

# Illinois Innovation Index

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

## In the numbers

### R&D funding for Illinois universities and research institutions drives innovation

Throughout Illinois' rich history of innovation, private and public organizations have conducted groundbreaking research and introduced technologies that have enhanced quality of life around the world. With more than 440 corporate R&D facilities and more than 200 academic, government, and not-for-profit research institutions, Illinois has one of the strongest concentrations of research institutions in the United States.

The amount of funding Illinois captures has a direct and indirect impact on economic development. According to multipliers developed under the auspices of the U.S. Department of Commerce's Bureau of Economic Analysis, every \$1 million in academic R&D spending supports 36 direct/indirect jobs on average across the United States.<sup>1</sup> In 2009, academic R&D expenditures totaled \$2.1 billion for the state. Total R&D performance<sup>2</sup> for Illinois in 2007,<sup>3</sup> including public and private sector expenditures, was \$14.3 billion.

As the **November edition** of the index illustrated, creating a nurturing environment for innovation requires a sustained and coordinated effort among industry, government, nonprofits, and higher education. Federal labs conduct critical basic and applied research and generate extensive additional economic opportunity in the region, while universities play a similar role and serve as a magnet for innovation: they attract not only the world's top minds but also companies looking for a deep pool of qualified workers.

In 2009, Argonne National Laboratory and Fermilab captured nearly \$875 million in federal funding and millions more in industry-sponsored research. A report by the Anderson Economic Group revealed that in 2010, the two labs generated economic output totaling \$1.34 billion and household earnings of \$410.3 million while supporting the employment of 9,481 people in Illinois.

Beyond their economic impact these facilities have achieved important scientific breakthroughs. Over the past several years, scientists at Argonne, for instance, invented a new nanotechnology technique and contributed to the development of the battery system that is now powering the Chevrolet Volt.

#### Illinois' R&D institutions set the pace in the Midwest

R&D expenditures by FFRDC by institution, top 15, 2009

1. Los Alamos National Laboratory, NM	\$2,172 billion
9. Brookhaven National Laboratory, NY	\$569 million
10. Argonne National Laboratory, IL	\$543 million
11. Idaho National Laboratory, ID	\$388 million
12. National Cancer Institute at Frederick, MD	\$378 million
13. Fermi National Accelerator Laboratory, IL	\$377 million
14. SLAC National Accelerator Laboratory, CA	\$294 million
15. National Renewable Energy Research Laboratory, CO	\$274 million

Research institutions rely on a range of funding sources to fulfill their mission. The National Science Foundation's Survey of Research and Development Expenditures for colleges and universities highlights the multiple stakeholders that must work together to support innovation.

#### How Illinois compares with other leading states

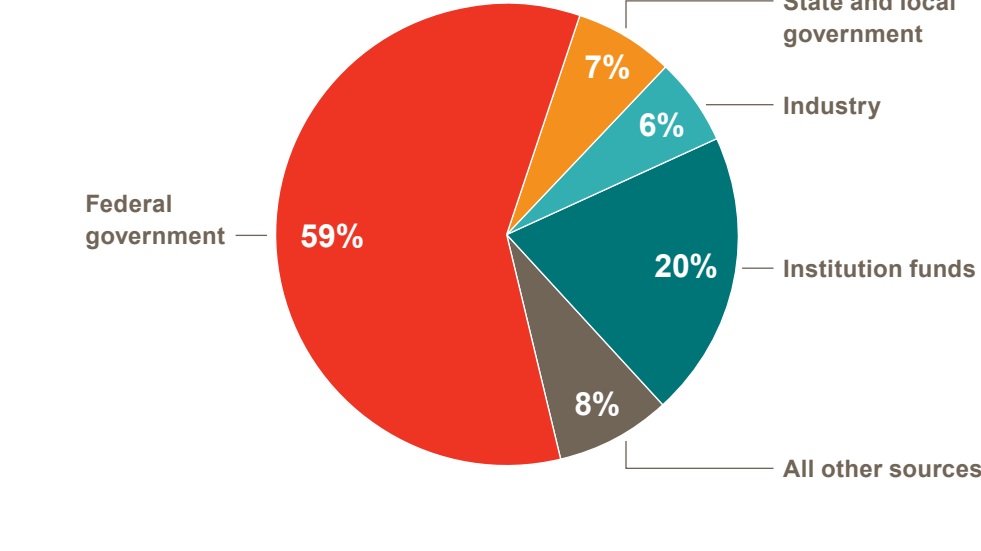
In 2009, the nation's colleges and universities captured a total of nearly \$55 billion in funding for research and development. Overall, federal funding accounts for approximately 60 percent of the total, with institutional sources contributing roughly 20 percent; state and local government, private industry, and other funding sources make up the remainder.

The proportions of sources differ markedly by state and reveal the diversity and balance of funding.

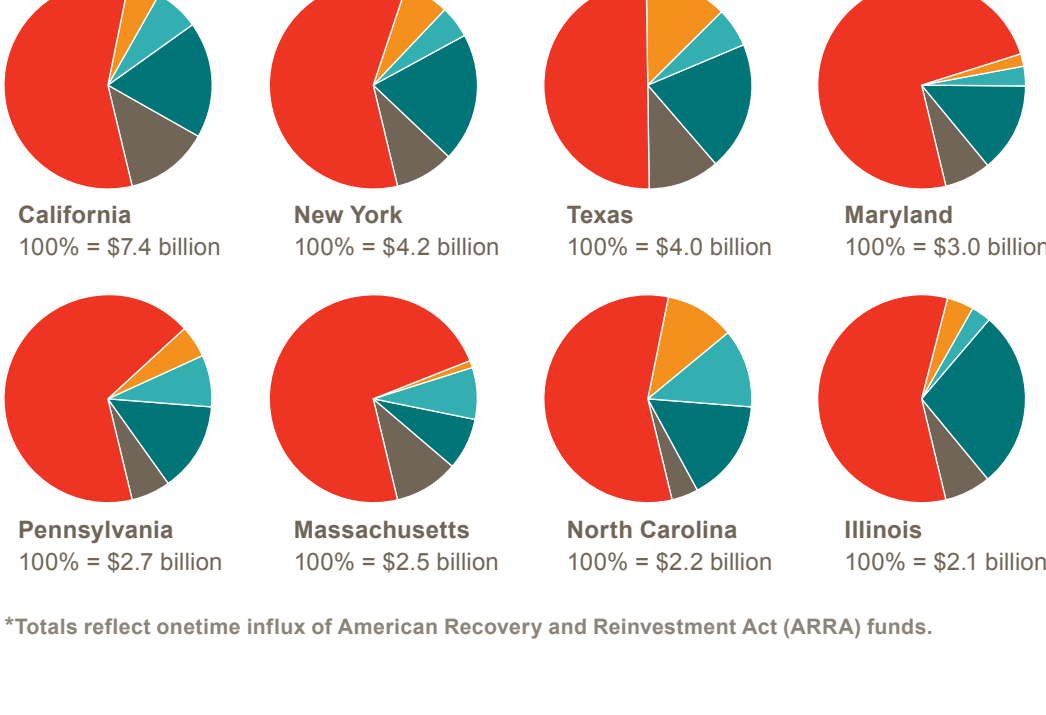
#### A mix of funding sources

Total U.S. R&D expenditures at universities and colleges, control, institution, and source of funds, 2009

100% = \$54.9 billion



#### Distribution of research funding sources for top 8 states\*



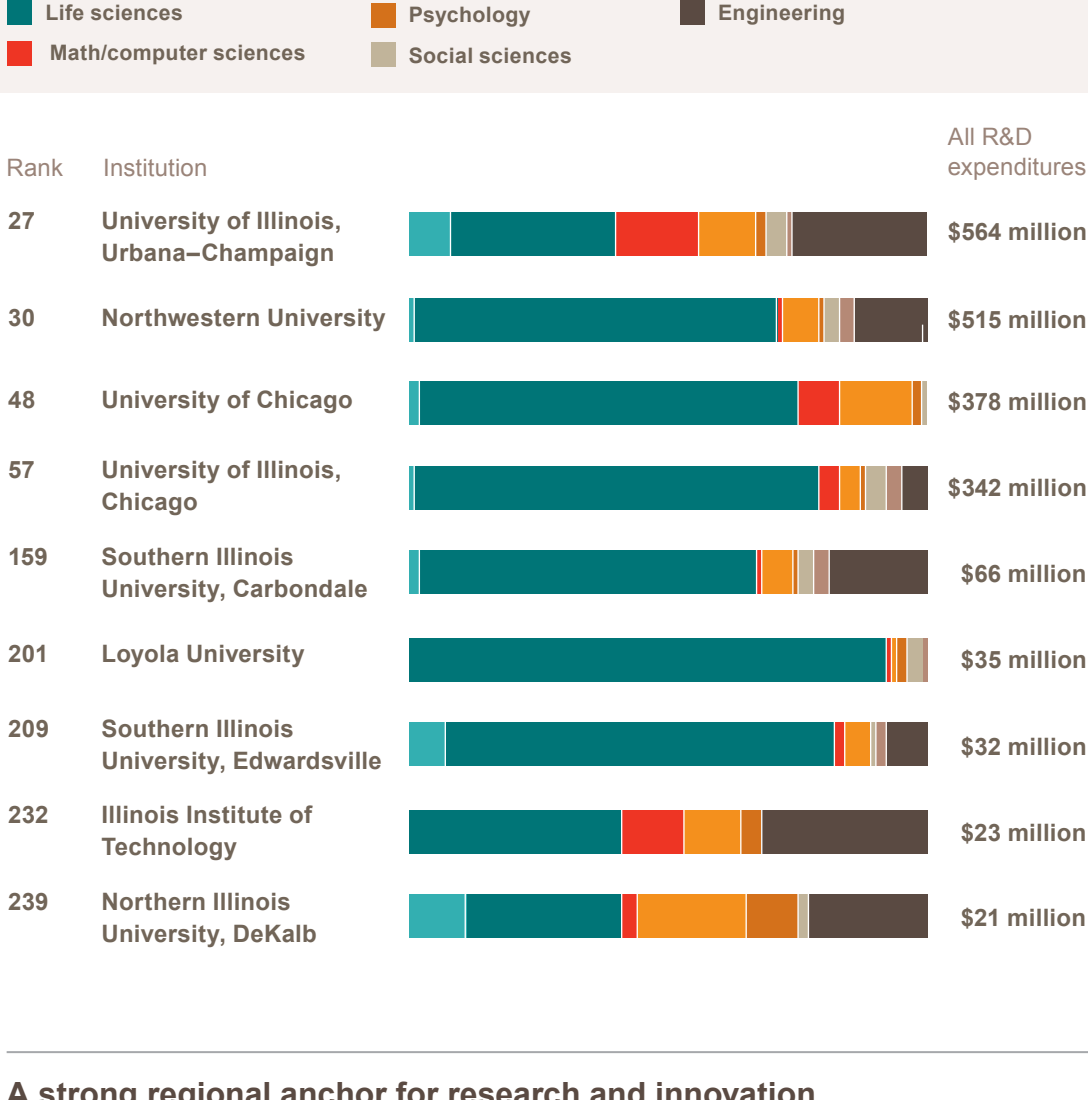
\*Totals reflect onetime influx of American Recovery and Reinvestment Act (ARRA) funds.

#### Funding distribution by educational institution

Among the 696 institutions listed in the NSF sample, Illinois has four colleges and universities in the top decile and nine in the top third. A closer look at how these institutions allocate their resources reveals where the state's R&D activity is concentrated. Life sciences (such as biology, physiology, and biochemistry), math and computer sciences, and engineering are all well represented. In addition, the top Illinois institutions have received more than \$60 million in funding for environmental sciences programs. The concentration in fields with great applied potential speaks to the practical nature of the research conducted in Illinois.

#### Fueling the next generation of innovation

R&D expenditures at Illinois universities and colleges, ranked by science and engineering field, 2009, percent

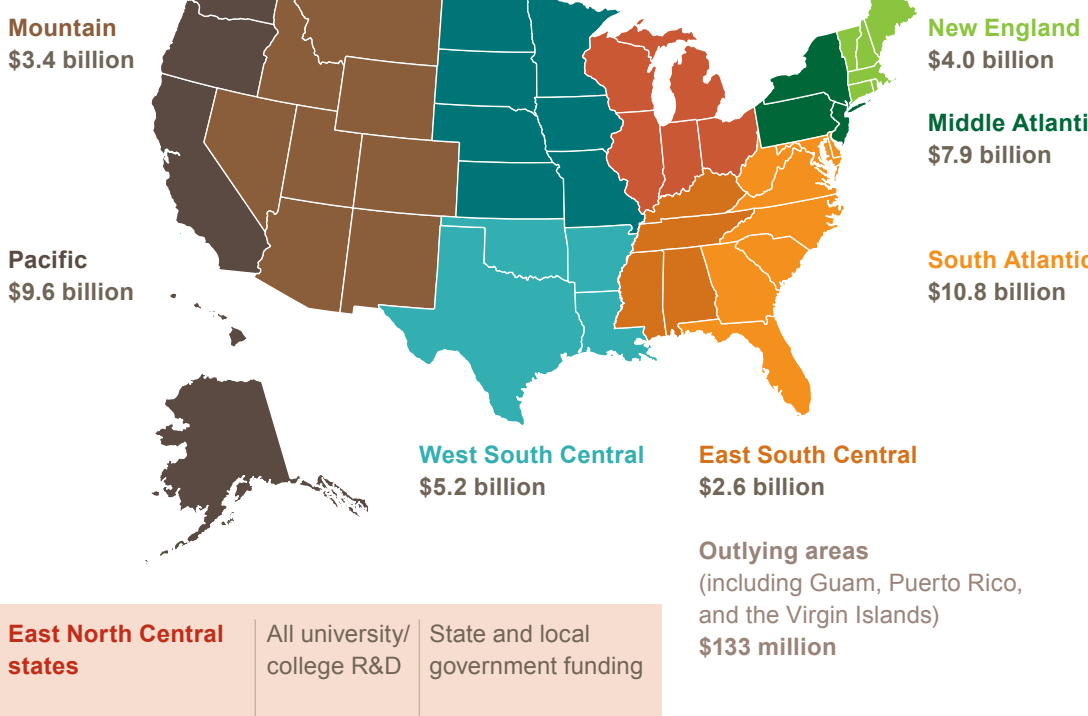


#### A strong regional anchor for research and innovation

Illinois leads the Midwest in R&D funding, and its East North Central region, also comprising Indiana, Michigan, Ohio, and Wisconsin, ranks third out of ten regions nationally, with nearly \$8 billion in funding. Each of these states benefits not only from strong federal support but also robust institutional resources.

#### Strong regional commitment to R&D

Total R&D expenditures at universities and colleges, by geographic division, state, and source of funds, 2009



East North Central states	All university/college R&D	State and local government funding
Illinois	\$2.1 billion	\$77.4 million
Indiana	\$1.0 billion	\$56.5 million
Michigan	\$1.7 billion	\$59.2 million
Ohio	\$1.9 billion	\$209.4 million
Wisconsin	\$1.2 billion	\$46.7 million

The lack of forward-facing federal science and technology investment is already eroding U.S. primacy in this area, and more talent is now concentrated in Asia and Europe, where this type of investment remains a priority. The effect is clear in Illinois, where Tevatron, Fermilab's particle accelerator, was shut down in September, and the long-term federal funding picture is unclear.

Other competing states have taken measures to bolster funding sources. For instance, Ohio leads the region by a wide margin from state and local government to support innovation as a result of its Third Frontier program, which was reapproved by voters in May 2010 in spite of the economic recession.<sup>4</sup>

A recent **Illinois public opinion survey** found that 92 percent of respondents believe it's important for Illinois to be a leader in health R&D, a cluster in which the state has excelled over the past decade. Leaders from business, industry, and education could work together to identify other opportunities that could benefit from greater support. ■

1 The Association of American Universities developed this economic multiplier using methods established by the Bureau of Economic Analysis (BEA) at the U.S. Department of Commerce. In the 1970s, BEA developed the Regional Input-Output Modeling System (RIMS), which updated to RIMS II in 1997. For more information see [www.bea.gov/regional/rims/brfdesc.cfm](http://www.bea.gov/regional/rims/brfdesc.cfm).

2 The sum of R&D funding from industry, government, and nonprofits.

3 The most recent year tracked by NSF data, Illinois is included in the following table: [www.nsf.gov/statistics/show.cfm?stateID=53,14&year=0](http://www.nsf.gov/statistics/show.cfm?stateID=53,14&year=0)

4 According to SRI International, the firm hired by the Third Frontier to conduct an economic impact study, from 2003 through 2008, the Third Frontier and Ohio universities invested \$681 million in research, development, and commercialization projects at academic, research, and development institutions and companies, entrepreneur-development organizations, and venture capital funds.

Source: National Science Foundation's Survey of Research and Development Expenditures for colleges and universities

[Access all of the data →](#)

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## News and events

### University of Illinois honored with 2011 Outstanding Research Park award

The Research Park at the University of Illinois at Urbana-Champaign was named the 2011 Outstanding Research Park by the Association of University Research Parks (AURP) during its annual Awards of Excellence ceremony on December 1. The AURP Awards of Excellence, now in their 16th year, recognize the achievements of research parks and industry veterans and encourage the development of best practices among research and science parks.

The Outstanding Research/Science Park Achievement Award recognizes parks that excel in bringing technology from the laboratory to economically viable business activities, thus promoting the growth of businesses, jobs, and public revenue.

The U of I's Research Park, which opened a decade ago, is now home to more than 90 companies employing more than 1,200 people. It provides internship opportunities for students, resources for faculty to commercialize new technology in conjunction with academic work, and engagement opportunities for companies that want to collaborate with the University of Illinois.

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## Spotlight

### Collaborative Science and Engineering

This fall, the National Science Foundation awarded Northwestern University a six-year, \$16.2 million grant to support its Materials Research Science and Engineering Center (MRSEC), one of the oldest interdisciplinary research centers in the nation.

The Northwestern center, headed by Professor Monica Olvera de la Cruz, integrates educational activities with a scientific research program. It is one of six materials research science and engineering centers in the nation to renew support from the NSF this fiscal year.

Founded in 1960, the center provides Northwestern scientists and engineers with the infrastructure and environment for designing, synthesizing, and characterizing transformative new nanoscale materials and exploring new device concepts. Faculty from eight departments and more than 500 students use the shared facilities each year.

[mrsec.northwestern.edu →](http://mrsec.northwestern.edu)

### NIU-Rockford collaborative wins \$2.4 million to accelerate aerospace cluster

Higher-education and economic development leaders are working together to accelerate the growth of the aerospace cluster in Rockford after winning a \$2.4 million federal Jobs and Innovation Accelerator Challenge grant. Rockford is one of only 20 cities in the country to be awarded one of these highly competitive grants, which receive funding from the Department of Commerce's Economic Development Administration (EDA), Department of Labor's Employment Training Administration (ETA), and the Small Business Administration (SBA). Northern Illinois University is the lead partner in a group that includes Rock Valley College, the Rockford Area Economic Development Council, the Rockford Area WIB, and EIGERlab.

The project's primary goals are to enhance innovation and technical knowledge to accelerate the advancement of local SMEs, increase the market for the Rockford-area aerospace cluster, and expand the development of the regional aerospace workforce. Special emphasis is being placed on the inclusion of disadvantaged populations in the workforce through STEM education, training, and internships. Through this innovative partnership, new products and practices will be developed to strengthen the cluster's global competitiveness, an environment of knowledge-sharing will be built in the region, and the region's skilled manufacturing capacity will be expanded.

[link to full news report →](#)

[Did you miss last month's newsletter on Illinois' emerging industry clusters →](#)

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