“I find the great thing in this world is not so much where we stand, but in what direction we are moving . . .
we must sail, and not drift nor lie at anchor.”

— Supreme Court Justice Oliver Wendell Holmes Jr.
IU: TRANSFORMING INDIANA

Life sciences innovations, increased job opportunities, improved health for Hoosiers, an educated workforce, rich arts and humanities offerings, a growing economy: these are just some of the ways Indiana University improves the lives of Hoosier citizens each and every day. Education and cutting-edge research are the keys to building a strong knowledge economy. IU is doing its part. For instance, IU continues to be the main producer of degree-holders in Indiana’s “Top Ten Hot Jobs.” These are areas of greatest importance to the state’s future.

Internship programs at IU Bloomington, IU East and IU Kokomo pair students with area businesses, providing students with valuable experience and connections that directly reverse the “brain drain” syndrome.

To ensure that all of our young people have a chance to participate in the new knowledge economy, we have mounted initiatives designed to help underprivileged middle and high school students bridge the achievement gap in science, technology, engineering and mathematics.

In terms of research, last year IU faculty once again attracted more grants and contracts to fund research than all of the state’s other four-year public and private universities combined. More than half of these sponsored research dollars funded life sciences research and clinical trial programs. These funds help our faculty members develop new diagnostic tools and cures for the diseases that affect Hoosiers most: cancer, diabetes and heart disease.

IU’s research enterprise also yields intellectual property that has significant economic development impact in the form of new products and new businesses. The IU Emerging Technologies Center in downtown Indianapolis is home to more than 20 life sciences and information technology business spin-offs from such discoveries. These businesses contribute to the outstanding life sciences economy in Indiana. Currently, 18 percent, or $69 billion, of Indiana’s economic output is tied to the health industry. Our state is one of the nation’s top four life sciences leaders based on the number and concentration of life sciences jobs. Accelerating Indiana, the state’s economic development strategic plan, advocates increasing universities’ capacity to conduct research that will lead to an influx of new businesses, revenue and jobs.

IU is ready to play a major role in that effort. We have developed the Indiana Life Sciences Initiative. It is a bold vision for Indiana’s future. By 2019, the plan will bring an additional $2.4 billion in research dollars to the state, create 14,000 new jobs, and foster development of at least 100 new companies. The initiative requires an investment from the state of $80 million over the next two years—modest in comparison to what our neighboring states are investing.

This impact report illustrates how IU is helping Indiana improve the lives of its citizens through excellent, accessible higher education and cutting-edge research and creative activity. You can expect even greater things to come. IU is committed to transforming the Indiana of today and of the future.

Adam W. Herbert
President
Indiana University
APPLYING LIFE SCIENCES RESEARCH TO AN URGENT HEALTH CRISIS

Indiana faces a looming health—and economic—crisis: 7.4 percent of Hoosiers (338,000 people) have been diagnosed with diabetes, a figure higher than the national percentage of 6.7. Researchers think that an additional 182,000 Hoosiers may have diabetes but not know it.

Diabetes is a major cause of blindness, kidney disease, and amputations and a contributor to heart attacks and stroke. Health care costs for diabetics average $13,200 annually, or more than five times the costs for persons without the disease. That’s approximately $4.5 billion a year for Hoosiers with diabetes.

Indiana University is attacking the problem from all sides—from prevention to treatment to cure. Some of the most exciting developments are in the area of prevention.

For example, IU played a key role in a landmark National Institutes of Health study that showed lifestyle changes can significantly reduce chances of developing diabetes. “We learned that modest weight loss and increased physical activity can reduce by as much as 60 percent the onset of diabetes for people who are at increased risk,” says David Marrero, the J. D. Ritchey Professor of Medicine and director of the Diabetes Prevention and Control Center at the IU School of Medicine. Researchers saw significant results for people who lost 5 to 7 percent of their body mass and exercised for 30 minutes five days a week.

“How do we translate this information into the public health domain?” he says. As one promising strategy, Marrero’s colleague Ronald Ackerman, M.D., is directing a partnership with five YMCAs in the Indianapolis area to offer diet and exercise programs that can help those at risk to significantly improve their health outlook. Marrero says, “With 2,400 YMCAs, with 19 million members, in 10,000 communities around the country, we can have a major impact on curbing this disease.”
• With the Indiana University Life Sciences Initiative, Indiana can become a national leader in the highly competitive field of life sciences. The Life Sciences Strategic Plan sets the goal of increasing technology transfer from the university to the private sector to promote economic development. In accordance with this goal, IU plans to generate at least $100 million in intellectual property revenue by the year 2019.

• The Indiana University School of Dentistry’s Oral Health Research Institute recently received a $3.4 million grant from the National Institutes of Health to study the early detection of tooth decay. The long-term goal of the study is to help dentists replace traditional diagnostic tools that can identify decay only in its more advanced stages. New technologies under investigation are expected to spot trouble while the tooth’s surface still appears to be undamaged.

• IU’s Johnson Center for Entrepreneurship and Aledo Consulting provide real-world advice to IU School of Medicine researchers who are creating new life sciences businesses.

• Using data from the federal Human Genome Project, the Indiana Genomics Initiative (INGEN) enables researchers to make groundbreaking medical discoveries and find cures for diseases. A $105 million grant from the Lilly Endowment launched the project in December 2000. This biomedical venture is strengthened by IU’s School of Medicine, Office of Information Technology, and Biotechnology Research and Training Center, which houses 43 researchers in more than 40 laboratories and support areas.

**FEDERAL FUNDING FOR LIFE SCIENCES RESEARCH**

Indiana University’s research funding from the two primary federal life sciences sources—the National Institutes of Health and the National Science Foundation Biology Directorate—have increased by two thirds (68%) between 1998 and 2005. IU currently ranks seventh among the 11 Big Ten Universities. The Life Sciences Initiative aims to increase IU’s ranking significantly on this measure of success.

**INDIANA UNIVERSITY RESEARCH AWARD TREND**

**NIH/NSF BIOLOGY FUNDING AMONG BIG TEN UNIVERSITIES**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 University of Michigan</td>
<td>$389,262,410</td>
</tr>
<tr>
<td>2 University of Wisconsin</td>
<td>$270,559,598</td>
</tr>
<tr>
<td>3 University of Minnesota</td>
<td>$237,535,684</td>
</tr>
<tr>
<td>4 University of Illinois</td>
<td>$203,618,492</td>
</tr>
<tr>
<td>5 Northwestern University</td>
<td>$169,573,712</td>
</tr>
<tr>
<td>6 University of Iowa</td>
<td>$168,276,755</td>
</tr>
<tr>
<td>7 Indiana University</td>
<td>$146,645,069</td>
</tr>
<tr>
<td>8 Ohio State University</td>
<td>$127,843,233</td>
</tr>
<tr>
<td>9 Penn State University</td>
<td>$95,905,404</td>
</tr>
<tr>
<td>10 Michigan State University</td>
<td>$3,020,033</td>
</tr>
<tr>
<td>11 Purdue University</td>
<td>$48,616,266</td>
</tr>
</tbody>
</table>

IU includes both Bloomington and Indianapolis; Ohio State, Penn State, and Purdue include all campuses.
OVERCOMING LAYOFFS WITH WORKFORCE DEVELOPMENT

Lori and Roger Hall were perfectly happy with their factory jobs (she at GE, he at Otis Elevator) and didn’t plan on new careers—until they learned of imminent layoffs at both factories. The couple enrolled in a Workforce One re-education program to earn degrees through IU Bloomington’s Continuing Studies Program.

While Roger already had a two-year associate degree from Vincennes University, Lori hadn’t considered college until the layoffs.

“I was content with my job,” says Lori, who started at IU a year before Roger, eventually earning a Certificate in Nonprofit Management in 2004 and her Bachelor of General Studies in 2006. “Being laid off kind of opened doors.”

Lori initially planned to earn an associate degree. “I had just finished my second year when my advisors said, ‘Lori, you’re nearly halfway to your bachelor’s degree.’ So I got my four-year degree.”

Being part of a like-minded peer group of returning students helped Roger transition back into college. “I sat in the front, asked questions, and appreciated what the instructors were teaching,” he says. “You learn not to take anything for granted.”

In August, Lori was hired as a family and student advisor at Linton–Stockton Junior High. As an advisor, Lori does conflict resolution with parents and students, makes referrals to social service agencies, teaches students how to build healthy relationships, and intervenes in crisis situations.

Roger recently began a job at Pfizer Pharmaceuticals and is working toward an online master’s degree in criminology. Lori has the ultimate goal of earning a Ph.D. She recognizes the influence that her college career has had on her children. “My first day of college was my daughter’s first day of kindergarten,” says Lori. “I can see the difference it made for them, being exposed to college.”
• Governor Mitch Daniels’ Strategic Skills Initiative for workforce development has granted IU’s School of Continuing Studies $45,000 to enable 50 students to complete a Managing in the Life Sciences Certificate Program over the next two years.

• IUPUI’s Indiana Center for Intercultural Communication provides organizations and individuals with tools to communicate more effectively by combining research with custom training in languages. It offers workforce training options such as English classes for native Spanish speakers and vice versa.

• IU Kokomo is home to the ACCElerated Evening College Program, in which students with daytime obligations can complete courses through classroom and online work in 8 weeks instead of the usual 16.

• The recent book *The Influentials* cites Shelley D. Miller, former mayor of Richmond, as a leader whose exceptional service touches the lives of those around her. As a returning adult student, Miller earned an accounting degree at IU East and IUPUI. She is now a vice president at West End Bank.

**EDUCATING INDIANA’S PROFESSIONAL WORKFORCE**

Between 1996 and 2005, Indiana’s public and private colleges and universities conferred over 400,000 bachelor’s, master’s, first professional, and doctoral degrees. Indiana University conferred nearly 150,000 or over one third (36%) of that total. The chart below shows the fields in which degrees were conferred in order of overall popularity. IU has contributed most notably to the conferral of degrees in human services and public administration, education, and the health and life sciences.

<table>
<thead>
<tr>
<th>Percentage of Degrees Conferred by IU</th>
<th>Total Baccalaureate and Higher Degrees Conferred in Indiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>73%</td>
<td>91,885</td>
</tr>
<tr>
<td>47%</td>
<td>51,099</td>
</tr>
<tr>
<td>42%</td>
<td>49,777</td>
</tr>
<tr>
<td>35%</td>
<td>43,909</td>
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<tr>
<td>34%</td>
<td>34,548</td>
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<tr>
<td>9%</td>
<td>31,384</td>
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<tr>
<td>38%</td>
<td>22,494</td>
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<tr>
<td>17%</td>
<td>11,392</td>
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<tr>
<td>17%</td>
<td>11,387</td>
</tr>
<tr>
<td>4%</td>
<td>2,447</td>
</tr>
</tbody>
</table>

*Source: National Center for Education Statistics, IPEDS Completion Surveys, 1996 through 2005*
REINVENTING LIVES THROUGH EDUCATION

Dawn Jones’s children know the benefits of a good education. Their mother, with Bachelor of General Studies and Master of Public Affairs degrees from IU South Bend, is living proof of it.

When Jones left an abusive marriage in Chicago to move into a South Bend YMCA women’s shelter, she had four children to support. Though she’d gained skills from working at a retirement-benefits firm in Chicago, she had only a high school education, limiting her career prospects. “I had to re-establish myself,” says Jones. “I participated in a lot of the YMCA’s programs and came to the realization that I needed to do something to improve the quality of life for my children.”

So Jones enlisted the help of a YMCA caseworker to complete financial-aid forms, and she soon became a 29-year-old freshman at IU South Bend. Her financial aid enabled her to go to college but did not cover child care costs and reduced her government assistance. Jones was advised to delay her education until her three-year-old was in school full time, but she wasn’t interested in waiting. “That would have been three years of doing nothing or working menial jobs,” she says. Instead, after finding a way to afford child care, Jones wrote her congressman, Tim Roemer, to describe the obstacles she’d encountered trying to support herself and her children without becoming dependent on public assistance.

Then, while a junior at IU, Jones sent her resume to Roemer’s office. Her initiative paid off. “I ended up with a job and worked for the congressman for seven years in South Bend,” she says. She left Roemer’s office in 2000 to run for a seat on the South Bend school board. She beat the other two candidates, receiving 67 percent of the vote. Jones was recently elected president of the board.

Jones’s oldest daughter is a research scientist at Notre Dame. One son is an electrical engineer in the U.S. Navy, another daughter has a nursing degree, and one is majoring in English at Manchester College. “All of my kids know the program,” she says. “Education is the way.”
• The IUPUI Women in Science Program creates a learning environment to sustain and support women’s interest and talent in science. Students live on campus, receive a $1,000 scholarship, engage in community outreach activities, and raise awareness among girls and young women about science careers.

• The Indiana Institute on Disability and Community on the Bloomington campus recently received a $1.3 million grant from the Corporation for National and Community Service to engage youth with disabilities in service activities. One project is collecting oral histories from disabled veterans for the national Veterans History Project.

• Pervasive Technology Laboratories on the Bloomington and Indianapolis campuses has launched a community outreach program to promote science and technology education among Indiana’s residents. The goal is to attract, develop, and retain Indiana’s future workforce by increasing citizens’ awareness of the value and impact of advanced information technology.

**EDUCATIONAL ACCESS AND AFFORDABILITY**

Indiana University enrolls over two-fifths of all undergraduate students who attend one of Indiana’s five public four-year universities. IU’s share of both low-income and underrepresented minority students (African American, Latino, and American Indian) is slightly higher than its overall share of students.

<table>
<thead>
<tr>
<th>Overall, Low-Income, and Underrepresented Minority Enrollment at Indiana’s Public Four-Year Universities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Undergraduate Enrollment</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Indiana University (all campuses)</td>
</tr>
<tr>
<td>Purdue University (all campuses)</td>
</tr>
<tr>
<td>Ball State University</td>
</tr>
<tr>
<td>Indiana State University</td>
</tr>
<tr>
<td>University of Southern Indiana</td>
</tr>
<tr>
<td>State Total</td>
</tr>
</tbody>
</table>

Source: U.S. Department of Education, Fall 2004 (most recently available data related to income eligibility). Low-income status is determined by eligibility for a federal Pell Grant.

**PROPORTION OF UNDERGRADUATE ENROLLMENT**

**PROPORTION OF LOW-INCOME STUDENTS**

**PROPORTION OF UNDERREPRESENTED MINORITIES**
SAVING INDIANA MILLIONS, SAVING INDIANA LIVES

In the waiting room at an outpatient clinic, a woman loses consciousness and is rushed to the emergency room. With only the patient’s driver’s license, the attending emergency-room physician makes a life-saving diagnosis in under a minute.

This is not an episode from a TV medical drama, but a real day in the life at Wishard Memorial Hospital, where the nation’s most comprehensive electronic medical records network gives physicians swift, secure access to critical patient information. Wishard’s large patient database—the Regenstrief Medical Records System (RMRS)—is also the source for the Indiana Network for Patient Care, an essential resource for ER physicians at 15 hospitals in central Indiana, including those of the Indiana University Medical Center.

“Ninety-eight percent of what a doctor does involves gathering, storing, moving, and otherwise managing information,” says Dr. William Tierney, Chancellor’s Professor at the IU School of Medicine and senior investigator in the Regenstrief Institute. “Medicine is an information business.”

Health care research conducted by Regenstrief investigators like Tierney and the remarkable efficiency of the RMRS have been key to the hospital’s success.

Wishard is one of the nation’s 92 public hospitals located near vulnerable inner-city populations, and it serves many medically indigent patients who could not otherwise afford health care. Since its collaboration with the Regenstrief Institute, Wishard has experienced a rapid decline in patients’ length of stay, and it boasts one of the lowest mortality rates among hospitals of its kind.

Regenstrief technology is also the driving force behind the Indiana Health Information Exchange (IHIE), which enables Indiana health care providers to securely share medical records. The IHIE could save central Indiana alone nearly $500 million per year in health care costs, according to Dr. Marc Overhage, president and CEO of the IHIE.

As automating health care becomes a national priority, the Regenstrief Institute is increasingly called upon as a pioneer, leader, and model in the movement. “We have a lot of visibility,” says Dr. Clement J. McDonald, creator of the RMRS, distinguished IU professor, and founding director of the Regenstrief Institute. “Creating unified medical information capability in central Indiana is a model for the world.”
• The Indiana University Cancer Center is the only National Cancer Institute–designated cancer center providing clinical care in Indiana. Patients can receive comprehensive diagnosis and treatment under one roof. In addition to patient care, the center provides research, education, and dissemination of information to reduce the burden of cancer.

• Riley Hospital for Children (part of Clarian Health) provides the best care and most current treatment options for Indiana’s sickest children. The hospital offers the state’s only pediatric burn unit and pediatric dialysis program, as well as the nation’s largest pulmonary and autism treatment centers. The neonatal intensive care unit was recently recognized as one of the top five in the country.

• Nearly two-thirds of all Indiana physicians receive some of their training at the IU School of Medicine. Indiana’s only medical school routinely graduates the second-largest class of physicians in the country, and those graduates’ national exam scores exceed the national average.

• IU School of Medicine physicians and staff provided $10.7 million worth of charity care to Indiana residents during the last fiscal year.

• The Maternity Outreach and Mobilization (MOM) Project of the IU School of Nursing made over 4,200 home visits to 830 families last year. Free prenatal care offered by the MOM Project reduces the costs to the state associated with high-risk babies.

• The Indiana University School of Optometry eye care centers participate in the American Optometric Association’s InfantSee public health initiative—offering free eye assessments for children under one year of age.

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**IU MEDICAL GROUP 2005 INDIANA PATIENT ORIGINS**

386,351 Patients

- 0–250, 13 counties, 14.1%
- 251–500, 21 counties, 22.8%
- 501–1,000, 18 counties, 19.6%
- 1,001–2,000, 15 counties, 16.3%
- 2,001–10,000, 20 counties, 21.8%
- 10,001–20,000, 4 counties, 4.3%
- 20,001–225,000, 1 county, 1.1%
GENERATING OPPORTUNITIES THROUGH THE ARTS

On a freezing February night, in the Willkie Auditorium on the IU Bloomington campus, a dance troupe of approximately 30 gave a skilled, polished performance before a captivated crowd. The production, Nubian Odyssey, blended original choreography and popular music to tell the story of African Americans’ journey from the days of slavery to the Jim Crow era.

The dancers, under the artistic direction of IU graduate Larry Brewer, were all precollege students from Emerson School for the Visual and Performing Arts in Gary. Staff members and alumni from the campus had invited them to Bloomington both to perform and to find out about college life. The students toured the campus, met with admissions staff, and attended an IU dance class.

The visit prompted Brewer to recall his own college days, when he studied sociology and danced for the African American Dance Company. “I remember when I first came to the campus and saw everything that was available there,” he says. “It broadened my horizons and gave me a totally different experience.”

For much of his life, Brewer has been a professional dancer, notably performing with Arthur Mitchell’s Dance Theater of Harlem and the legendary Alvin Ailey. Then, seven years ago, he began his current position at Emerson to work with young people who, as he did, are growing up in Gary. To attend Emerson and complete one of its eight majors—visual arts, band, dance, drama, orchestra, piano, voice, or stage technology—students must maintain academic excellence.

Brewer and his colleagues have formed strong connections with the IU Northwest campus. “We recently staged a vocal, band, and dance performance at IU Northwest,” Brewer says. He adds that every time IU supports an outreach program that benefits his students, their chances for success beyond high school are improved. “It’s really a community effort.”
• IU President Adam Herbert established the Moveable Feast of the Arts to showcase the university’s cultural treasures in communities statewide. Recent performances include Bach’s Mass in C Minor by the University Chorale and University Orchestra at the Cathedral of St. Mary of the Immaculate Conception in Lafayette, and by the University Singers at St. Luke’s United Methodist Church in Indianapolis.

• IU Southeast’s Chase Children’s Series gives kids in southern Indiana the opportunity to appreciate and participate in the arts—for free. The program, funded completely by community and corporate organizations, is open to every school-age child in southern Indiana and annually serves up to 25,000 students of all economic levels.

• Each year, more than 500 children attend the Saturday School Program, Summer Honors Art Program, or Youth Art Camp of IUPUI’s Herron School of Art and Design. Herron also typically hosts 12 gallery exhibitions per academic year, with 1,000 to 1,500 attendees viewing each exhibition. Herron faculty and students participated in more than 38 community service and partnership activities in 2005-06, as varied as developing educational materials to warn residents of the WESCO neighborhood about predatory lending practices and analyzing the effectiveness of the new X-Room gallery as an interactive exhibition space at the Indianapolis Museum of Art.

• Magdalena Herdoiza, an associate professor of education at IU Southeast, has organized a cultural exchange program between school-age Indiana children and dancers from Quito, Ecuador. A group from Quitumbe Municipal School in Quito recently visited Floyd County and taught Ecuadorian dances at the Children’s Academy of New Albany.

• More than 1,100 musical programs, mostly free and open to the public, are offered by the Jacobs School of Music on the IU Bloomington campus each year.

**Spirit & Place Festival: Workshop at church to cover diverse music for worship**
---Indianapolis Star

**Historical markers unveiled**
---Richmond Palladium-Item

**Ballet season celebrates diverse cultures, music styles**
---Bloomington Herald-Times

**Black history celebration in multimedia**
---New Albany News and Tribune

**IUK students create art based on soldiers’ stories**
---Kokomo Tribune
Everybody loves a good story, right?

Especially when it’s well written and engaging and can teach people something—at their fingertips. Enter WisdomTools, a Bloomington-based software development firm that happens to be Indiana University’s first official startup company. Through the use of its Web-based, interactive tutorials called Scenarios, the company is setting the standard for high-technology training.

"Nobody does what we do," says Michael Shermis, WisdomTools vice president of client services and senior producer. "We offer fully developed stories that allow people to learn in context."

Corporations and government agencies use WisdomTools products to train their employees on a range of topics, from disaster preparedness and work/life balance to leadership and skills-based management. In fact, the company’s client list is filled with household names, including Walgreens, Eli Lilly and Company, BlueCross BlueShield, Houghton Mifflin Publishing, IBM, and DaimlerChrysler.

WisdomTools was founded in 1999 by Martin Siegel, a pioneer in computer-based education who earned distinction as Microsoft’s first Faculty Fellow. He is currently executive associate dean and associate dean for graduate studies and research at the IU School of Informatics. WisdomTools Scenarios offer "the next generation of e-learning," says Siegel.

Many Hoosiers are benefitting from WisdomTools’ unique approach to employee education. From its dozen full-time employees—most of whom are IU graduates—to the hundreds of Indiana workers who have learned from Scenarios at their workspace computers, the company is truly an Indiana success story.
• Indiana University established the Advancing Indiana office to help government and businesses access IU’s expertise and assets, including faculty at eight campuses and nine medical education centers. The office’s IU Economic Development Task Force provides specific recommendations for long-term and short-term goals, policies, processes, and priorities for economic engagement.

• IU Kokomo is overturning the city’s fading manufacturing economy with the Inventrek Technology Park, a business incubator run from a 100,000-square-foot facility. To attract technology entrepreneurs, Inventrek provides a joint-venture model, offering technical and business expertise from IU Kokomo and area businesses as well as office staff, business machines, conference rooms, and T1 lines.

• The nationally acclaimed IU Emerging Technologies Center (IUETC) in Indianapolis is a business incubator for startup companies in the life sciences, biotechnology, and bioinformatics. Its first “graduate,” the Haelan Group, achieved independence after just two years.

• IU Research & Technology Corporation (IURTC), the university’s agent for technology transfer, reported a record 257 disclosures during fiscal year 2006, more than twice the number reported in fiscal year 2005. Disclosures are confidential reports filed by IU researchers that describe new research and its potential for practical application, and they’re the first step in developing research into licensable products.

IUETC TENANT COMPANIES

Advancing Indiana  
Aledo Consulting  
Credit Suisse First Boston  
csKeys, LLC  
DynoMed/Chartlogic  
Embedded Concepts  
EndGenitor Technologies Inc.  
Hoosier Oncology Group  
Indiana Centers for Applied Protein Sciences  
Indiana Health Industry Forum  
Indiana Health Information Exchange  
Johnson Center for Entrepreneurship & Innovation  
Lange Advisors  
Optiform Imaging Systems  
OptoSonic  
Park & Kim Consulting  
Phycotransgenics  
Prosolia  
Safis Solutions  
Sales Performance Project Management  
Sundo Technologies  
Therametric Technologies  
Tienta Sciences

RECENT IURTC-ASSISTED INNOVATIONS

"Bone putty" for treating skeletal injuries and deformities  
Endopoiesis research for repairing cellular damage  
Glucagon, an antidote to insulin shock  
Cybersecurity devices to prevent “phishing” scams  
Polymer for improving dental restoration  
Nasal drug delivery device
TECHNOLOGY TRANSFER INDICATORS

Indiana University’s technology transfer activities are generally on the increase (with some inherent yearly fluctuations). Invention disclosures reached an all-time high in 2006. The other three indicators—licenses/options executed, licensing income, and startup companies formed, rebounded in 2006 after slight declines in 2005. IU ranks sixth among the 11 Big Ten institutions in licensing income and startup companies formed.
RESEARCH AND DEVELOPMENT

TEN-YEAR TREND IN RESEARCH EXPENDITURES AMONG INDIANA UNIVERSITIES AND COLLEGES

SPONSORED RESEARCH FUNDING

Indiana University continues to attract the largest amount of sponsored research funding among all Indiana public and private colleges and universities and has the largest growth trend as well. In the most recent year, IU’s new sponsored research awards outpaced all other public universities and Notre Dame combined.

SPONSORED RESEARCH AWARDS RECEIVED, 2005–06

<table>
<thead>
<tr>
<th>Institution</th>
<th>Total Awards</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana University</td>
<td>$420,954,557</td>
<td>53%</td>
</tr>
<tr>
<td>All Other 4-Yr Publics &amp; Notre Dame</td>
<td>$373,459,541</td>
<td>47%</td>
</tr>
<tr>
<td>Purdue University</td>
<td>$261,387,673</td>
<td>33%</td>
</tr>
<tr>
<td>Notre Dame</td>
<td>$ 71,098,199</td>
<td>9%</td>
</tr>
<tr>
<td>Ball State University</td>
<td>$ 23,396,082</td>
<td>3%</td>
</tr>
<tr>
<td>Indiana State University</td>
<td>$ 17,240,499</td>
<td>2%</td>
</tr>
<tr>
<td>University of Southern Indiana</td>
<td>$ 337,088</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$794,414,098</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

TEN-YEAR TREND OF RESEARCH EXPENDITURES
IU’S ECONOMIC IMPACT ON INDIANA

In the most recent fiscal year (2005-06) Indiana University pumped over $1.6 billion directly into the state’s economy through its Indiana resident payroll and in-state purchases. This represented about half of the in-state spending generated by all of Indiana’s public four-year universities. When the ripple effects of this spending (that is, the money spent, in-state, by those who received these monies) and estimated spending by nonresident students are added, the total annual economic impact of IU on the state increases to $3.2 billion, which is equal to the combined impact of the four other public four-year universities.

Partial Economic Impact on the State’s Economy of Indiana’s Public Four-Year Universities

<table>
<thead>
<tr>
<th>University</th>
<th>In-State Expenditures</th>
<th>Nonresident Student Spending</th>
<th>Partial In-State Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct</td>
<td>Indirect/Induced</td>
<td>Dollar Amount</td>
</tr>
<tr>
<td>Indiana University</td>
<td>$1,623,706,172</td>
<td>$1,368,394,817</td>
<td>$3,225,625,988</td>
</tr>
<tr>
<td>Purdue University</td>
<td>1,103,245,515</td>
<td>929,771,329</td>
<td>2,255,316,844</td>
</tr>
<tr>
<td>Ball State University</td>
<td>273,990,985</td>
<td>230,908,677</td>
<td>529,049,662</td>
</tr>
<tr>
<td>Indiana State University</td>
<td>145,028,445</td>
<td>122,224,191</td>
<td>292,377,636</td>
</tr>
<tr>
<td>University of Southern Indiana</td>
<td>71,817,424</td>
<td>60,524,861</td>
<td>145,879,785</td>
</tr>
<tr>
<td>Indiana Public Universities Total</td>
<td>$3,217,788,541</td>
<td>$2,711,823,874</td>
<td>$6,448,249,915</td>
</tr>
</tbody>
</table>

When compared to the state appropriation, IU returns more than six dollars for every dollar allocated. Indiana’s two major research universities, IU and Purdue, produce similar returns on taxpayer dollar investment.

Return on Investment: Economic Impact per Dollar of State Appropriation

<table>
<thead>
<tr>
<th>University</th>
<th>Economic Impact</th>
<th>State Appropriation (2005-06)</th>
<th>Per-Dollar Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana University</td>
<td>$3,225,625,988</td>
<td>$525,628,694</td>
<td>$ 6.14</td>
</tr>
<tr>
<td>Purdue University</td>
<td>2,255,316,844</td>
<td>363,790,194</td>
<td>6.20</td>
</tr>
<tr>
<td>Ball State University</td>
<td>529,094,662</td>
<td>136,391,676</td>
<td>3.88</td>
</tr>
<tr>
<td>Indiana State University</td>
<td>292,377,636</td>
<td>82,749,259</td>
<td>3.53</td>
</tr>
<tr>
<td>University of Southern Indiana</td>
<td>145,879,785</td>
<td>41,245,954</td>
<td>3.54</td>
</tr>
<tr>
<td>Indiana Public Universities Total</td>
<td>$6,448,249,915</td>
<td>$1,149,805,777</td>
<td>$ 5.61</td>
</tr>
</tbody>
</table>

The hospitals, clinics, and services affiliated with the IU School of Medicine have an even greater economic impact. In a recent study sponsored by the American Association of Medical Colleges and conducted by Tripp Umbach Healthcare Consulting, Inc., using the IMPlan model, the total economic impact of the IU School of Medicine and its associated hospitals and medical care groups was determined to be just over $5.5 billion. Removing the portion of this impact already included in the above data (~$750 million), the total economic impact of IU and its medical school-related enterprises climbs to $7.9 billion and the per-tax-dollar return on investment in Indiana University increases to $15.09.

| IU Impact                      | $3,225,625,988 |
| Added Impact of Medical School-Related Enterprises | $4,704,712,943 |
| Total IU Impact                | $7,930,338,931 |
| State Appropriation (2005-06)  | $525,628,694   |
| Per Dollar Return on Investment | $ 15.09       |
OTHER ECONOMIC IMPACTS

- University degree recipients command higher wages than students who have high school diplomas or associate degrees and therefore pay higher taxes on average. They are also less likely to place an economic burden on the state through welfare, uncovered health care costs, and unemployment benefits.

- Faculty, staff, and students often start businesses outside the institution or help others to start or improve businesses. These entrepreneurial activities may generate significant employment and payrolls as well as making significant contributions to the local and state economies.

- University operations generate tax revenues through direct and indirect/induced expenditures as well as real and personal property taxes paid to localities by supported vendors and employees.

- Faculty, staff, and students serve as volunteers in community-based and faith-based organizations. In many instances they play a major leadership role within these institutions. Students also engage in service-learning experiences, including tutoring in public schools, business plan development, and recreational program leadership and staffing, among others. The economic value of the hours spent in these endeavors is not included in this study.

- The presence of a college or university in a community is a draw for other types of businesses that do not supply goods and services directly or indirectly to the educational institution. These businesses use student interns and employees with specialized skills such as science, computer programming, business, and health care. Often these businesses employ students full time upon graduation.

- Faculty, staff, and students deposit funds in local financial institutions, which are subsequently reinvested into the local community through business and consumer loans and mortgages. These funds bolster the regional and state economies.

- IU’s health and wellness programs, including the Schools of Medicine, Dentistry, Nursing, Optometry, and Social Work, generate financial and cost savings through community health improvement activities, preventive and primary care, and access to care.

- Alumni of higher education institutions return to their institutions for alumni reunions and to take advantage of educational programs. In some cases, after a return visit, they decide to relocate to the area. Faculty and staff retirees from the institution often continue residing in these communities.

HOW IMPACT IS DETERMINED

The direct impact represents two sources of expenditures: 1) the total wages and benefits received by Indiana residents employed by the universities; and 2) the universities’ purchases of goods and services from Indiana vendors. Total personnel and nonpersonnel expenditures were derived from the financial data reported by universities to the National Center for Education Statistics. The portions of those expenditures associated with Indiana resident employees and Indiana vendors were available for IU based on internal records. IU’s proportions (across all campuses) were used to apportion the expenditures for all other universities.

Indirect/Induced impacts were derived through the IMPlan economic impact modeling software. The distribution of IU expenditures across industry categories was used to model spending for the other universities. The indirect impact represents the ripple effect of the universities’ purchasing of goods and services. The induced impact reflects the ripple effect on the economy of the spending patterns of university employees. The IMPlan model produces “multipliers” that indicate how much additional spending is generated for every dollar of purchasing (indirect) or of employee wages (induced). The multipliers in this model were 1.33 and 1.51, for indirect and induced impacts, respectively, yielding a total multiplier effect of 1.84 (for every dollar spent by the university in the state, another 84 cents is generated in the state economy).

Nonresident student spending is derived from studies conducted at a range of universities that estimated the spending patterns of out-of-state students, both undergraduate and graduate, and the visitors they bring to the state (for example, when parents drop them off, friends visit, or their own spouses and families come along). These studies produced spending estimates ranging from $7,300 to $18,000 per student. This analysis employed a multiplier of $12,500 per nonresident student.