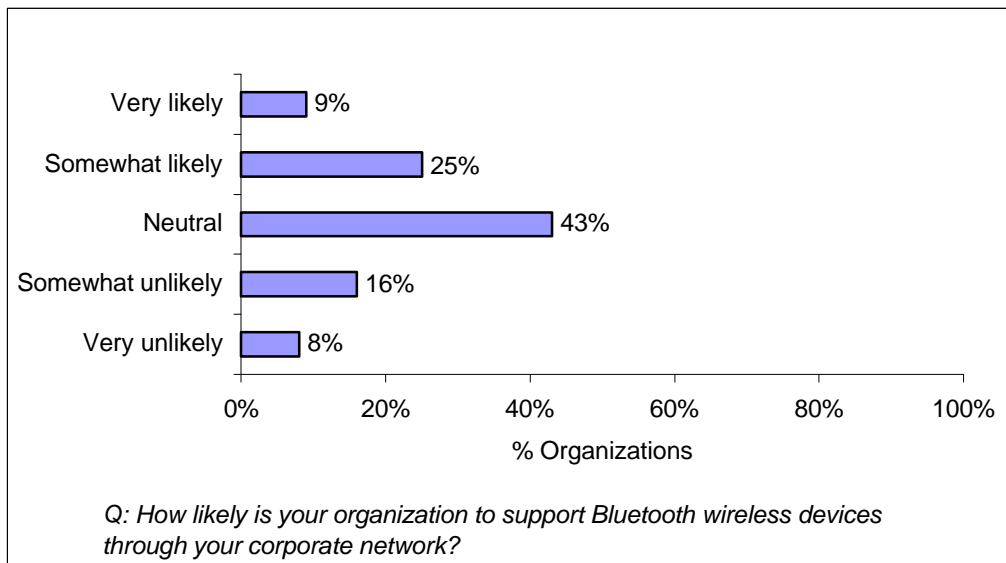


Figure 5 • Bluetooth Plans Uncertain

4.0 Demographics

This section details the demographics of the sample population. Included are job titles, vertical industries, office locations by state, annual revenue, and number of employees.

4.1 Job Title

As mentioned in Section 2.1, all study participants have relevant areas of responsibility for their organizations. As shown in Figure 6, about half of all respondents are either IS/IT Directors/Managers or IS/IT VPs or CIOs. “Other” titles include Telecom Specialist, International Network Manager, Assistant Superintendent, and Manager of Voice and Data.

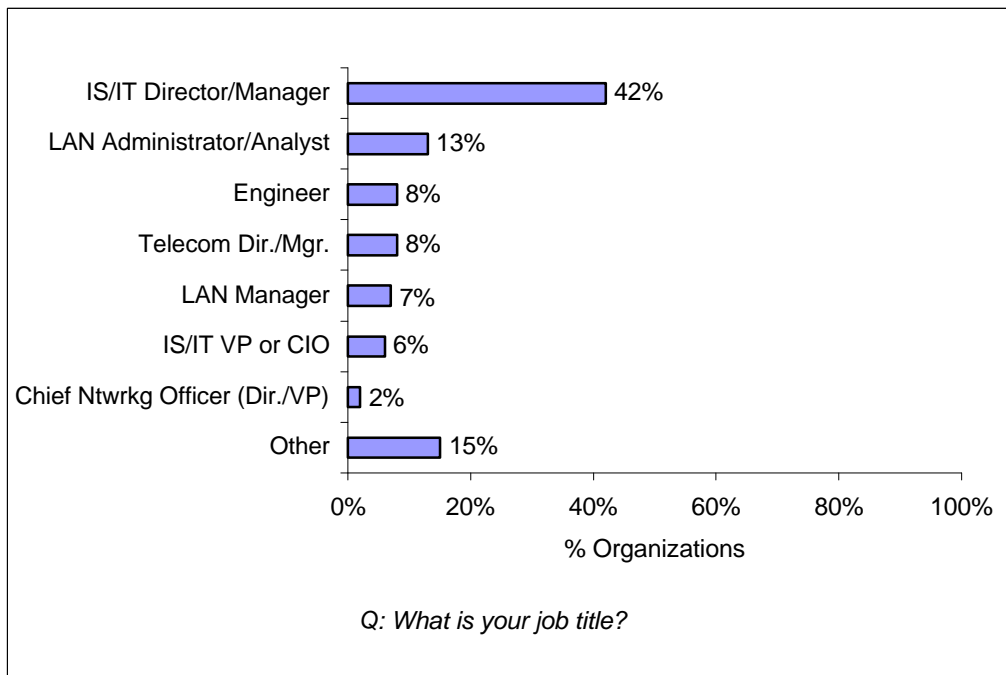


Figure 6 • Nearly Half Are IS/IT Managers

4.2 Primary Industry

A broad range of industries is represented in the sample population (see Figure 7). The most common industries are non-computer-related manufacturing and education. Industries in the “Other” category include financial services, IT consulting/services, and transportation/transit.

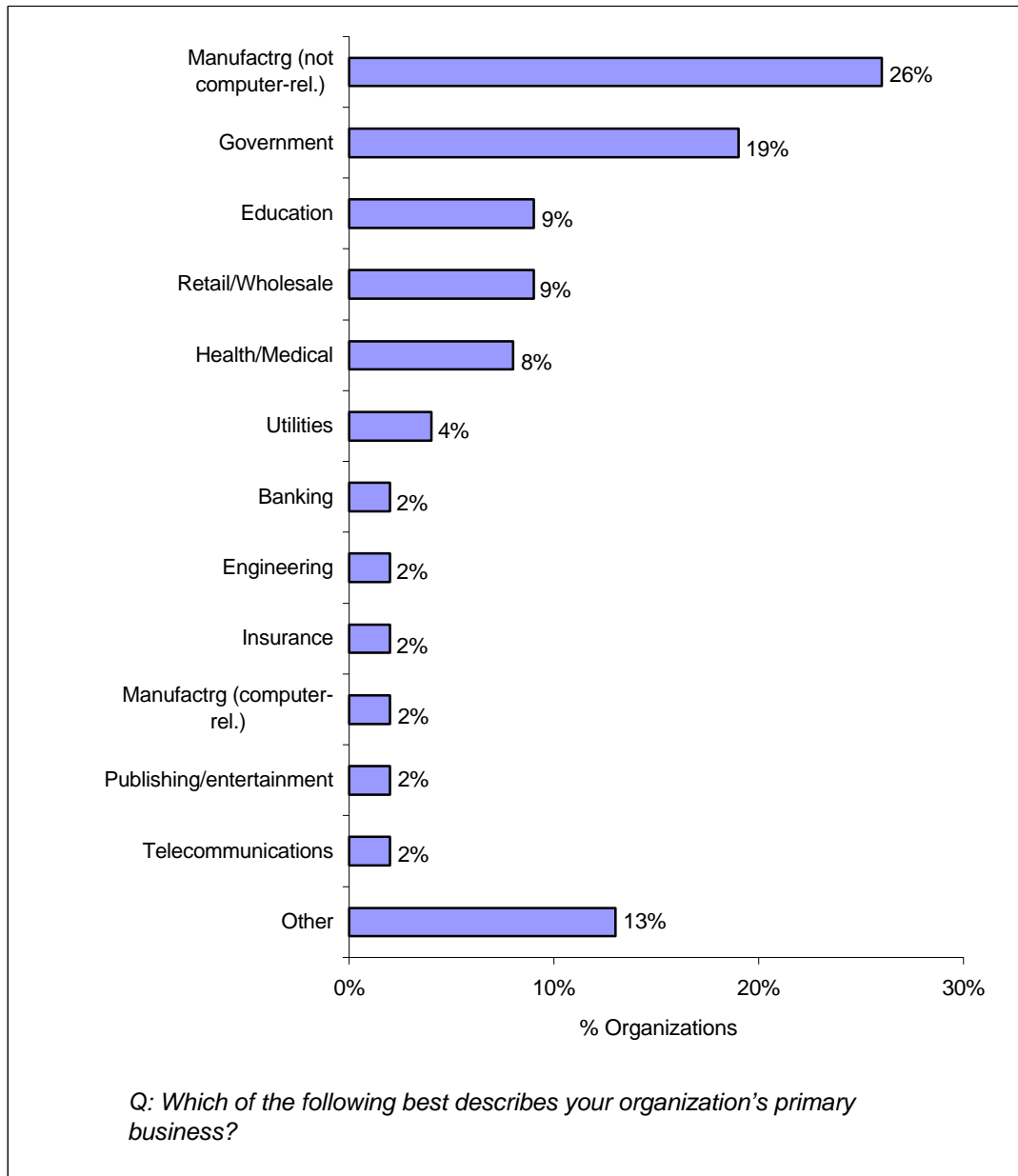


Figure 7 • Diverse Industries are Represented

4.3 Office Location

Participants in this study are located in 40 different U.S. states, plus the District of Columbia. California is the most represented state, followed by Massachusetts, New York, and Texas. Figure 8 displays the ten states with the highest representation.

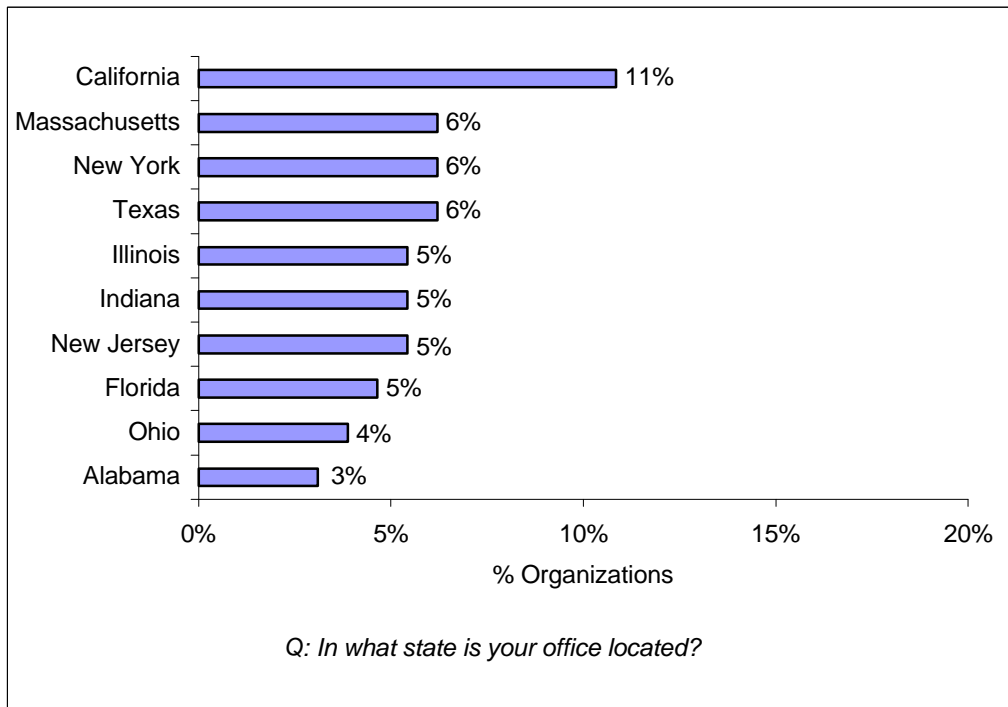


Figure 8 • California Has Most Participants⁵

⁵ Only the ten most common states are displayed.

4.4 Annual Revenue

As Figure 9 displays, organizations in the sample population have varied levels of annual revenue. Nearly two-thirds have annual revenue of less than \$500M.

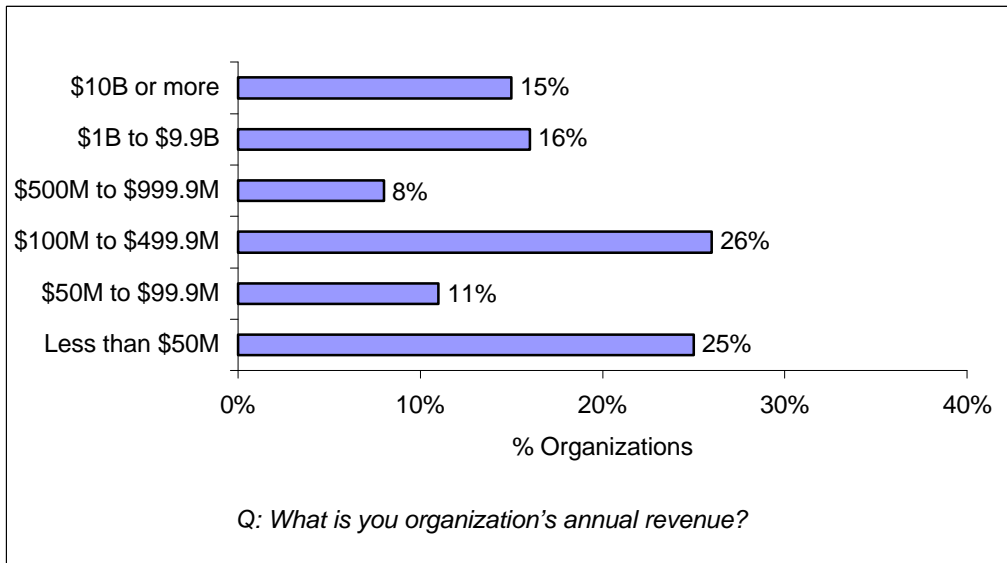


Figure 9 • Diverse Company Sizes Represented

4.5 Number Of Employees

While most participants' organizations have between 100 and 4,999 employees, over one-quarter has 10,000 or more (see Figure 10). Very few companies with fewer than 100 employees are present.

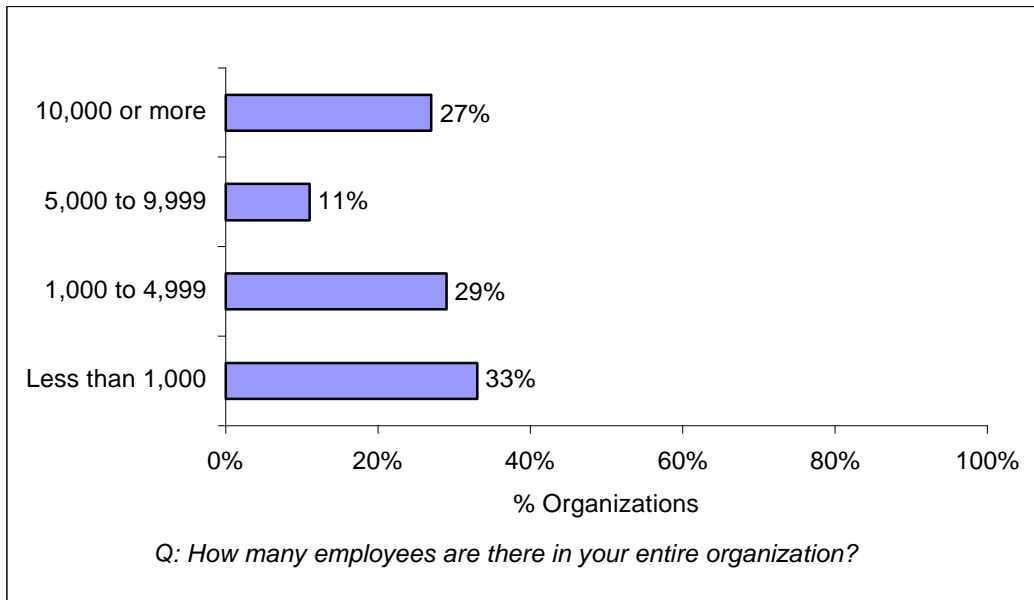


Figure 10 • Most Have 100 to 4,999 Employees