THE ECONOMIC IMPACT OF UAB

Current and Projected Economic, Employment, and Government Revenue Impacts

Final Executive Report
(FY 08-09 and FY 19-20)
November 9, 2010

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

TrippUmbach
research ■ strategy ■ impact

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UAB Economic Impact Study

UAB Annual Impact on the Alabama Economy

$4.6 billion in total economic impact generated by UAB in the state of Alabama.

$302.2 million in tax revenue to state and local governments, including sales, property, and business tax payments. **$1** in every **$25** in the state's budget is generated by UAB.

$1 invested by the state in UAB generates **$16.23** in the total state economy.

UAB staff, faculty and students generate more than **$208.8 million annually** in charitable donations, volunteer services, and provision of free care.

The economic and employment impact of UAB's expansion in 2020 (mid-range scenario) is projected to grow to **$6.6 billion**, generate **72,449 jobs** and create **$431.4 million** in state and local tax revenue.

UAB Creates Jobs

UAB is the largest single employer in the state of Alabama.

UAB supports 61,025 jobs in the state of Alabama.

One in every 33 jobs in the state is supported by UAB.

PROJECT OVERVIEW

In July 2010, Tripp Umbach was retained by UAB to measure the economic, employment and government revenue impacts of its current operations and research, as well as the projected impact of UAB as a whole, utilizing different scenarios of growth. The primary goal of the UAB economic impact study was to calculate the current (FY 2008-2009) and projected (FY 2019-2020) business volume, employment and government revenue impacts of UAB's operations on the state of Alabama and the Birmingham-Hoover MSA.

UAB entities included in this analysis are UAB campus operations, UAB Medicine and the Southern Research Institute.

UAB Economic Impact Study Overview

Study Period: Fiscal Year 2008-2009 (FY 08-09) and Fiscal Year 2019-2020 (FY 19-20)

Study Geography: State of Alabama and Birmingham-Hoover MSA

Methodology: American Council on Education (ACE): "Estimating the Impact of a College or University on the Local Economy."

METHODOLOGY EMPLOYED IN THE UAB ECONOMIC IMPACT STUDY

This economic impact analysis measures the effect of both direct and indirect business volume and government revenue impacts for UAB. The methodology employed in the calculation of these impacts is derived from the standard set of impact research tools developed by the American Council on Education (ACE) for the measurement of college and university economic impact.[1] The ACE-based methodology is well-established, having been used in hundreds of impact studies throughout the United States. The ACE methodology

[1] Caffrey, John and Isaacs, Herbert, "Estimating the Impact of a College or University on the Local Economy," American Council on Education, 1971.

employs linear cash-flow modeling to track the flow of institution-originated funds through a delineated spatial area.[2] For the UAB impact analysis, computerized spreadsheet models were developed for the University as a whole, including the entities that comprise UAB Medicine.[3]

Economic impact begins when an organization spends money. Economic impact studies measure the direct economic impact of an organization's spending plus additional indirect spending in the economy as a result of direct spending. Economic impact has nothing to do with dollars collected by institutions.

Total economic impact measures the dollars that are generated within the state of Alabama due to the presence of UAB. This includes not only spending on goods and services with a variety of vendors within the state, and the spending of its staff and visitors, but also the business volume generated by businesses within Alabama that benefit from UAB's spending. It is important to remember that not all dollars spent by a university remain in its home state. Dollars that "leak" out of the state in the form of purchases from out-of-state vendors are not included in the university's economic impact on the state. The multipliers utilized in this study are standard multipliers for public research universities in the United States, with the state multiplier being 2.3 for the statewide business volume impact and 2.5 for the employment impact.[4]

In completing this report, Tripp Umbach used data supplied by UAB and from Tripp Umbach's national databases developed over the years by conducting economic impact studies commissioned by a variety of prominent universities and medical schools throughout the country as a baseline. To complete the economic, employment and government revenue projections of UAB's operations out to FY 2019-2020 for this report, Tripp Umbach worked closely with UAB leadership to develop three unique growth scenarios for the University. The

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[2] The ACE methodology is highly adaptable to different geographic scales. It is suitable for measuring impact on neighborhoods, municipalities, counties, states, regions or nations.

[3] The components of UAB Medicine included in this report are UAB Hospital, The Kirklin Clinic, The Kirklin Clinic at Acton, Callahan Eye Foundation Hospital, HSF, Spain Rehabilitation Hospital, UAB Highlands, UAB Health Centers, and Medical West.

[4] Typically, multipliers for the operations of an organization are in the 2.0 to 4.0 range. The multipliers utilized in this study are derived from the in-depth research about the complex business activities of public research universities from the ACE-based methodology.

three scenarios (conservative, mid-range and aggressive) are described in the table below and represent a range of potential economic impact for UAB.

Attribute	Conservative Scenario	Mid-Range Scenario	Aggressive Scenario
Increase in Undergraduate Students *(in-state/out-of-state)*	4,266 3,122/1,144	5,688 4,163/1,525	7,110 5,204/1,906
Increase in Graduate and Professional Students *(in-state/out-of-state)*	1,829 839/990	2,438 1,118/1,320	3,048 1,398/1,650
Increase in Staff *(jobs)*	2,545	3,393	4,241
Increase in Faculty *(jobs)*	571	761	951
Increase in Fellows (jobs)	109	146	183
Increase in Student Employees (jobs)	202	270	338
Total Campus Expansion Costs *(2015-2020 average) ($)*	$313.3M	$417.8M	$522.2M
Increase in External Sponsored Research	$100M	$200M	$300M

Key economic impact findings presented within the summary include the total current (FY 08-09) economic, employment, and state and local government revenue impact of UAB's operations, as well as the projected mid-range scenario (FY 19-20).[5]

INTRODUCTION TO UAB

UAB's vision is to be an internationally renowned research university and a first choice for education and healthcare. In its relatively short history — it first became an autonomous campus of The University of Alabama System in 1969 — it already has become a research university and academic health center that discovers, teaches and applies knowledge for the intellectual, cultural, social and economic benefit of Birmingham, the state and beyond. UAB's top-tier academic medical enterprise, research, and graduate and undergraduate education make it an educational and economic force in the state of Alabama.

[5] In order that direct comparisons can easily be made, all dollar figures presented in this report are expressed in 2009 dollars (i.e., the effect of inflation has been taken out of the future impacts).

In fall 2009, UAB enrolled 16,874 students, including a record graduate enrollment of 5,193. Enrollment at UAB has set new records in 2009 and 2010. In the past three years, UAB has produced six Goldwater Scholars, five Fulbright Scholars, five NSF Fellows, and three USA Today Academic Team members. UAB offers 139 degrees for undergraduate, graduate and professional students. UAB conferred 3,480 bachelors, masters, doctoral and professional degrees in 2009. While its primary missions are those of education, research, and patient care, an institution as large as UAB also is vital to the economic well-being of the state of Alabama and the Greater Birmingham region. UAB's daily operations provide ongoing financial benefits to the state's economy. The University impacts the statewide economy through expenditures, government revenues, employment and the personal income of its residents.

UAB Fast Facts

- Ranked among the top 15 percent of U.S. colleges and universities by The Princeton Review.
- Attracted a record $489 million in external research funding and ranked among the top 20 nationally in funding from the National Institutes of Health.
- Named among the Top 5 Best Places to Work in Academia by The Scientist in 2008.
- Among 96 public and private universities (and the only Alabama university) classified as an institution of "very high research activity" by the Carnegie Foundation.

UAB is educating the workforce of the future and building intellectual capital by channeling the talent of faculty and students who are employed by and study at the University. In FY 09, UAB's research enterprise surpassed all previous years by securing $489 million in external research funding, ranking 31st nationally in federal funding and in the top 20 nationally in funding from the National Institutes of Health. UAB's faculty and students are achieving research breakthroughs in the sciences and medicine, engineering, business, education, and the arts and humanities.

Working together because of UAB's highly collaborative culture, faculty mentors and their students are developing revolutionary treatments and cures for the most devastating human diseases; pioneering nanotechnology and engineering new materials for use in everything

from dental implants to body armor; using satellite imaging to uncover lost cities in the Nile delta and track public health threats worldwide; combating cybercrime perpetrated from computers around the globe, partnering with the FBI, CIA and Interpol; and conducting groundbreaking projects and studying abroad on every continent of the globe, to the ends of the earth in Antarctica.

UAB's top-quality clinical care continues earning high marks at the local, state and national levels. *U.S. News & World Report* has ranked UAB for 21 straight years in its "Best Hospitals" issue, in which only 3 percent of hospitals nationwide — and none other in Alabama — are represented. UAB is an asset to the residents of the state of Alabama.

The results presented in the UAB economic impact study are generated on an annual basis. The economic impact in future years can either be higher or lower based on the number of students, capital expansion, increases in external research and the level of state appropriations. Finally, it is important to note that the economic and employment impacts reported in this report represent the "fresh dollar" impact of UAB. **Stated simply, if UAB were not located in the state, $4.6 billion in impact and over 61,000 jobs would not be generated.**

UAB BUSINESS VOLUME IMPACT

UAB is an economic engine, directly or indirectly affecting nearly every resident of the state of Alabama. It generates $4.6 billion annually in overall economic impact. Statewide expenditures by the University totaled **$2 billion** in FY 08-09. UAB affects business volume in the state of Alabama and the local region in two ways:

1) Direct expenditures for goods and services by the University, its employees, students, and visitors. This spending supports local businesses, which in turn employ local individuals to sell the goods and provide the services that University constituencies need.

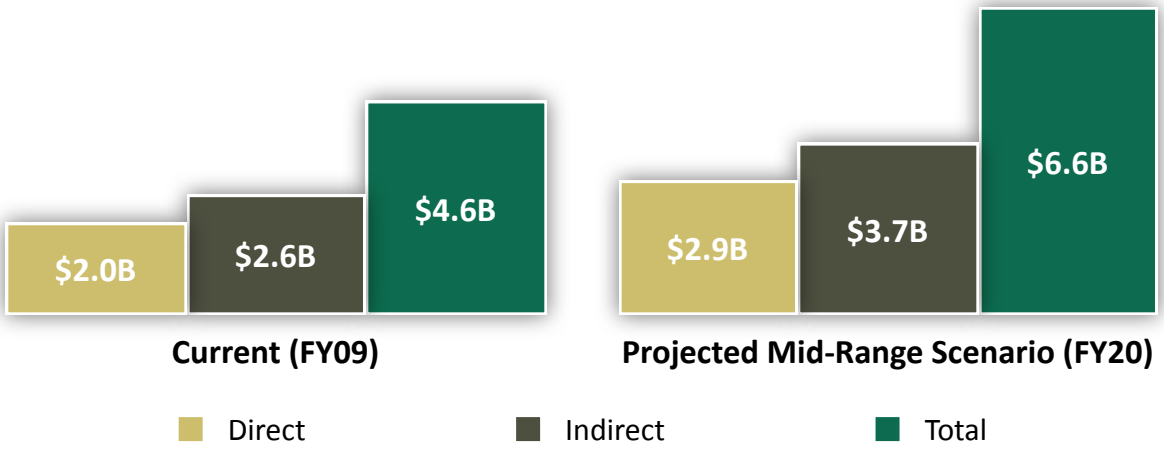
2) Induced or indirect spending within state of Alabama. The businesses and individuals that receive direct expenditures re-spend this money within the state, thus creating the need for even more jobs.

As a result of expenditures on goods and services by the University, the overall economic impact of all of UAB's operations on the state of Alabama in FY09 was **$4.6 billion** ($2.0 billion

direct impact and $2.6 billion indirect). Therefore, **$1 in every $36 in the state of Alabama economy is supported by UAB.**[6]

Utilizing the assumptions of the mid-range scenario, it is projected that by FY20 the business volume impact of UAB will increase to **$6.6 billion** ($2.9 billion direct impact and $3.7 billion indirect).

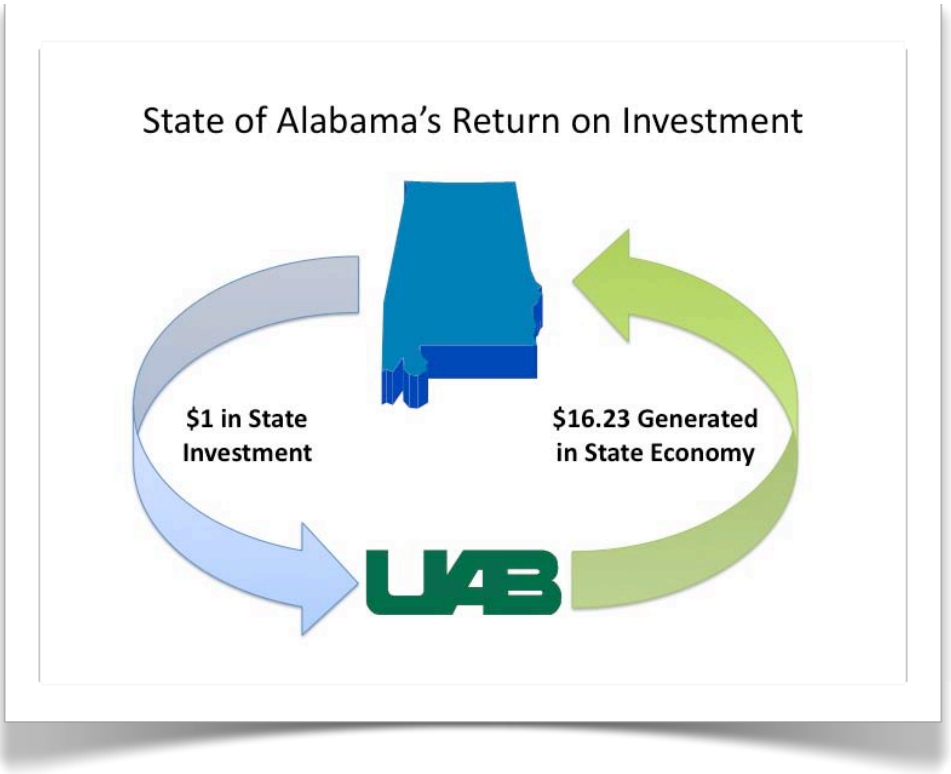
Current and Projected Business Volume Impact of UAB (in billions)



Current and Projected Business Volume Impact of UAB			
	Direct Business Volume Impact	**Indirect Business Volume Impact**	**Total Business Volume Impact (Direct + Indirect)**
UAB Current (FY 09)	$2.0 billion	$2.6 billion	$4.6 billion
UAB Projected (FY 20) *Conservative Scenario*	$2.6 billion	$3.4 billion	$6.0 billion
UAB Projected (FY 20) *Mid-Range Scenario*	$2.9 billion	$3.7 billion	$6.6 billion
UAB Projected (FY 20) *Aggressive Scenario*	$3.1 billion	$4.0 billion	$7.1 billion

[6] This number represents UAB's portion of the total state of Alabama business volume ($165,796,000,000).

In FY 08-09, UAB received $284.9 million in appropriations from the state of Alabama. **For every $1 invested by the state in UAB, $16.23 is generated in the state's economy.**



STATE AND LOCAL GOVERNMENT REVENUE IMPACT

State and local government revenues attributable to the presence of UAB totaled $302.2 million in FY 08-09 ($59.9 million direct and $242.3 million indirect).[7] **One dollar in every $25 in the state's budget is generated by UAB.**[8] Furthermore, state and local governments throughout Alabama all received tax revenues that were University-related.

It is projected that the expansion of UAB in FY 19-20 will have a significant impact on state and local government revenues. Utilizing the mid-range scenario, it is projected that state and local government revenues attributable to the presence of an expanded UAB will total nearly **$431.4 million** (direct and indirect).

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[7] Direct taxes include: payroll, income tax, sales, property, and unemployment taxes.

[8] The return on investment to the state is based upon the total state government revenue (direct and indirect) generated by UAB and the amount of state appropriation to UAB which equaled $284.9 million.

State and Local Government Revenue Impact of UAB				
	State Government Revenue Impact (Direct)	**Local Government Revenue Impact (Direct)**	**Indirect Government Revenue Impact**	**Total Government Revenue Impact (Direct and Indirect)**
UAB Current (FY 09)	$43.0 million	$16.9 million	$242.3 million	**$302.2 million**
UAB Projected (FY 20) *Conservative Scenario*	$55.9 million	$22.0 million	$316.4 million	**$394.3 million**
UAB Projected (FY 20) *Mid-Range Scenario*	$61.1 million	$24.0 million	$346.3 million	**$431.4 million**
UAB Projected (FY 20) *Aggressive Scenario*	$65.8 million	$26.0 million	$373.5 million	**$465.3 million**

Through its local spending, as well as its direct and indirect support of jobs, the presence of the University stabilizes and strengthens the local and statewide tax base. **UAB is an integral part of the of state's economy — generating revenue, jobs, and spending.**

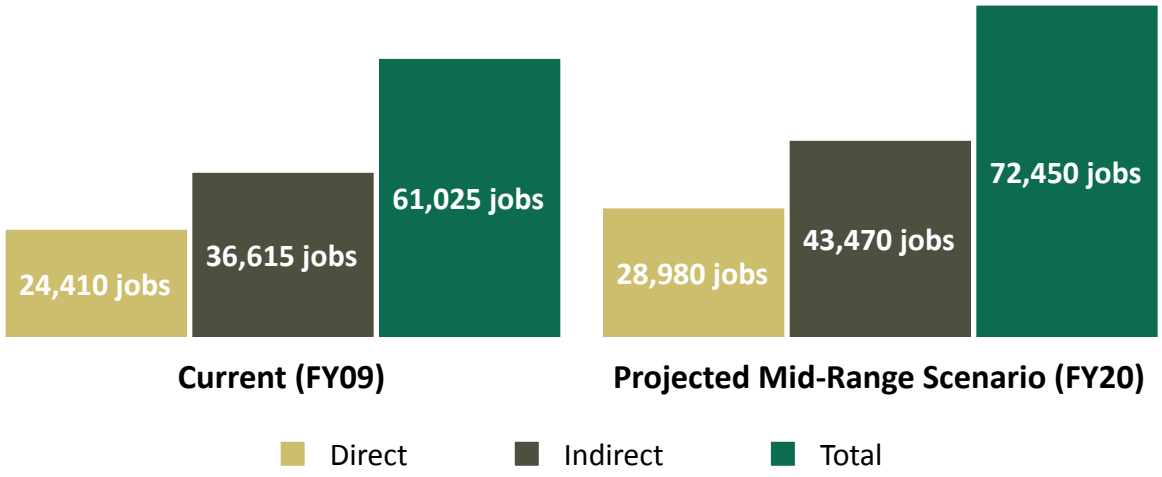
UAB EMPLOYMENT IMPACT

Both directly and indirectly, UAB supported **61,025 jobs** in the state of Alabama. **One out of 33 jobs in the state is attributable to UAB.** The University directly employed 24,410 faculty and staff during FY 08-09.

These jobs include not only direct employment by the University but also indirect jobs created for supply and equipment vendors, contractors and laborers for the construction and renovation of university facilities, and jobs created in the community at hotels, restaurants, and retail stores in support of UAB's workforce and its visitors. These indirect jobs (36,615 jobs) are in support of more than 24,000 Alabama residents who are employed directly by the University. In addition, the population of the University community—and the workers who support that community—also create a need for additional employees in governmental and service facilities, such as schools and daycare facilities.

UAB's projected growth will have an even stronger impact on the state. Utilizing the mid-range scenario, it is projected that a total of 72,450 jobs will be created and sustained by UAB in 2020 — an increase of over 11,000 jobs.

Current and Projected Employment Impact of UAB (jobs)



Current and Projected Employment Impact of UAB (jobs)			
	Direct Employment Impact	**Indirect Employment Impact**	**Total Employment Impact (Direct + Indirect)**
UAB Current (FY 09)	24,410	36,615	**61,025**
UAB Projected (FY 20) *Conservative Scenario*	27,837	41,756	**69,593**
UAB Projected (FY 20) *Mid-Range Scenario*	28,980	43,470	**72,450**
UAB Projected (FY 20) *Aggressive Scenario*	30,123	45,185	**75,308**

UAB RESEARCH ECONOMIC IMPACT

UAB is educating the workforce of the future and building intellectual capital by channelling the talent of faculty and students who study at the University. In FY 09, UAB's research enterprise surpassed all previous years by securing $489 million in external research funding, ranking 31st nationally in federal funding and in the top 20 nationally in funding from the National Institutes of Health. UAB's faculty and students are achieving research breakthroughs in the sciences and medicine, engineering, business, education and the arts and humanities.

The University is classified as an institution of "very high research activity" by the Carnegie Foundation — a designation held only by the nation's top 96 public or private universities, and no other in Alabama.

- Over four decades, UAB's collaborative culture and interdisciplinary approach to research has produced many "firsts" in science and medicine, and that pioneering spirit continues in every classroom, lab and library as students work alongside faculty toward the next major breakthrough.

- Physics researchers are developing novel middle-infrared active materials, lasers and optical sensors. In January 2010, PPI, a Birmingham spin-off company based on this research and led by a UAB physics professor, was acquired by IPG Photonics (Massachusetts), the world leader in high-power fiber lasers and amplifiers. PPI will operate a wholly owned subsidiary in Birmingham to do early stage development and expects to be in the market within three years.

- UAB is among only four schools in the nation with an NIH Neurosciences Interdisciplinary Center Grant ($8.6 million) that links investigators from institutions across the state and region to speed up discovery and development of new drugs and therapies for neurological diseases.

- The UAB Comprehensive Cancer Center has been funded by NIH for over 30 years and specializes in finding and testing new therapies. There are currently two clinical trials based on UAB discoveries being used to treat various cancers.

- UAB's new Materials Processing and Application Development Center, or MPAD, will help industry design and test new materials, technologies and applications. It is the

largest academic research facility of its kind in the country. It is rare in that it will enable companies to develop, test and refine composites or metal materials.

- UAB biochemists were able to transform skin cells from an animal model of sickle cell disease into pluripotent stem cells, fix the genetic defect, replace the animal's blood cells, and cure the disease. Work in humans is exceptionally promising.

- UAB Center for Clinical and Translational Science (CCTS), funded by a $27 million grant from NIH (one of the largest single grants in UAB history), is enabling UAB to accelerate the pace of translating scientific discoveries into practical applications that enhance the lives of Alabamians. A key focus of the grant is increasing interaction between UAB researchers, the community, and other investigators throughout the world—drawing upon UAB's traditional strength of collaboration and interdisciplinary research.

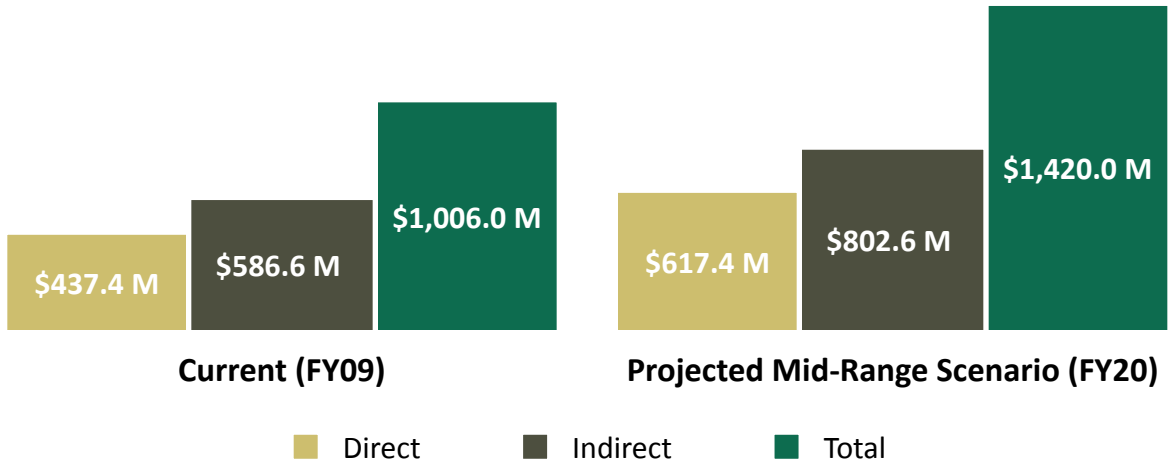
- Researchers in public health and archeology are using the newest-generation remote satellite imaging to both track public health threats worldwide, in the NASA-funded Laboratory for Global Health Observation, and reveal lost ancient settlements in Egypt. The Egyptology research is the subject of an upcoming BBC documentary.

- The UAB Minority Health and Health Disparities Research Center has received more than $23 million in federal funding to support educational, research and community outreach focused on eliminating the health disparities of racial and ethnic minorities in Alabama. The Center has trained over 400 Community Health Advisors (CHAs) serving Birmingham's inner city and Alabama's Black Belt region.

As an academic research center, UAB annually brings hundreds of millions of dollars to the state in government- and industry-sponsored research and projects. UAB's $489 million dollars in sponsored research translates into a significant economic impact. **The current economic impact of UAB's research engine is $1 billion ($437.4 million direct impact and $586.6 million indirect impact).**

The projected economic impact of UAB Research in FY 2019-2020 is **$1.4 billion ($617.4 million direct impact and $802.6 million indirect impact).** This projected impact is the mid-range scenario and based upon the assumption that sponsored research increases from $489 million to $689 million and the economic impact of UAB increases to $6.6 billion.

Current and Projected Economic Impact of UAB Research (in millions)



Current and Projected Research Impact of UAB			
	Direct Research Impact	**Indirect Research Impact**	**Total Research Impact (Direct + Indirect)**
UAB Current (FY 09)	$437.4 million	$586.6 million	**$1,006.0 million**
UAB Projected (FY 20) *Conservative Scenario*	$527.4 million	$685.6 million	**$1,213.0 million**
UAB Projected (FY 20) *Mid-Range Scenario*	$617.4 million	$802.6 million	**$1,420.0 million**
UAB Projected (FY 20) *Aggressive Scenario*	$707.4 million	$919.6 million	**$1,627.0 million**

The University's research operations make tangible and quantifiable economic contributions. Along with creating jobs for research staff and support personnel, UAB scientists are contributing to new product development and technology commercialization. Knowledge and technology transfers have helped to start commercial ventures that promote entrepreneurship, economic development, and job creation. **In FY 08-09, UAB received over $270 million in National Institutes of Health (NIH) funding.**[9]

[9] Source: NIH Research Portfolio Online Reporting Tools (RePORT). http://report.nih.gov/award/trends/FindOrg_Detail.cfm?OrgID=9087701.

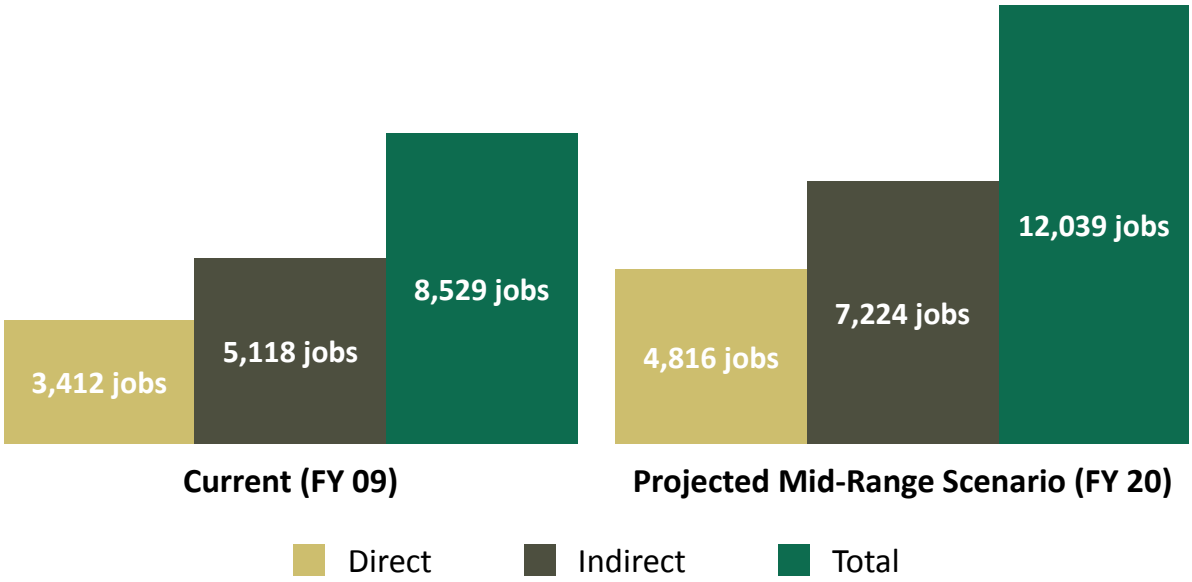
UAB RESEARCH EMPLOYMENT IMPACT

In FY 08-09, the $489 million that the University received for sponsored research and other sponsored programs supported 8,529 jobs. These jobs included not only direct employment by the University of research professionals (3,412 direct jobs) but also indirect jobs created for supply and equipment vendors, contractors and laborers for the construction and renovation of laboratory facilities, administrators and managers who support the research infrastructure, and jobs created in the community by the disposable income of the scientific workforce.

In FY 19-20, it is projected in the mid-range scenario that the $689 million that the University is projected to receive for sponsored research and other sponsored programs will support a total of **12,039 jobs** (4,816 direct jobs).

If the University can grow its strong faculty base, it will continue to attract, and consequently spend, increasingly higher levels of research dollars, and the number of jobs supported will continue to grow. With increasing levels of research funding and consequent expenditures, the University will continue to grow and be an even more significant source of support for thousands of local jobs based on its research funding alone.

Current and Projected Employment Impact of UAB Research (in jobs)



Current and Projected Research Employment Impact of UAB (jobs)			
	Direct Research Employment Impact	**Indirect Research Employment Impact**	**Total Research Employment Impact (Direct + Indirect)**
UAB Current (FY 09)	3,412	5,118	**8,529**
UAB Projected (FY 20) *Conservative Scenario*	4,114	6,171	**10,284**
UAB Projected (FY 20) *Mid-Range Scenario*	4,816	7,224	**12,039**
UAB Projected (FY 20) *Aggressive Scenario*	5,518	8,277	**13,794**

University-based research has proved to have a substantial and measurable effect on business formation and economic development. Research performed by Adam Jaffe at Harvard found that "…a state that improves its university research system will increase local innovation both by attracting industrial R&D and augmenting its productivity."

Source: Jaffe, Adam B., "Real Effects of Academic Research," American Economic Review, March 1991, pp. 957-970.

RESEARCH COMMERCIALIZATION

The UAB Research Foundation (UABRF) — the technology transfer office for UAB — was formed in 1987 as a non-profit corporation with a mission to identify, assess, and market commercially viable technology. The UABRF is the assignee of all intellectual property developed at UAB, and is responsible for reviewing all invention disclosures submitted.

The UABRF oversees the protection of intellectual property rights for UAB, including the initiation of domestic and foreign patent filings when appropriate. Additionally, the UABRF negotiates, manages, and monitors research, option and licensing agreements on behalf of UAB.

The UABRF has a broad range of technologies available for licensing. UAB has technologies in every medical therapeutic area, including but not limited to technologies for the diagnosis and treatment of cancer, autoimmune diseases, cardiovascular diseases, and central nervous system disorders. They encompass every type of technology, from platform technology and research tools to diagnostics and therapeutics (such as gene therapy and vaccines), and every stage, from very early stage to late stage (including clinical trials). UAB also has a strong portfolio of engineering, biomaterials and computer technologies with a wide variety of industrial and medical applications.

Innovation Depot, a business incubation facility and program that focuses on the development of emerging biotechnology/life science, information technology and service businesses, operates in partnership with UAB. A public-private economic development effort, Innovation Depot is funded by UAB, the Birmingham regional business community, the Community Foundation of Greater Birmingham and other leading private foundations, and the City of Birmingham and Jefferson County. Innovation Depot currently houses 71 companies with approximately 400 people working out of the facility.

Highlights of research commercialization activity include:

- Extensive portfolio of inventions, from which both U.S. and foreign patents have been granted, and from which numerous patent applications are currently pending.
- More than 40 startup companies based on UAB technologies.
- More than 400 option and licensing agreements, generating approximately $46 million in revenues for the University.
- More than $29 million in research agreements negotiated through the UABRF.
- Southern Research Institute has generated $80 million in royalty and licensing fees.

Companies started from UABRF Technologies include the following: Those highlighted in **green** are Alabama-based companies.

- Aegis Therapeutics, LLC
- **Amplicode, Inc.**
- **Atherotech, Inc.**
- Benu Biopharma, Inc.
- **Biocryst Pharmaceuticals, Inc.**
- **Bioengineering, Inc.**
- **BioHorizons Implant Systems, Inc.**
- **Brookwood Pharma**
- Bruin Pharmaceuticals, Inc.
- **Definicare, LLC**
- **Discovery Biomed**
- Emageon *(a wholly owned subsidiary of Amicas, Inc.)*
- Hemodynamic Therapeutics, Inc.
- Idenix Pharmaceuticals, Inc. *(formerly Novirio)*
- **Innovative Composite Solutions, LLC**
- Photonics Innovations, Inc. *(acquired By IPG Phonotics, Inc.)*
- MEDMINED *(acquired By Cardinal Health Inc.)*
- Megan Health Inc.*(acquired by Avant Immunotherapeutics, which merged with Celldex Therapeutics)*
- **Mosaicare, LLC**
- Mr. Instruments, Inc.
- Neuronautics, Inc.
- Neurorecovery, Inc. *(acquired By Acorda Therapeutics, Inc.)*
- **PNP Therapeutics, Inc.**
- **Southern Biotech**
- **Transmolecular, Inc.**
- Tranzyme, Inc.
- **Vaxin, Inc.**
- **Vectorlogics, Inc.**
- **VIPAAR, Inc.**
- Vista Engineering And Consulting, LLC

The impact of research is often not shown in the economy until years after its initiation. Based upon current research funding of $489 million, the economic impact of spin-off businesses and commercialization of research in existing companies is estimated to be between **$1.5 billion (conservative) and $2.8 billion (aggressive)** on the state's economy by 2020.[10]

[10] Analysis is based upon Tripp Umbach's customized economic impact models quantifying the economic impact of research commercialization developed initially in 2001 for the Mayo Clinic and the University of Minnesota.

UAB STUDENT IMPACT

The 2008-09 academic year enrollment at UAB was 16,874 undergraduate, graduate, and professional students. These students have a significant impact on the state of Alabama and the region as a result of their off-campus spending for goods, services, and rental payments in the state of Alabama during FY 08-09. As the campus continues to expand its student population to 25,000 students in FY 19-20, the impact of students on the campus will grow as well.

Included in this impact is an impact from out-of-state students paying tuition and bringing fresh dollars into the Alabama economy. In FY 08-09, more than $29.1 million in fresh dollars entered the state of Alabama in the form of tuition from out-of-state students, but the impact of these students is much larger than tuition payments. It is estimated that in FY 08-09 out-of-state students have a total impact on the state of Alabama of $182.7 million. In FY 19-20 it is expected that this impact will increase to $367.6 million.

UAB COMMUNITY BENEFITS

UAB has for decades partnered with the city of Birmingham to improve education, health care and quality of life throughout the community and state. Every individual school within UAB is engaged in important service programs and service-learning is deeply engrained across UAB's curricula. UAB also remains the economic engine of Birmingham and the state of Alabama.

In early 2009, UAB was named to the President's Higher Education Community Service Honor Roll, the highest federal recognition a university can achieve for its commitment to service-learning and civic engagement. And in 2007, The Association of American Colleges and Universities ranked UAB among the nation's 18 best at educating students for personal and social responsibility.

UAB's total impact on the state of Alabama goes far beyond the annual economic impact presented earlier in this report. Tripp Umbach estimates that **UAB faculty, physicians, students, and staff who received their education and training at UAB generate more than $208.8 million annually in charitable donations, volunteer services, and provision of free care.** These benefits (in addition to the $4.6 billion annual impact) include:

- In 2009, UAB provided more than $116.9 million in care (at cost) to state of Alabama residents for which it did not receive full compensation (charity care or bad debt).

- In 2009, UAB faculty and staff donated $39.7 million in 2009 to local charitable organizations.

- UAB faculty and staff provide a generous amount of hours in volunteer services. The economic value of such services is estimated at more than $30.8 million.[11]

- UAB students (undergraduate, graduate, and professional) provide benefits in the form of contributions to local charities. It is estimated that students donated nearly $2.6 million to the local charities and that their volunteer activities are valued at nearly $18.8 million; these dollars are also in addition to the economic impact outlined above.

The Alys Stephens Performing Arts Center, part of UAB, is one of the Southeast's premier performing arts centers, hosting the best in international, national and local performance. Home to the UAB departments of theatre and music and the Alabama Symphony Orchestra, the ASC also presents its own season, bringing the world's best music, dance, theater, comedy and family entertainment to Alabama, making a significant contribution to the community's quality of life.

[11] Tripp Umbach has conducted survey research at many other universities where students, faculty, and staff provide estimates on spending patterns, including information on the number of volunteer hours and charitable donations in which they provide. Tripp Umbach utilized this research to make conservative assumptions about UAB's volunteerism and charitable giving. Tripp Umbach used a conservative assumption of $20.10 per hour to calculate the value of volunteer services. This amount was originally calculated independently by the Points of Light Foundation.

Appendices

APPENDIX A: DEFINITION OF TERMS

Study Year	Fiscal Year 2008-2009 (FY 08-09) and Fiscal Year 2019-2020 (FY 19-20)
Total Economic Impact	The total economic impact of an institution includes both the direct impact and the indirect impact generated in the economy as a result of the institution. Direct impact includes items such as institutional spending, employee spending, and spending by visitors to the institution. Indirect impact, also known as the multiplier effect, includes the re-spending of dollars within the local economy.
Total Business Volume	Total sales receipts generated with a given geographic area (state of Alabama and Birmingham-Hoover MSA). Business volume includes wholesale, retail, and service sector spending, as well as value added in the manufacturing process.
Multiplier Effect	The multiplier effect is the additional economic impact created as a result of the institution's direct economic impact. Local companies that provide goods and services to an institution increase their purchasing by creating a multiplier.
Direct Tax Payments	Direct tax payments made by an institution to a unit of government.
Indirect Tax Payments	Government revenue that is collected by governmental units in addition to those paid direct by an institution, including taxes paid directly by employees of the institution, visitors to the institution, and vendors who sell products to the institution.
Direct Employment	Total part-time and full-time employees at UAB (jobs).
Indirect Employment	Indirect employment is the additional jobs created as a result of the institution's economic impact. Local companies that provide goods and services to an institution increase their number of employees as purchasing increases, thus creating an employment multiplier.

APPENDIX B: ECONOMIC IMPACT FINDINGS BY GEOGRAPHY

The table below details the economic impact of UAB's operations on the state of Alabama.

Economic Impact of UAB (Overall Operations) on the State of Alabama			
	Direct	**Indirect**	**Total**
UAB Current (FY 09)	$2,010,049,109	$2,613,063,841	$4,623,112,950
UAB Projected (FY 20) *Conservative Scenario*	$2,625,674,413	$3,413,376,737	$6,039,051,150
UAB Projected (FY 20) *Mid-Range Scenario*	$2,873,766,577	$3,735,896,550	$6,609,663,127
UAB Projected (FY 20) *Aggressive Scenario*	$3,098,263,256	$4,027,742,233	$7,126,005,489
Employment Impact of UAB (Overall Operations) on the State of Alabama (jobs)			
	Direct	**Indirect**	**Total**
UAB Current (FY 09)	24,410	36,615	**61,025**
UAB Projected (FY 20) *Conservative Scenario*	27,837	41,756	**69,593**
UAB Projected (FY 20) *Mid-Range Scenario*	28,980	43,470	**72,450**
UAB Projected (FY 20) *Aggressive Scenario*	30,123	45,185	**75,308**
Government Revenue Impact of UAB (Overall Operations) on the State of Alabama			
	Direct	**Indirect**	**Total**
UAB Current (FY 09)	$42,984,894	$242,306,142	**$285,291,036**
UAB Projected (FY 20) *Conservative Scenario*	$55,934,582	$316,441,162	**$372,375,744**
UAB Projected (FY 20) *Mid-Range Scenario*	$61,138,739	$346,333,249	**$407,471,988**
UAB Projected (FY 20) *Aggressive Scenario*	$65,801,311	$373,463,219	**$439,264,530**

The table below details the economic impact of UAB's operations on the Birmingham-Hoover MSA.

Economic Impact of UAB on the Birmingham-Hoover MSA			
	Direct	**Indirect**	**Total**
UAB Current (FY 09)	$1,608,039,287	$2,090,451,073	**$3,698,490,360**
UAB Projected (FY 20) *Conservative Scenario*	$2,100,539,530	$2,730,701,390	**$4,831,240,920**
UAB Projected (FY 20) *Mid-Range Scenario*	$2,299,013,261	$2,988,717,240	**$5,287,730,501**
UAB Projected (FY 20) *Aggressive Scenario*	$2,478,610,605	$3,222,193,786	**$5,700,804,391**
Employment Impact of UAB on the Birmingham-Hoover MSA (jobs)			
	Direct	**Indirect**	**Total**
UAB Current (FY 09)	19,528	29,292	**48,820**
UAB Projected (FY 20) *Conservative Scenario*	22,269	33,404	**55,673**
UAB Projected (FY 20) *Mid-Range Scenario*	23,184	34,776	**57,960**
UAB Projected (FY 20) *Aggressive Scenario*	24,098	36,147	**60,245**
Government Revenue Impact of UAB on the Birmingham-Hoover MSA			
	Direct	**Indirect**	**Total**
UAB Current (FY 09)	$16,242,845	$193,844,914	**$210,087,759**
UAB Projected (FY 20) *Conservative Scenario*	$21,989,202	$253,152,930	**$275,142,132**
UAB Projected (FY 20) *Mid-Range Scenario*	$24,025,021	$277,066,599	**$301,091,620**
UAB Projected (FY 20) *Aggressive Scenario*	$25,868,967	$298,770,575	**$324,639,542**

APPENDIX C: METHODOLOGY

Impact on State Business Volume and Government Revenue

The University is the largest single direct employer in the state and, as such, a major generator of personal income for state residents. Businesses operating within Alabama in the wholesale, retail, service, and manufacturing sectors benefit from the direct expenditures of the institution and its faculty, staff, students, and visitors on goods and services. In addition, many of these "direct" expenditures are re-circulated in the economy as recipients of the first-round of income re-spend a portion of this income with other businesses and individuals within the state. This re-spending is termed the "multiplier" or "indirect" effect.

This economic impact analysis measures the effect of both direct and indirect business volume and government revenue impacts. The methodology employed in the calculation of these impacts is derived from the standard set of impact research tools developed by the American Council on Education (ACE) for the measurement of college and university economic impact.[12] The ACE-based methodology is well established, having been used in hundreds of impact studies throughout the United States. Tripp Umbach has previously used the same methodology in Pennsylvania in a multi-campus university study of the impacts of medical schools.[13]

The ACE methodology employs linear cash-flow modeling to track the flow of institution-originated funds through a delineated spatial area.[14] For the UAB impact analysis, computerized spreadsheet models were developed for the University as a whole and for each of the locations of the University, with the models measuring impact on the state economy

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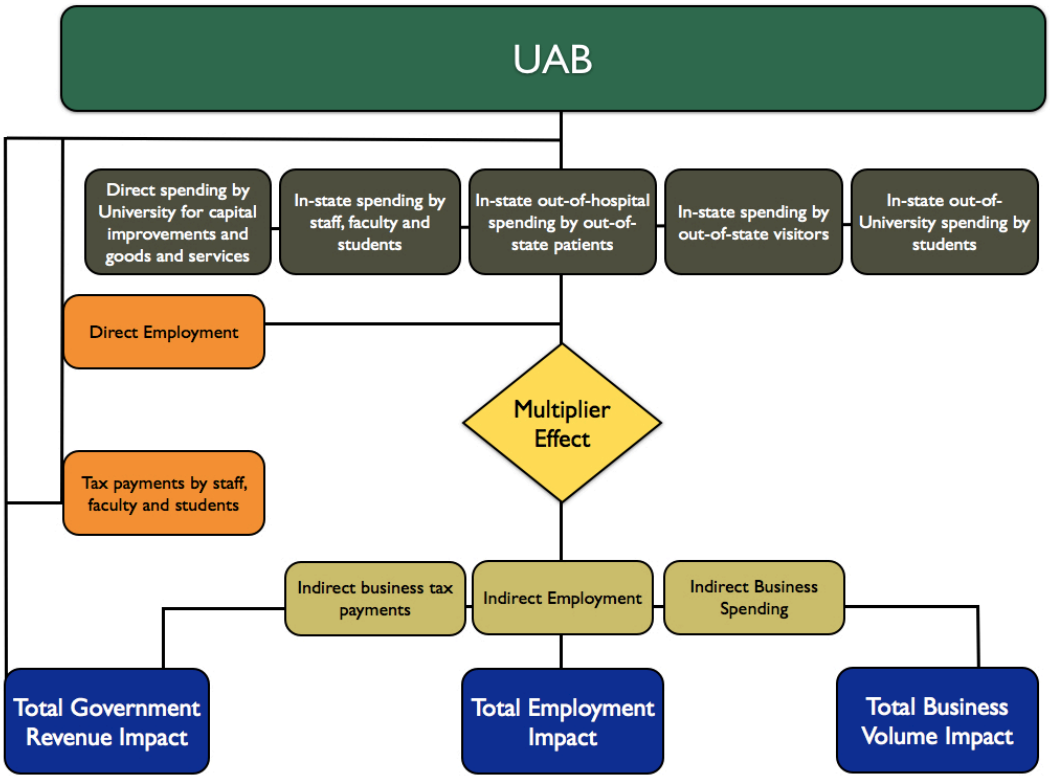
[12] Caffrey, John and Isaacs, Herbert, "Estimating the Impact of a College or University on the Local Economy," American Council on Education, 1971.

[13] Tripp Umbach & Associates, Inc., "The Economic Impact of Medical Centers of Excellence on the State Of Pennsylvania." Harrisburg, Pennsylvania The Economic Development Partnership Taskforce on Medical Centers of Excellence, 1995. Pennsylvania academic medical centers sponsoring the study included the Allegheny Health Education and Research Foundation (AHERF: incorporating Hahnemann University and the Medical College of Pennsylvania), Penn State Hershey Medical Center, the University of Pennsylvania Health System, University of Pittsburgh Medical Center, Thomas Jefferson University and Temple University.

[14] The ACE methodology is highly adaptable to different geographic scales. It is suitable for measuring impact on neighborhoods, municipalities, counties, states, regions or nations.

and government revenues. The figure below shows the general components of the impact models used for the UAB study.



By using this economic impact model, the Tripp Umbach research team has been able to provide UAB with a detailed quantification of the total direct and indirect impact of the University on the economy of Alabama and the Birmingham-Hoover MSA. The impact models provide measures of business volume and state government revenues allocable to the University, together with breakouts of the individual categories of spending that comprise the total impact (e.g. institutional capital spending, student spending, faculty spending, etc.).

Employment Impact

The research reported here measures the direct employment impact of the University. In addition, the research quantifies the indirect employment generated at instate businesses by expenditures emanating from the university. An employment multiplier of 2.5 was generated by Tripp Umbach for the UAB project. The multiplier for UAB is comparatively higher due to the large amount of out-of state visitors and research grants and the impact of out-of-state students and their visitors.

Data Sources

As noted above, this research project closely follows the ACE methodology for the performance of impact analysis for a higher education institution. The methodology requires that a university supply detailed information related to expenditure levels and geographic location of expenditures, together with staffing and other related economic information. The main sources of data used in the UAB economic impact study were:

Data Supplied by Individual Departments: The majority of information required for the individual departmental sections of the models and the report was provided by each University department directly. Tripp Umbach developed a customized data collection form which was distributed to each respective department for completion and analysis.

Secondary-Sourced Data: Census data from the economic census, together with Bureau of Labor Statistics information, were required for completion of the models. Tripp Umbach gathered budgetary information from UAB to facilitate the modeling of government revenue impacts allocable to the University. To complete the economic impact models, Tripp Umbach used student, faculty, and staff spending data from primary data and assumptions from other studies completed for similar universities and other recent projects throughout the country.

APPENDIX D: PEER UNIVERSITY AND INDUSTRY COMPARISONS

Peer University Comparisons

UAB's operational impact of $4.6 billion annually is presented in the table below in comparison to peer universities. It is noteworthy, however, that each economic impact study is unique and these comparisons are not based upon identical methodologies or data collection practices.[15]

Peer University Comparisons					
Peer University	State Investment FY 07-08	State Investment FY 08-09	Economic Impact*	Statewide Economic Activity Generated per Dollar of State Investment	Efficiency of Dollars
UAB	**$358.1 M**	**$284.9 M**	**$4.6 B (2009, ACE)**	**$16.23**	**$284.9 M in investment leads to $4.6 B in impact**
University of Iowa	$343.7 M	$379.4 M	$6.0 B (2009, ACE)	$15.81	$379.4 M in investment leads to $6.0 B in impact
University of Wisconsin-Madison	$461.1 M	$491.9 M	$4.7 B (2002, Input-Output)	$9.55	$491.1 M in investment leads to $4.7 B in impact
University of California, Los Angeles	$589.8 M	$584.1 M	$9.3 B (2008, REMI)	$15.92	$584.1 M in investment leads to $9.3 B in impact
Georgia Institute of Technology	$242.9 M	$280.1 M	$2.2 B (2009, IMPLAN)	$7.85	$280.1 M in investment leads to $7.85 B in impact

[15] The methodologies used to complete the economic impact studies by the peer universities in the table vary by entity. It is also important to note that Tripp Umbach did not perform the analysis for these economic impact studies.

State of Alabama and Birmingham Economy Overview

The state has heavily invested in aerospace, education, health care, and banking, and various heavy industries, including automobile manufacturing, mineral extraction, steel production and fabrication. According to the United States Bureau of Economic Analysis, the 2009 total gross state product was $165.8 billion.

Alabama's agricultural outputs include poultry and eggs, cattle plant nursery items, peanuts, cotton, grains such as corn and sorghum, vegetables, milk, soybeans, and peaches. Alabama's industrial outputs include iron and steel products (including cast-iron and steel pipe); paper, lumber, and wood products; mining (mostly coal); plastic products; cars and trucks; and apparel. Also, Alabama produces aerospace and electronic products in the Huntsville area where the NASA George C. Marshall Space Flight Center and the U.S. Army Aviation and Missile Command are located (headquartered at Redstone Arsenal).

Much of the growth in the industrial sector of the economy was due to Alabama's rapidly expanding automotive manufacturing industry. Since 1993, the automobile industry has generated more than 67,800 new jobs in the state. Alabama currently ranks fourth in the nation in automobile output.

From Birmingham's early days onward, the steel industry has always played a prominent role in the local economy. Though the steel industry no longer has the same prominence it once held in Birmingham, steel production and processing continue to play a key role in the economy. Several of the nation's largest steelmakers have a major presence in Birmingham. In recent years, local steel companies have announced about $100 million worth of investment in expansions and new plants in and around Birmingham.

Birmingham is also a leading center for the financial industry. Many insurance companies have their headquarters in Birmingham, and these employ a large number of people in the Birmingham-Hoover MSA. Birmingham is also a powerhouse of construction and engineering companies. Two of the largest soft-drink bottlers in the United States, each with more than $500 million in sales per year, are located in Birmingham. The Birmingham metropolitan area has consistently been rated as one of America's best places to work and earn a living based on the area's competitive salary rates and relatively low living expenses.

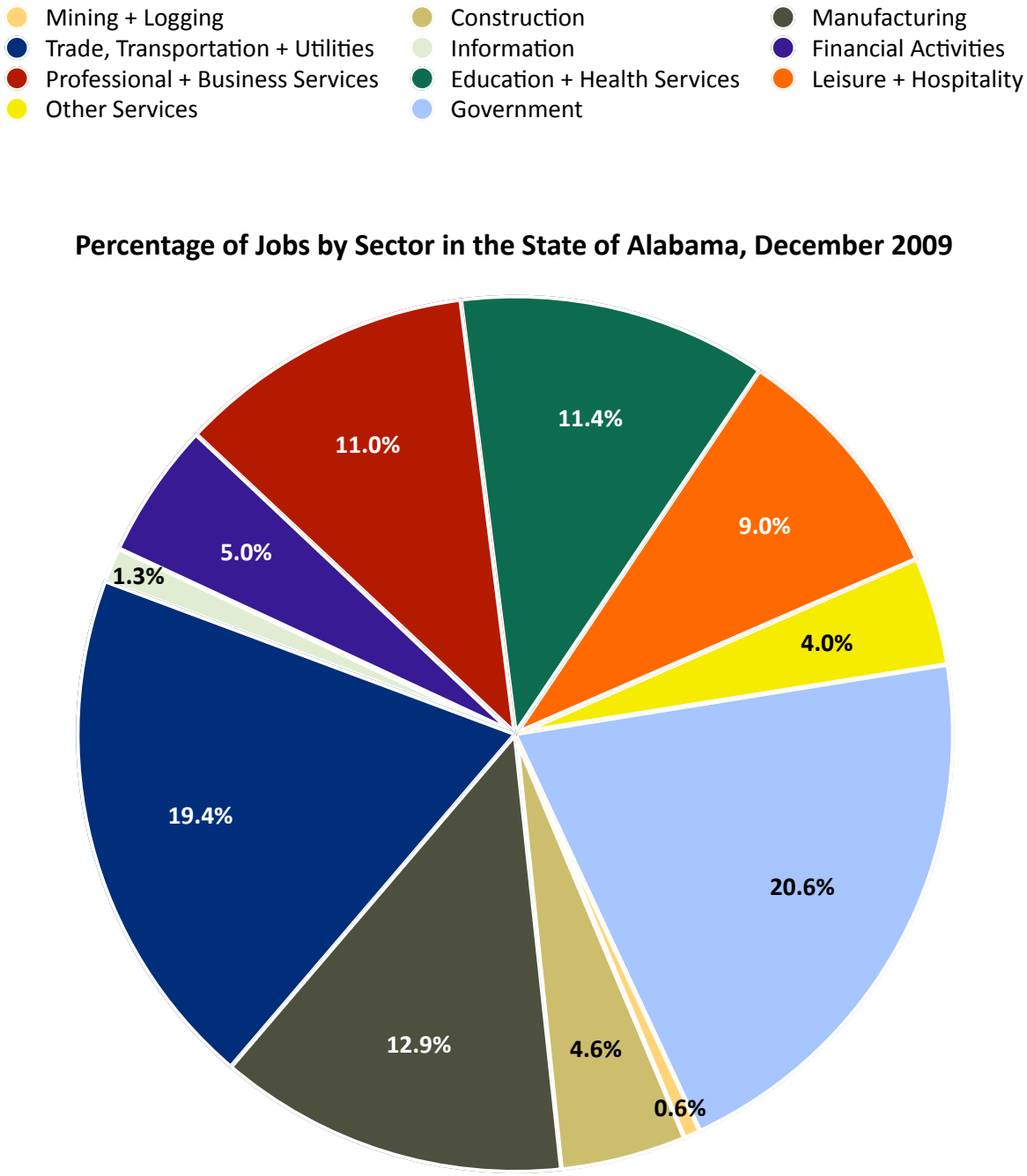
Comparisons to Other Industry Segments in State of Alabama

According to an analysis completed by the U.S. Bureau of Labor and Statistics published in December 2009, the top three employment clusters in the state of Alabama are: 1) government, 2) trade, transportation and utilities, and 3) manufacturing.[16] The table below profiles the employment numbers by job type in the state of Alabama.

Alabama State Economy (December 2009)	
Labor Force Data*	
Civilian Labor Force	2,057,716
Employment	1,833,541
Unemployment	224,175
Unemployment Rate	10.9%
Non-Farm Wage and Salary Employment**	
Total Non-Farm	1855.2
Mining and Logging	11.5
Construction	85.9
Manufacturing	240.0
Trade, Transportation, and Utilities	360.5
Information	23.6
Financial Activities	93.5
Professional & Business Services	204.3
Education & Health Services	211.6
Leisure & Hospitality	167.6
Other Services	74.3
Government	382.4
**Number of persons, in thousands, seasonally adjusted.*	
***Number of jobs, in thousands, seasonally adjusted.*	

[16] Source: Bureau of Labor and Statistics, December 2009.

The graphic below depicts the percentage of jobs by sector in the state of Alabama.



APPENDIX E: FAQs REGARDING ECONOMIC IMPACT ASSESSMENT

What is economic impact?

Economic impact begins when an organization spends money. Economic impact studies measure the direct economic impact of an organization's spending plus additional indirect spending in the economy as a result of direct spending. Economic impact has nothing to do with dollars collected by institutions, their profitability, or even their sustainability, because all operating organizations have a positive economic impact when they spend money and attract spending from outside sources.

In this report, direct economic impact measures the dollars that are generated within the state of Alabama due to the presence of the UAB. This includes not only spending on goods and services with a variety of vendors within the state, and the spending of its staff and visitors, but also the business volume generated by businesses within Alabama that benefit from UAB's spending. It is important to remember that not all dollars spent by a university remain in its home state. Dollars that "leak" out of the state in the form of purchases from out-of-state vendors are not included in the university's economic impact on the state.

The total economic impact in this analysis includes the "multiplier" of spending from companies that do business with UAB. Support businesses may include lodging establishments, restaurants, construction firms, vendors, temporary agencies, etc. Spending multipliers attempt to estimate the ripple effect in the state economy where the spending occurs. For example: Spending by UAB with local vendors provides these vendors with additional dollars that they re-spend in the local economy, causing a "multiplier effect."

What multipliers were used in this study?

Tripp Umbach uses economic impact (also referred to as business volume impact) multipliers recommended by the American Council on Education. The indirect impacts represent the re-spending which takes place in the study areas. The multipliers utilized in this study are based upon research conducted by Caffrey and Isaacs in 1971, and are appropriate for major research universities.

Economic Impact Multipliers: State business volume multiplier = 2.3. Birmingham-Hoover MSA business volume multiplier = 1.8

What methodology was used in this study?

The methodology employed in the calculation of the impact of UAB was derived from the standard set of impact research tools developed by the American Council on Education (ACE) for the measurement of college and university economic impact. The ACE-based methodology is well-established, having been used in hundreds of impact studies throughout the United States. The ACE methodology employs linear cash-flow modeling to track the flow of institution-originated funds through a delineated spatial area.

What is employment impact?

Employment impact measures the direct employment (staff, faculty, administration) plus additional employment created in the economy as a result of the economic impact of UAB.

Indirect employment impact refers to other employees throughout the region that exist because of UAB's economic impact. In other words, jobs related to the population -- city services (police, fire), employees at local hotels and restaurants, clerks at local retail establishments, residents employed by vendors used by UAB.

The approximate ratio of direct to indirect state employment for UAB is 1 to 2.5. This is a much stronger ratio that other industries, which is typically 1 indirect job for every 1 direct job.

How is the tourism impact of an institution measured?

Universities are by nature major tourism destinations. Students, faculty and staff visit universities on a regular basis for conferences and meetings. Parents and friends visit students frequently and the general public travels to universities for sporting events, concerts and cultural events. The economic impact models created by Tripp Umbach for UAB calculate the net impact of spending within the state of Alabama from visitors from outside of the state. The tourism impact of a major university represents hundreds of millions of dollars annually in the flow of "fresh" dollars, dollars attracted from out-of-state, into the state's economy. The models do not include spending by visitors within Alabama who travel to UAB.

What is the difference between direct and indirect taxes?

Direct tax dollars include sales taxes and net corporate income taxes paid directly by the institution to the state, while indirect taxes include taxes paid to the state by vendors that do business with UAB.

Is this a one-time impact or does the impact repeat each year?

The results presented in the UAB economic impact study are generated on an annual basis. The economic impact in future years can either be higher or lower based on number of students, capital expansion, increases in external research, and/or state appropriations.

What types of economic impacts are typically presented in a comprehensive economic impact report?

There are three standard measures that institutions use when measuring and communicating their economic impact:

1. Direct spending: How many direct dollars spent annually by the university, its employees and its visitors that remain in the state of Alabama.
2. Indirect spending: How many direct dollars are spent annually by businesses that receive money from UAB within the state of Alabama.
3. Induced impacts: How many direct dollars are spent annually as a result of the products and services provided by an organization. One example is the capitalization of research innovation. Induced economic impact occurs when new products are developed based on research conducted at UAB.

What are Tripp Umbach's qualifications to perform an economic impact study for UAB?

Tripp Umbach is the national leader in providing economic impact analysis to leading health care organizations, universities and academic medical centers. We have completed more than 150 economic impact studies over the past 20 years for clients such as The Pennsylvania State University, The Ohio State University, The University of Iowa, The University of Washington, Mayo Clinic Rochester, Cleveland Clinic, University of Florida Shands HealthCare, the

University of North Carolina Hospitals, the University of Pennsylvania Medical Center, the University of Pittsburgh Medical Center, and the Ohio State University Medical Center.

Tripp Umbach recently finished the fourth national study of all 125 medical schools and 400 teaching hospital affiliates for the Association of American Medical Colleges. Tripp Umbach has completed statewide studies for multiple institutions in Ohio, New York, Pennsylvania, Virginia, South Carolina, Wisconsin, and Minnesota. Finally, our firm has completed economic impact studies at the metropolitan level in Boston, Pittsburgh, Philadelphia, and Chicago.