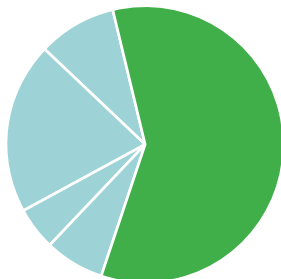


Illinois Innovation Index

Innovation news and metrics for metropolitan Chicago and the state of Illinois



2013 Quarter 1

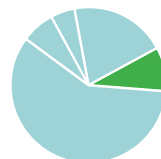
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The Index is brought to you by the Chicagoland Chamber of Commerce, Chicago Metropolitan Agency for Planning, Illinois Science & Technology Coalition, and World Business Chicago.

In partnership with Illinois Innovation Network.



Investing in the future of innovation

Creating a positive environment for innovation requires investment in the building blocks for business operations and growth. Critical components include access to the infrastructure and capital to explore new technologies and develop promising concepts. This quarterly edition of the Illinois Innovation Index provides recent data and analysis on academic R&D, venture capital investment, small business loans, and broadband business connections that demonstrate how these fundamental components of innovation support companies throughout the state.



March 2013

Illinois educational institutions increase R&D funding

This update brought to you by:
World Business Chicago



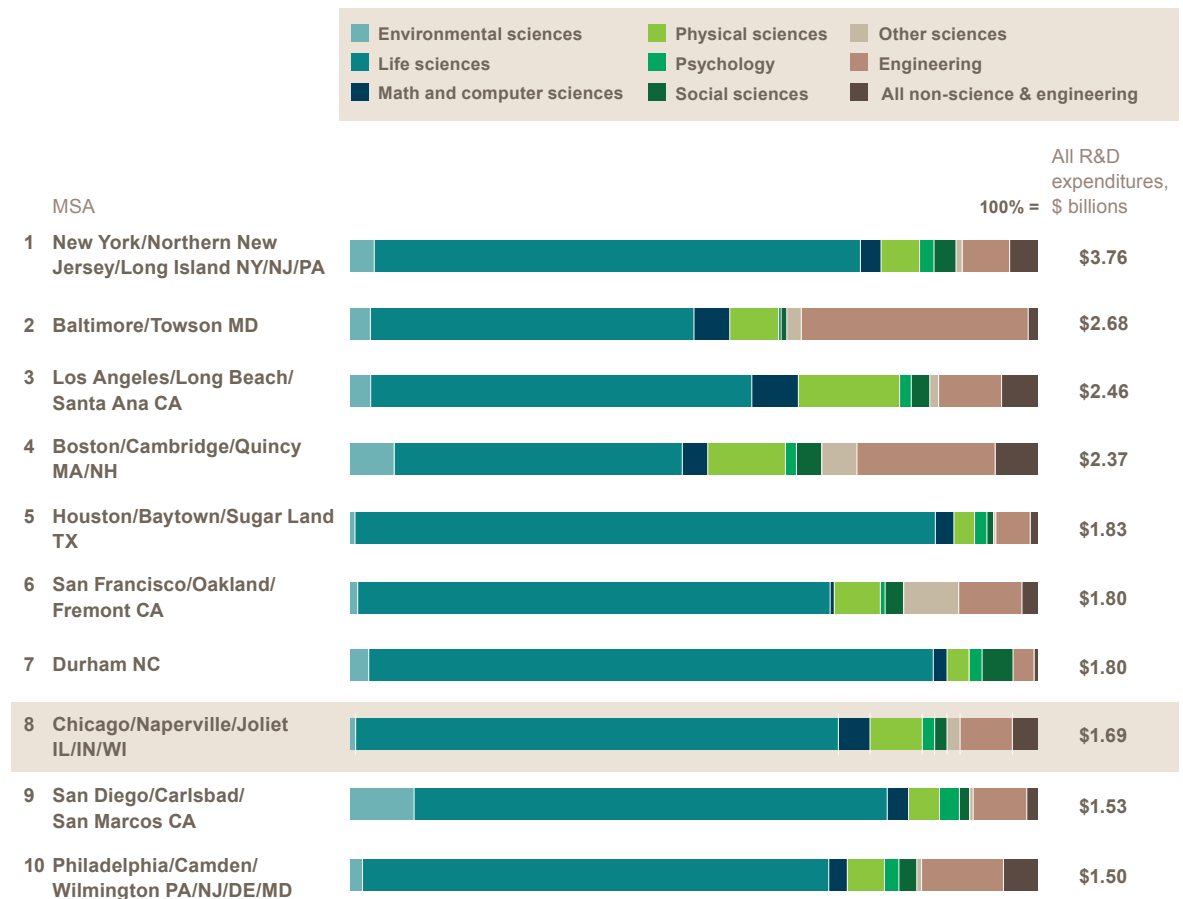
Investments in R&D drive innovation in Illinois by providing the resources to sustain research projects and attract top talent. Educational and federal research institutions (covered in the [December 2011 Index](#)) are two primary recipients of research dollars. The strength of Illinois' educational institutions has helped solidify the state's position as an academic research leader. In addition, Argonne National Laboratory and

Fermi National Accelerator Laboratory are consistently ranked among the top federally funded research and development centers in the nation for R&D expenditures. Funding for these labs increased every year from 2008 to 2011. Recent data from the National Science Foundation¹ indicate that R&D spending at educational institutions in both the metropolitan Chicago and Illinois rose in 2011 (the latest year for which data are available).

Chicago's recent performance

Chicago ranked eighth among U.S. metropolitan statistical areas (MSAs) in total R&D expenditures at educational institutions in 2011, with the majority of spending in life sciences. Its nearly \$1.7 billion in expenditures supported more than 25,000 R&D positions, putting Chicago in fifth place for total academic R&D staffing.²

Top 10 U.S. metros by total R&D funding for educational institutions, 2011, percent



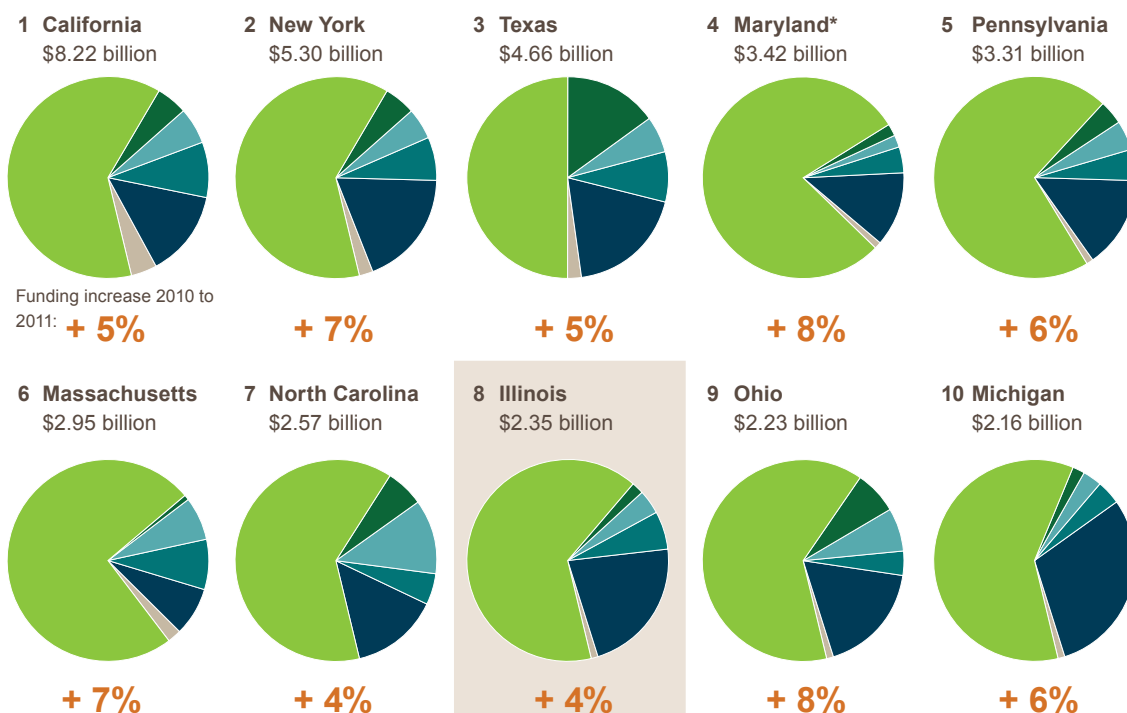
Source: National Science Foundation

From 2010 to 2011, R&D spending at Chicago's educational institutions jumped by \$63 million. However, its 3.8 percent growth rate was outpaced by other leading MSAs: New York and Baltimore saw their levels increase by 9.8 and 7.3 percent, respectively.

How Illinois compares with top states

Total academic R&D expenditures rose in the leading states in 2011, leaving the rankings unchanged from the previous year.³ Illinois' institutions spent more than \$2.3 billion in total academic R&D in 2011, placing it 8th among all

Top 10 states for total academic R&D funding, 2011, by source, percent

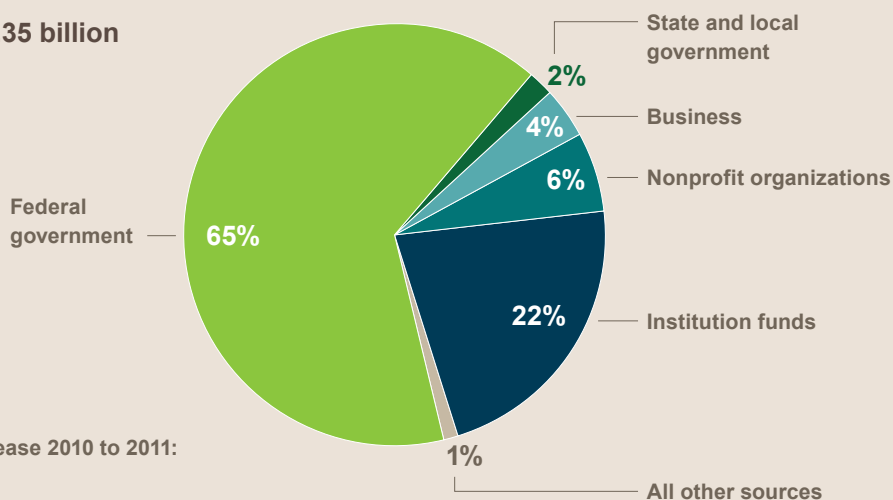


Illinois

100% = \$2.35 billion

Funding increase 2010 to 2011:

+ 4%



* Johns Hopkins University includes expenditures for the university-affiliated Applied Physics Laboratory, which accounted for \$1.1 billion of Maryland's 2011 total. While the APL is technically part of the university, it functions as a vast, separate research center.

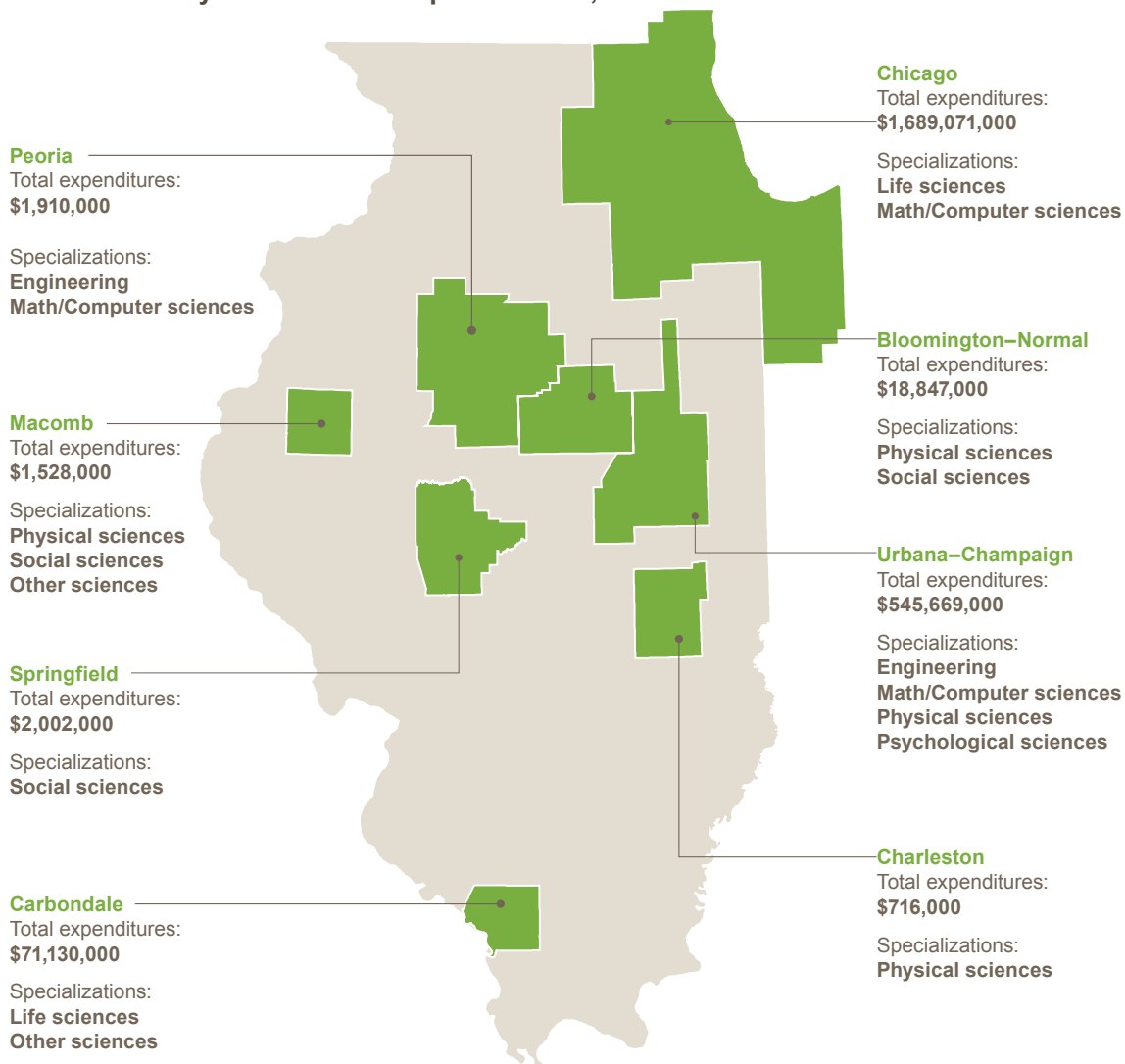
Source: National Science Foundation

states. When counting private institutions only, Illinois was 6th in the nation; by public institutions alone, the state ranked 16th. The composition of funding sources varied among the top states. In Illinois, 87 percent of academic R&D expenditures were supported by funding from the federal government and institutions.

Specialization in math and computer science R&D

Metros with concentrations of funding and talent in technology-related fields can build a competitive advantage in innovation. Illinois institutions ranked fifth among all states in R&D expenditures for math and computer science,

Illinois MSAs by academic R&D specialization, 2011



Note: Location quotients (LQs) can identify local specialization across fields or industries. Here, LQs were calculated by comparing each metro's expenditures by research fields to the corresponding national distribution.

Source: National Science Foundation

with two MSAs—Chicago (#8) and Urbana-Champaign (#9)—among the top ten MSAs in the nation. Further, the University of Illinois at Urbana-Champaign and the University of Chicago ranked sixth and eighth, respectively, among U.S. institutions for total R&D expenditures in math and computer science.

Looking forward

The coming years will bring challenges for all states, as increasing uncertainty surrounding the federal budget threatens to reduce R&D spending in 2013. Illinois' composition of funding sources suggests that private and institutional funding could partially compensate for any reductions in federal funding. ■

¹ This voluntary survey covers all four-year institutions that spent at least \$150,000 in R&D in fiscal year 2011.

² Staffing numbers and ranking based on best available data.

³ The NSF's sample for 2010 included 741 institutions, while 912 institutions contributed data in 2011. Therefore, increases in reported funding could be the result of 2011's larger sample size.

March 2013

Venture capital investments in Illinois favor early-stage funding

This update brought to you by:

**Chicagoland
Chamber
of Commerce**



Data provided by:
**Illinois Venture
Capital Association**

IVCA

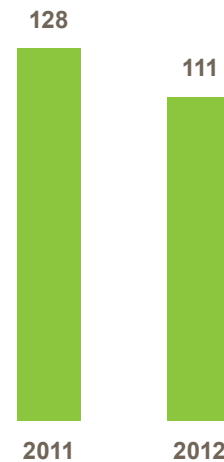
Start-ups and entrepreneurs rely on a number of sources for financing throughout the growth cycle. From early-stage funding to successive rounds of capital, venture capital (VC) firms are a vital element in the state's innovation ecosystem. After a significant uptick in total VC funding in 2010 and 2011, Illinois saw total funding drop significantly in 2012. However, the Illinois Venture Capital Association (IVCA) took a deeper look at the numbers and found evidence that the concentration of investments in the earliest-stage companies rose during this period.

Total VC investments fall in 2012

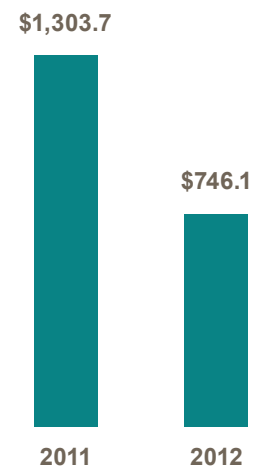
According to the IVCA, VC investments in companies in the nine-county Chicago region account for the overwhelming majority of VC investment in Illinois: in 2012, the Chicago region made up 96.5 percent of the state's total. VC funding for Chicago companies reached \$1.3 billion in 2011 but fell to \$746 million in 2012. While the overall number of companies funded declined 12 percent, from 128 in 2011 (the recent high water mark) to 111 last year, this total was still more than twice the average number of companies funded annually from 2006 to 2010.

Venture capital investments in Chicago region, 2011–2012

Number of companies funded



Reported funding, \$ millions



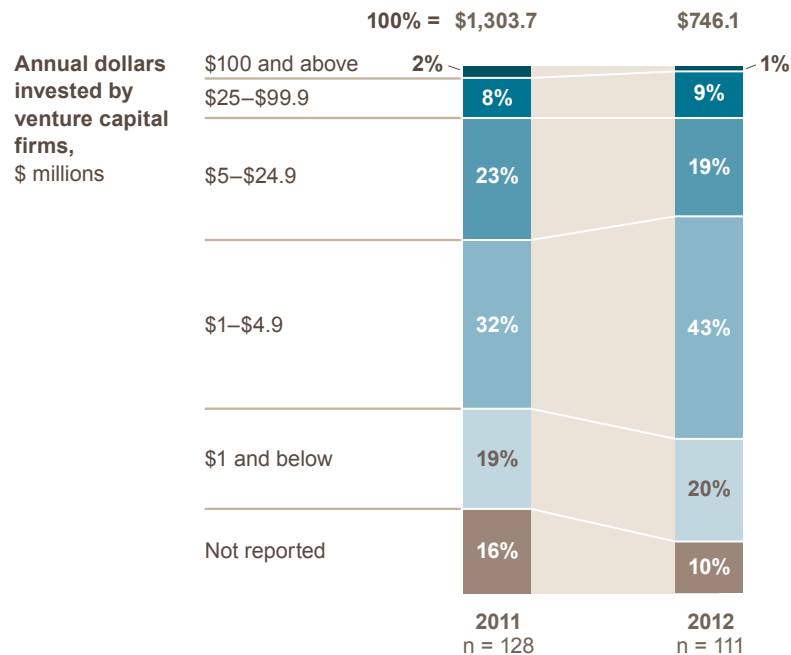
Source: Thomson Venture One, Pitchbook, IVCA research

Providing vital capital for growth

Recent data suggest that Chicago's VC companies have concentrated their focus on early-stage investments even as funding declined for more mature start-ups. Although the region's overall funding fell, the percentage of companies receiving early-stage and seed-stage funding rose slightly in 2012, to 20 percent of total reported

investments. The majority of Chicago companies that receive early-stage funding are very capital-efficient businesses, so the total investment is typically less than \$1 million. The share of second-stage investments (\$1 million–\$4.9 million) also increased—from 32 percent of the total in 2011 to 43 percent in 2012.

Venture capital in Chicago region companies by investment amount, 2011 and 2012



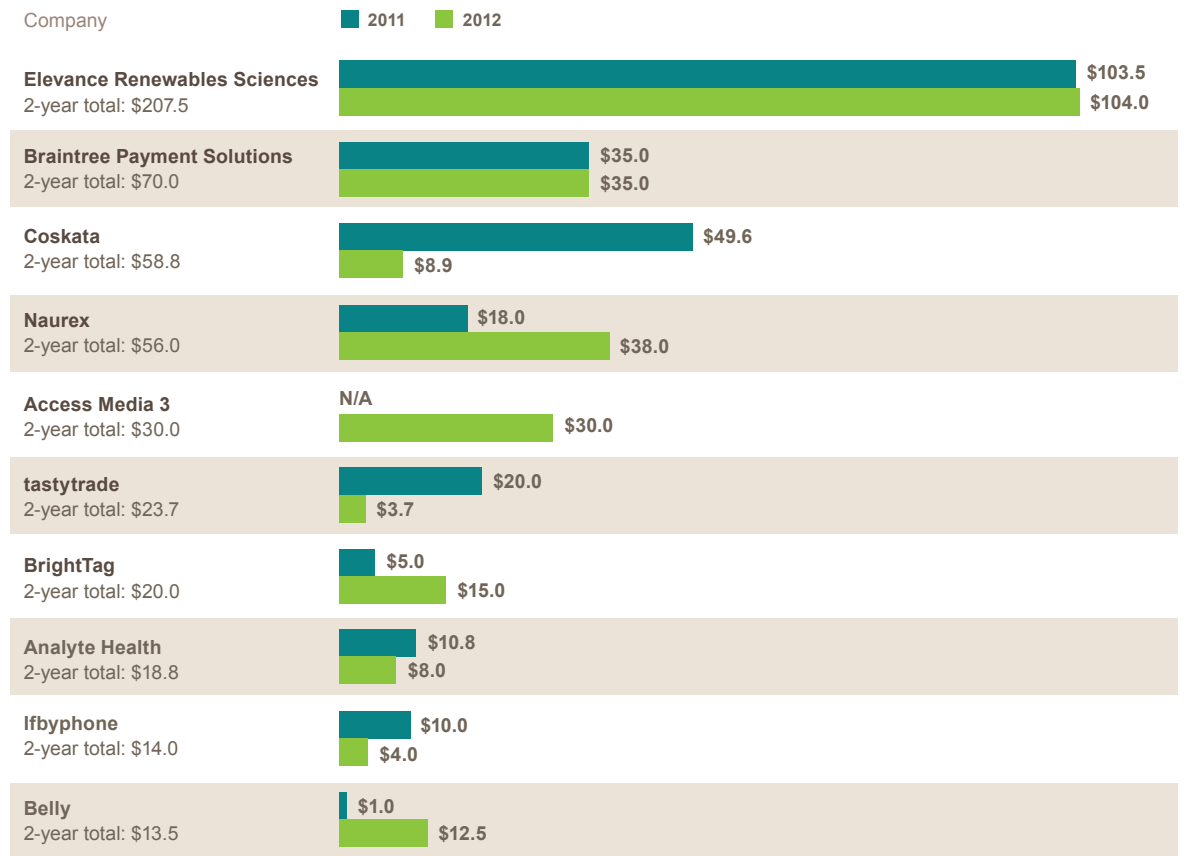
Source: Thomson Venture One, Pitchbook, IVCA research

Pursuing an accelerated path to growth

As in past years, the majority of Chicago region VC funding was concentrated in a handful of companies. In 2012, for example, 55 percent of the total VC dollars went to just 10 businesses. The number of companies that receive funding in consecutive years make up a particularly fast-growing business segment. Since businesses can't pursue additional rounds of funding until

completing certain milestones, the companies that secure capital in consecutive years typically have a robust management team and strong business model. From 2011 to 2012, one-third of the venture capital went to the same 35 companies, with concentrations in biotech, business intelligence, data security, and online consumer tools.

Top recipients of venture capital funding in Chicago region, 2011–2012, \$ millions



Source: Thomson Venture One, Pitchbook, IVCA research

Building on current momentum

The Chicago region has gained the reputation among start-ups and entrepreneurs as a place where companies with promising ideas can gain access to the needed capital to develop their business. Initiatives such as start-up incubator

1871 have served as a magnet for talent and innovation, and the success of Chicago-based companies can send a positive signal of the investment opportunities for VC firms. ■

February 2013

Loans to Illinois small businesses on the rise

This update brought to you by:
Chicago Metropolitan Agency for Planning

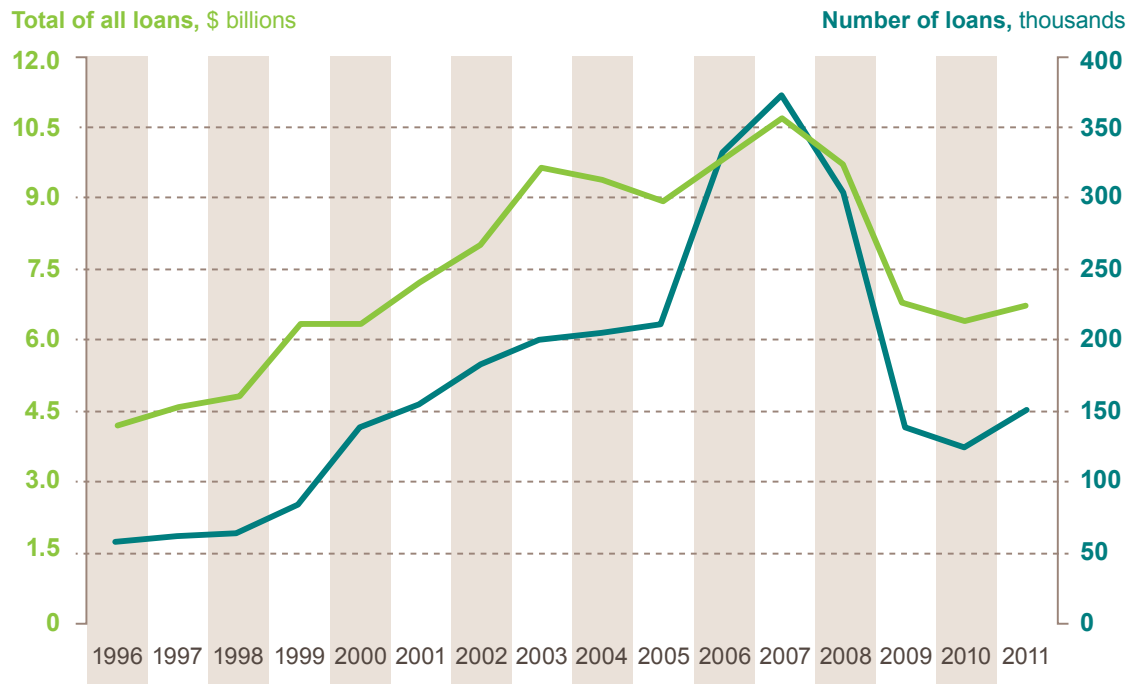


Elected officials and economists alike frequently highlight the importance of small businesses to the economy, and with good reason. In 2009, 5.7 million companies with fewer than 500 employees accounted for 50 percent of total employment in the United States. Nearly a quarter million of these businesses are located in Illinois. The ability of small businesses to secure loans is vital for their ongoing operations

and expansion. Unlike larger companies, small businesses tend to have fewer resources to finance expansion and innovation efforts and so must turn to banks for needed capital.

The Federal Financial Institutions Examination Council collects and provides data on small business lending, which includes loans of less than \$1 million. A look at this category of lending in the Chicago metropolitan region from 1996 to 2011 offers one indicator of the regional economy's vibrancy. Both the region's volume and amount of loans grew steadily from 1996 to 2007, the year they peaked with nearly 378,000 loans totaling \$10.5 billion. As the recession took hold in 2008 and businesses and financial institutions focused on survival, lending plummeted sharply. Although the economy began to rebound in 2009, loans to small businesses did not begin to climb again until 2011.

Small business lending in seven-county Chicago region



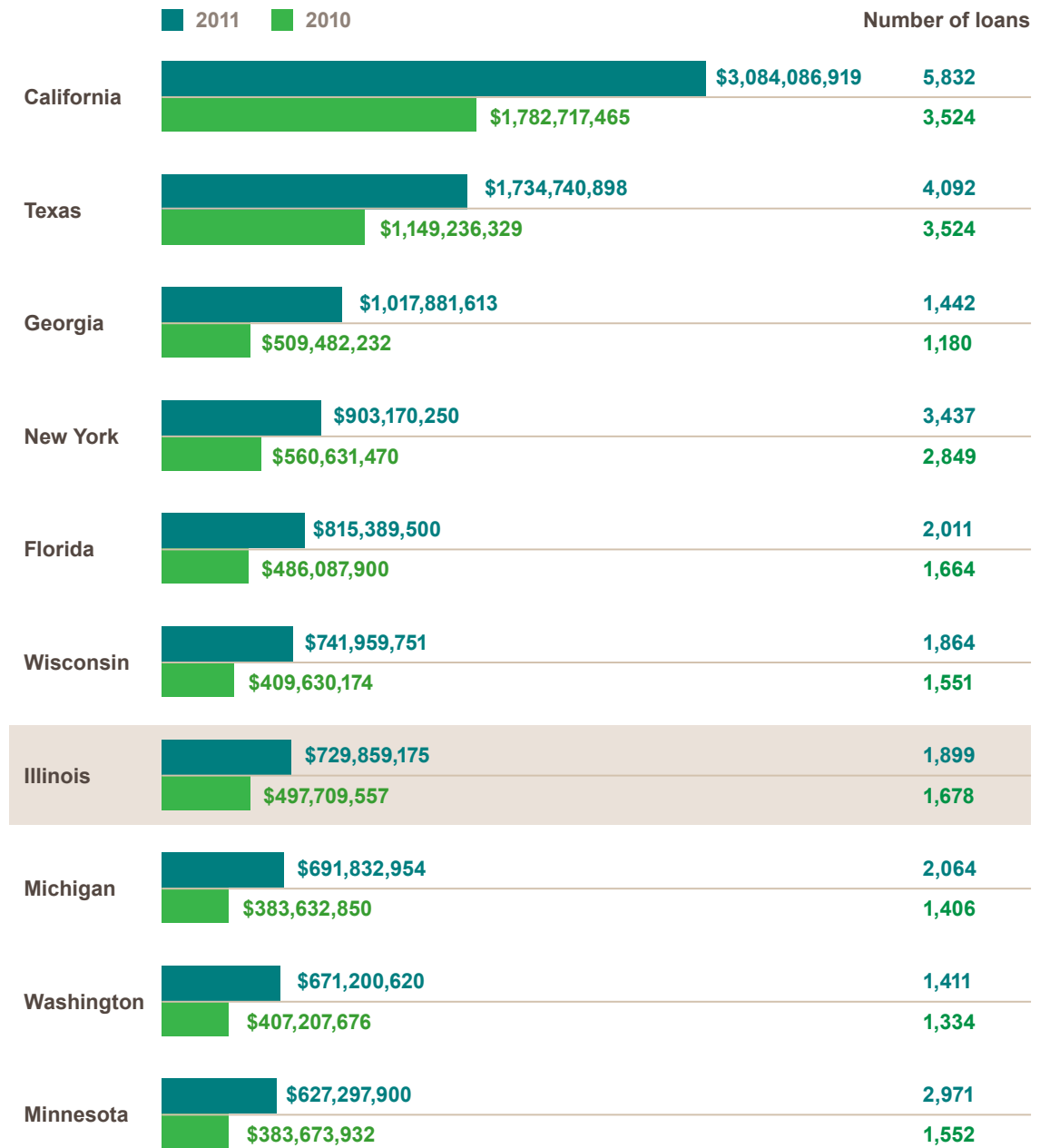
Source: CRA Aggregate File; Federal financial Institutions Examination Council (<http://www.ffiec.gov/>)

While the total amount of lending fell after 2007, the average loan amount grew significantly, jumping from around \$28,000 in 2007 to nearly \$46,000 in 2011. This shift indicates a change in the types of loans being made and likely the types of businesses securing loans.

Government Assistance

The Small Business Administration (SBA) is the primary federal agency that supports business growth through lending programs that improve access to capital. The SBA does not make loans directly but oversees several programs

Top ten states in total amount approved through SBA 7(a) program



Source: National Association of Government Guaranteed Lenders

that encourage lending by participating institutions. The SBA definition of small businesses is based on employment size or sales volume and varies by industry. For example, manufacturers are considered small businesses if they have 500 to 1,500 employees, depending on the type of manufacturing; service-oriented firms are considered small businesses if their sales are \$2.5 million to \$21.5 million, depending on the service being provided. The SBA's flagship lending initiative is the SBA 7(a) Loan Program, which encourages lending by extending loan guarantees to banks. In 2010, Illinois ranked fifth among all states by total dollar amount lent through the 7(a) program but fell behind Florida and Wisconsin in 2011.

Projects are under way to improve lending to small businesses in Illinois. In October 2010, Governor Quinn announced the launch of a new suite of business-lending products through Advantage Illinois. This program, supported in part by the federal Small Business Jobs Act of 2010, aims to expand access to capital. Its efforts include policies that encourage banks to lend to small businesses and a reserve pool to lower the risk to participating institutions. ■

January 2013

Broadband business connections and total coverage in Illinois continue to climb

This update brought to you by:

Illinois Science & Technology Coalition



The May 2012 edition of the Index highlighted that broadband infrastructure has become an integral component of operations for companies across a range of industries. As the authors of TechNet's 2012 State Broadband Index observe, "Increasingly, businesses and local economic development agencies recognize how fast and reliable broadband networks are critical inputs to productivity."

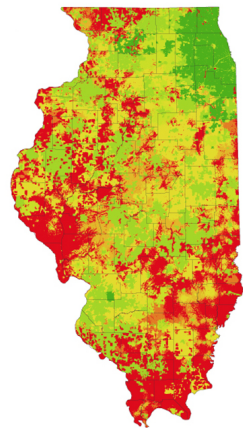
Illinois' government officials and private sector leaders have made a significant commitment to expanding high-speed broadband service to both residential and commercial customers. The latest data show continued progress throughout the state.

In the past several years, the availability of high-speed broadband throughout Illinois has increased significantly. The series of maps below illustrates the expansion of broadband coverage from 2010 to 2012. These images represent fixed broadband infrastructure coverage by the private sector and exclude satellite and cellular coverage.

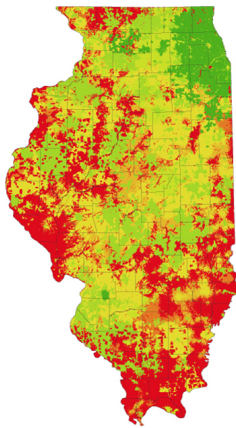
From 2009 to 2011, new business connections in Illinois grew by 865,000 or 232 percent—well above the national median of 197 percent. With this increase, Illinois ranked ninth in the nation,

Illinois maximum advertised download speed tiers

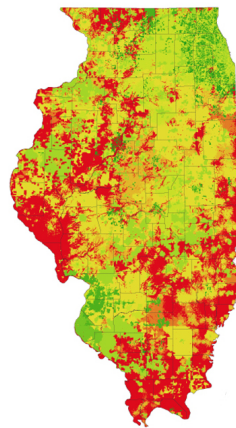
Round 2: June 2010



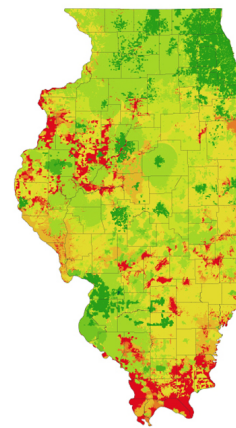
Round 3: December 2010



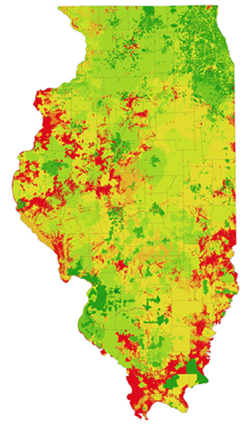
Round 4: June 2011



Round 5: December 2011



Round 6: June 2012



Source: broadbandillinois.org

ahead of states such as New York (227 percent) and California (223 percent).

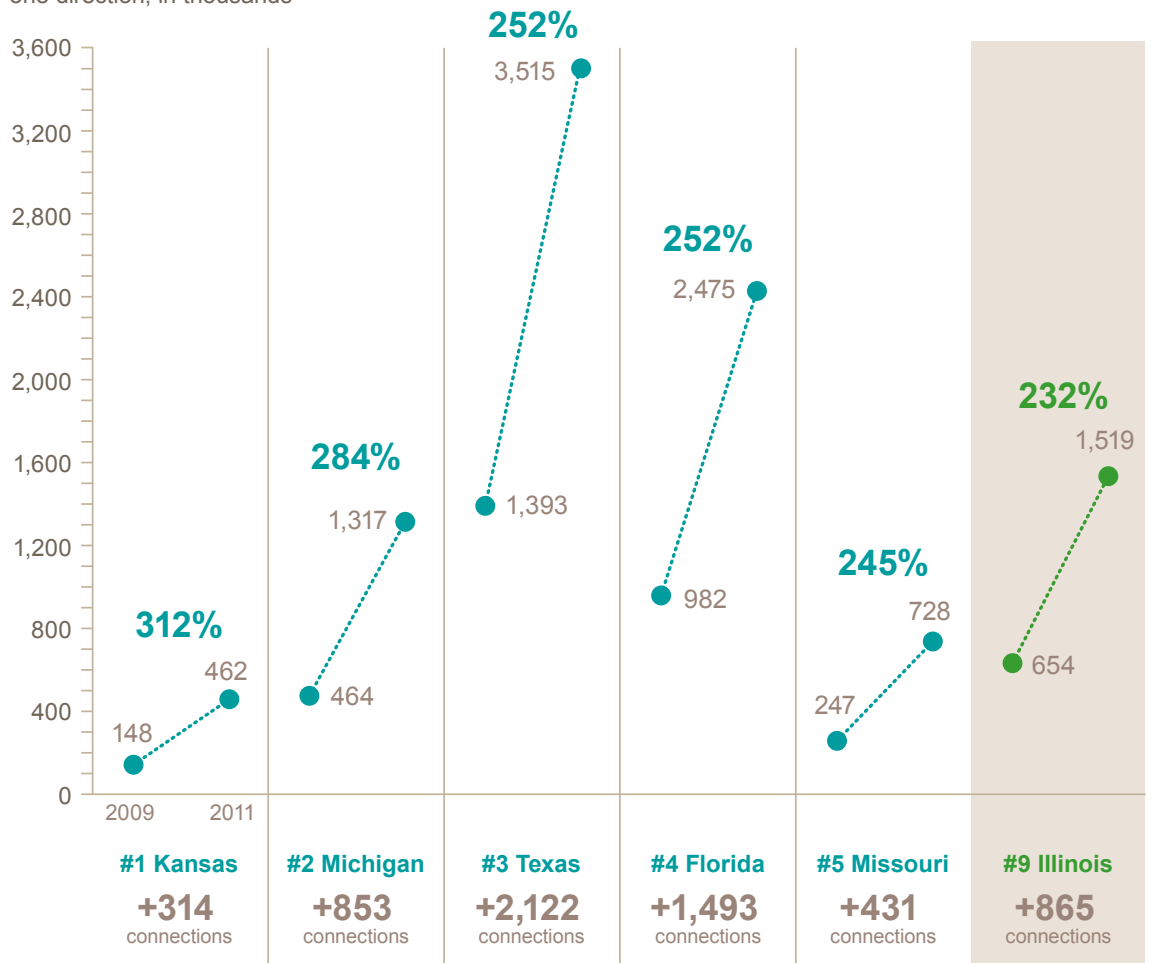
According to the most recent available data, nearly 270,000 jobs, equivalent to 4.83 percent of Illinois' entire workforce, are in information and communication technology (ICT). Illinois' broadband-related ICT workforce is the fifth

largest in the nation, although just slightly above the state-level average of 4.63 percent of total jobs.

Investment in broadband infrastructure by private carriers is being augmented by federal and Illinois state government initiatives. One example is the Gigabit Communities challenge,

Illinois ranks 9th among the top states in growth of business connections, June 2009–June 2011

Connections over 200 kbps in at least one direction, in thousands



Information and communication technology (ICT) employment, top 5 states

	ICT-related employment ¹	Total employment	Percent of total employment ²
#1 California	822,760	14,038,950	5.86%
#2 Texas	498,160	10,304,370	4.83%
#3 New York	466,320	8,427,560	5.53%
#4 Florida	331,300	7,151,700	4.63%
#5 Illinois	269,000	5,574,180	4.83%

¹ See Broadband and ICT ecosystem directly supports nearly 11 million high-paying U.S. jobs, February 28, 2012 (http://www.ustelecom.org/sites/default/files/documents/022812_Employment-Research-Brief-final.pdf).

² Does not include self-employed individuals.

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, 2011 (www.bls.gov/oes/oes_dl.htm)

a competition launched by Illinois Governor Pat Quinn that will award \$4 million in funding to the most promising ultra-high-speed broadband deployment projects in Illinois. On January 22, Evanston received a \$1 million grant as the third award recipient in this program.

These efforts will likely result in expanded broadband coverage in the coming years. The Index will provide updates as more data become available. ■

Spotlight

IIT's Interprofessional Projects Program (IPRO)

Businesses contributed nearly \$100 million to academic R&D at Illinois public and private institutions in 2011. According to the most recent data, Illinois Institute of Technology (IIT) attracted a higher share of its total R&D expenditures from the private sector—6 percent—than did colleges and universities across the United States (5 percent) and within Illinois (4 percent). Private sector support for IIT's flagship Interprofessional Projects Program (IPRO) has been instrumental in forging direct relationships between employers and the workforce pipeline.

Since 1995, IPRO has organized teams of students from various backgrounds to work on contemporary, open-ended challenges such as designing low-cost water purification systems and bricks from recycled materials. In 2010, the IPRO Program launched IPRO 2.0, which further integrates innovation and design thinking into its experiential, project-centered learning curriculum.

IPRO sponsors and community partners—the Chicago White Sox, Coca-Cola, Motorola, Museum of Science and Industry, Sargent & Lundy LLC, and many others—present students a challenge on which their organization would like creative input. Some IPRO projects, such as the Integration of Process Improvements sponsored by A. Finkl & Sons, represent a longer-term, iterative process spanning several semesters. IIT students form a multidisciplinary team and earn course credit by engaging in a collaborative process to create value for stakeholders.

The program strives to harness IIT students' high degree of analytical and technical competence and creativity. The resulting ideas are not only novel and innovative but also technically feasible—working prototypes are often used to demonstrate the concepts. At the end of each semester, teams formally present and exhibit their projects at “IPRO Day” for sponsors, community partners, and panels of judges made up of alumni and other professionals.

ipro.iit.edu

IPRO It takes a team!
INTERPROFESSIONAL
PROJECTS PROGRAM
AT ILLINOIS INSTITUTE OF TECHNOLOGY


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IPRO Day



Over 55 unique student teams from the Spring 2013 semester will be exhibiting their work at the IPRO Day competition on **Friday, April 26th, 2013**. IPRO Day will run from 10am to 3pm in the Hermann Union Building on IIT's Main Campus. Join us to learn more about their work in Sustainability, Technology, Community Development, and Corporate Relations!


The IPRO Program brings together undergraduate students from all majors to work in interdisciplinary teams on real-world projects in engineering research, process improvement, sustainability, service learning and venture development. Many of the projects are sponsored by corporations or community partners.

At the end of each semester, IPRO teams exhibit their work through presentations and exhibits and compete for awards at IPRO Day. Members of the Chicago-area professional community who volunteer as judges at IPRO Day are able to interact with some of the most talented students in the U.S. and learn about cutting-edge research at IIT.

IPRO Day Information

- ▶ [IPRO Day Registration: Guests & Judges](#)
- ▶ [Judging Criteria](#)

From the IPRO Gallery



Spotlight

Elevance Renewable Sciences

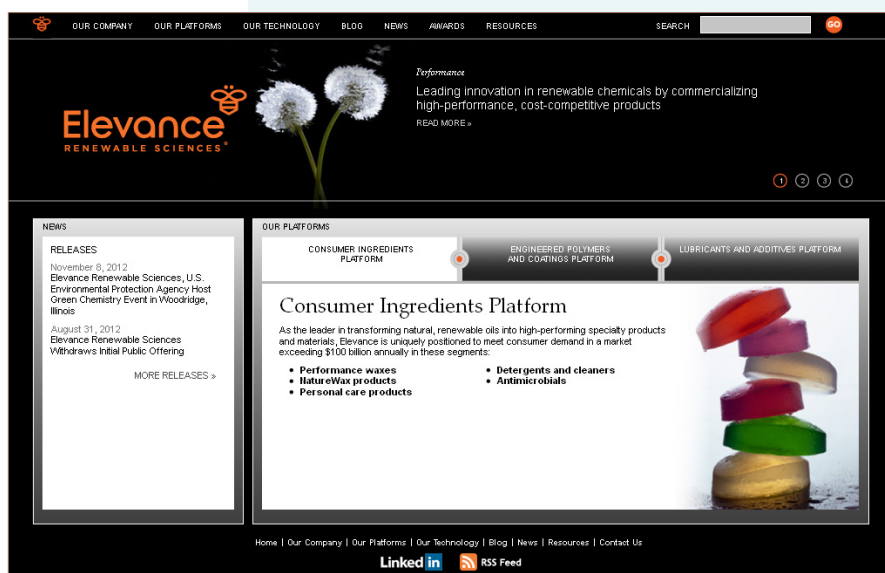
Based in Woodridge, Illinois, Elevance Renewable Sciences, Inc. creates high-performance specialty chemicals from natural oils for use in personal care products, detergents, fuels, lubricants, and other specialty chemicals markets. Elevance produces these chemicals using its proprietary production process, which utilizes Nobel Prize-winning innovations in metathesis catalysis and patent-protected technologies.

Elevance has exclusively licensed patents, owned by and licensed to Materia from the California Institute of Technology. The patents include all of the innovations created by Nobel Laureate Dr. Robert Grubbs for use with natural oils. The company also has a license with XiMo for innovations created by Nobel Laureate Dr. Richard Schrock and his team or developed in collaboration with Elevance.

Elevance was incorporated in 2007 to pursue work started in 2004 in a collaboration between Cargill and Materia. To date, Elevance has raised more than \$300 million in capital from leading investors including TPG, Naxos, and, most recently, \$104 million from Lacustrine Limited, owned by Genting and TOTAL in July 2012. The capital has allowed Elevance to invest in biorefinery construction and hire a highly qualified R&D team with more than 25 doctorates and post-doctorates from leading institutions, including Northwestern University, the University of Chicago, and University of Illinois.

In addition, Elevance has established strategic partnerships with market leaders such as Arkema, Cargill, Dow Corning, and Stepan to accelerate the commercialization and rapid deployment of its technology.

elevance.com



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