CONNECT OHIO

The Impact of Teleworking on Ohio's Workforce and Businesses

March 2013

In today's competitive economy, finding alternative ways to build and sustain an organization is essential. Broadband provides a key opportunity for many Ohio organizations and their employees: working at home through an Internet connection, commonly referred to as "teleworking."

Teleworking, as defined by the Federal Telework Enhancement Act of 2010, refers to "a work flexibility arrangement under which an employee performs the duties and responsibilities of such employee's position, and other authorized activities, from an approved worksite other than the location from which the employee would otherwise work."[1] As technology and Internet capabilities increase, teleworking is becoming a viable option for a growing number of employers and businesses alike. Many businesses in Ohio and across the nation are now providing more employees the option of performing at least some of their job duties outside of the office. In fact, the state of Ohio recently expanded its job creation tax credit to include employers of "home-based employees."[2]

Employers can see the benefits of teleworking in the form of improved employee recruitment and retention, reduced office space costs, reduced parking costs, reduced employee turnover, and increased productivity.[3] Employees who telework can benefit from decreased stress, reduced automobile operating costs, a better balance between work and social life, and time savings.[4] A recent study by Stanford University found that working from home led to a 13% increase in performance by workers. The study also found that job attrition had decreased by 50% among home workers, and that these employees reported improved job satisfaction.[5]

As part of its mission to expand broadband access, adoption, and use across the state, Connect Ohio has examined how teleworking impacts the state's workforce and employers.[6] Our findings show that while a growing number of businesses and residents benefit from the advantages of teleworking, many in Ohio still have not caught on with this trend.

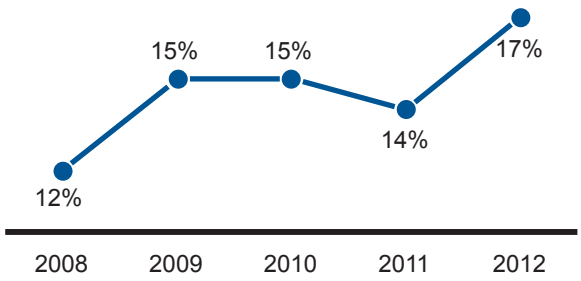
Ohio Employees who Work From Home

In the recently released 2012 Connect Ohio Residential Assessment, nearly one in five employed adults in Ohio (17%, or approximately 783,000 adults in Ohio) teleworked, or worked from home using an Internet connection instead of commuting to their workplace (Figure 1). This rate has increased since Connect Ohio first began studying teleworking in 2008 and found that only 12% of employed adults in Ohio teleworked. This is also an in increase of three percentage points in the state from 2011, when 680,000 employed adult Ohioans reported that they teleworked, and is comparable to the average teleworking rate of 18% among employees in states surveyed by Connected Nation in 2012.[7]

Among the findings from this survey:

- Approximately **783,000 Ohioans, or 17% of employed adults** in the state, work from home using an Internet connection instead of commuting to their workplace. This includes approximately **301,000** Ohio employees who work from home every day.
- Ohio teleworkers tend to be more highly educated and have higher annual household incomes. Nearly **nine out of ten Ohio teleworkers (88%)** have a college education, and **six out of ten** have annual household incomes of $75,000 or more.
- As a result of teleworking, Ohioans drive an estimated **2.19 billion fewer miles**, saving them approximately **$430 million** in automobile operating costs, and reducing automotive CO_2 production by **1.97 billion pounds**.
- The average teleworker gains over **88 hours of time**, or almost **4 full days each year**, by not commuting.
- In 2010, over **one out of five (22%)** Ohio businesses, or almost **59,000 businesses** across the state, reported that they had employees who regularly worked from home during normal business hours.
- Only **10%** of rural Ohio employees work from home instead of commuting to their usual workplace, compared to **18%** of non-rural Ohio employees. Almost **one out of four (24%)** rural Ohio businesses allowed employees to telework in 2010.

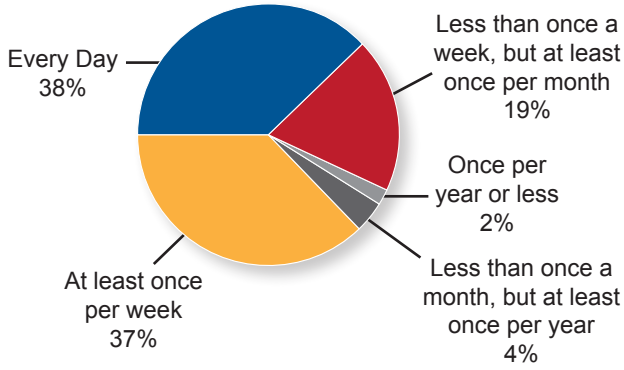
Figure 1.
Percent of Ohio Employees Who Telework



1 111th United States Congress, "Telework Enhancement Act of 2010", http://www.gpo.gov/fdsys/pkg/PLAW-111publ292/pdf/PLAW-111publ292.pdf
2 129th General Assembly of the State of Ohio, "Substitute House Bill Number 327", http://www.legislature.state.oh.us/bills.cfm?ID=129_HB_327
3 United States Environmental Protection Agency, Office of Air and Radiation, January 2005, "Telework Programs: Implementing Commuter Benefits as One of the Nation's Best Workplaces for Commuters SM", http://www.bestworkplaces.org/pdf/telework_07.pdf
4 Ibid.
5 Bloom et al. "Does Working From Home Work? Evidence From a Chinese Experiment", http://www.stanford.edu/~nbloom/WFH.pdf
6 2012 Connect Ohio Residential Assessment, http://connectohio.org/research
7 Connected Nation conducted similar surveys in 8 states in 2012: Iowa, Michigan, Minnesota, Nevada, Ohio, South Carolina, Tennessee, and Texas.

Broadband is essential to employed Ohioans, particularly teleworkers. According to Connect Ohio's Residential Technology Assessment, nearly every Ohio teleworker (97%) subscribes to home broadband service, and over eight out of ten (83%) access the Internet via cell phone or mobile broadband. Approximately 878,000 Ohioans with home broadband service (14%) report that the main reason they decided to subscribe to the service was because they needed to conduct business online. In addition, 8% of employed Ohioans (or 370,000 adults statewide) owned and operated a home business in 2012, showing that providing affordable broadband access benefits employees and owners of all Ohio businesses, whether they are small home-based operations or large companies with workforces distributed across the state.

Figure 2.
Frequency of Teleworking among Ohio Employees Who Work From Home



Among Ohioans who do telework, approximately 301,000 (38%) report that they work from home instead of commuting every day (Figure 2). An additional 286,000 employed Ohioans (37% of teleworkers) report that they do not telework every day, but they do so at least once per week. On average, Ohio teleworkers work from home 2.32 days per week, or approximately 116 days per year.

Ohio Teleworkers: A Demographic Breakdown

Income, age, gender, education, race, and county of residence show significant differences between employed Ohio adults who telework and those who do not (Table 1).

The share of male Ohio teleworkers (60% of teleworkers) is larger than in the non-teleworking workforce. A significantly smaller share of Ohio teleworkers (8%) are between the ages of 18 and 24, as compared to the share of Ohio employees in that age group who do not telework.

Nearly one-half (49%) of teleworkers in Ohio are adults with children at home, indicating that teleworking may offer flexible work options that are of great value to Ohio parents.

Teleworking is also connecting minorities to jobs across the state. Over one out of five Ohio teleworkers (21%) identify as being part of a minority group, compared to only one out of ten non-teleworkers. This includes approximately 127,000 African Americans in the state who are teleworkers.

Teleworkers also tend to be more highly educated and have higher annual household incomes. Nearly nine out of ten Ohio teleworkers (88%) have a college education, and six out of ten have an annual household income of $75,000 or more.

Teleworkers are less likely to live in rural parts of the state. Only one in ten Ohioans who telework (11%) live in rural counties, compared to one in five (20%) non-teleworking Ohio employees.

Table 1.
Demographic Profile of Ohio Teleworkers

	% of Ohio Employees who Telework	% of Ohio Employees who do not Telework
Gender		
Male	60%	52%
Female	40%	48%
Age		
18 to 24	8%	16%
25 to 44	45%	43%
45 to 54	29%	23%
55 to 64	14%	16%
65 or older	4%	2%
Presence of Children		
Children at home	49%	46%
No children at home	50%	53%
Refused	1%	1%
Race/Ethnicity		
White	78%	86%
Minority	21%	11%
African American	16%	8%
Other Minority	5%	3%
Refused	1%	3%

The 783,000 Ohio employees who telework provide significant savings to the state. The average teleworker commutes approximately 2,800 fewer miles per year as a result of their ability to work from home.[8] Additionally, they save $550.28 each year in automobile operating costs and prevent 2,517 pounds of CO_2 emissions from entering the atmosphere.[9] This translates into a statewide savings of 2.19 billion commuting miles, $430 million in automobile operating costs, and 1.97 billion pounds of CO_2.

Teleworkers also see a significant savings in time from working in a home office. With an average travel time to work in Ohio of 22.9 minutes, the average teleworker gains over 88 hours of time, or almost 4 full days each year, by not commuting.[10]

One Brown County resident who has seen the benefits of teleworking firsthand is Diana Pitzer. Diana was commuting 40 miles to her job as a claims adjustor in Mason, a trip that took her one hour each way. In January 2010, Pitzer's company gave her approval to work from home; however, her home Internet speeds were not fast enough to meet her employer's requirements. After a year of being told by local Internet providers that nothing could be done about the Internet speeds at her home, Pitzer contacted Connect Ohio and learned that a local broadband service provider was in the process of deploying an upgraded network near her home. Soon afterwards, her Internet service had been upgraded to a higher speed, and Pitzer began working from home.

Table 1 (continued).
Demographic Profile of Ohio Teleworkers

	% of Ohio Employees who Telework	% of Ohio Employees who do not Telework
Education		
No college	12%	36%
College education	88%	63%
Some college education	15%	28%
College degree	44%	25%
Advanced degree	29%	10%
Refused	0%	1%
Annual Household Income		
Less than $25,000	3%	12%
$25,000 to $49,999	16%	29%
$50,000 to $74,999	13%	18%
$75,000 or more	60%	28%
Refused	8%	13%
County of Residence		
Rural	11%	20%
Non-Rural	89%	80%

Based on Pitzer's own estimates, she saves $80 each week by not commuting to her office each day and is saving additional money by needing fewer oil changes and car repairs. She also enjoys the savings she sees in time. "I'm just very excited," said Pitzer. "I can spend 2 more hours a day doing whatever … it's like a raise … a big raise. Thank you, thank you, thank you. Connect Ohio went the extra mile to find someone to help me."

"I can spend two more hours a day doing whatever … it's like a raise … a big raise"

Diana Pitzer
Ohio teleworker

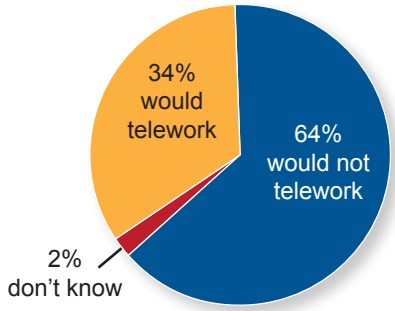
8 Based on an average daily round-trip commute of 24.18 miles (http://nhts.ornl.gov/2009/pub/stt.pdf)
9 Based on 116 work days during the year, 24.18 miles round trip commute, with an average automobile operating costs of 19.64 cents per mile (http://www.commutesmart.info/download/AAA_DrivingCosts2011.pdf), and an average automobile efficiency of 21.6 mpg (http://www.epa.gov/cleanenergy/energy-resources/refs.html) producing 19.4lbs of CO2 emissions per gallon of fuel consumed (http://www1.eere.energy.gov/vehiclesandfuels/facts/2009_fotw576.html).
10 Based on each teleworker in Nevada commuting 22.9 minutes to and from work (45.8 minutes total), 116 days per year (U.S. Census, Means of Transportation to Work by Selected Characteristics, 2007-2011 American Community Survey 5-Year Estimates http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml)

Interest in Teleworking

Teleworking is a benefit that many Ohio employees would like to have access to in their current positions. Over one-third of Ohio employees who do not telework (34%) report that they would be interested in working from home if their employers allowed it, representing over 1.3 million Ohioans (Figure 3).

Combined with the 783,000 Ohioans who already do telework, this means that 45% of employed Ohio adults say they either currently telework or are interested in teleworking, representing over 2.1 million employees in the state.

Figure 3.
Among Ohio Employees Who Do Not Telework



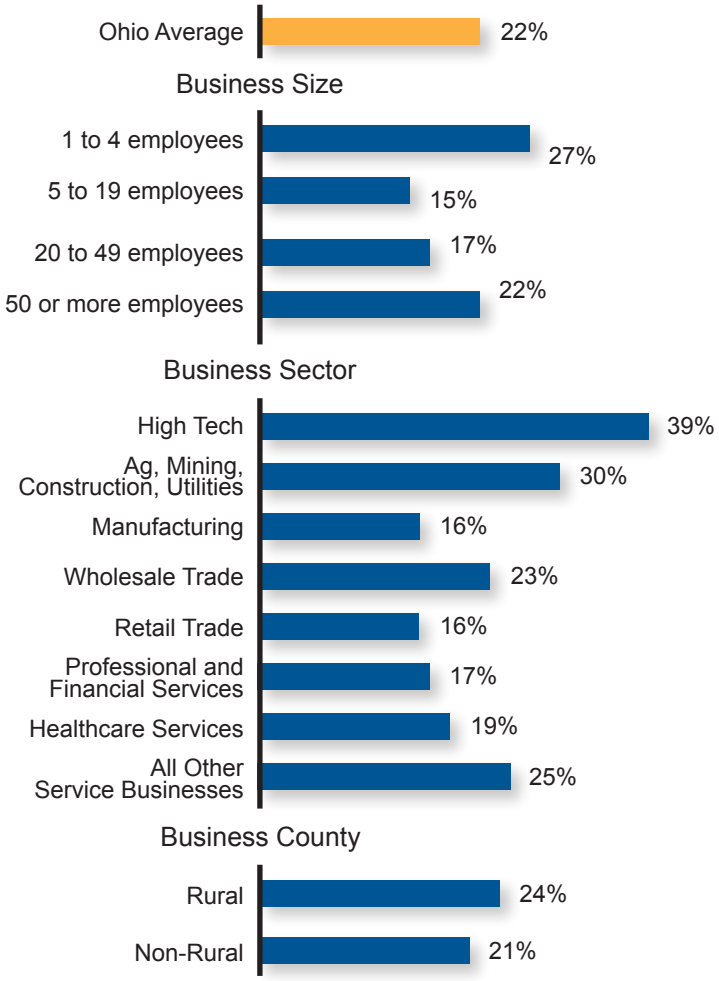
Ohio Employers and Teleworking

As part of its 2010 Business Technology Assessment, Connect Ohio also analyzed what types of businesses allow their employees to telework. Over one out of five (22%) Ohio businesses, or almost 59,000 businesses across the state, reported that some of their employees worked from home during normal business hours on a regular basis (Figure 4). This is comparable to the average of 23% across all states surveyed by Connected Nation in 2010.[11]

Small businesses with fewer than five employees were significantly more likely to allow teleworking than the state average for all businesses. Just over 36,000 small businesses in Ohio (27%) provided their employees with the flexibility to work outside of the office. The percentage of large businesses that allowed employees to telework is comparable to the state average. Nearly 4,000, or 22% of businesses with fifty or more employees, allowed employees to work from home instead of commuting to their usual workplace.

Businesses in the High Tech sector led the way when it came to teleworking. Almost two out of five (39%), or 8,000 businesses in that sector, allowed employees to telework from home, significantly higher than the statewide average. Three out of ten Ohio businesses in the Agriculture, Mining, Construction, and Utilities sector (30%) allowed employees to telework, significantly higher than the average among businesses in this sector across the states surveyed by Connected Nation (21%). The Retail and Manufacturing sectors are more likely to require employees to be on-site instead of teleworking from home. Only 16% of Retail Trade businesses and 16% of Manufacturing businesses allowed their employees to work from home.

Figure 4.
Ohio Businesses That Allow Teleworking



11 Connected Nation conducted similar surveys in 11 states and 1 territory in 2010: Alaska, Iowa, Florida, Kansas, Michigan, Minnesota, Nevada, Ohio, South Carolina, Tennessee, Texas, and Puerto Rico

Many Ohio employers are creating more opportunities for employees to work from home. For example, the Employee and Business Services department of the Ohio Department of Job and Family Services (ODJFS) is not only helping other Ohioans find work, it is also encouraging its own employees to telework. The ODJFS maintains the website OhioMeansJobs.com and works with several other Ohio job sites that assist Ohioans in finding jobs. In the last 18 months, the department has transitioned over 200 employees into teleworking positions. To do this, the ODJFS put a "paperless initiative" in place, so all of the agencies that partner with the ODJFS can now scan and upload paperwork to online servers.

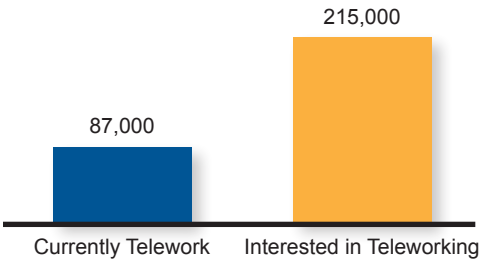
Roughly half of the department's teleworkers are call-center employees, while the rest work with processing centers that assist with employer and employee issues. The Employee and Business Services department hopes to expand its teleworking opportunities to include more positions they see as "car-centric", including branch and regional managers who oversee multiple sites and the department's auditors.

Teleworking in Rural Ohio

Employees who live in rural Ohio counties were significantly less likely to telework than those in urban parts of the state in 2012. Only approximately 87,000 rural Ohio employees (10%) worked from home in 2012 instead of commuting to their usual workplace (Figure 5), compared to 18% of non-rural Ohio employees. Almost one out of four (24%, or approximately 16,000) rural Ohio businesses allowed employees to telework in 2010, compared to 21% of non-rural Ohio businesses (Figure 4).

Finding ways to connect residents of rural Ohio to companies throughout the state that allow teleworking, or to encourage more Ohio businesses to allow teleworking, could increase employment levels and provide benefits to residents and businesses alike. Approximately 215,000 rural Ohio residents say they would be interested in teleworking if their employers allowed it.

Figure 5.
Rural Ohio Employees



The Role of a Distributed Workforce and Telework Centers

Companies that are interested in seeing the benefits of teleworking can consider using a distributed workforce model to meet their employment needs. A distributed workplace is "a community work model that seeks to change the current single location workplace model by 'localizing' access to more jobs and more employers."[12] This could include a network of strategically based work centers that have multiple tenants, are connected to dedicated and secure broadband, and have a centralized technical support staff. These centers have the potential to support hundreds of employees who have the ability to work for employers located throughout their metropolitan or regional area.[13]

A distributed workforce relies on an online, broadband-connected workforce and is advantageous to employers and employees. In a 2011 survey of employers and contractors by the online employment platform oDesk, 50% of employers said that they had grown their business in terms of revenue, size, and scope of service in the past year by leveraging online work capabilities, while 66% of contractors said that online work capabilities would allow them to make more in 2011 than they did in 2010.[14]

12 Strategic Office Networks, LLC, "Accelerating Economic Growth through Advanced Telecommunications Infrastructure: Considerations for Community Leadership"
13 Ibid.
14 oDesk, "The Evolution of Employment: From Free Agent Nation to On-Demand Distributed Workforce", https://www.odesk.com/blog/2011/06/survey-from-free-agent-nation-to-on-demand-workforce/

One way that Ohio communities can encourage teleworking is by supporting the creation of these teleworking centers. Telework centers are generally set up in geographically convenient locations, such as suburban, exurban, or rural areas, and are designed to assist nearby residents who wish to avoid commuting to main work sites in urban centers.[15] Many of these centers have been set up by cooperative ventures or partnerships, private sector organizations, and public sector agencies.[16] These telework centers have been successful in providing work spaces for local residents who want to avoid long commutes to urban areas, while at the same time offering training and counseling to communities, emergency workstations for workers impacted by disasters, and Internet access for distance learning and other activities.[17]

For these telework centers to succeed, businesses need to have access to a workforce with the necessary digital skills. This can be a challenge in some regions, as 14% of rural Ohioans report that a lack of digital literacy skills has prevented them from subscribing to broadband at home, let alone use it in the workplace.

Connect Ohio's Every Citizen Online (ECO) program is trying to close that gap. This program provides residents of Ohio six hours of free basic training sessions on computers, the Internet, and the benefits of using the Internet.[18]

One Ohio business that partnered with Connect Ohio to offer employees basic computer training is Marathon Special Products, located in Bowling Green. Bret Danks, vice president and general manager of Marathon Special Products, said that he only sees the need for computer knowledge continuing to grow as the company becomes increasingly reliant on technology. He also felt it was important that employees received and improved the skills they needed to excel at their positions.

"We want to help our employees reach their career goals," said Danks. "I feel that the computer training is a good way to help our employees reach these goals and for them to progress in the company, as we are often promoting within. If you do not know computers, it's really hard to progress in any company."

"Computer training is a good way to help our employees…progress in the company. If you do not know computers, it's really hard to progress in any company."

Bret Danks
VP and general manager of Marathon Special Products

Conclusion

Teleworking has numerous advantages for employers, employees, and the state of Ohio. Businesses that allow teleworking are able to recruit and retain a better workforce to meet their needs. Employees are able to connect to better jobs, no matter where they are located, and see significant savings in terms of commuting times and cost. These savings translate into large economic and environmental benefits to the entire state.

Increasing teleworking throughout the state could enhance these benefits. While 783,000 Ohioans currently work from home, an additional 1.3 million would be interested in doing so if it were permitted by their employers. Supporting the development of centralized telework centers and encouraging businesses to consider utilizing a distributed workforce model in their operations could increase teleworking and provide substantial benefits to the state of Ohio.

15 Center for Digital Government, "Telework 360°: A Best Practices Digest and Guide to Getting Telework Right in the Public Sector", http://media.govtech.net/Digital_Communities/assets/CDG06_Telework.pdf
16 Ibid.
17 Ibid.
18 Connect Ohio, Every Citizen Online, http://connectohio.org/every-citizen-online

Methodology and Definitions

2012 Residential Technology Assessment

Connect Ohio is a subsidiary of Connected Nation and operates as a non-profit in the state of Ohio. As part of Connect Ohio's mission, this research was designed to measure technology adoption and the awareness of available broadband service, and to determine factors that contribute to individuals choosing whether or not to subscribe to broadband service.

Between September 22 and October 13, 2012, Connect Ohio conducted a random digit dial telephone survey of 1,200 adult heads of households across the state. Phone numbers were chosen randomly, with area codes and telephone prefixes determined by geography per the North America Numbering Plan (NANP), with the last four digits of the telephone numbers randomly selected. Of the 1,200 respondents randomly contacted statewide, 199 were called on their cellular phones and 1,001 were contacted via landline telephone. Once a respondent agreed to participate, these surveys took approximately 11 minutes to complete.

Multiple attempts were made to reach an adult at each working telephone number on different days of the week and at different times of the day to increase the likelihood of contacting a potential respondent. To ensure that the sample was representative of the state's adult population, quotas were set by age, gender, and county of residence (to ensure that a sufficiently large sample of adult heads of households in rural Appalachian counties was reached, these households were oversampled), and the results were weighted to coincide with 2010 United States Census population figures. In addition, Connect Ohio oversampled adult heads of households who identified themselves as of Hispanic, Latino, or Spanish origin to ensure a large enough sample size of this demographic group for reporting purposes. Random sampling, with the inclusion of quotas to reduce bias, was chosen as the most efficient and cost effective method of identifying respondents.

For the purpose of setting quotas and weighting, "rural" respondents are defined as living in a county that is not a part of a Metropolitan Statistical Area (MSA), as designated by the United States Office of Management and Budget. Surveys were conducted by Thoroughbred Research Group, located in Louisville, KY, in English. The effective post-weighting margin of error = $\pm$3.41% at a 95% level of confidence for the statewide sample. A higher margin of error applies to cross-tab analyses drawn from subgroups. As with any survey, question wording and the practical challenges of data collection may introduce an element of error or bias that is not reflected in this margin of error.

Rim weighting was applied to correct for minor variations and ensure that the sample matches the most recent U.S. Census estimates of the state's population by age, gender, and the respondent's county of residence (whether or not the respondent lives in a rural Appalachian county).

"Teleworkers" are defined as respondents who report being employed full-time or part-time and say that they work from home using the Internet instead of commuting to their workplace.

This residential survey was conducted as part of the State Broadband Initiative (SBI) grant program, funded by the National Telecommunications and Information Administration (NTIA). The SBI grant program was created by the Broadband Data Improvement Act (BDIA), unanimously passed by Congress in 2008 and funded by the American Recovery and Reinvestment Act (ARRA) in 2009.

2010 Business Technology Assessment

Connect Ohio conducted a random digit dial telephone survey of 802 business establishments statewide between June 22 and July 21, 2010. Data were collected by Thoroughbred Research Group, located in Louisville, KY. The purpose of this survey was to set benchmarks for technology adoption and barriers to adoption; determine best practices by identifying which applications Ohio businesses use most often; and measure the average price and speed of broadband service among business establishments across Ohio. On average, these surveys took approximately nine minutes to complete.

Sample quotas were established by company size (5 brackets) and industry sector (8 sectors). Within these 40 cells, a randomly-drawn sample of businesses listed with Dun & Bradstreet was contacted for the survey. Altogether, this sample included 186 businesses with 50+ employees, 203 businesses with 20-49 employees, 209 businesses with 5-19 employees, and 204 businesses with 1-4 employees. In cases where the respondent's information regarding the number of employees at the establishment differed from the informa¬tion provided by Dun & Bradstreet, the respondent's answer was used in determining business size quotas. Connect Ohio intentionally over-sampled large businesses to ensure a sample that was large enough to analyze and compare to smaller businesses.

In addition to the size and sector quotas, the data was subsequently weighted to ensure that the sample was representative of all employer business establishments statewide, with targets determined according to the 2007 United States Census Bureau's County Business Pattern report, the most recent data that was available at the time the survey was conducted. Weighting of the survey data and research consultation were provided by Lucidity Research LLC, located in Westminster, MD.

This sample provides a margin of error of ± 4.72% at the 95% confidence level for the total sample of 802 businesses. This sample error accounts for sample weighting, using the effective sample size.

The Ohio Business Technology Assessment was also conducted as part of the State Broadband Initiative (SBI) grant program, funded by the National Telecommunications and Information Administration (NTIA).

If you have any questions or would like further information about Connect Ohio, please visit our website at www.connectoh.org or e-mail us at info@connectoh.org.

APPENDIX A:

Select Sample Sizes from Connect Ohio 2012 Residential Survey

	All Respondents	Non-Rural Respondents	Rural Respondents	Employed
Total Respondents	1,200	781	419	615
Into which of the following employment groups do you fall? Are you…				
Employed or self-employed full-time or part-time	615	414	201	615
Which of the following describe the way you work from home, when you do so? (Among employed who report working from home)				
Work at home using an Internet connection, instead of commuting to usual workplace (teleworkers)	94	75	19	94
Do not telework	521	339	182	521

Select Sample Sizes from Connect Ohio 2011 Business Technology Assessment

	All Respondents
Total Respondents	802
Business Size	
1 to 4 employees	204
5 to 19 employees	209
20 to 49 employees	203
50 or more employees	186
Business Sector	
High Tech	87
Agriculture, Mining, Construction, Utilities	97
Manufacturing (Non-Tech)	104
Wholesale Trade	97
Retail Trade	102
Professional and Financial Services	103
Healthcare Services	104
All Other Service Businesses	108
Business County	
Non-Rural Respondents	617
Rural Respondents	185