



Broadband's Economic Impact in Michigan



March 2013

Does broadband matter to the economy? The answer to this question has a number of far-reaching implications. If increasing broadband access, adoption, and usage helps households save money or earn income in excess of what they have to pay to be connected, then getting connected to the Internet would represent a positive return on investment, and show itself worth the cost of subscribing. If, on the other hand, the costs outweigh the benefits of subscribing to broadband, then based solely on financial terms, subscribing to broadband may not be worthwhile.

The question, then, is how to measure this economic impact among Michigan households. Past research has emphasized how broadband expansion affects employment, job creation, and GDP growth.¹ For example, the Brookings Institute estimated that, “for every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year.”² Connected Nation conducted a comprehensive study to measure broadband’s economic impact from different angles in 2008. It found a 7 percentage point boost in national broadband adoption could lead to \$662 million in annual healthcare savings, and \$6.4 billion in annual mileage savings.³

Beyond the direct potential for economic growth, broadband also helps strengthen Michigan’s workforce by giving Michiganders opportunities to improve and continue their educations. In addition, through teleworking and the use of the Internet at work, Michigan is able to keep its most talented employees and prevent the “brain drain” that occurs when highly skilled employees are forced to move out of rural areas, or out of the state, to find gainful employment.

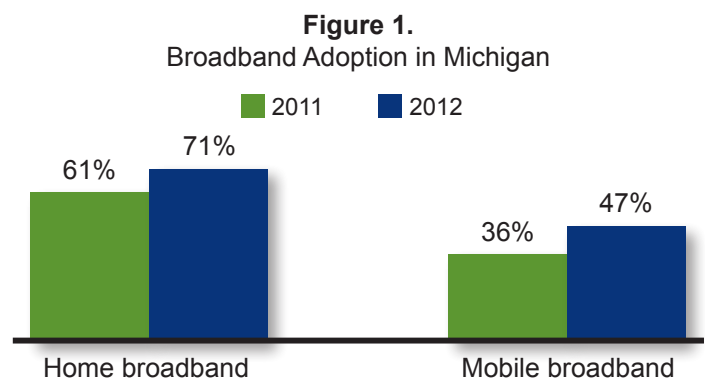
To better understand how broadband use contributes to Michigan’s economy, Connect Michigan conducted a survey of 1,201 households across the state. This report shows some of the ways that Michigan residents are using broadband connections at home and work to help fuel Michigan’s economy.

Among the findings from this survey:

- Connect Michigan estimates that a **one percentage point increase** in broadband penetration could create or save approximately **12,388** jobs statewide.
- Statewide, **804,000** Michigan e-Learners report that they have some college education but have not yet earned a bachelor’s degree. Census estimates suggest if these Michigan residents use online learning to earn their bachelor’s degrees, they could bring in a total of **\$3.8 billion** in additional household income to the state.
- Michigan residents conduct **17.1 million** online transactions with Michigan businesses and spend nearly **\$1.1 billion** in online sales with these businesses annually.
- Approximately **1.16 million** Michigan residents take advantage of the Internet to sell goods or services through home-based businesses, through individual online sales, and via auctions. This accounts for **\$467 million** in annual revenue statewide.
- Approximately **732,000** employed Michigan residents are teleworkers. Statewide, teleworkers save **\$362.8 million** in car maintenance and fuel.

The Economic Impact of an Increase in Broadband Adoption

The 2012 Connect Michigan Residential Technology Assessment shows that 71% of Michigan residents subscribed to home broadband in 2012, up 10 percentage points from 61% in 2011 (Figure 1). Mobile usage is also soaring in Michigan. In 2012, nearly 3.6 million adults accessed the Internet via their cell phones or through a mobile device (47% of residents) compared to 2.7 million mobile users (36% of adults) in 2011.



1 <http://broadband.about.com/od/economicdevelopment/a/Broadband-As-An-Economic-Driver.htm>

2 The Brookings Institute (2007), “The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data”, <http://www.brookings.edu/research/papers/2007/06/labor-crandall>

3 Connected Nation (February 21, 2008), “The Economic Impact of Stimulating Broadband Nationally.” http://www.connectednation.org/_documents/connected_nation_eis_study_executive_summary_02212008.pdf

This increase in broadband adoption can have many positive effects, including job creation. Based on a 2007 study that found that each percentage point increase in broadband penetration resulted in a 0.593 increase in employment over two years, Connect Michigan estimates that just one percentage point increase in broadband penetration could create or save approximately 12,388 jobs statewide.⁴ The booming demand for mobile technology could be another stimulus for new economic development in Michigan. A study by the Mobile Technology Association of Michigan (MTAM) and the Michigan Economic Development Corporation (MEDC) indicated “every mobile-related job that is created in Michigan creates 3.9 additional non-mobile-related positions in the state.”⁵

e-Learning

Taking online classes or conducting research for schoolwork over the Internet (referred to as e-Learning) provides adults in the state the opportunity to further their education in professional development or even earn a higher degree. In fact, nearly four out of ten Internet users (39%, or approximately 2.5 million Michigan residents) take classes online or use the Internet for schoolwork.

From an economic perspective, e-Learning can provide a boost to the state. The 2011 American Community Survey from the United States Census found that Michigan residents with a bachelor’s degree report annual household incomes that are \$15,959 higher than those with only some college education. Given a four-year graduation rate of 32.8%⁶ and an unemployment rate of 10.3%,⁷ the 804,000 Michigan residents with some college education who choose to participate in and further their educations through e-Learning could bring a total of \$3.8 billion in additional household income to the state after earning a bachelor’s degree via online learning.

Online Shopping

Broadband has also revolutionized the way we purchase goods and services by providing convenience, wider selection, and oftentimes better prices. Indeed, nearly three out of four Michigan Internet users (74%, or approximately 4.7 million Michigan residents) go online to research or purchase goods or services. This has a positive impact on Michigan businesses.

Across the state, an estimated 2.6 million Michigan adults went online to buy goods or services from Michigan businesses in the 12 months prior to taking the survey. On average, each of these online shoppers made seven online purchases from in-state vendors, at an average value of \$409.53 per buyer during the course of the year. Altogether, this translates into more than 17.1 million transactions worth nearly \$1.1 billion in annual online sales to Michigan businesses. This does not include the \$2.2 billion that Michigan residents spent with vendors in other states across America and the \$100 million spent with international vendors (Figure 2).

Figure 2.
Total Value of Online Transactions in Michigan



4 The Brookings Institute, <http://www.brookings.edu/views/papers/crandall/200706litan.pdf>

5 <http://michiganmobileusings.com/tag/mobile-technology/>

6 http://collegecompletion.chronicle.com/state/#state=ny§or=public_four

7 <http://www.bls.gov/news.release/srgune.nr0.htm>

According to Connect Michigan's 2011 Business Technology Assessment, nearly three out of ten Michigan businesses (29%, or approximately 65,000 Michigan business establishments) earn at least some of their revenues from online sales. On average, these businesses earn about one-third (33%) of their revenues from online transactions. Based on those businesses' self-reported annual revenues, this equates to a median annual value of \$430,000 in online sales per business. Statewide, this translates into nearly \$9.2 billion in online revenues for Michigan businesses. Since Michigan residents contribute \$1.1 billion to Michigan businesses via online shopping, this indicates that the remaining \$8.1 billion could be purchased by out-of-state residents and businesses as well as by other Michigan businesses (Figure 2).

Getz's Clothiers – a Michigan Business Success Story

One of the many Michigan businesses that is benefitting from their use of the Internet is Getz's Clothiers, a family-owned clothing retailer headquartered in Marquette, Michigan. Founded in the mid 1880s, Getz's has found its niche with online sales and grown to attract customers from around the country.

"We are probably shipping 300% to 400% more today than we shipped four or five years ago," said John Spigarelli, vice president of marketing and e-Commerce with Getz's.⁸ Point of sale software and e-Commerce allow retailers like Getz's to update its inventory in real time. This allows for tighter inventory control, better customer service, and access to historical sales information that allows for smarter product stocking.



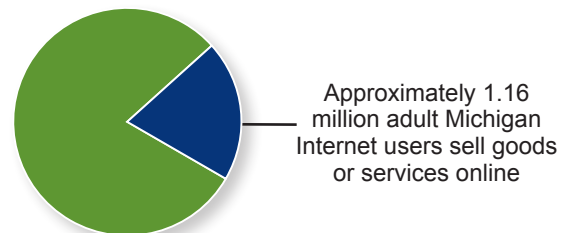
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John Spigarelli
Vice President of Marketing and e-Commerce, Getz's

Online Sales

Michiganders are not only buying products online, but they are also selling their goods and services to local, national, and even worldwide consumers via the Internet. This applies to both businesses as well as individuals. Approximately 1.16 million Michigan residents take advantage of the Internet to conduct online sales (Figure 3). These activities range from online auctions, to running home-based businesses, to selling arts and crafts. Statewide, this accounts for an estimated \$467 million in annual revenue.

Figure 3.
Online Sellers in Michigan



Broadband in the Workplace

It is important to ensure that businesses are able to connect to broadband at speeds that are sufficient for their business functions. According to Connect Michigan's 2011 Business Technology Assessment, more than three out of four Michigan businesses (76%, or approximately 169,000 online businesses) use the Internet for their business functions, and 3,000 of those businesses were making plans to increase their bandwidth.

Making high-quality broadband available to these businesses is vital to making high paying jobs available to Michigan employees. Based on Connect Michigan's 2012 Residential Technology Assessment, approximately two million Michigan workers (or 47% of employed Michigan adults) use the Internet at their jobs. The vast majority of these individuals (87%, nearly 1.8 million Michigan workers) are college educated, and workers who use the Internet at their jobs report that their median annual household incomes are three times higher than employed Michiganders who do not use the Internet at work. This indicates that high paying jobs, often those that require the use of the Internet, can help keep skilled and educated residents in Michigan instead of forcing them to seek gainful employment elsewhere.

⁸ https://www.youtube.com/watch?list=PLEF1AE6770ED1A38A&v=0IYISqCgmQY&feature=player_detailpage

Many Michigan residents also use their home Internet connections for their work. Statewide, approximately 32,000 home-based businesses rely on the Internet daily. In addition, for many Michigan residents, teleworking is a win-win arrangement for employees and employers, empowering Michigan workers to stay in their hometown while helping Michigan employers reduce operating costs and allowing them to hire and retain the best and brightest employees.

In fact, approximately 732,000 employed Michigan residents are teleworkers. These Michigan teleworkers report that they are working at home instead of commuting 2.1 days per week on average. Teleworking's economic impact to the state is substantial. According to the 2009 National Household Travel Survey,⁹ on average, Americans commute 24.18 miles per day for work. Based on this figure, each Michigan teleworker drives an average of 2,524 fewer miles per year. Based on data collected by the American Automobile Association (AAA),¹⁰ that represents a statewide annual savings of \$362.8 million in car maintenance and fuel costs for teleworkers.

Conclusions

Broadband adoption is increasing across Michigan, up by 10 percentage points to 71% of Michigan residents. The usage of mobile devices is also growing, which represents another opportunity for new economic development in Michigan. The next step is to make sure that this growth in home and mobile broadband results in benefits to households and businesses across the state.

Online applications such as e-Learning, e-Commerce, and teleworking enabled by broadband technology, provide numerous ways to boost the Michigan economy. e-Learning improves the skills and education levels of Michiganders, while online sales expand Michigan sellers' customer bases. At the workplace, the Internet provides a variety of benefits, ranging from the ability to telework, to giving entrepreneurs the opportunity to turn their ideas into reality.

Although broadband has numerous economic benefits to Michigan, adoption is not universal. For Michigan residents to take full advantage of broadband, it is essential to not only make broadband available to households and businesses, but also to make sure that potential employees have the skills needed to make the most of the opportunities that broadband presents.



⁹ <http://nhts.ornl.gov/2009/pub/stt.pdf>

¹⁰ <http://newsroom.aaa.com/wp-content/uploads/2012/04/YourDrivingCosts2012.pdf>

Methodology

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

Between October 4 and November 4, 2012, Connect Michigan conducted a random digit dial telephone survey of 1,201 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 1,201 respondents randomly contacted statewide, 200 were called on their cellular phones, and 1,001 were contacted via landline telephone. Once the respondent agreed to participate, these surveys took approximately 11 minutes to complete.

Up to four 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 (rural or non-rural), and the results were weighted to coincide with 2010 United States Census population figures. Random sampling, with the inclusion of quotas to reduce bias, were 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 = $\pm 3.07\%$ at a 95% level of confidence for the statewide sample. 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, and margins of error for sub-sectors of the population will be higher, based on differences in sample sizes.

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 urban/rural classification of the respondent's county of residence. Weighting and research consultation were provided by Lucidity Research, LLC. The survey was also subsequently peer reviewed by an expert from Michigan State University.

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.

Definitions

Technology Adoption Definition

1. Internet users are defined as respondents who answered “yes” when asked, “Do you subscribe to the Internet at home?” and every use the Internet when asked, “How often do you go online from home?” or answered “yes” when asked, “Do you use the Internet from any locations outside of your own home?”
2. Broadband adopters are defined as respondents who answered “yes” when asked, “Do you subscribe to the Internet at home?” and answered “broadband or high speed Internet service” when asked, “Which of the following describe the type of Internet service you have at home?”
3. Mobile broadband users are defined as respondents who met any of the following criteria:
 - Responded that they use a cell phone to access the Internet while at home when asked, “When you are at your home, which of the following devices do you use to access the Internet?” or
 - When asked “At what locations outside of your own home do you use the Internet?” responded “Through a cell phone or handheld device” or
 - Responded “yes” when asked, “On your laptop or tablet computer, do you subscribe to a mobile wireless service that allows you to access the Internet through a cellular network?” or
 - Responded “yes” when asked, “On your cell phone, do you subscribe to a plan that allows you to access the Internet?” and reported that they access the Internet via their cell phone when asked, “How often, if ever, do you go online using your cell phone?”
4. e-Learners are defined as Internet users who answered “Taking online classes or conducting research for schoolwork” when asked, “Which of the following activities do you conduct using the Internet?”
5. Teleworkers are defined as employed respondents who answered “You work at home using an Internet connection, instead of commuting to your usual work place” when asked, “Which of the following describe the way you work from home when you do so?”

APPENDIX A:

Select Sample Sizes from Connect Michigan’s 2012 Residential Survey

	Sample Size n=
Total respondents	1,201
Internet Users	991
e-Learners	360
Research or purchase goods or service online	735
Advertise or sell goods or service online	180
Teleworkers	111

Select Sample Sizes from Connect Michigan’s 2011 Business Technology Assessment

	Sample Size n=
All businesses	800