2012

Blueprint Mississippi Health Care

Study Appendix

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SUBSIDIUM HEALTHCARE
Insight and Action for Value

Blueprint Mississippi Health Care

The health care industry (hospitals, clinics, research, manufacturers, pharma distributers, etc.) and the world of economic development are inextricably linked. A healthy, productive population, reduction in health care costs and innovative research institutions contribute to the overall competitiveness of Mississippi, and enhance the prospects of business attraction, retention and growth. On the other side of the equation, the growth of a health care cluster contributes jobs and encourages wealth creation; the end game of economic development.

Because of this connection, the health care industry offers a unique opportunity to simultaneously address the two most significant goals of economic development;

1) Enhance business competitiveness of the State; and,
2) Create jobs, wealth and overall positive economic impact.

In response to this opportunity, Blueprint Mississippi is seeking to establish a strategy to promote health care as an economic development driver in the State. The charter for this initiative is simple:

To improve Mississippi competitiveness by expanding the economic asset of health care statewide and identifying enhancements to health care access and wellness. To create an environment where Mississippi can become a leader in health care industry growth and attraction, as well as a model of innovative care delivery.

This is an ambitious undertaking. Some of the primary goals for the project are as follows:

- Improve quality of place, labor and business competitiveness by developing a more robust health care delivery network through a combination of education and training.
- Grow “innovation infrastructure” to support R&D, commercialization and technology transfer within the health care cluster, and link research activities to population health and care delivery.
- Develop implementable strategies to capitalize on opportunities and mitigate weaknesses in the Mississippi business environment to spur health care industry growth.
- Develop a set of actionable strategies to guide short and long-term initiatives targeted at health care and related industry growth; capture statewide action items with a regional focus.

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Project Charter

To improve Mississippi **competitiveness** by expanding the **economic asset of health care** statewide and identifying enhancements to **health care access and wellness**. Create an environment where Mississippi can become a leader in health care industry growth and attraction, as well as a model of innovative care delivery.

Competiveness is…

- Workforce health and productivity
- Workforce development
- Cost reduction of business
- Quality of Place
- Economic growth and sustainability

Economic Asset of Health Care is…

- Physicians, hospitals and entire continuum of care
- Supply chain, suppliers and other direct infrastructure
- Producers of goods and services
- Innovation and research ecosystem
- Education, training, and employment

Health Care Access and Wellness is…

- Availability of appropriate care delivered when and where needed
- Targeted programs to improve health and reduce incidence of disease

Why Health Care Matters

It is clear health care is one of the most important development areas for the state. Health care is an economic driver that can enhance the business competitiveness of the state and create jobs and wealth.

- 10 of the top 20 fastest growing occupations are health care related.
- The health care and social services sector has grown by 23% nationally (2002-2011) and by 24% in Mississippi.
- Health care will generate approximately 3.2 million more jobs before 2018.
- Mississippi hospitals employed 60,143 full-time employees – 5.7% of statewide total employment. Hospitals also created an additional 34,557 jobs outside of their facilities.
- The total economic impact of hospital payroll spending is $5.8 Billion.
- One physician creates approximately 21 jobs and more than $2 Million of revenue in a community.
- Studies have shown that lost work time and productivity due to health issues cost businesses in the U.S. more than $250 Billion in lost economic output per year.

Source: Health care economic statistics from "Critical Care, The Economic Impact of Hospitals on Mississippi's Economy." 2012.

Project Goals

This Project is….

- The first of its kind in the nation
- An economic development study with significant health care input
- About defining health care and the health care cluster
- Unique and custom
- Intended to identify short and long-term objectives/goals
- About industry AND delivery
- About educating the community
- Focused on implementable results
- Focused on urban AND rural strategies
- The initial deployment of a repeatable framework for industry analysis

This Project is not….

- A health care policy reform study
- Solely an analysis of existing conditions
- Will not address specific health outcome metrics (e.g. teen pregnancy, obesity, diabetes, etc.)
- Focused only on job creation; but on total economic impact
- Focused solely on or weighted towards one single industry sector or stakeholder

Project Goals

- **Define and align health care industry** and its **value chain relevance** for Mississippi.
- **Grow and strengthen** the health care system as a whole.
- Identify a group of **existing health care industry concentrations** from which to draw best practices and provide long-term metrics of success.
- **Improve quality of place, labor and business competitiveness** by developing a more robust health care delivery network through a combination of education and training.
- Grow **"innovation infrastructure"** to support R&D, commercialization and technology transfer within the health care cluster, and link research activities to population health and care delivery.
- **Educate the public and economic development professionals** on the growth opportunities the health care cluster represents.
- Develop implementable **strategies to capitalize on opportunities and mitigate weaknesses** in the Mississippi business environment to spur health care cluster growth.
- Develop a set of **actionable strategies to guide short and long-term initiatives** targeted at health care and related industry growth; capture **statewide action items with a regional focus.**
- **Develop a balanced approach** to business attraction, retention, entrepreneurship, growth and asset development strategies.
- Create key **performance indicators and metrics** to measure success.

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Blueprint Mississippi Health Care Recommendations

Strategic Initiatives

1. Identify and empower a **leadership** body to spearhead the implementation of the health care strategy.
2. Identify sustainable **financing mechanisms** to fund health care initiatives and implementation.
3. Improve **rural access** to health care.
4. Enhance Mississippi's **areas of excellence in health care.**
5. Enhance the **state-wide health care network** by addressing gaps and promoting wellness.
6. Address **regulatory barriers** constraining development of the health care industry in Mississippi.
7. Enhance and promote **state competiveness** within the health care cluster industries.
8. Promote **growth in entrepreneurship and nurturing of small business** in the health care sector.

Blueprint Mississippi Health Care Recommendations

Recommended Implementation Tactics	Leadership	Financing Mechanisms	Rural Access	Areas of Excellence	Health Care Network	Regulatory Barriers	State Competitive	Small Business
Undertake a health care strategy capital raising campaign focused on private industry.		●						
Create an economic development program targeting existing and new companies to encourage onsite medical professionals.			●				●	
Create a public/private health care commission that will spearhead and coordinate efforts in implementing the health care strategy.	●							
Improve rural access to care by promoting alternative methods of delivery and addressing barriers to utilizing care.			●					
Develop incentive mechanism to provide small, rural clinics and hospitals the ability to implement Electronic Medical Records (EMR); revolving loan fund, incentivize large hospitals to push EMR. Make the EMR system interoperable to promote shared information.			●		●			
Continue to pursue a long-term planning process for the Jackson Medical Corridor. Ensure multiple state partners outside of Jackson are involved in identifying and promoting linkages to care providers and institutions around the state.				●	●			●
Ease regulatory requirements for physician licensure.					●	●		
Expand the scope of practice for nurse practitioners and physician assistants to encourage use of extenders.			●		●	●		
Identify a public, private or public/private funding source to increase primary care residency slots in Mississippi.			●		●			
Adjust the UMMC loan forgiveness program to refine the qualifying definition of rural, and extend the post graduation residency requirement.			●					
Jackson State University and other Mississippi universities work together to form a school of public health.			●		●	●		●
Encourage the state Department of Health/Division of Medicaid to implement population health measures and programs, based on existing and proven models used by other states. Encourage private business to implement wellness programs.			●		●			

*The Study recognizes that the University of Southern Mississippi and Jackson State University offer accredited degree programs within a department of health or related department. However, the State lacks a stand-alone School of Public Health that would be required to substantially escalate impactful research and benefit to the State.

Blueprint Mississippi Health Care Recommendations

Recommended Implementation Tactics	Leadership	Financing Mechanisms	Rural Access	Areas of Excellence	Health Care Network	Regulatory Barriers	State Competitive	Small Business
Use the Institutions of Higher Learning system office to facilitate communication and networking regarding health care related expertise and intellectual property.							●	●
Expand the existing Mississippi Crossmatch program to target health care suppliers (services and goods) and health care providers. Encourage cooperative use of instate services amongst providers (e.g. laundry service).							●	
Elevate health care industries in which Mississippi is immediately competitive to state-wide target industries - Pharma/Medical Related Distribution & Health Care Related Business Process Outsourcing (BPO).							●	
Conduct a comprehensive skills audit to match health care industry needs with training and education providers.					●		●	●
Identify a single leadership organization to promote the growth of innovation within the health care sectors.	●			●		●	●	●
Develop strategic, coordinated research parks at key academic institutions to centralize areas of excellence. Provide diversity in real estate type.				●			●	●
Use community development to enable economic development in urban areas; quality of place.				●			●	●
Create a reward and recognition mechanism to highlight achievements in promoting health care as an economic driver.	●				●			
Explore public/private mechanisms to fund a new, or expand an existing, Mississippi angel or venture fund.		●					●	●
Address gaps in assets demanded by medical device manufacturing and R&D related industries.						●	●	
Develop a dedicated health care fund to support the task force and strategic initiatives.		●						
Promote and build on existing health care zones to provide incentives for rural physicians and health care related development.			●	●	●			
Promote a philanthropic medical program that encourages physicians to provide services in rural areas.			●		●			

Blueprint Mississippi Health Care Implementation Tactics

	Recommended Implementation Tactics	Timing	Impact	Cost	Difficulty	Impacted Region	Econ Dev. Mission
1	Undertake a health care strategy capital raising campaign focused on private industry.	Immediate & Ongoing	High	Low	Mid	State-Wide	N/A
2	Create an economic development program targeting existing, and new, companies to encourage onsite medical professionals.	ST	High	Low - Mid	Mid	State-Wide	WF, BS
3	Create a public/private health care commission that will spearhead and coordinate efforts in implementing the health care strategy.	Immediate	High	Low	Mid	State-Wide	N/A
4	Improve rural access to care by promoting alternative methods of delivery and addressing barriers to utilizing care.	MT ST – Initiate	High	High	High	Rural	WF, EW, BS
5	Develop incentive mechanism to provide small, rural clinics and hospitals the ability to implement EMR (revolving loan fund, incentivize large hospitals to push EMR). Make the EMR system interoperable to promote shared information.	ST	Medium	High	High	Rural	BS
6	Continue to pursue a long-term planning process for the Jackson Medical Corridor. Ensure that multiple state partners outside of Jackson are involved in identifying and promoting linkages to care providers and institutions around the state.	LT	Medium	High	High	Areas of Excellence	EW, BS, QL
7	Ease regulatory requirements for physician licensure.	ST	Medium	Low	Mid	State-Wide	EW, BS
8	Expand the scope of practice for nurse practitioners and physician assistants to encourage use of extenders.	MT	Medium	Low	Mid	Rural	WF, BS
9	Identify a public, private or public/private funding source to increase primary care residency slots in Mississippi.	ST	High	High	Mid	Rural	WF, EW, BS
10	Adjust the UMMC loan forgiveness program to refine the qualifying definition of rural, and extend the post graduation residency requirement.	MT	Medium	Low	Mid	Rural	WF, EW, BS

Economic Dev. Mission
- Workforce – WF
- Create Econ Wealth – EW
- Business Sustainability – BS
- Qualify of Life – QL

Timing
- Immediate – Prerequisite to Success
- Short Term – ST (0-3 years)
- Mid Term – MT (4-6 years)
- Long Term – LT (6+ years)

Priority
- High
- Medium
- Low

Blueprint Mississippi Health Care Implementation Tactics

	Recommended Implementation Tactics	Timing	Impact	Cost	Difficulty	Impacted Region	Econ Dev. Mission
11	Jackson State University and other Mississippi universities work together to form a school of public health*.	LT	High	High	High	State-Wide	EW, BS
12	Use the Institutions of Higher Learning system office to facilitate communication and networking regarding health care related expertise and intellectual property.	MT	High	Medium	Medium	Areas of Excellence	EW, BS
13	Expand the existing Mississippi Crossmatch program to target health care suppliers (services and goods) and health care providers. Encourage cooperative use of instate services amongst providers (e.g. laundry service).	MT	Low	Low	Mid	State-Wide	EW, BS
14	Elevate health care industries in which Mississippi is immediately competitive to state-wide target industries - Pharma/Medical Related Distribution & Health Care Related BPO.	ST	Low	Low	Low	State-Wide	EW
15	Conduct a comprehensive skills audit to match health care industry needs with training and education providers.	ST	High	Mid	Mid	State-Wide	WF, BS
16	Identify a single leadership organization to promote the growth of innovation within the medical sectors.	Immediate	High	Low	Low	Areas of Excellence	WF, EW, BS, QL
17	Develop strategic, coordinated research parks at key academic institutions to centralize areas of excellence. Provide diversity in real estate type.	MT - LT	High	High	High	Areas of Excellence	EW, BS, QL
18	Use community development to enable economic development in urban areas; quality of place.	LT	High	High	High	Urban	EW, BS, QL
19	Create a reward and recognition mechanism to highlight achievements in promoting health care as an economic driver.	ST	Medium	Low	Low	State-Wide	N/A
20	Explore public/private mechanisms to fund a new, or expand an existing, Mississippi angel and venture fund.	LT	Medium	High	High	Areas of Excellence	EW, BS, QL

*The Study recognizes that the University of Southern Mississippi and Jackson State University offer accredited degree programs within a department of health or related department. However, the State lacks a stand-alone School of Public Health that would be required to substantially escalate impactful research and benefit to the State.

Economic Dev. Mission
- Workforce – WF
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Blueprint Mississippi Health Care Implementation Tactics

	Recommended Implementation Tactics	Timing	Impact	Cost	Difficulty	Impacted Region	Econ Dev. Mission
21	Address gaps in assets demanded by medical device manufacturing and R&D related industries.	LT	Medium	Medium	Medium	State-Wide	WF, EW, BS
22	Develop a dedicated health care fund to support the task force and strategic initiatives.	ST	High	Low	High	State-Wide	N/A
23	Promote a philanthropic medical program that encourages physicians to provide services in rural areas.	ST	Medium	Low	Low	Rural	WF, BS
24	Promote and build on existing health care zones to provide incentives for rural physicians and health care related development.	ST	Medium	Medium	Low	Designated Zones	WF, EW
25	Encourage the state Department of Health/Division of Medicaid to implement population health measures and programs, based on existing and proven models used by other states. Encourage private business to implement wellness programs.	ST	High	High	High	State-Wide	WF, BS, QIL

Economic Dev. Mission
- Workforce – WF
- Create Econ Wealth – EW
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- Qualify of Life – QL

Timing
- Immediate – Prerequisite to Success
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Priority
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Blueprint Mississippi Health Care Implementation Tactics

Enablers

- Undertake a health care strategy capital raising campaign focused on private industry.
- Create a public/private health care commission that will spearhead and coordinate efforts in implementing the health care strategy.
- Identify a single leadership organization to promote the growth of innovation within the medical sectors.

Low-Hanging Fruit for Early Successes

- Ease regulatory requirements for physician licensure.
- Create an economic development program targeting existing, and new, companies to encourage onsite medical professionals.
- Conduct a comprehensive skills audit to match health care industry needs with training and education providers.

Important Efforts Requiring Significant Cost and Political Capital

- Improve rural access to care by promoting alternative methods of delivery and addressing barriers to utilizing care.
- Identify a public, private or public/private funding source to increase primary care residency slots in Mississippi.
- Develop strategic, coordinated research parks at key academic institutions to centralize areas of excellence (Jackson, Oxford, Hattiesburg). Diversity in real estate type.
- Use community development to enable economic development in urban areas; quality of place

Priority

- High
- Medium
- Low

Blueprint Mississippi Health Care Recommendations

Strategic Initiatives

1. Identify and empower a **leadership** body to spearhead the implementation of the health care strategy.
2. Identify sustainable **financing mechanisms** to fund health care initiatives and implementation.
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5. Enhance the **state-wide health care network** by addressing gaps and promoting wellness.
6. Address **regulatory barriers** constraining development of the health care industry in Mississippi.
7. Enhance and promote **state competiveness** within the health care cluster industries.
8. Promote **growth in entrepreneurship and nurturing of small business** in the health care sector.

1. Identify and empower a **leadership** body to spearhead the implementation of the health care strategy

Why:
- A statewide strategy will require coordination with numerous entities; Governor's Office, MDA, MEC, Local ED Professionals, Medicaid, etc.
- A single point of leadership will provide legitimacy and accountability.
- A leadership body can integrate disparate goals and missions of various organizations.
- Provides "point person" for funding issues.

How:
- Create a health care commission consisting of public appointees and private sector representatives.
- Remove the leadership entity from the political environment to ensure consistency over time.
- Each major implementation organization (MDA, MEC, MEDC, Mississippi Medical Association, Hospital Association, etc.) should have a representative on the board that acts as the liaison between its mission and the health care strategy.

Recommended Implementation Tactics:
1. Create a public/private health care commission that will spearhead and coordinate efforts in implementing the health care strategy.
    - This would be the entity to achieve the goals of this Strategic Initiative; the why and how above outline the importance.
2. Create a reward and recognition mechanism to highlight achievements in promoting health care as an economic driver.
    - Task the commission with tracking and awarding achievements in implementation (best collaboration, leader in innovation, pioneering delivery model, etc.).
    - Reward and recognition will bring attention to the initiatives, garner political and public support, and create marketing opportunities for the State.
3. Identify a single leadership organization to promote the growth of innovation within the medical sectors.
    - A single leadership organization coordinating the development of innovation will produce better implementation results. But, it also adds credibility to the innovation environment in Mississippi; important for changing outside opinions of the state.

Metrics
- Development of the Mississippi Health Care Commission charter and mission statement.
- A unified implementation strategy that incorporates key Mississippi organizations.

Best Practice
Grand Rapids Medical Mile has established numerous advisory groups comprised of public and private entities. The groups provide vision for the corridor, support to businesses located in the area, or moving to the area, and promotion of communication and collaboration. Although not a state-wide initiative, the Grand Rapids Medical Mile is a shining example of coordinated leadership and collaboration amongst private health care providers, public medical schools, economic development and community planning entities.

2. Identify sustainable **financing mechanisms** to fund health care initiatives and implementation

Why:

- The need and opportunity associated with the health care industry has been widely accepted by key stakeholders throughout the state , attention now must focus on resources to advance the cause.
- At this time, given the unique nature of this industry and health care ecosystem, no major funds or programs (with exception of Health Care Zones) are in place to advance this Blueprint workstream on a sustainable basis.
- Collaboration and planning takes dollars, and without properly directed and targeted funds Mississippi cannot significantly advance the communication among stakeholders, which is key to making health care an accepted economic driver for the long term.
- The return on investment and value associated with this cluster initiative has proven out in benchmark locations to be positive in terms of workforce development, accelerating public/private sector partnership, improving access to health care and advancing local and regional competitiveness.

How:

- Focused communication and education around action plans and shared resources.
- Champions in each region and appointed leader of proposed Health Care Commission should have a fundraising performance management requirement; suggests that the leader should be well respected executive or experienced administrator who understands financing mechanisms.
- Create buy-in during the roll-out of the plan to discuss resources required and seek ideas from those who will benefit (both rural and urban institutions), health care providers and private industry and small business; they all have existing knowledge of funding sources.
- Looks at existing funding vehicles available to economic development across the board, evaluate all possible channels including foundations and federal grants, and investigate prioritization of funds available against recommendations.

Recommended Implementation Tactics:

1. Undertake a health care strategy capital raising campaign focused on private industry.
    - For something that is so systemic and determinant with regard to Mississippi's workforce, competitiveness, business climate and cost structure (including health care costs), private industry (including small and medium enterprises) and the health care service providers themselves need to be approached immediately for a special fund to support this initiative.
    - Assuming the communication and roll-out plan will include private industry discussions, begin to plant the seed for at a minimum a $10 Million base fund raised within 12 months that can be accessed for prioritized initiatives; validity, impact and importance to be assessed by new Health Care Commission or similar body with economic development responsibility and job creation/economic impact accountability.

2. Identify sustainable **financing mechanisms** to fund health care initiatives and implementation (cont.)

Recommended Implementation Tactics:

2. Develop a dedicated health care fund to support the task force and strategic initiatives.
    - Consider, based on best practices of other states, a 0.5% sales tax to capitalize a health care economic development fund.
    - Work with the Secretary of State and Department of Revenue to examine current sales tax structures and how best to implement a reallocation of where collected dollars go and consideration of special levies; local referendum voting as the governing approval (such as the tourism tax that is prevalent throughout Mississippi).
    - In all cases a special sales tax for the health care initiative should flow back to impacted institutions that will be responsible for developing the health care sector and industry infrastructure including:
        - K-12 institutions (e.g., for wellness and education);
        - Community colleges (improve skills training and science, technology, engineering and math (STEM) talent needs);
        - Additional incentives that local authorities can use at their discretion (to recruit doctors or support a small business expansion in health care access); and,
        - Entrepreneurial and innovation ventures (getting angel and investment funding to those entities or individuals who cannot access capital through normal channels).

3. Explore public/private mechanisms to fund a new, or expand an existing, Mississippi angel and venture fund.
    - A majority of states that have taken a more holistic approach to job creation have developed public/private or not-for-profit organizations to help promote, fund and coach entrepreneurial activities at early stage, and some second stage funding cycles.
    - Mississippi has a number of organizations that should work with Mississippi Technology Alliance (MTA) to facilitate the entire angel and venture fund development program.
    - Mississippi should look at how a statewide bond issue or regional revolving loan fund mechanism can be developed and associated with targeted regional innovation centers and expansion of incubators in key health care zones, universities and critical mass communities.
    - To compliment these public funds there should be a 1:1 ratio of private sector capital before funds can be put to use in this new centralized angel and venture based organization. The entity should target at least $10 Million within 12 months and $20 Million within 36 months to expand access to capital for burgeoning talent base in the bio, pharma and health care sectors of the state.

Metrics

- Significant increase in private capital and private industry funds.
- Allocation of sales tax dollars to targeted recommendations in the short term.
- More start up businesses and increase in incubator facilities.
- Establish angel and venture statewide coordinating body.

2. Identify sustainable **financing mechanisms** to fund health care initiatives and implementation (cont.)

Best Practices

- Texas 4A and 4B - Sales Tax for Economic Development
  The economic development sales tax was first created in 1979 to give smaller Texas communities the financial resources to attract primary jobs and create wealth. Today, the tax is the undisputed workhorse of local economic development efforts, serving as the backbone of economic development programs in more than 500 communities across the state.

- Wisconsin Angel Acceleration Fund
  - They have raised $74 Million in equity capital; $36 Million from in-state investors
  - Eight companies have investors who utilized Act 255 Tax Credits
  - 62 patents have been secured
  - Over 200 highly skilled jobs have been created
  - Companies have attracted significant new capital from out-of-state sources

3. Improve **rural access** to health care

Why:

- On a regional basis, Mississippi has many strong health care systems. Rural areas, however, are struggling to meet basic staffing, facility, technology and other infrastructure needs.
- Residents of rural areas face significant access limitations in terms of basic preventative services, regular access to primary care and the availability of specialists.
- As a result, health care costs are higher than they would otherwise be if health screening, chronic disease management and other basic services were more available.
- Improving rural access would also reduce the burden on the larger regional health systems.

How:

- Increased incentives for medical school students to enter primary care in rural areas.
- Due to the primary care orientation of William Carey College of Osteopathic Medicine (DO), explore with school administration the potential (including funding) to increase class size.
- More residency programs located in or closer to rural areas.
- Broadened scope of practice regulations for nurse practitioners and other mid-level providers in designated high-need rural areas.

Recommended Implementation Tactics:

1. Improve rural access to care by promoting alternative methods of delivery and addressing barriers to utilizing care.
    - Mississippi's rural nature and lack of physicians makes the need for alternative methods of care delivery (e.g., telemedicine) more important.
2. Develop an incentive mechanism to provide small, rural clinics and hospitals the ability to implement Electronic Medical Records (EMR).
    - EMR is important for tracking patient care in rural areas, where patients often hop from doctor to doctor. A revolving loan fund could help financing.
3. Expand the scope of practice for nurse practitioners and physician assistants to encourage use of extenders.
    - Mississippi limits the scope of practice for nurse practitioners and physician assistants. Adjusting the allowable practice would extend care provision.
4. Develop a public/private model for the creation and initial funding of new primary care (e.g., family practice) residency programs in or near rural areas.
    - Mississippi only has approximately 500 residency slots, which is inadequate. Growth should also look to leverage William Carey DO graduates. Work with the newly created Office of Mississippi Physician Workforce.
5. Adjust the UMMC loan forgiveness program to refine the qualifying definition of rural; extend the post graduation residency requirement.
    - The physician loan forgiveness program is a good tool, but areas eligible are defined broadly, meaning truly "rural" areas do not see the benefit.
6. Jackson State University and other Mississippi universities work together to form a school of public health*.
    - Without a school of public health, Mississippi is missing opportunities to understand chronic health problems in the general population. The school of public health could also attract investment from entities doing certain types of research and trials.

*The Study recognizes that the University of Southern Mississippi and Jackson State University offer accredited degree programs within a department of health or related department. However, the State lacks a stand-alone School of Public Health that would be required to substantially escalate impactful research and benefit to the State.

3. Improve **rural access** to health care (cont.)

Recommended Implementation Tactics:

7. Create an economic development program for companies to encourage onsite medical professionals.
    - Help companies understand the benefits and costs. Encourage them to partner with other companies or invest in their own resources.
    - Create a classification of incentives to encourage and reward key businesses that provide onsite care.
    - Use this program as a recruitment tool in business attraction.
8. Promote and build on existing health care zones to provide incentives for rural physicians and health care related development.
9. Promote a philanthropic medical program that encourages physicians to provide services in rural areas.

Metrics

- Number of mid-level providers practicing in high-need rural areas and increase from current levels.
- Number of Mississippi residency programs for primary care (e.g., family practice) and total number of residents in those programs.
- Number of medical school students and residents receiving incentives to enter primary care and with a commitment to practice in a rural area.

Best Practices

Oklahoma State University College of Osteopathic Medicine has effectively helped Oklahoma address the primary care supply challenge. Despite being a newly created institution, the COM and the OSU Health Sciences Center have developed multiple rural clinics for clinical care and teaching. They have also developed programs to orient students into local rural communities to increase the probability that those students will remain in those communities long-term. Also in terms of scope of practice for mid-level providers, the western states (e.g., Washington, Oregon, Utah, Idaho, Montana, etc.) generally have the broadest provisions and require the least amount of physician oversight.

4. Enhance Mississippi's **areas of excellence in health care**

Why:

- To create areas in the State that can compete regionally and nationally for labor talent and health care businesses.
- To strengthen the State's hubs of health care research and delivery and strengthen the entire network.
- To develop physical spaces, with a focus on small and medium sized companies, that provide synergy between public and private sectors, and between research and implementation.

How:

- Develop leadership in strategic areas of excellence to guide and promote development of a synergistic environment.
- Promote physical clustering of health care research, education and private business activity to promote synergy.
- Partner with local municipalities and private developers to establish a future vision for the urban environment and create regulatory instruments to implement that vision.
- Develop a school of public health in partnership with Jackson State University working with other Mississippi Universities*.
- Develop strategic, coordinated research parks at research institutions to facilitate commercialization of technology.

Recommended Implementation Tactics:

1. Continue to pursue a long-term planning process for the Jackson Medical Corridor. Ensure that multiple state partners outside of Jackson are involved in identifying and promoting linkages to care providers and institutions around the state.
    - Jackson must be the center of excellence that propels the state forward in areas of business start-ups and innovation. The medical corridor can anchor that center of excellence.
    - The Corridor must, however, benefit the entire state and promote collaboration. With the end in mind, it is important that representatives across the state be involved in the planning, promotion and implementation process.
2. Identify a single leadership organization to promote the growth of innovation within the medical sectors.
    - A single leadership organization coordinating the development of innovation will produce better implementation results. But, it also adds credibility to the innovation environment in Mississippi; important for changing outside opinions of the state.
3. Develop strategic, coordinated research parks at key academic institutions to centralize areas of excellence (Jackson, Oxford, Hattiesburg, Starkville, Lorman). Provide diversity in real estate type to align with realistic occupiers in the region.
    - Every serious innovation network needs centralized hubs of excellence. These hubs should be aligned with strengths of academic institutions.
    - Provide a variety of real estate types at these parks, incubator, flex space, shared lab, etc. to accommodate companies at various stages of growth.

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4. Enhance Mississippi's **areas of excellence in health care** (cont.)

Recommended Implementation Tactics:

4. Use community development to enable economic development in urban areas, with a specific focus on current corridors or communities where health care is already at critical mass.
    - Talent is the key to success in many of the health care industries. Next generation talent demands a live/work environment that promotes their desired lifestyle. Many of Mississippi's urban environments need to promote community development efforts to create a competitive environment.
5. Continue to promote Health Care Zones as an implementation vehicle and program to create sustainable jobs and bring together health care sector partners.

Metrics

- Development of the Local champions in each of the State's Areas of Excellence.
- Development and adoption of local planning documents that establish vision and regulations for future development, investment, tax base growth and job growth.
- Research and patent activity in each area
- Health Care Zone activity and success stories
- Reduction in health care benefit cost to businesses

Best Practices

Although larger than envisioned for Mississippi, the Texas Medical Center in greater Houston is one of the largest clusters of patient care, research and commercialization related to health care in the world. It is over 1,000 acres and contains 15 hospitals, three medical schools, four nursing schools and schools of dentistry, public health and pharmacy, among others. The center includes multifamily housing and cultural attractions such as the Texas Medical Center Orchestra. The Texas Medical Center has developed and adopted a 50-year Master Plan in 1999 to guide physical development. In 2010, over 93,500 people were employed in the center including 20,000 physicians, scientists, researchers and other advanced degree professionals.

5. Enhance the **state-wide health care network** by addressing gaps & promoting wellness

Why:

- With only few exceptions, gaps exist throughout the state in terms of the total number of physicians, the number of primary care physicians and funding for the uninsured.
- Outmigration for care benefits no one. A "coopetition" model is needed for selected low incidence and certain highly specialized procedures/therapies.
- Greater availability of Electronic Medical Records would enhance quality and continuity of care.
- Adoption of population health and disease management methodologies would increase the quality of health care and the competitiveness of the state's workforce.

How:

- Develop and implement a Mississippi workforce wellness model—there are many well supported and established programs to use as models.
- Streamline the credentialing for new physicians entering the state.
- Develop a program for linking and extending health data in regional or statewide networks.
- Support development of the Jackson Medical Corridor.

Recommended Implementation Tactics:

1. Continue to pursue a long-term planning process for the Jackson Medical Corridor. Ensure that multiple state partners outside of Jackson are involved in identifying and promoting linkages to care providers and institutions around the state.
    - Jackson must be the center of excellence that propels the state forward in areas of business start-ups and innovation. The medical corridor can anchor that center of excellence.
    - The Corridor must, however, benefit the entire state and promote collaboration. With the end in mind, it is important that representatives across the state be involved in the planning, promotion and implementation process.
2. Reassess regulatory requirements for physician licensure.
    - Regulatory barriers and time delays should be examined and addressed because they negatively impact recruitment.
3. Expand the scope of practice for nurse practitioners and physician assistants to encourage use of extenders.
    - Mississippi limits the scope of practice for nurse practitioners and physician assistants. Adjusting the allowable practice would extend care provision.
4. Develop a public/private model for the creation and initial funding of new primary care (e.g., family practice) residency programs in or near rural areas.
    - Mississippi only has approximately 500 residency slots, which is inadequate. Growth should also look to leverage William Carey DO graduates. Work with the newly created Office of Mississippi Physician Workforce.
5. Jackson State University and other Mississippi universities work together to form a school of public health*.
    - Without a school of public health, Mississippi is missing opportunities to understand chronic health problems in the general population. The school of public health could also attract investment from entities doing certain types of research and trials.
6. Develop an incentive mechanism to provide small, rural clinics and hospitals the ability to implement Electronic Medical Records (EMR).
    - Make the EMR systems interoperable to promote the sharing of information and better tracking of patients and care.

*The Study recognizes that the University of Southern Mississippi and Jackson State University offer accredited degree programs within a department of health or related department. However, the State lacks a stand-alone School of Public Health that would be required to substantially escalate impactful research and benefit to the State.

5. Enhance the **state-wide health care network** by addressing gaps & promoting wellness (cont.)

Recommended Implementation Tactics:

7. Conduct a comprehensive skills audit to match health care industry needs with training and education providers.
    - Work with key health care target sectors to understand their skills needs.
    - Compare needed skills to training offered by universities, votech, training programs, etc. to identify gaps and customized training offerings.
    - This should be conducted for high skill (STEM), all the way to lower skilled occupations.
8. Create a reward and recognition mechanism to highlight achievements in promoting health care as an economic driver.
    - Task the commission with tracking and awarding achievements in implementation (best collaboration, leader in innovation, pioneering delivery model, etc.).
    - Reward and recognition will bring attention to the initiatives, garner political and public support, and create marketing opportunities for the State.
9. Develop incentives for companies that offer either directly or through a health insurer wellness programs to their employees and dependents.
    - Wellness programs based at companies effectively reach the workforce. This will also open the line of communication between health care providers and employers ensuring a more comprehensive treatment program, and effective method of addressing health issues that result in time away from work.
10. Encourage the state Department of Health/Division of Medicaid to implement population health measures and programs, based on existing and proven models used by other states.
    - These key agencies are equipped for effective health care education and can impact high-risk populations.
11. Promote and build on existing Health Care Zones to provide incentives for rural physicians and health care related development.
12. Promote a philanthropic medical program that encourages physicians to provide services in rural areas.

Metrics

- Number of patients enrolled in wellness programs
- Health improvement statistics from wellness programs (e.g., number of patients with blood pressure brought under control, number of diabetics managed within proper guidelines, etc.)
- Number of Medicaid recipients enrolled in a population health program
- Number of physician candidates entering and successfully exiting the credentialing process
- Number and type of initiatives pursued by the Jackson Medical Corridor
- Number of patients with populated Electronic Medical Records; degree of interoperability between EMR systems
- Reduction in out-migration for key services to out-of-state providers in cities such as Birmingham, New Orleans, etc.

Best Practices

Community Care of North Carolina for population health management in Medicaid and commercial populations; best practice in wellness programs is for them to be physician office based rather than a remote/telephonic model. Other best practices include states such as Illinois, which is building a state wide health data network to cover approximately 13 million people and link together 50,000 providers (hospitals and physicians), payers and state agencies.

6. Address **regulatory barriers** constraining development of the health care industry in Mississippi

Why:

- Make Mississippi competitive with other states in terms of attracting and keeping physicians.
- Enhance the State health care network's bandwidth, rural access and efficiency by allowing non-physicians to deliver more services where appropriate.
- Develop additional education and research assets in the State.
- Enhance leadership and organizational capacity for health care within the State.
- It should be noted that overall Mississippi is viewed as having a very favorable business and regulatory environment.

How:

- Ease physician licensure requirements where appropriate so regulations do not add additional hurdles without materially improving public health.
- Change allowable duties of nurse practitioners and physician assistants to deliver health care services currently only allowed by physicians where appropriate.
- Remove regulatory barriers that restrict the creation of a School of Public Health to the domain of Jackson State University and allow other institutions to assist in creating such an entity if they have the resources*.
- Create legislation that identifies and creates a leadership organization to spearhead State-wide efforts to enhance the health care network.

Recommended Implementation Tactics:

1. Ease regulatory requirements for physician licensure.
    - Regulatory barriers and time delays should be examined and addressed because they negatively impact recruitment.
2. Expand the scope of practice for nurse practitioners and physician assistants to encourage use of extenders.
    - Mississippi limits the scope of practice for nurse practitioners and physician assistants. Adjusting the allowable practice would extend care provision.
3. Jackson State University and other Mississippi universities work together to form a school of public health*.
    - Without a school of public health, Mississippi is missing opportunities to understand chronic health problems in the general population. The school of public health could also attract investment from entities doing certain types of research and trials.
4. Identify a single leadership organization to promote the growth of innovation within the medical sectors.
    - A single leadership organization coordinating the development of innovation will produce better implementation results. But, it also adds credibility to the innovation environment in Mississippi; important for changing outside opinions of the state.
5. Address gaps in assets demanded by medical device manufacturing and R&D related industries.
    - Use the high-level results from this study to build a detailed understanding of the assets and cost structure demanded by medical device manufacturing and R&D industries. Target investment to close gaps and enhance competitiveness.
    - This will require a long-term commitment.

*The Study recognizes that the University of Southern Mississippi and Jackson State University offer accredited degree programs within a department of health or related department. However, the State lacks a stand-alone School of Public Health that would be required to substantially escalate impactful research and benefit to the State.

6. Address **regulatory barriers** constraining development of the health care industry in Mississippi (cont)

Metrics

- Change of regulations to ease physician licensure
- Change of regulations to increase allowable duties of nurse practitioners and physician assistants
- Removal of regulation allowing only Jackson State University to create a School of Public Health
- Adoption of legislation creating a health care leadership organization within the State

Best Practice

Western states, including Washington, Oregon, Utah, Idaho and Montana, allow broader provisions for scope of practice by mid-level providers and require the least amount of physician oversight.

7. Enhance and Promote **state competiveness** within the health care cluster industries

Why:

- Private sector investment decisions are made based on a locations ability to support and nurture their business operations. In order to capture that investment, from both existing companies and future companies, and retain current investment, Mississippi must address gaps and weaknesses in their competitiveness.
- Mississippi's competiveness in some health care sectors is already strong. These must be aggressively marketed.

How:

- Take stock in Mississippi's competition within health care sectors. Where can you successfully compete?
- Seek early wins in areas Mississippi is already competitive.
- Use the health care initiative to promote a healthier, more productive workforce.
- Change your focus; attraction is not the core success driver in health care. Retain and nurture Mississippi ideas and companies.
- Shift some economic development dollars from incentives and cost mitigation to invest in infrastructure (human, physical, intellectual, etc.).

Recommended Implementation Tactics:

1. Create an economic development program targeting existing, and new, companies to encourage onsite medical professionals.
    - Help companies understand the benefits and costs. Encourage them to partner with other companies or invest in their own resources.
    - Create a classification of incentives to encourage and reward key businesses that provide onsite care.
    - Use this program as a recruitment tool in business attraction.
2. Expand the existing Mississippi Crossmatch program to target health care suppliers (services and goods) and health care providers. Encourage cooperative use of instate services amongst providers (e.g. laundry service).
    - Get local economic developers up to speed on finding in-state business to business links.
    - Ensure all local Mississippi suppliers/manufacturers are part of key health care purchasing cooperatives.
3. Elevate health care industries in which Mississippi is immediately competitive to state-wide target industries - Pharma/Medical Related Distribution & Health Care Related BPO.
    - Mississippi is already winning major medical and pharma distribution projects. Use these strengths to promote the health care initiatives.
    - BPO is not a sector Mississippi is actively targeting, but they have the characteristics to compete.
4. Conduct a comprehensive skills audit to match health care industry needs with training and education providers.
    - Work with key health care target sectors to understand their skills needs.
    - Compare needed skills to training offered by universities, votech, training programs, etc. to identify gaps and customized training offerings.
    - This should be conducted for high skill (STEM), all the way to lower skilled occupations.

7. Enhance and Promote **state competiveness** within the health care cluster industries (cont)

Recommended Implementation Tactics:

5. Identify a single leadership organization to promote the growth of innovation within the medical sectors.
    - A single leadership organization coordinating the development of innovation will produce better implementation results. It also adds credibility to the innovation environment in Mississippi; important for changing outside opinions of the state.
6. Develop strategic, coordinated research parks at key academic institutions to centralize areas of excellence (Jackson, Oxford, Hattiesburg, Starkville, Lorman). Provide diversity in real estate type.
    - Every serious innovation network needs centralized hubs of excellence. These hubs should be aligned with strengths of academic institutions.
    - Provide a variety of real estate types at these parks, incubator, flex space, shared lab, etc. to accommodate companies at various stages of growth.
7. Use community development to enable economic development in urban areas; quality of place.
    - Talent is the key to success in many of the health care industries. Next generation talent demands a live/work environment that promotes their desired lifestyle. Many of Mississippi's urban environments need to promote community development efforts to create a competitive environment.
8. Explore public/private mechanisms to fund a new, or expand an existing, Mississippi angel and venture fund.
    - Growth companies and start-ups in the health care sector demand access to flexible capital. In-state sources of capital are desirable because they are more likely to result in companies staying in State. Currently there is a lack of well capitalized venture and capital funding networks in Mississippi.
9. Address gaps in assets demanded by medical device manufacturing and R&D related industries.
    - Use the high-level results from this study to build a detailed understanding of the assets and cost structure demanded by medical device manufacturing and R&D industries. Target investment to close gaps and enhance competitiveness.
    - This will require a long-term commitment.
10. Use the Institutions of Higher Learning system office to facilitate communication and networking regarding health care related expertise and intellectual property.
    - Developing an active network of University officials and technology transfer departments to encourage exchange of ideas and opportunities will help ensure all opportunities to capitalize on intellectual property and commercialization are realized.

Metrics

- Increased investment in target sectors and industries.
- Positive press coverage on business environment and assets in the health care cluster.

Best Practice

There is no single state that has targeted and enhanced its competitiveness within the health care cluster at a state wide level. Look to Mississippi's past successes in attracting and growing major industrial players like Toyota and Nissan, and successful innovation environments like the Polymer Science Research Center. Mississippi has a proven track record of economic development excellence. Tactics will need to be adjusted for the health care cluster, but the success can be replicated.

8. Promote **growth in entrepreneurship and nurturing of small business** in the health care sector

Why:

- Clusters that rely on high-skill talent (like much of health care) are propelled forward by small businesses and entrepreneurship. Growing this sector is critical to elevating the future health care industry in Mississippi.
- Entrepreneurs and small businesses often fail because they don't have access to the needed support structure.

How:

- Create a unified approach that is centralized in a dedicated organization.
- Shift some of the traditional focus of Mississippi economic development from low cost based attraction to investment in human capital.
- Link together existing centers of excellence to promote a state-wide culture and image of innovation and small business success.

Recommended Implementation Tactics:

1. Continue to pursue a long-term planning process for the Jackson Medical Corridor. Ensure that multiple state partners outside of Jackson are involved in identifying and promoting linkages to care providers and institutions around the state.
    - Jackson must be the center of excellence that propels the state forward in areas of business start-ups and innovation. The medical corridor can anchor that center of excellence.
    - The Corridor must, however, benefit the entire state and promote collaboration. With the end in mind, it is important that representatives across the state be involved in the planning, promotion and implementation process.
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    - Every serious innovation network needs centralized hubs of excellence. These hubs should be aligned with strengths of academic institutions.
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8. Promote **growth in entrepreneurship and nurturing of small business** in the health care sector (cont.)

Recommended Implementation Tactics:

6. Use community development to enable economic development in urban areas; quality of Place.
    - Talent is the key to success in many of the health care industries. Next generation talent demands a live/work environment that promotes their desired lifestyle. Many of Mississippi's urban environments need to promote community development efforts to create a competitive environment.
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    - Developing an active network of University officials and technology transfer departments to encourage exchange of ideas and opportunities will help ensure all opportunities to capitalize on intellectual property and commercialization are realized.

Metrics

- Increase the number of business start-ups.
- Grow technology transfer and commercialization between the public and private sector.
- Keep more intellectual property and related wealth generation in Mississippi.

Best Practice

One of the premier implementers of entrepreneurial support is Jumpstart. Although they originally started in Cleveland, OH, Jumpstart now assists regions around the country. Jumpstart is successful in accelerating entrepreneurial success by organizing a region's existing assets to support entrepreneurs, developing new resources to fill gaps in the eco-system, raising funds and investing directly in high growth companies. Their role as point person in developing the network of experts, funds and knowledge is what Mississippi should look to replicate within the health care sector.

Ohio is also home to the Cleveland Clinic, a world renowned medical institution. Cleveland Clinic, among their other traits of excellence, has a focused effort on innovation and commercialization. They operate a start-up incubator called CCF innovations, as well as the Global Cardiovascular Innovation Center.

Table of Contents

Key Findings: Mississippi Health Care Baseline Assessment

Population Health and Care Access

- Mississippi is at or near the bottom in four of the six key population health indicators. When businesses are making investment decisions they are cognizant of how the health of the workforce will impact their operational success. If the health of the Mississippi workforce is viewed as a detriment, companies may chose to locate or expand elsewhere.
- Mississippi health care costs per capita are below average, however, those costs have been increasing at a rate that is among the highest in the nation. In addition, a much larger portion of cost burden is carried by the employee in Mississippi. Although attractive from an employer perspective, it negatively impacts overall economic growth driven by consumer spending.
- Mississippi is trailing most states in physicians per capita. In addition, research suggests those physicians are not distributed throughout the state in way that provides easy access to rural populations.

Activity in Delivery Sector

- Overall, growth within the Mississippi delivery sector, from a job creation perspective, has been on par with national trends. The data suggest that economic growth within the health care delivery sector is neither underperforming or over performing because of local factors.
- In total, 10.4 percent of Mississippi's workforce is employed in the health care sector, compared to only 9.1 percent nationally. Based on the analysis, Mississippi is 50 percent more concentrated in inpatient employment than national averages. This is likely the sector driving the larger proportion of overall health care employment in the state.

Key Findings: Mississippi Health Care Baseline Assessment (cont.)

Activity in Support (Industry) Sector

- Mississippi has seen higher than average levels of job loss in medical related manufacturing; and a much smaller percentage of overall employment than national averages. In short, Mississippi does not have much economic activity in this sector, and what is present has been under performing.
- Medical related distribution is a strong competitor in Mississippi and poised for additional growth.

Activity in Innovation Environment

- Mississippi has numerous business incubators that have been successful in supporting small office based and light manufacturing start-up companies. However, there does not appear to be adequate focus on commercializing and supporting life science related ventures.
- There is a general lack of well capitalized funding networks in Mississippi to support "homegrown" businesses and entrepreneurs.

Key Findings: Professional Economic Developer Survey

- Every region regards itself as highly competitive in the Health Care sector relative to the other regions in the state, and considers the state as a whole to lack competitiveness in the health care sector. The disconnect can be the result of perception, lack of knowledge, or both. This presents an opportunity for improvement by closing the gap between perceived, relative and actual competitiveness.

- The main obstacles facing the state are workforce skills, education system and image and perception. These ranks generally remain true across the regions. This presents an opportunity at the state level to focus efforts and resources that will benefit multiple, if not all, regions in the state.

- Economic development strategy, policies and direction fell in the top five largest obstacles in fifty percent of the regions. While the health care sector is considered to be essential for growth in most regions, this 'obstacle' is very unattractive to new businesses, and hampers attracting and retaining talent and investment for research and development.

- Other obstacles to note are incentives programs and funding levels, economic development funding for statewide and regional marketing, and regulatory environment. These obstacles all made an appearance in the top five in one or more regions, making them notable and in need of attention.

- Overall, the data shows that opportunity exists throughout the state and in each individual region. It also brings light to interesting topics such as the degree of disconnect that comes from conflicting perceptions. In general, focused efforts and resources allow for strengthening the delivery, support and innovation functions of the health care system and, therefore, increasing efficiency in overall service and quality.

Key Findings: Stakeholder Focus Groups

The entire summary of the focus groups are considered key to the core of this project. See pages 102 to 121, for the full write-up.

Key Findings: Best Practices Case Studies

- From the case studies we identified several key points which we believe are important for Mississippi as they continue through this process:
  - **Public/Private Partnership**
    - The long-term clusters have been successful because of consistent leadership from the private sector. In all cases the public sector has played a role in ensuring an environment for success, but the private sector leads the long-term strategy. This requires a commitment to collaboration and transparency.
  - **Local Area Infrastructure Development**
    - A solid environment/infrastructure for growth must be established for recruitment of business. This environment includes all aspects of services that businesses need: technology infrastructure (cell towers, high speed broadband, etc.), water/sewer system, entertainment, housing options, business regulations, etc.
  - **Focus on the Strengths AND Needs of the Area**
    - In all cases there was a need: either for jobs, better health care, or research. To help meet the needs of the region communities proactively recruited businesses and talent. They also gave them an opportunity and environment to succeed in.
  - **Aligning Services with Patient/Community Needs**
    - High quality of service to both employees, doctors and patients leads to higher levels of engagement with the patient base, improves community health and leads to better overall outcomes.

Key Findings: Asset Mapping & Score Cards

Mississippi's asset strength needs to be viewed in the context of its population and largely rural character. Low cost structure is a competitive advantage but can only be attractive when combined with availability and quality of workforce.

Pharmaceutical Industry:

- By 2010 Mississippi had lost 19% pharmaceutical jobs from its base of 2001. Most of this reduction coincided with the financial crisis in 2008-09 before which the trend was positive. However, Alabama had rapid growth during the same period, a phenomenon that needs to be studied for pointers towards future strategy.
- Mississippi has the lowest pharmaceutical wage structure among all Blueprint States. Low cost manufacturing could be a positioning that Mississippi could adopt if it fits with its total market strategy.

Medical Devices, Equipment and Supplies:

- South Carolina has benefited from the halo effect of North Carolina and Georgia's success as centers of Medical Devices manufacturing. Mississippi might be able to provide a lower operating cost structure to companies that could access resources in Alabama, Tennessee and even Texas.
- Nearly all states have been losing workforce in Medical Device and Equipment Industry, which suggests that the industry as a whole has reduced jobs over the last decade, possibly moving them overseas for cost reduction. Mississippi could compete for some of the higher value adding jobs with one of the lowest operating cost structures among Blueprint States.

Key Findings: Asset Mapping & Score Cards (cont.)

Although lower cost structure is important to attract investment, moving up the value chain is equally important for Mississippi.

Business Process Outsourcing (BPO) and Back Office Industry:

- Although back office work in Mississippi grew by 100%, the starting base was very small and therefore the industry concentration of BPO and Back Office services remains very low. Since cost is of paramount importance to Back Office operations, Mississippi can compete in this field quite effectively, provided it has the workforce available for the industry.

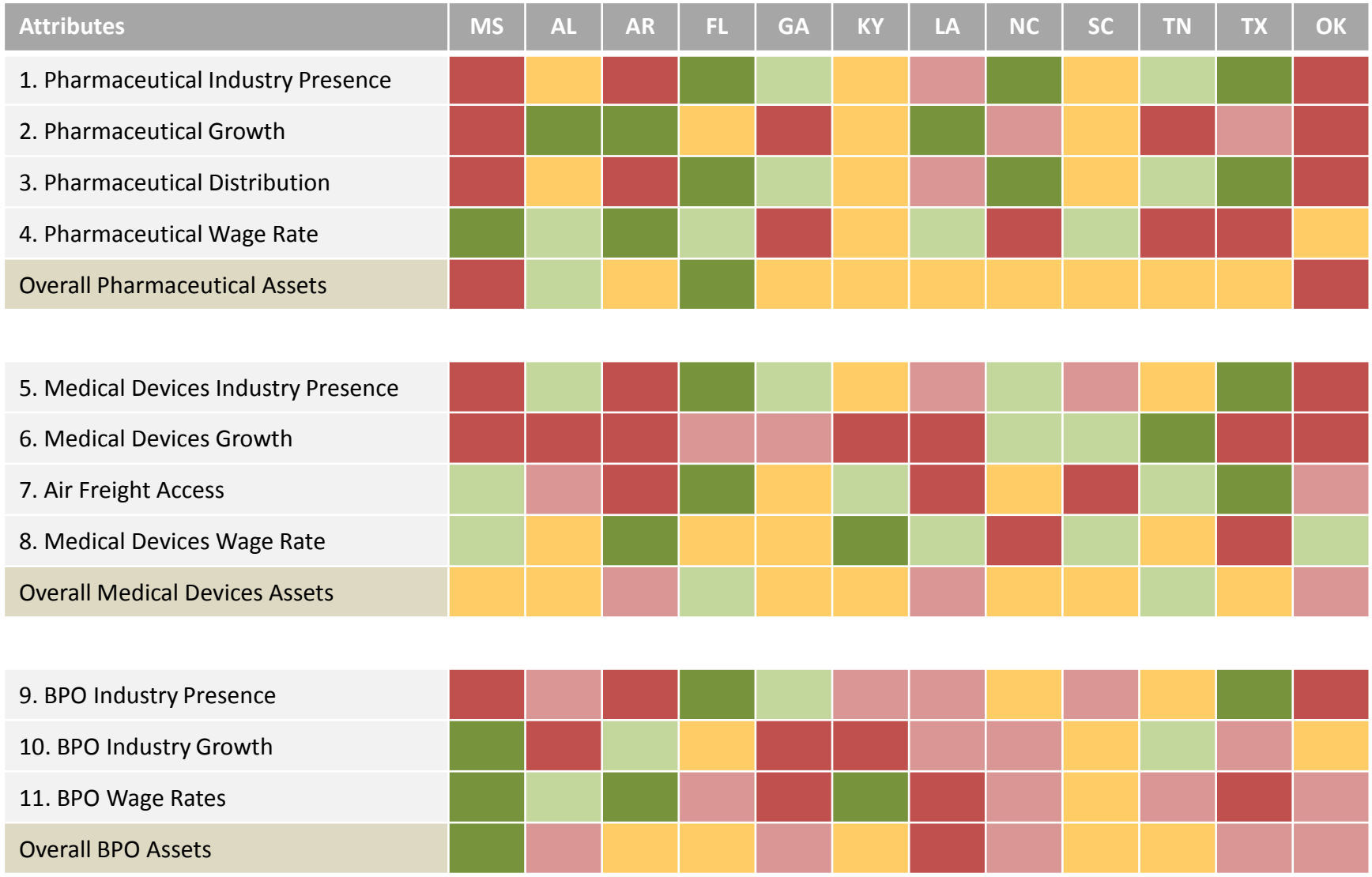
Biotech R&D:

- In absolute terms, Texas attracts by far the most funding among Blueprint States. When normalized on a per capita basis, North Carolina and Texas have led the field for the past decade. However, in the past few years, Alabama has attracted more funding than any other Blueprint state on a per capita basis.
- Mississippi is not a significant competitor in the Biotech R&D space yet. Its average R&D wage dropped slightly over the last ten years while similar wages in leading R&D states like North Carolina, Texas and Tennessee increased substantially. This might suggest increasing employment of lower level technicians or junior researchers in Mississippi and higher level research in leading Blueprint States.

For explanation on the asset scoring (following pages) please refer to the Asset Mapping section.

Key Findings: Asset Mapping & Score Cards (cont.)

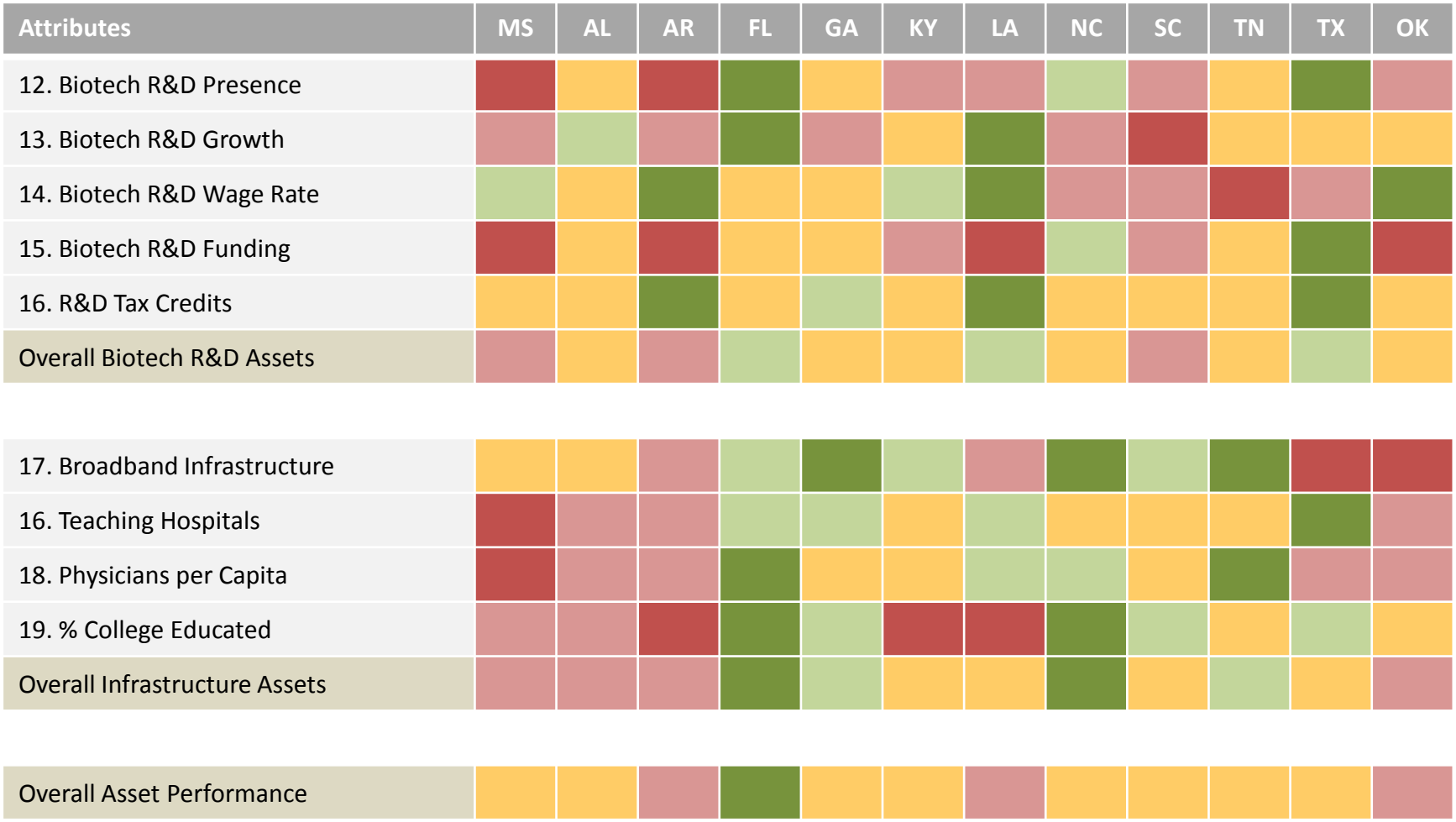
Summary of Performance



Attributes	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
1. Pharmaceutical Industry Presence												
2. Pharmaceutical Growth												
3. Pharmaceutical Distribution												
4. Pharmaceutical Wage Rate												
Overall Pharmaceutical Assets												
5. Medical Devices Industry Presence												
6. Medical Devices Growth												
7. Air Freight Access												
8. Medical Devices Wage Rate												
Overall Medical Devices Assets												
9. BPO Industry Presence												
10. BPO Industry Growth												
11. BPO Wage Rates												
Overall BPO Assets												

Key Findings: Asset Mapping & Score Cards (cont.)

Summary of Performance



Attributes	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
12. Biotech R&D Presence												
13. Biotech R&D Growth												
14. Biotech R&D Wage Rate												
15. Biotech R&D Funding												
16. R&D Tax Credits												
Overall Biotech R&D Assets												
17. Broadband Infrastructure												
16. Teaching Hospitals												
18. Physicians per Capita												
19. % College Educated												
Overall Infrastructure Assets												
Overall Asset Performance												

Key Findings: Asset Mapping & Score Cards (cont.)

Industry scorecards indicate how a particular industry is positioned in leading Blueprint States and Mississippi's peer states that are closer to its size and scope. This subjective and relative scoring is based on success factors specific to that industry. The scorecard also indicates how the particular state is positioned on an industry competitiveness matrix.

Key Success Factors

- Target industry designation by the state
- Academic programs and training programs to ensure availability of workforce
- Economic incentives for the industry or function

Location Competitiveness Factors

- Differentiation: Has the state developed a brand image and reputation for an industry?
- Cost Leadership: Has the state managed to keep its costs low to attract business?
- Focus: Has the state focused on a segment or a strategy?

Key Findings: Asset Mapping & Score Cards (cont.)

Pharmaceutical Manufacturing: Although The University of Mississippi was ranked highly by *US News* for its school of pharmacy, Pharmaceutical industry is not listed as a target industry by the state. The leading Blueprint States target this industry and have academic programs providing research and workforce for industry growth. Mississippi, along with Arkansas and Florida are low cost leaders.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Academic and Training Programs	●	●			●	●	●
Target Industry Designation					●	●	●
Clustering					●	●	●
Differentiated	●					●	
Cost Leader	●			●			●
Focused on Scope & Segment							

Key Findings: Asset Mapping & Score Cards (cont.)

Medical Device and Equipment Manufacturing: Most Blueprint States have undergraduate and graduate programs in biomedical engineering from which the medical devices industry draws its talent. The leading states have life sciences as their target industry while Mississippi and its peer states are focused on other industries. In spite of that, Alabama is beginning to develop a medical devices cluster.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Academic and Training Programs	●	●	●		●	●	●
Target Industry Designation					●	●	●
Clustering		●			●	●	●
Differentiated					●	●	●
Cost Leader	●	●	●	●			●
Focused on Scope & Segment							

Key Findings: Asset Mapping & Score Cards (cont.)

BPO and Back Office: Mississippi has seen the largest increase in Industry presence between 2001 and 2010 of all the Blueprint States, however, BPO is not listed as a target industry by the state. The leading Blueprint States have seen a decrease in industry presence over the past decade and they have higher average industry wages. Mississippi, along with Arkansas, Kentucky and Alabama are cost leaders.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Academic and Training Programs	●	●	●	●	●	●	●
Target Industry Designation		●		●		●	
Clustering					●	●	●
Differentiated	●					●	
Cost Leader	●	●		●			
Focused on Scope & Segment							

Key Findings: Asset Mapping & Score Cards (cont.)

Biotech R&D: Mississippi has very low Biotech R&D funding, even on a per capita basis, when compared to leading Blueprint States. This disparity results from lack of biotech and life science clustering and weak linkage between industry and institutional R&D. When compared with states beyond Blueprint States, such as Massachusetts and California, Mississippi is in a very nascent stage.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Biotech R&D Funding by NIH ($)	22M	134M	79M	39M	635M	600M	295M
Target Industry Designation		●		●	●	●	●
Clustering					●	●	●
Differentiated					●	●	●
Cost Leader			●	●			
Focused on Scope & Segment					●	●	

Key Findings: Delivery Supply & Demand Analysis

- **Physicians**
  - Primary Care: Approximately 190 net new primary care physicians will be needed by 2016 to keep up with expected demand for health care services. This number excludes primary care physicians needed to replace retiring physicians.
  - Specialty Care: Approximately 280 net new specialty care physicians will be needed by 2016 (again excluding retirements that take place).

- **Nurses**: Up to 4,880 new nurses by 2016 will need to enter the delivery system to provide necessary inpatient and outpatient nursing support. Nurse practitioners can play a role in stretching the workforce where appropriate.

- **Mid-level providers**: Modeling suggests the need for 25 additional physician assistants or nurse practitioners. The state, however, may wish to encourage further growth of mid-level providers as a way of satisfying the need for primary care, which is likely to outstrip available supply.

- **Other Allied Health**: A series of additional "med-tech" and other allied professionals will be needed to support physicians in diagnostic and therapeutic services:
  - Radiation technologists: Approximately 430 net new rad-techs needed by 2016
  - General med-techs: Approximately 100 net new general med-techs needed by 2016
  - Physical therapists (PT): Approximately 340 net new physical therapists needed by 2016
  - Respiratory therapists: Approximately 270 net new respiratory therapists needed by 2016
  - Pharmacists: Approximately 410 net new pharmacists needed by 2016

Key Findings: Labor Analysis

- Depending on the skill level necessary for a **medical device and equipment manufacturing operation**, most of the locations in the state could support a small- to medium-sized business. Some larger operations have experienced difficulty maintaining a workforce.
- According to the labor analysis, the current state workforce does not have the skills necessary to support a typically (approx. 100 full time equivalent employees) sized new **pharmaceutical and medicine manufacturing operation**. There is some potential around Jackson, DeSoto County, Tupelo and the Gulf Coast, but not a deep enough labor pool to provide confidence to a business.
- A large sized **pharmaceutical distribution** company could find necessary workforce in any of the locations they would likely consider – DeSoto County, Jackson Metro, Hattiesburg or the Gulf Coast.
- In areas near academic institutions there exists the labor necessary to support small **R&D operations**. However, as those operations grow, or as the industry grows, the talent pool will quickly be depleted.
- **BPO and Back Office operations** require a large labor force to account for typically high turnover. Any of the more populous regions in Mississippi would likely be able to support an operation of less than 500 or so. Larger operations would likely need to focus on the Jackson Metro and the Gulf Coast.

Note: The hypothetical firm sizes were chosen to reflect both common businesses in each sector, as well as a size at, or near, the maximum supported by existing labor; not factoring in recruiting, or fluid labor pools. This analysis is to understand the existing landscape of skills. A detailed skills audit and matching study would be required to identify strategies to build the talent base.

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What is a Cluster?

“geographical concentrations of industries that gain performance advantages through co-location” -Doeringer & Terkla 1995

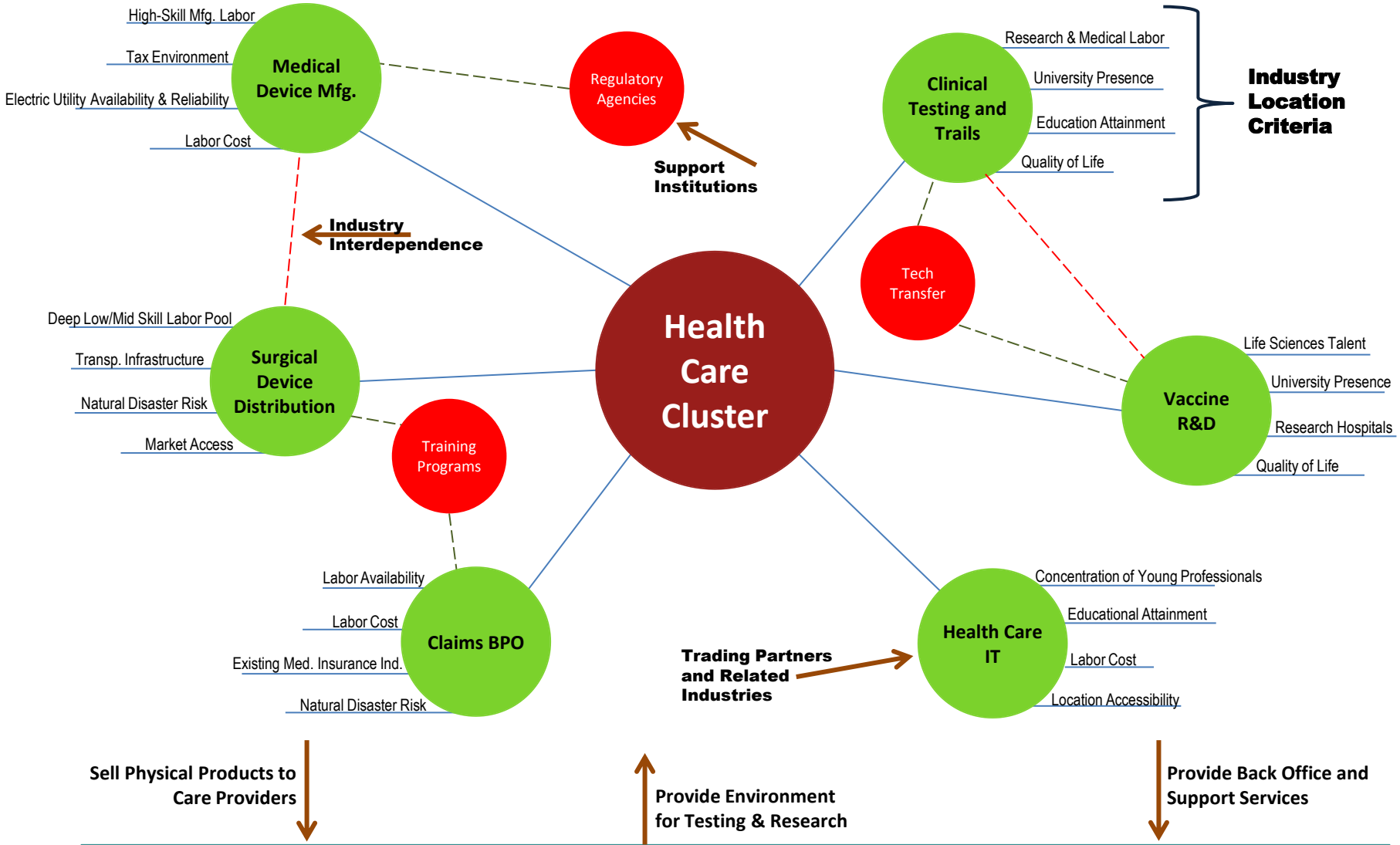
Cluster Components

Cluster Industry Sectors

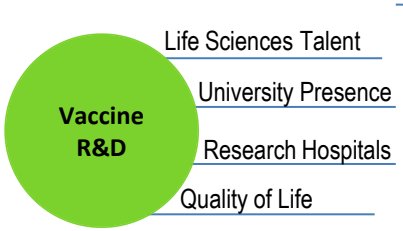
Trading Partners	Industries that are linked through inter-industry trading. This would include the supply chain and customers of a business.
Related Industries	Industries that share common material inputs, labor profiles, skill sets, ultimate customer, etc. Industries with common critical location criteria.
Support Institutions	Institutions that provide inputs to an industry (e.g. universities and training programs provide skilled employees), institutions that regulate or permit industry activity, or those that promote new growth within the cluster (e.g. tech transfer and incubators).

Doeringer, P.B., & Terkla, D.G. (1995). Business strategy and cross-industry clusters. Economic Development Quarterly, 9, 225-3

The Framework of an Industry Cluster (using Health Care)

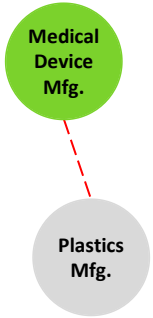


Primary Ways to Impact a Cluster



Develop strategies to leverage existing assets that align with industry location criteria, and mitigate weaknesses that have to be addressed in order to create a competitive business environment. Focus on criteria that are shared by numerous industries within the cluster.

Attract & Retain

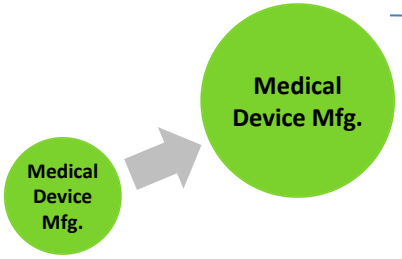


Recruit industries that support or are connected to existing industries within the cluster. This serves to expand the cluster while also providing a competitive advantage to the industries involved because of proximity to support industries, suppliers, customers, etc.

Attract

Identify support institutions that impact the activities of the cluster industries. Develop strategies to engineer those institutions so they align with the goals of the cluster (e.g. policy changes). Develop new institutions if gaps are found.

Attract, Retain & Grow



Grow existing cluster industry sectors that align with the competitive assets of the region. This will likely require the use of other strategies outlined above.

Retain & Grow

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The Need for Definition

In order to adequately understand the existing health care cluster and the potential for long-term growth, the analysis which underpins Blueprint Mississippi Health Care must segment the health care sector into its component parts. Specifically, because this initiative is concerned with leveraging care delivery, related industry (e.g. manufacturing, distribution, etc.) and innovation as economic development drivers, the structure of the quantitative and qualitative analysis must recognize the unique characteristics of those three segments.

The following pages outline the purview of this initiative in terms of Health Care Delivery, Health Care Support and Innovation. Although there is significant interplay between each of these segments, much of the quantitative analysis will examine each segment individually. However, the strategies which arise out of the analysis are responsive to the fact that the health care sector is a highly interdependent industry cluster which can not address its component parts without a unifying approach.

There are industry sectors not included in this definition which may be participating in health care related activities, for example information technology firms. These other activities where excluded from the definition for one of two reasons. 1) The majority of industry activity is not related to health care, or 2) There is no single industry classification in which they fall; therefore complicating visibility into industry presence. These nuanced activities were explored on an as needed basis.

Segments of Health Care

Delivery

The network that provides care to the population. The Delivery network includes people (physicians, nurses, home care workers, etc.) and organizations (hospitals, physician clinics, urgent care centers, etc.).

Support (industry)

The non-care aspects of health care that support the overall functioning of the delivery network. Sectors within this segment could range from device manufacturers, to pharmaceutical distributors, or research and development labs.

Innovation

Inclusive of all aspects involved in intellectual capital development in both the public and private sector. This would include research and development functions of established businesses, university research, business incubation, commercialization and technology transfer. **Innovation could occur in sectors within the Delivery or Support segments.**

Detailed Industry Sectors

Delivery

Outpatient Care	NACIS Code
• Offices of Physicians	621111, 621399 (misc)
• Offices of Mental Health Specialists	621112, 621330
• Offices of Dentists	62121
• Offices of Chiropractors	62131
• Offices Optometrists	62132
• Offices PT, OT, SLP and AUD	62134
• Offices of Podiatrists	621391
• Other Outpatient Care Services	62149
• Outpatient Mental Health & Substance Abuse Centers	62142

Inpatient Care	NACIS Code
• Psychiatric & Substance Abuse Hospitals	6222
• Other Specialty Hospitals	6223
• General Medical & Surgical Hospitals	6221

Residential Care Facilities	NACIS Code
• Residential Mental Health & Substance Abuse Facilities	6232
• Nursing Care Facilities	6231
• Continuing Care Retirement Communities	6233
• Other Residential Care Facilities	6239

Other	NACIS Code
• Pharmacies and Drug Stores	446110
• Family Planning Centers	62141
• Home Health Care Services	6216
• Other Ambulatory Services	6219

Detailed Industry Sectors

Support (industry)

Manufacturing	NACIS Code
• Pharmaceutical and Medicine Mfg	3254
• Electromedical and Electrotherapeutic Apparatus Mfg	334510
• Analytical Laboratory Instrument Mfg	334516
• Irradiation Apparatus & Furniture Mfg	339111
• Surgical and Medical Instrument Mfg	339112
• Surgical Appliance and Supplies Mfg	339113
• Dental Equipment and Supplies Mfg	339114
• Ophthalmic Goods Mfg	339115

Distribution of Goods	NACIS Code
• Medical, Dental &Hospital Equip./Supplies Wholesalers	423450
• Ophthalmic Goods Merchant Wholesalers	423460
• Home Health Equipment Rental	532291

Testing, Research and Development	NACIS Code
• Testing Laboratories	541380
• Medical Laboratories	621511
• Diagnostic Imaging Centers	621512
• Research and Development in the Physical, Engineering & Life Sciences	541710

Other Support Sectors	NACIS Code
• Direct Health and Medical Insurance Carriers	524114

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Blueprint Mississippi Health Care

Baseline Assessment

Before developing a strategy for where Mississippi should go, the study needs to understand where it has been and where it is now. The purpose of the baseline assessment is to provide basic analysis on the current state of health care delivery, industry and innovation. Like most of this study, it will be segmented to reflect the three components of the health care "cluster:"

Delivery
The network that provides care to the population. The Delivery network includes people (physicians, nurses, home care workers, etc.) and organizations (hospitals, physician clinics, urgent care centers, etc.).

Support (Industry)
The non-care aspects of health care that support the overall functioning of the delivery network. Sectors within this segment could range from device manufacturers, to pharmaceutical distributors, or testing labs.

Innovation
Inclusive of all aspects involved in intellectual capital development in both the public and private sector. This would include research and development functions of established businesses, university research, business incubation, commercialization and technology transfer. Innovation could occur in sectors within the Delivery or Support segments.

All of the synthesis and conclusions made in the baseline assessment are inferred from secondary data; the final recommendations and strategies will be based on much more than current level data. The Baseline Assessment consists of the following sections:

- Key Findings
- Population Health and Care Access Indicators
- Historic Trends in Delivery Sector
- Existing Presence of Delivery Network
- Historic Trends in Health Care Support Industry
- Existing Presence of Health Care Support Industry
- Existing Presence of Innovation Infrastructure
    - Business Incubators
    - Research Parks
    - State Organizations
    - Capital Networks

Key Findings

Population Health and Care Access

- Mississippi is at or near the bottom in four of the six key population health indicators. When businesses are making investment decisions they are cognizant of how the health of the workforce will impact their operational success. If the health of the Mississippi workforce is viewed as a detriment, companies may chose to locate or expand elsewhere.
- Mississippi health care costs per capita are below average, however, those costs have been increasing at a rate that is among the highest in the nation. In addition, a much larger portion of cost burden is carried by the employee in Mississippi. Although attractive from an employer perspective, it negatively impacts overall economic growth driven by consumer spending.
- Mississippi is trailing most states in physicians per capita. In addition, research suggests those physicians are not distributed throughout the state in way that provides easy access to rural populations.

Activity in Delivery Sector

- Overall, growth within the Mississippi delivery sector, from a job creation perspective, has been on par with national trends. The data suggest that economic growth within the health care delivery sector is neither underperforming or over performing because of local factors.
- In total, 10.4 percent of Mississippi's workforce is employed in the health care sector, compared to only 9.1 percent nationally. Based on the analysis, Mississippi is 50 percent more concentrated in inpatient employment than national averages. This is likely the sector driving the larger proportion of overall health care employment in the state.

Key Findings

Activity in Support (Industry) Sector

- Mississippi has seen higher than average levels of job loss in medical related manufacturing; and a much smaller percentage of overall employment than national averages. In short, Mississippi does not have much economic activity in this sector, and what is present has been under performing.
- Medical related distribution is a strong competitor in Mississippi and poised for additional growth.

Activity in Innovation Environment

- Mississippi has numerous business incubators that have been successful in supporting small office based and light manufacturing start-up companies. However, there does not appear to be adequate focus on commercializing and supporting life science related ventures.
- There is a general lack of capital funding networks in Mississippi to support “homegrown” businesses and entrepreneurs.

Population Health and Care Access Indicators

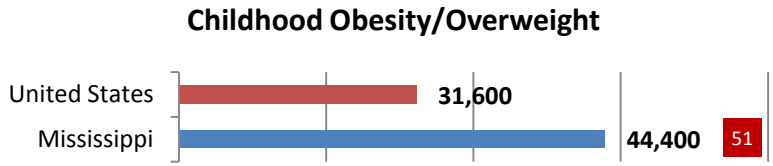
This study is not about identifying ways to address specific health care outcomes. However, the study is focused on improving health care quality in Mississippi in order to create a more competitive business environment. Companies making an investment in a community and a state regularly consider the health of the workforce and the cost to provide care. The variables which impact these factors are complex; education, wealth, geography, federal regulations, care quality, care access, etc. This study cannot address all these factors. However, within the framework of improving the competitiveness of the State of Mississippi and generating economic growth, the study will look at how the health care delivery network can better provide care to more people at lower cost to businesses.

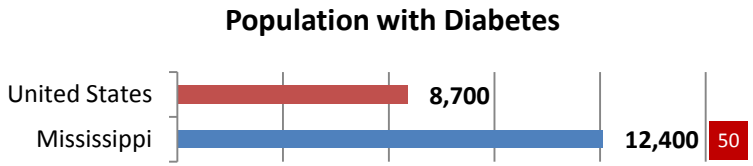
To that end, the baseline analysis begins with metrics on population health and the delivery network. The purpose of the indicators is not to highlight specific disease incidence or measures of health care quality. The indicators are included in this assessment to highlight one of the burning platforms driving this study: **the population of Mississippi must be healthier and have better access to care in order to be competitive in capturing private sector investment.**

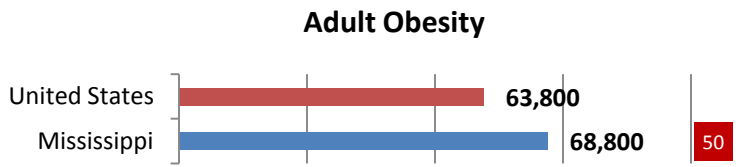
Population Health and Care Access Indicators

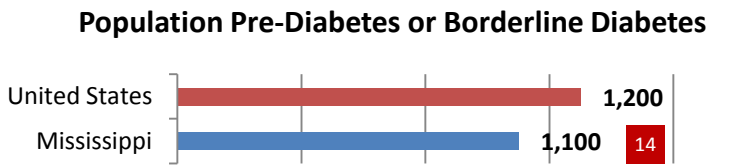
Healthy Population Indicators

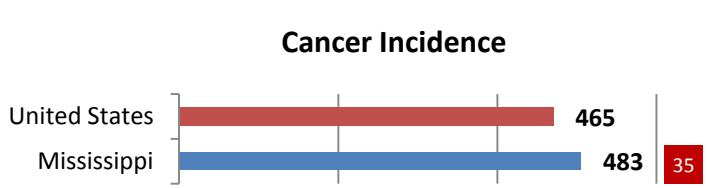
All Numbers are per 100,000 of population
Mississippi rank in red. One is always most desirable

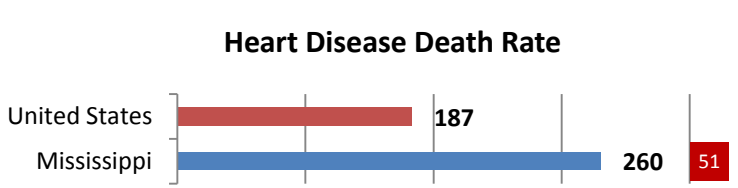












Mississippi is at or near the bottom in four of the six key indicators. Each day lost on the job or reduced productivity due to employee health negatively impacts the ability of a business to operate successfully in Mississippi. Past studies have shown that reduced labor force participation, sick days and reduced productivity due to health problems result in over $250 Billion in lost economic output per year in the United States[1]. If Mississippi population health exacerbates this problem, companies will chose to locate or expand elsewhere.

1) The Commonwealth Fund (2005); Health and Productivity Among US Workers.

Source: The Henry J. Kaiser Family Foundation (2010-2012)

Population Health and Care Access Indicators

Health Care Costs and Insurance Availability

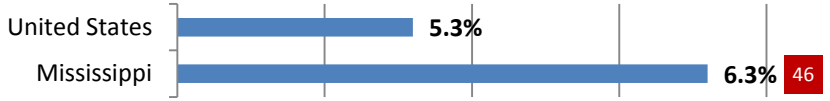
Mississippi rank in red. One is always most desirable unless otherwise noted.

Health Care Expenditures per Capita

(2009)

Average Annual Percent Growth in Expenditures per Capita

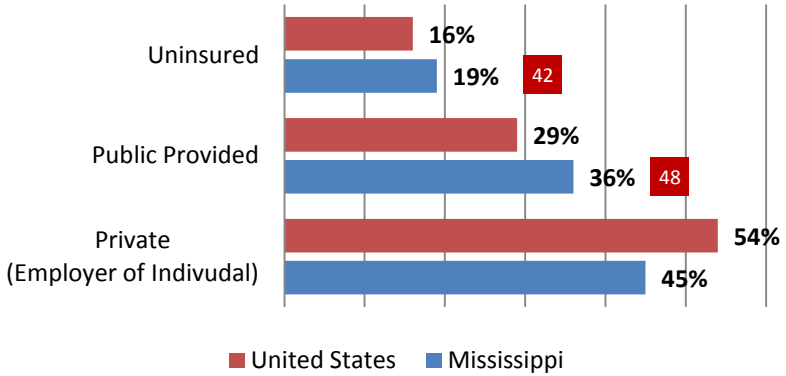
(1991 – 2009)



Mississippi health care costs per capita are below average, however, those costs have been increasing at a rate that is among the highest in the nation. Continuing at that rate, Mississippi would be above average within four years.

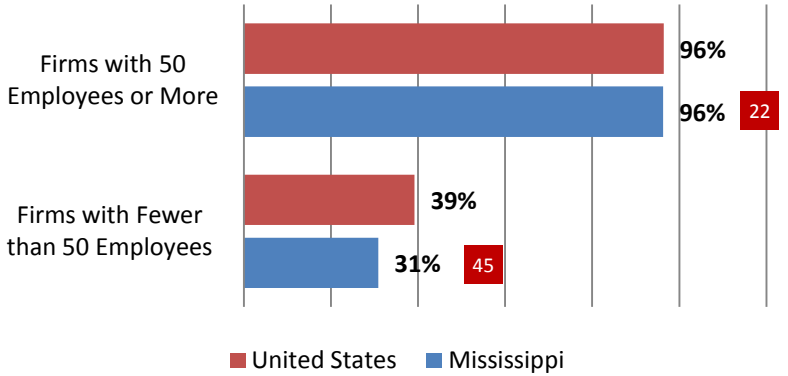
Population Insurance Status

(2009 – 2010)



Employers Providing Insurance

(2010)



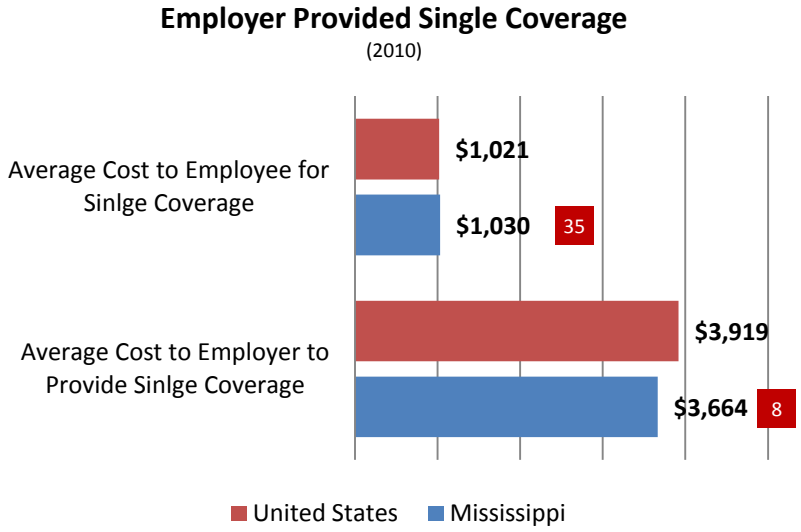
Mississippi's uninsured population is the ninth largest in the nation, and the population with public insurance is third largest. This puts a significant strain on health providers because of a small private payer base.

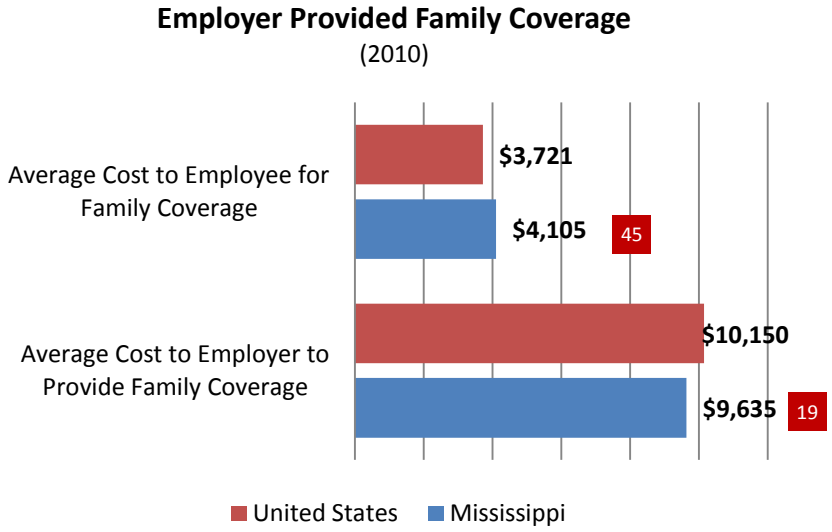
Source: The Henry J. Kaiser Family Foundation (2010-2012)

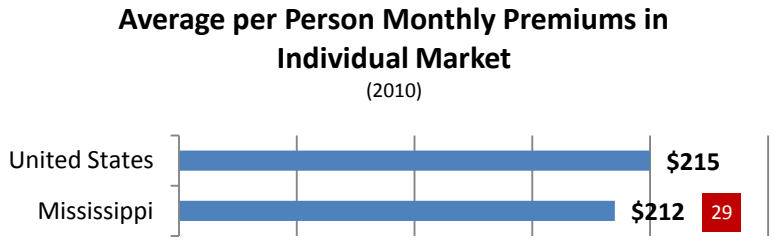
Population Health and Care Access Indicators

Insurance Costs

Mississippi rank in red. One is always most desirable unless otherwise noted.







Health insurance cost to employers in Mississippi is favorable compared to other states. However, costs to individuals are above average, and in the case of family coverage, among the highest in the nation. It appears, compared to other states, that a larger percentage of the health care cost burden in Mississippi is on employees. This may be attractive to potential employers, but it negatively impacts overall economic vitality by reducing wages and driving down spending potential.

Source: The Henry J. Kaiser Family Foundation (2010-2012)

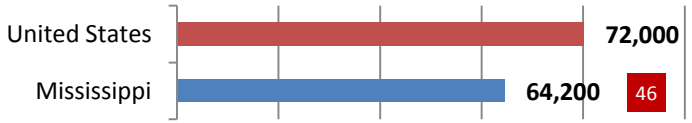
Population Health and Care Access Indicators

Access and Delivery Network

Mississippi rank in red. One is always most desirable unless otherwise noted.

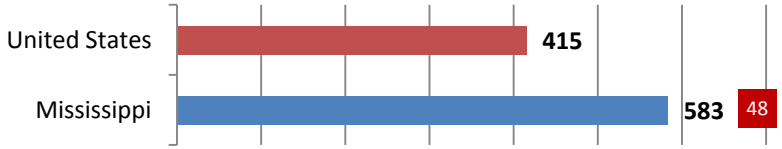
Children Who Have Had Both Medical and Dental Preventive Care in the Past 12 Months

(per 100,000 of population)



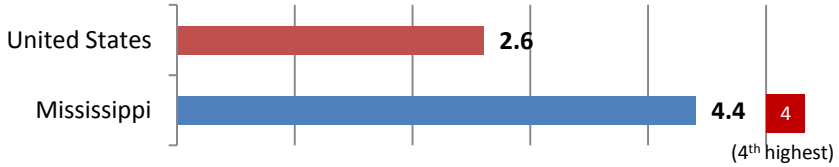
Emergency Room Visits per 1,000

(2009)



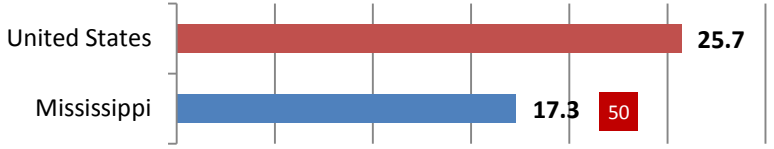
Hospital Beds per 1,000 Pop

(2009)



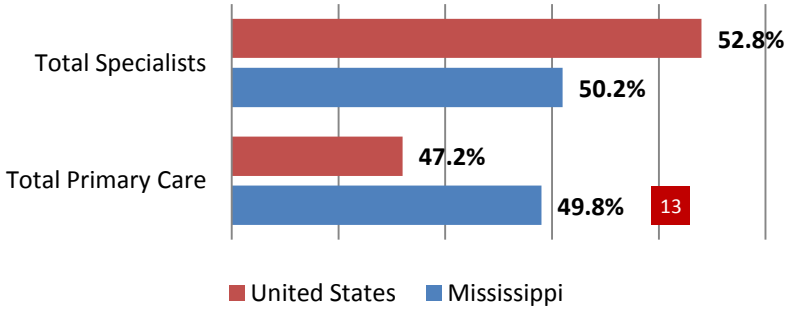
Physicians per 10,000

(2008)



Physician Distribution

(2012)



Mississippi has the second lowest number of physicians per capita in the nation. Although Mississippi's distribution of primary care doctors is above average, the low number of overall physicians likely impacts the provision of routine and preventative care. That conclusion is supported in the data on children who have received preventative care in the past 12 months, as well as the significantly higher than average number of emergency room visits. Despite what appears to be a general lack of physicians, the State has the fourth most hospital beds per capita in the nation.

Source: The Henry J. Kaiser Family Foundation (2010-2012)

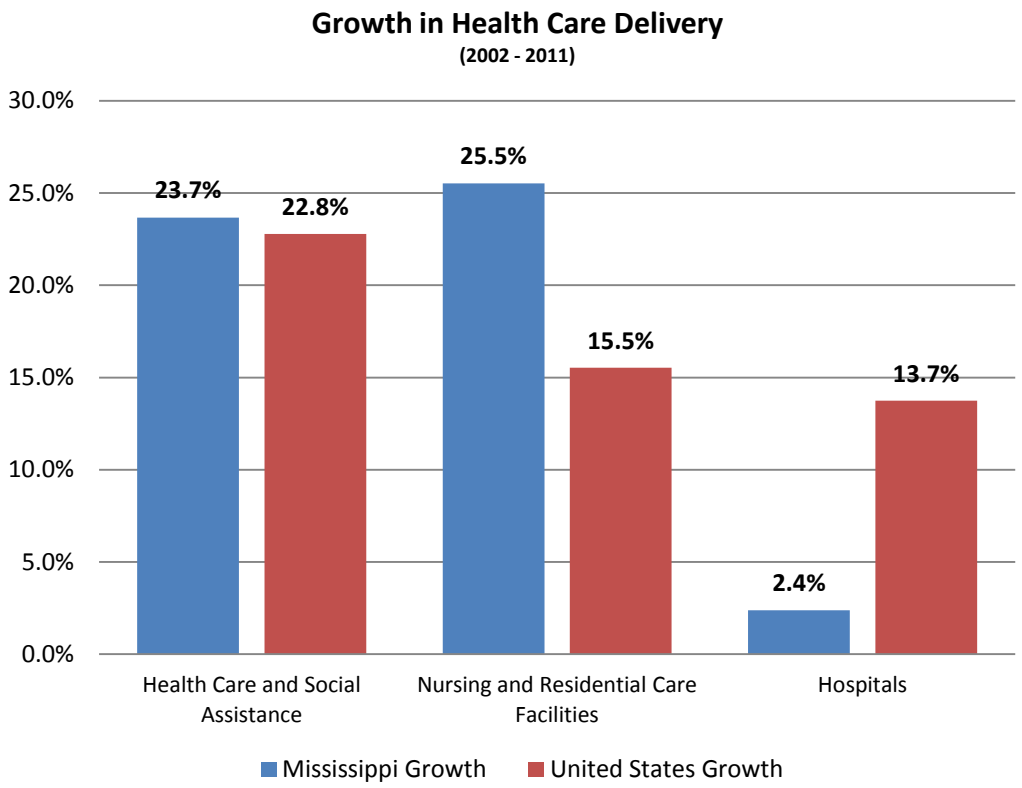
Historic Trends in Delivery Network

The delivery sector within the health care cluster is about more than just provision of care, it is also a major employer and driver of the state economy. Historic growth in employment within the delivery sector compared to overall national growth provides some insight into industry dynamics in Mississippi. All historic data used in this section is from the Bureau of Labor Statistics, covering the years 2002 to 2011. State level data often lacks industry specificity that is available on a national level. For that reason, the comparative analysis can include only three health care delivery segments:

1) Health Care and Social Assistance (the aggregate health care sector)
2) Hospitals
3) Nursing and Residential Care Facilities

Data for other, more specific delivery segments available at the national level is unfortunately not available for the State of Mississippi.

Historic Trends in Delivery Network



Overall, health care sector employment growth in Mississippi has mirrored national growth in the industry.

Mississippi has far outpaced growth in Nursing and Residential Care Facilities.

- The fast pace of growth in Mississippi compared to the US is juxtaposed against the growth rate of the 65+ age cohort. Between 2000 and 2010, 65+ grew at 15.1% in the United States, while in Mississippi the growth rate was only 10.7%. Likewise, the 75+ age cohort has grown at 11.8% between 2000 and 2010 in the United States, and only 5.1% in Mississippi.
- The accelerated growth in Mississippi compared to the US, despite statistics that suggest demand is lower in Mississippi, could be due to a greater lack of facilities in 2002 than would have been normal across the country. In other words, Mississippi may have needed much more substantial growth to reach par with expected levels of service.

Mississippi has lagged the United States growth in hospitals by a significant margin. As shown in the previous section, Mississippi still has the fourth highest concentration of hospital beds in the country, so the lack of hospital growth is not surprising. The nation is now in a phase where demand is being pushed to outpatient care; therefore, the rate of growth in the hospital sector will likely slow.

Mississippi's growth in the delivery side of health care is, overall, on par with expectations based on US growth. This means that from an economic activity perspective, not a health care quality or access perspective, health care delivery in Mississippi is neither underperforming nor over performing because of local factors.

Source: Bureau of Labor Statistics (2011)

Existing Presence of Delivery Network

Based on the definition of the health care cluster prepared for this study, the delivery network is segmented into three categories. These categories are useful in data aggregation and presentation. However, the precise composition of any delivery segment is in reality fluid. The creation of these segments for the purpose of this study does not limit the ability to examine and respond to the "on-the-ground" dynamics of the delivery network:

Outpatient Care	
• Offices of Physicians	621111, 621399 (misc)
• Offices of Mental Health Specialists	621112, 621330
• Offices of Dentists	62121
• Offices of Chiropractors	62131
• Offices Optometrists	62132
• Offices PT, OT, SLP and AUD	62134
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Inpatient Care	
• Psychiatric & Substance Abuse Hospitals	6222
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• General Medical & Surgical Hospitals	6221
Residential Care Facilities	
• Residential Mental Health & Substance Abuse Facilities	6232
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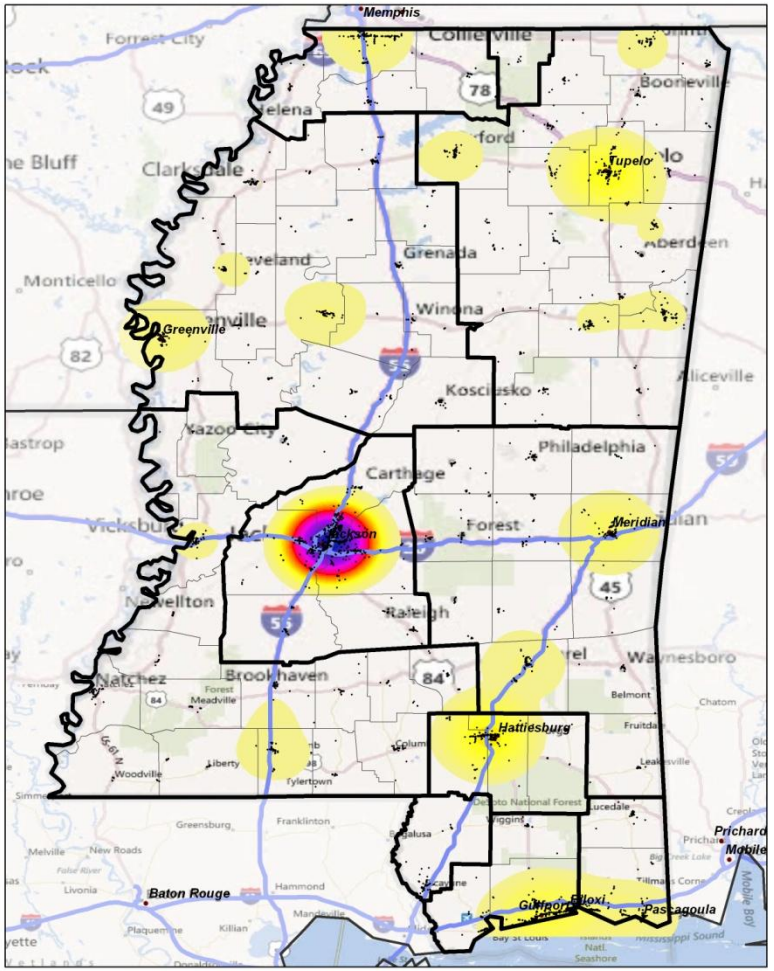
• Continuing Care Retirement Communities	6233
• Other Residential Care Facilities	6239
Other	
• Pharmacies and Drug Stores	446110
• Family Planning Centers	62141
• Home Health Care Services	6216
• Other Ambulatory Services	6219

Concentration of Delivery Facilities



Source: Info USA (2011) / ESRI Business Analyst

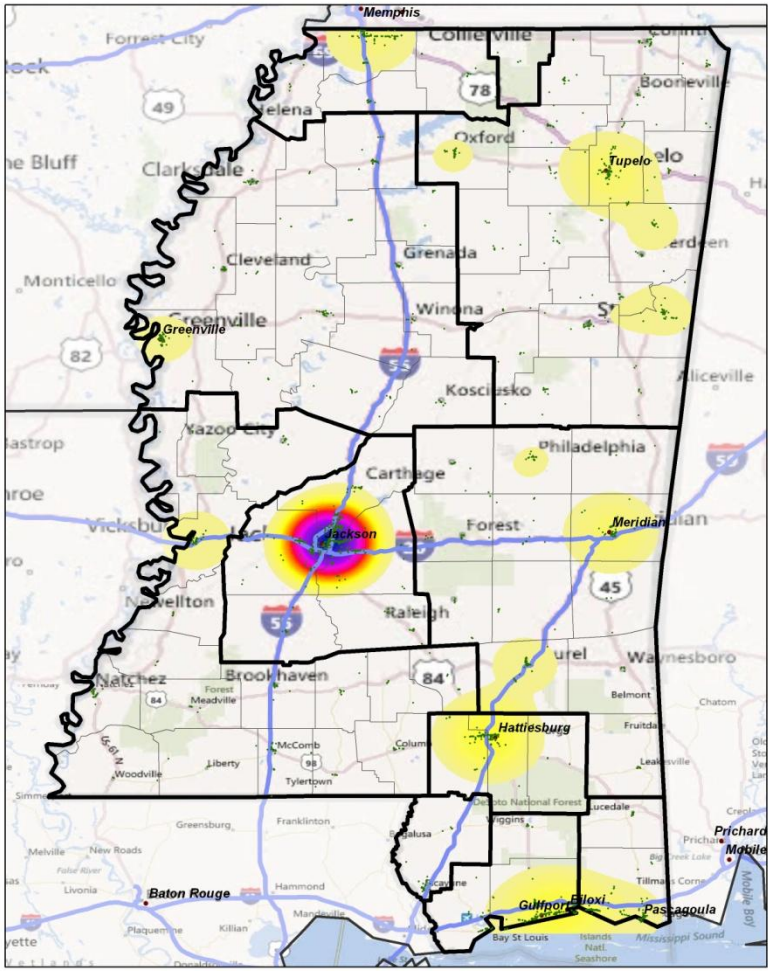
Existing Presence of Delivery Network

2010 employment data was gathered for each of the activities that make up the delivery components identified on the previous page. The employment data provides an understanding of total delivery scale, as well as concentration of each category. The concentration is illustrated using the Mississippi Presence Index.

Mississippi Presence Index (MPI):
The MPI is a measure of industry presence within Mississippi compared to the expected presence based on average national industry mix. If an industry sector has an MPI of 1.0 that means the proportion of total employment in the sector is the same in Mississippi as it is nationally. If the MPI is 1.25, then the state of Mississippi has 25 percent more of their employment in that sector than the nation; likewise, an MPI of 0.75 indicates 25 percent less.

Outpatient Care Components	Approximate Employment in MS	Mississippi Presence Index
Physicians Offices	20,500	0.99
Physician Clinics		
Mental Health Clinics		
Dentists Offices	3,200	0.72
Outpatient Care Centers	11,300	1.58
Other Care Providers	2,700	0.65
Chiropractors		
Optometrists		
PT, OT, SLP and AUD		
Podiatrists		
TOTAL OUTPATIENT CARE	**38,400**	**1.05**

Concentration of Outpatient Facilities



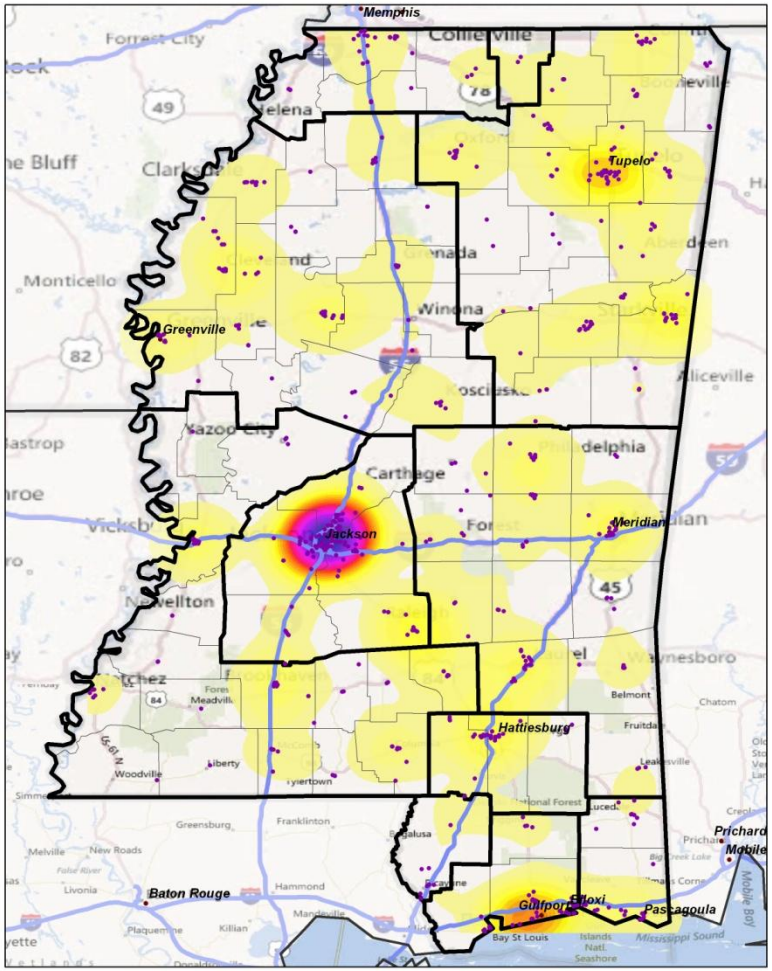
Source: Info USA (2011) / ESRI Business Analyst

Existing Presence of Delivery Network

Mississippi presence of residential care facilities is approximately average compared to the nation. Based on the concentration maps, residential care facilities are more widely distributed throughout the state than the other delivery segments.

Residential Care Facilities	Approximate Employment in MS	Mississippi Presence Index
Residential Care	25,000	1.12
Residential Mental Health & Substance Abuse Facilities		
Nursing Care Facilities		
Continuing Care Retirement Communities		
Other Residential Care Facilities		
Residential Mental Health & Substance Abuse Facilities		
TOTAL RESIDENTIAL CARE	**25,000**	**1.12**

Concentration of Residential Care Facilities



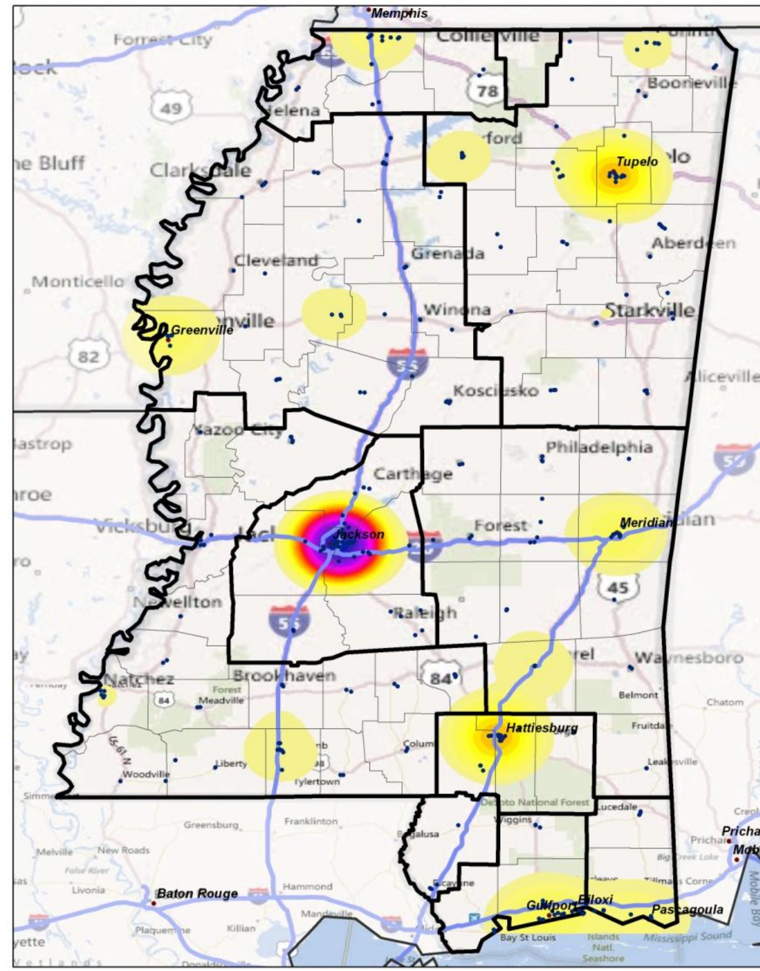
Source: Info USA (2011) / ESRI Business Analyst

Existing Presence of Delivery Network

Inpatient facilities – hospitals – have a significantly higher presence in Mississippi than the national average. This may be due to the large number of small, rural hospitals in Mississippi, as well as a very high number of hospital beds per capita.

Inpatient Care Components	Approximate Employment in MS	Mississippi Presence Index
Inpatient Care	70,000	1.49
General Hospitals		
Specialty Hospitals		
TOTAL INPATIENT CARE	**70,000**	**1.49**

Concentration of Inpatient Care Facilities



Source: Info USA (2011) / ESRI Business Analyst

Existing Presence of Delivery Network

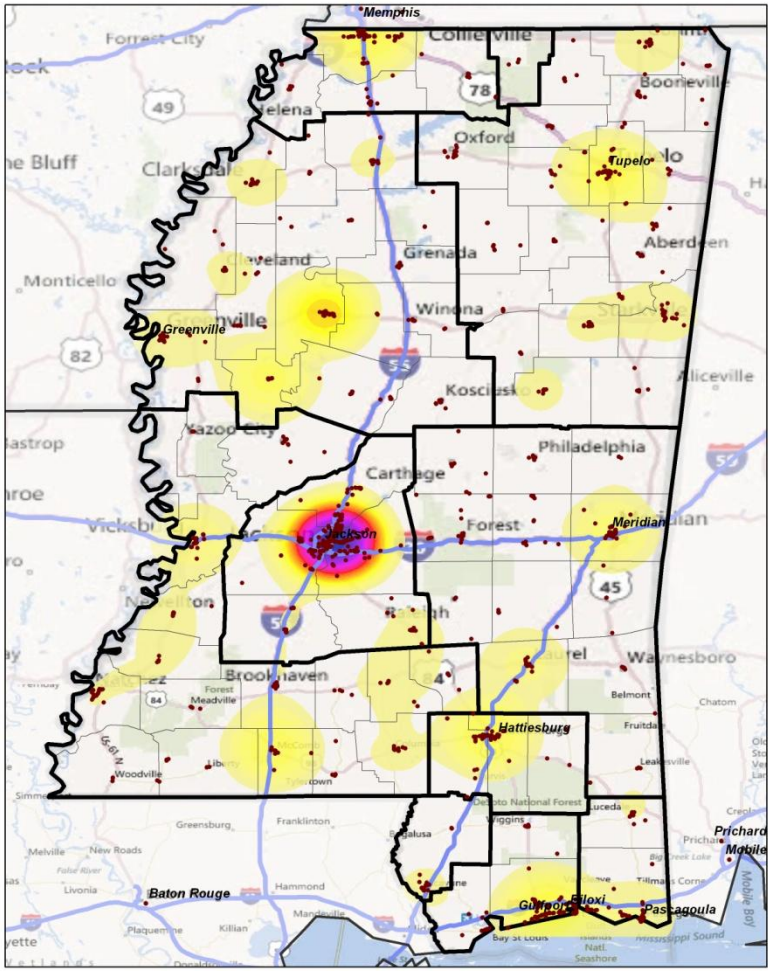
The data shows that in terms of total employment, inpatient care, made up primarily of general hospitals, is almost twice as large as the next closest segment. Inpatient care is also the only general segment that is significantly more concentrated in Mississippi than would be expected. In other words, in Mississippi the proportion of total employment resulting from inpatient care facilities is 49 percent higher than the nation.

Other Delivery Related	Approximate Employment in MS	Mississippi Presence Index
Other	18,000	0.88
Pharmacies and Drug Stores		
Family Planning Centers		
Home Health Care Services		
Other Ambulatory Services		
TOTAL OTHER DELIVERY	**18,000**	**0.88**

The outpatient care sub-segment is also more concentrated than the nation with an MPI of 1.58. All other segments are roughly on par with expectations based on national averages.

In total, 10.4 percent of Mississippi's workforce is employed in the health care sector, compared to only 9.1 percent nationally. Based on the MPIs of the above delivery segments, it is clear that hospitals and outpatient facilities are driving the higher than average employment in overall health care. The supply/demand relationship of these sectors will be explored in detail later in this analysis.

Concentration of Other Care Facilities



Source: Info USA (2011) / ESRI Business Analyst

Historic Trends in Health Care Support Industry

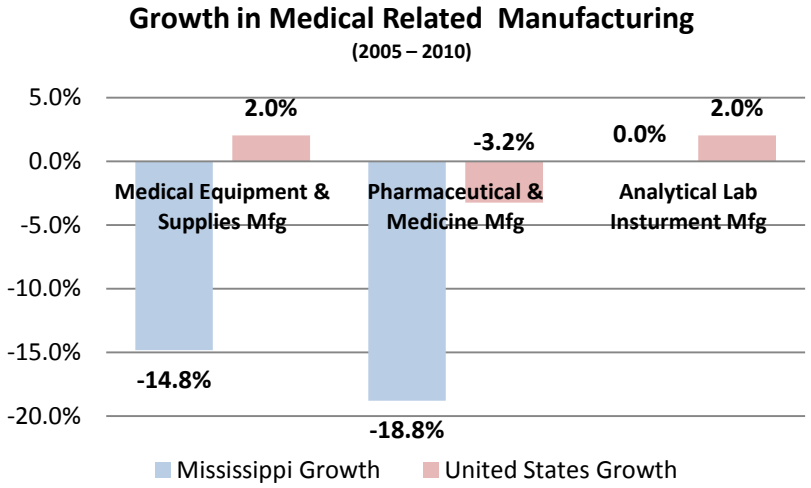
Based on the definition of the health care cluster prepared for this study, the health care support industry is segmented into the following categories.

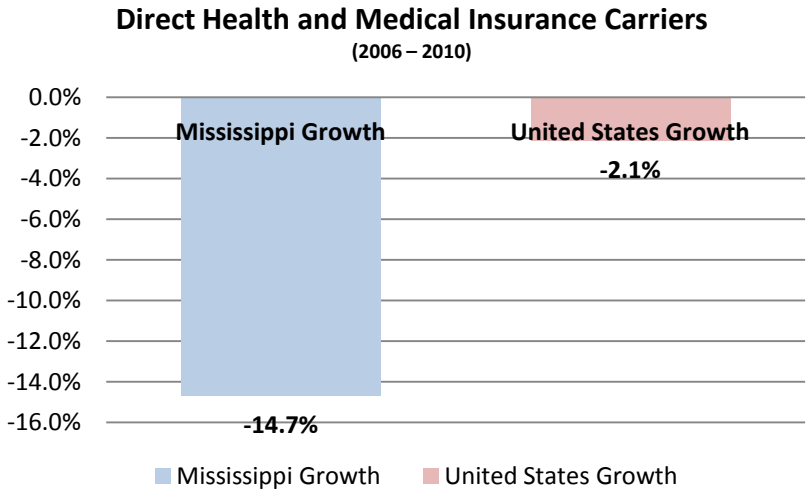
Manufacturing NACIS Code	NACIS Code
• Pharmaceutical and Medicine Mfg	3254
• Electromedical and Electrotherapeutic Apparatus Mfg	334510
• Analytical Laboratory Instrument Mfg	334516
• Irradiation Apparatus & Furniture Mfg	334517
• Surgical and Medical Instrument Mfg	339112
• Surgical Appliance and Supplies Mfg	339113
• Dental Equipment and Supplies Mfg	339114
• Ophthalmic Goods Mfg	339115
Distribution of Goods	**NACIS Code**
• Medical, Dental &Hospital Equip./Supplies Wholesalers	423450
• Ophthalmic Goods Merchant Wholesalers	423460
• Home Health Equipment Rental	532291
Testing, Research and Development	**NACIS Code**
• Testing Laboratories	541380
• Medical Laboratories	621511
• Diagnostic Imaging Centers	621512
• Research and Development in Biotechnology	541711
Other Support Sectors*	**NACIS Code**
• Direct Health and Medical Insurance Carriers	524114

*Due to data compatibility issues there is no employment or presence measures for Other Support Sectors.

Historic Trends in Health Care Support Industry

Activity within the health care support industry has varied significantly between Mississippi and national trends (this data differs in source from the employment data provided on the following page):





Manufacturing

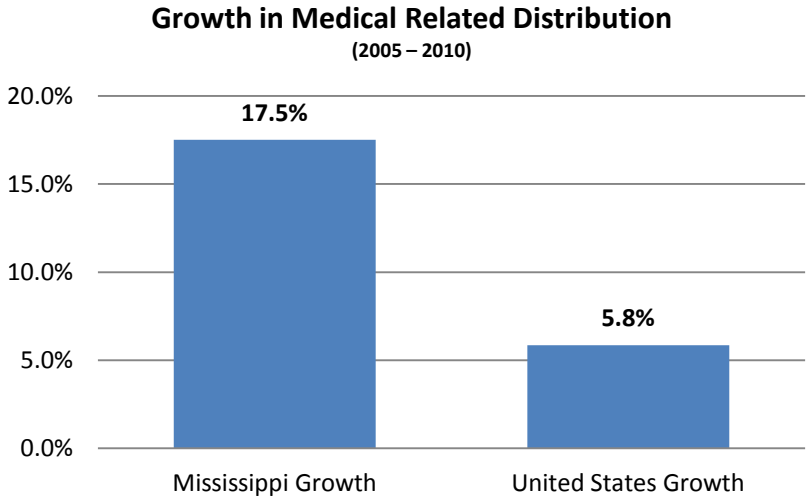
Most manufacturing sectors have seen either little growth, or a loss of employment nationally between 2005 and 2010; medical related manufacturing follows suit. However, Mississippi's loss in manufacturing employment is much more significant than national trends. This may be related to continued "technologization" of manufacturing in this sector; resulting in more importance placed on access to talent and innovation as opposed to simply low operating costs.

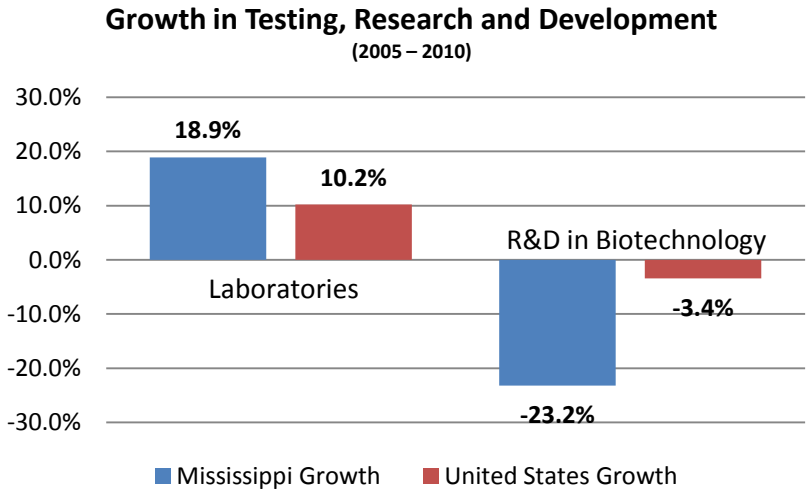
Insurance Providers

Mississippi lost significant employment in the insurance industry. There was a loss in this industry nationally as well. The landscape of the insurance industry has changed, and is changing, significantly. The trends of this industry will require additional research and understanding.

Source: Bureau of Labor Statistics (2011)

Historic Trends in Health Care Support Industry





Distribution

Mississippi's employment in medical related distribution grew almost three times more than the US between 2005 and 2010. This growth continues with the relocations of a very significant pharmaceutical and medical device distributor to Mississippi. Mississippi's proximity to Memphis, and a more business friendly environment, makes this sector a potentially strong competitor.

Testing, Research and Development

Mississippi's loss in biotechnology research and development jobs was very large at 23 percent. This was a significant loss from an already very small industry sector, resulting in 2010 employment numbers of only 500. However, Mississippi's growth in lab activities (testing, medical and diagnostic) far outpaced the nation.

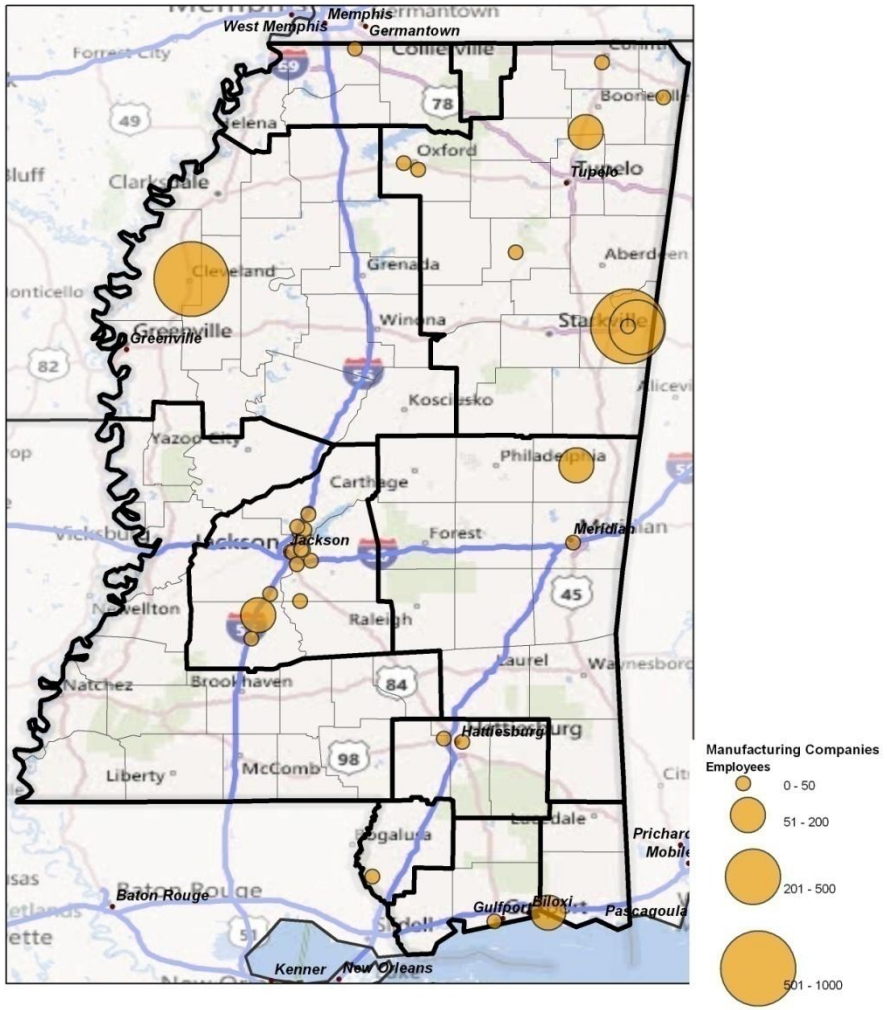
Source: Bureau of Labor Statistics (2011)

Existing Presence of Health Care Support Industry

All of the medical related manufacturing sectors are far less common in Mississippi than national averages would dictate. These operations typically require high-skilled labor pools that may be limited in Mississippi.

Manufacturing	Approximate Employment in MS	Mississippi Presence Index
Medical Equipment & Supplies Mfg	600	0.12
Irradiation Apparatus & Furniture		
Surgical and Medical Instrument		
Surgical Appliance and Supplies		
Dental Equipment and Supplies		
Ophthalmic Goods		
Pharmaceutical & Medicine Mfg	900	0.50
Analytical Lab Instrument Mfg	100	0.49
Electromedical and Electrotherapeutic Apparatus		
Analytical Laboratory Instrument		
TOTAL HEALTH CARE RELATED MFG	**1,600**	**0.22**

Concentration of Manufacturing Facilities

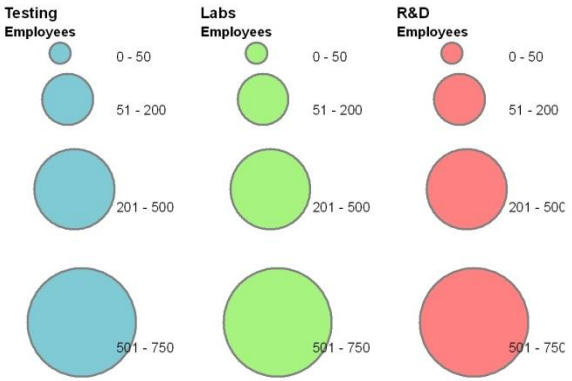


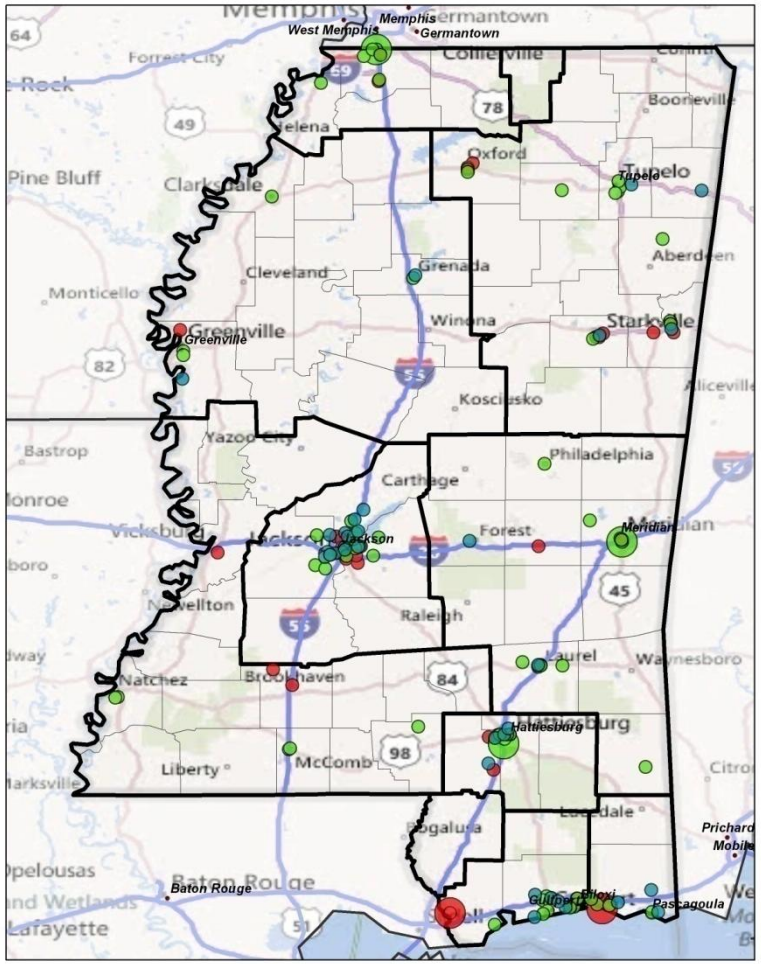
Source: Info USA (2011) / ESRI Business Analyst

Existing Presence of Health Care Support Industry

Testing, Research & Development	Approximate Employment in MS	Mississippi Presence Index
Laboratories	1,600	0.46
Testing Laboratories		
Medical Laboratories		
Diagnostic Imaging Centers		
R&D in Biotechnology	500	0.24
TOTAL TESTING & R&D	**2,100**	**0.38**

Concentration of Testing, Research & Development Facilities





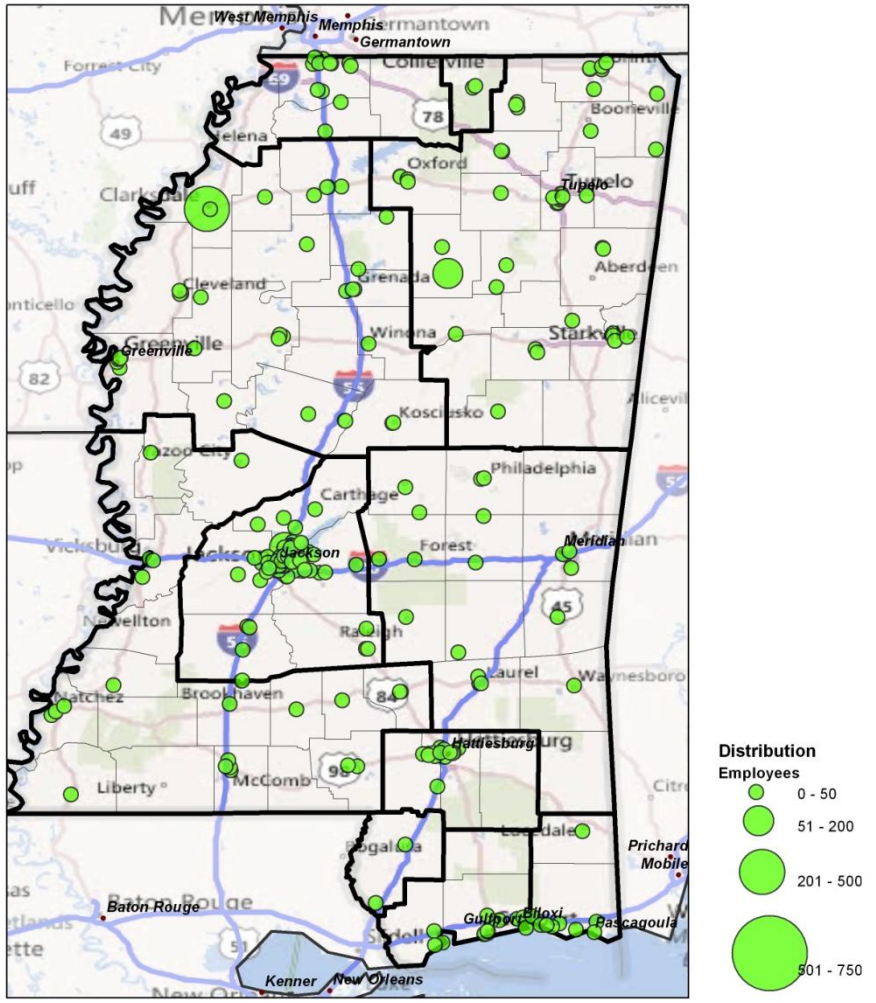
Source: Info USA (2011) / ESRI Business Analyst

Existing Presence of Health Care Support Industry

Mississippi is below the average national presence in all of the support industry categories. Although it should be noted that distribution has been growing significantly in the state. The low MPI in manufacturing, testing and R&D is likely reflective of the mismatch between those industry's location demands and the business environment of Mississippi.

Medical Related Distribution	Approximate Employment in MS	Mississippi Presence Index
Medical Related Distribution	2,000	0.92
Medical, Dental &Hospital Equip./Supplies Wholesalers		
Ophthalmic Goods Merchant Wholesalers		
Home Health Equipment Rental		
TOTAL MEDICAL DISTRIBUTION	**2,000**	**0.92**

Medical Related Distribution Facilities



Source: Info USA (2011) / ESRI Business Analyst

Existing Presence of Innovation Infrastructure

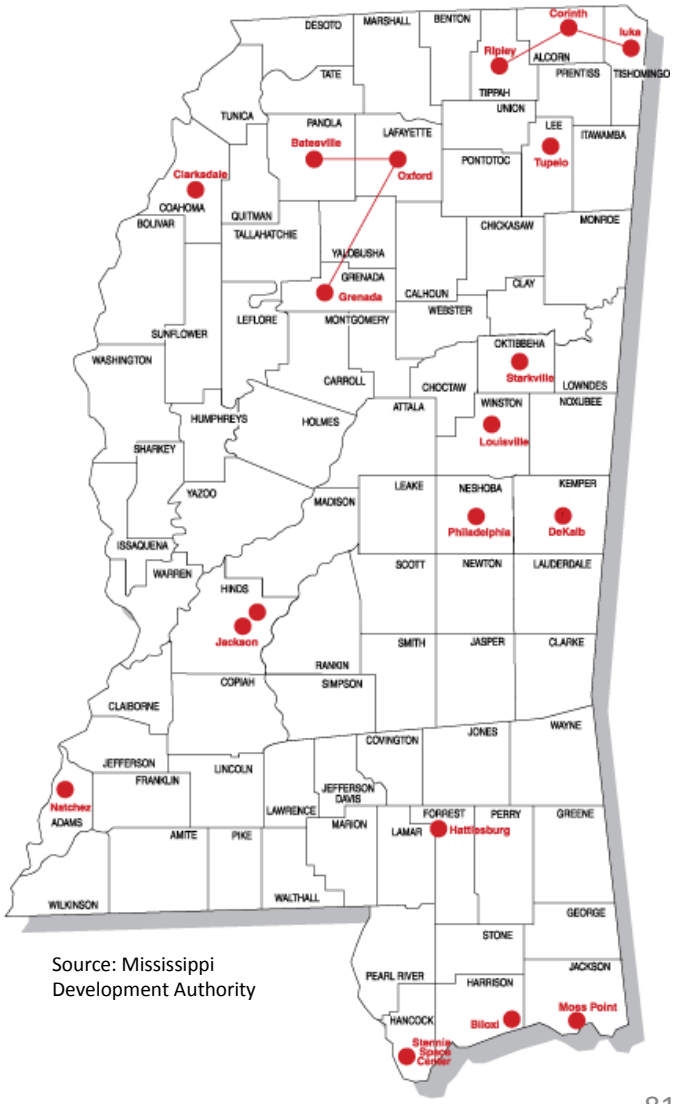
The innovation infrastructure of a state is a multi-faceted collection of services and facilities that support the growth of entrepreneurs and fast growth companies. With respect to health care, the innovation infrastructure must be able to support many types of activities; from small service companies, to production and advanced activities in the life sciences.

The review of existing innovation infrastructure is focused on the following components.

- Business Incubators
- Research Parks / Academic Extension Facilities
- State Level Organizations
- Capital Networks

Given the fragmented, ever changing nature of services and programs, it is unlikely this overview is completely comprehensive.

Mississippi Business Incubators



Source: Mississippi Development Authority

Innovation Infrastructure – Business Incubators

Alcorn State University Technology Incubator

Natchez, MS

A struggling, mixed-use incubator in downtown Natchez. The facility Is currently without any start-up tenants.

Business Launchpoint Trent Lott National Center

University of Southern Mississippi

Hattiesburg, MS

A mixed-use incubator located in a building provided to USM by the City of Hattiesburg. There are three tenants in Launchpoint. When those tenants are active the incubator is open. When those tenants are not active the incubator is not functioning.

Golden Triangle Enterprise Center

Mississippi State University

Starkville, MS

One of the first incubators in the state of Mississippi located on the campus of Mississippi State University. The Golden Triangle Enterprise Center is almost always full. It is focused on technology companies with current tenants in remote sensing and application development.

Mississippi e-Business Innovation Center

Jackson State University

Jackson, MS

Located in a former All-State Insurance building, the e-Business Center was previously the Mississippi Technology Authority facility. Specializing in technology companies there is significant space to expand.

Venture Incubator

Jackson, MS

Located in a first floor space in downtown Jackson. It has not generated sustained interest from start-up companies or entrepreneurs.

Source: Mississippi Economic Development Council (Jan. 2011)

Innovation Infrastructure – Business Incubators

Mississippi Enterprise for Technology

Stennis Space Center, MS

The Enterprise for Technology center has existed for over 20 years; it is well funded and very well utilized. There are numerous water related and space spin-offs, as well as affiliations with the US Navy and NOAA.

Coahoma County Business Development Center

Clarksdale, MS

Run by the Coahoma Chamber of Commerce and industrial development organization. The facility is mixed use with flex bays; serving the local entrepreneurial market.

Jackson County Small Business Incubator

Moss Point, MS

A successful office only incubator located in an old house. It is loosely affiliated with Mississippi Gulf Coast Community College.

Kemper County Industrial Incubator Center, Inc

DeKalb, MS

The Kemper County facility has a single manufacturing tenant, however, that tenant has been very successful. The facility has expanded twice to accommodate the growth.

Neshoba Business Enterprise Center

Philadelphia, MS

The Neshoba Center is the newest incubator in the state. It is affiliated with East Central Community College, which a high-tech training facility for employee education programs. The facility is mixed use with flexible manufacturing bays.

Source: Mississippi Economic Development Council (Jan. 2011)

Innovation Infrastructure – Business Incubators

Northeast Mississippi Business Incubation System

Corinth, MS, Iuka, MS, Ripley, MS

A collection of three incubators with the primary facility in Corinth. All of the facilities are mixed use with both office and manufacturing suites. The incubators have had success in supporting and graduating light manufacturing businesses.

North Mississippi Enterprise Initiative

Batesville, MS, Grenada, MS, Oxford, MS

A collection of three incubators that have all been very successful.

Renasant Center for IDEAs; Tupelo/Lee County Regional Business Incubator

Tupelo, MS

A brand new, high-end facility in downtown Tupelo. It is a mixed use incubator with a focus on service and technology sectors. It is currently being expanded with a three story building.

The Innovation Center

Biloxi, MS

Historically this is one of the best incubators in the US; winning national awards from the National Business Incubators Association. It is a mixed use facility with light manufacturing and office space.

Winston County Economic Development District

Louisville, MS

A rural, mixed-use facility run by the local economic developer. A very successful, basic facility.

Source: Mississippi Economic Development Council (Jan. 2011)

Innovation Infrastructure – Research Parks

Insight Park – University of Mississippi, Oxford

A recently opened research park located on the University of Mississippi campus. There is currently one building constructed with both available incubator and standard space. Insight Park offers the following amenities.

- Incubator Services (12,000 square feet of Class A office space) with a focus on technology transfer opportunities
- Access to state-of-the-art equipment and instrumentation at competitive rates via the University
- Access to University communications
- Access to the Mississippi Small Business Development Center
- Faculty Experts
- Potential to quality for local tax incentives and financing programs

The Garden – University of Southern Mississippi

A 521 acre research park focused on innovation and commercialization of University intellectual property. The park is home to the National Formulation Science Laboratory, the Mississippi Polymer Institute and other organizations working with the Area Development Partnership (local economic development entity).

The Garden is also home to The Accelerator business incubator. The Accelerator is 60,000 square feet offering space to technology start-ups. The space includes a tissue culture room in addition to standard incubator shared space. The research park also houses Noetic Technologies, a private company that specializes in assisting companies in commercializing intellectual property.

Mississippi Polymer Institute

Supports businesses by providing analysis and testing of polymer components as well as rapid prototyping. These services are made available to both established companies as well as start-ups in need of support in the selection, formulation or testing of polymer materials.

Thad Cochran Research, Technology and Economic Development Park – Mississippi State University

A 272 acre park consisting of seven buildings housing both private companies as well as several University research facilities, including the High Performance Computing Collabatory; focused on research in computational science and engineering. Because of the Computing Collabatory the park is equipped with communications infrastructure that has earned Mississippi State an 18th ranking for supercomputing power among Universities in the United States. A 52 acre expansion is planned.

Innovation Infrastructure – State Level Organizations

Mississippi Technology Alliance (MTA) and Related Support

MTA is a nonprofit organization focused on supporting innovation and technology-based economic development throughout the State of Mississippi. MTA provides the following services and programs:

Entrepreneurial Assessment and Intake

MTA uses an intake survey and initial meeting to assess the risk and business plan readiness of a new venture. They can then direct the entrepreneur to the appropriate resources, including:

- Entrepreneurial Services Providers – a network of service providers that can assist with specific needs.
- Mississippi Executive Talent Exchange – A "match making" service where emerging technology companies can meet pre-screened executives that are interested in living and working in Mississippi.

Entrepreneur in Residence Program

The entrepreneurs in residence program consists of experienced entrepreneurs and senior managers looking to mentor early stage companies.

Venture Development Academy

A group of educational courses targeted at incubator managers and economic developers. The course is designed to provide detailed tools and methodologies to help coach and develop innovation start-ups.

Innovation Infrastructure – Capital Networks

Mississippi Angel Network

A group of accredited investors interested in entertaining potential fundraising opportunities from Mississippi-based technology companies. The network typically sees requests of $300,000 to $3.0 Million.

Mississippi Seed Fund

Provides pre-seed financing, early stage capital and product development capital to technology based business ventures in Mississippi.

MS-Fast

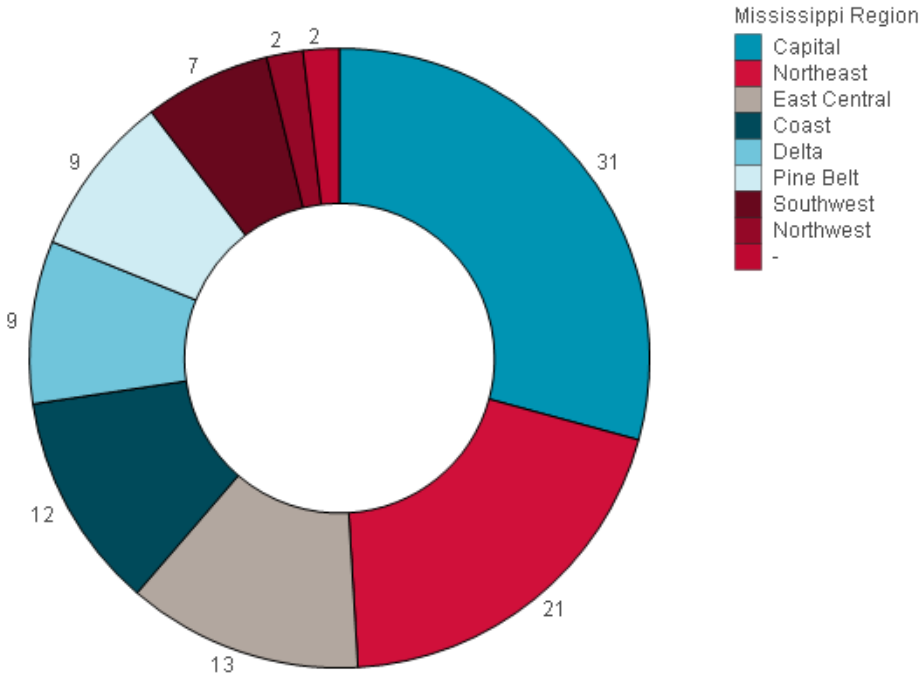
Provides assistance to small high-tech businesses attempting to participate in the federally funded Small Business Innovation Research and Small Business Technology Transfer programs.

Table of Contents

Survey Overview

A survey was sent to Mississippi economic development professionals in January of 2012 to understand how they view the competitiveness of Mississippi and their region with respect to health care delivery, industry support and innovation.

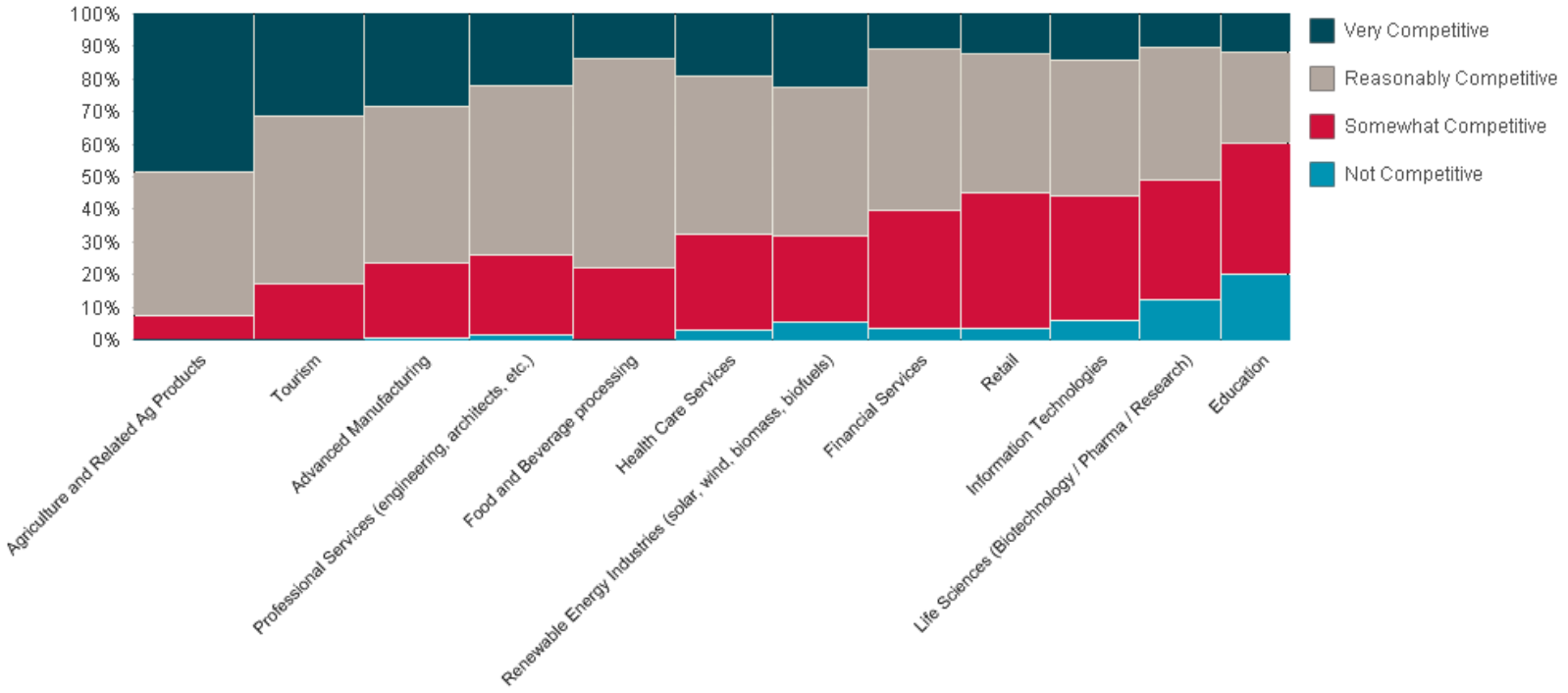
106 responses were received across the eight Blueprint regions of the state. Approximately 380 surveys were distributed for a response rate of 27.9 percent.



Health Care Sector Segments

1. The health care sector can be split into three segments:
   - Delivery
     - The network that provides care to the population. The Delivery network includes people (physicians, nurses, home care workers, etc.) and organizations (hospitals, physician clinics, urgent care centers, etc.).
   - Support (Industry)
     - The non-care aspects of health care that support the overall functioning of the delivery network. Sectors within this segment could range from device manufacturers, to pharmaceutical distributors, or research and development labs.
   - Innovation
     - Inclusive of all aspects involved in intellectual capital development in both the public and private sector. This would include research and development functions of established businesses, university research, business incubation, commercialization and technology transfer. Innovation could occur in sectors within the Delivery or Support segments.

2. How competitive is the STATE AS A WHOLE in the following sectors or industries?

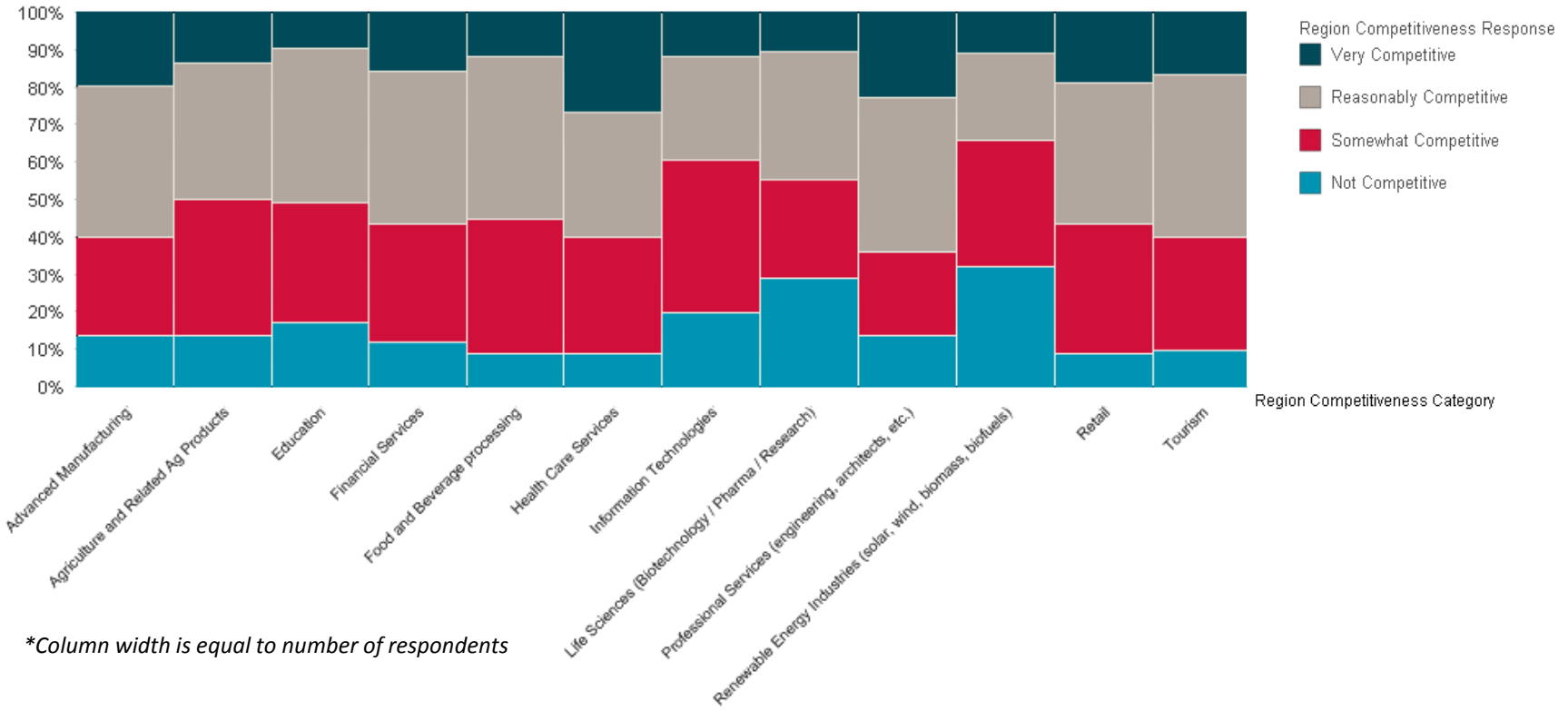


**Column width is equal to number of respondents*

The industries viewed as competitive in Mississippi are Agriculture, Tourism, Advanced Manufacturing and Professional Services.

The industries viewed as least competitive in Mississippi are Education, Life Sciences, Retail and Information Technology. Health Care Services was viewed as neither very competitive or uncompetitive.

3. How competitive is YOUR REGION in the following sectors or industries?



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When discussing their particular region, professionals were generally more consistent across the Industries, although from this perspective Renewable Energy and Information Technology became the least competitive Industry. Professional Services became the most competitive.

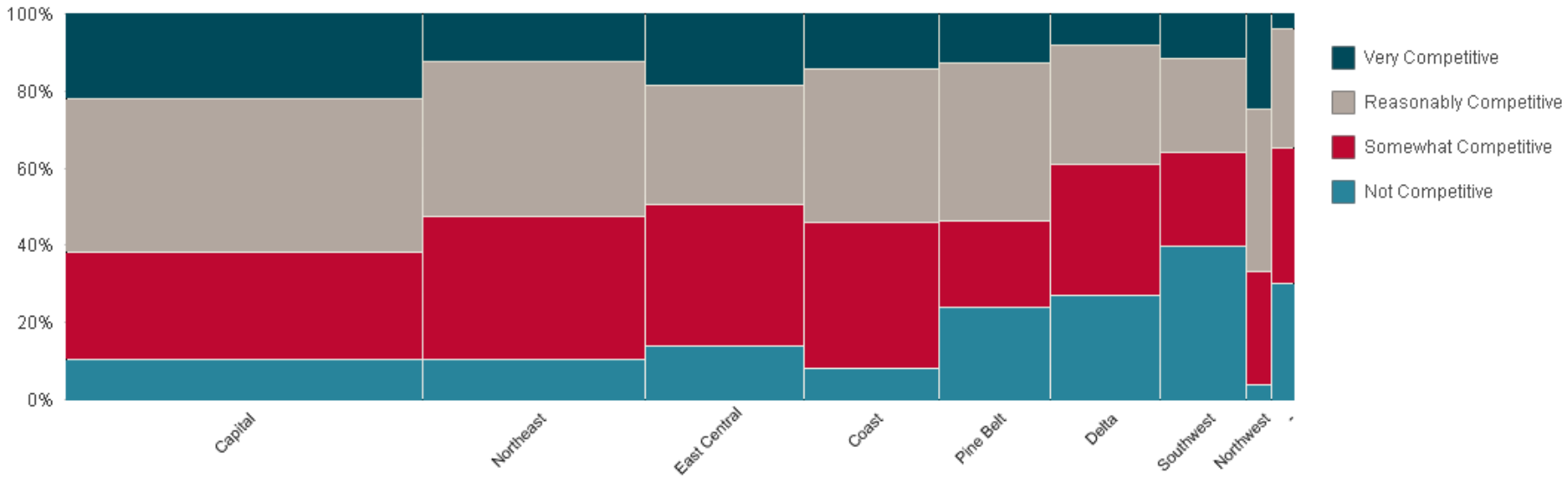
Overall outlook on competitiveness in industry sectors is more negative when asked on a regional level. However, competitiveness in the Health Care sector is regarded as higher in every region than the state as a whole.

3. How competitive is YOUR REGION in the following sectors or industries?

Opinion on industry competitiveness is based solely on the responses of the economic development professionals, not any of the analysis included in this study. The results of the survey are likely influenced by recent business recruitment and retention success.

Region	Very Competitive Industries	Not Competitive Industries
Capital	Tourism, Professional Services	Renewable Energy Industries (solar, wind, biomass, biofuels), Financial Services
Coast	Tourism, Professional Services	Advanced Manufacturing, Renewable Energy Industries (solar, wind, biomass, biofuels)
Delta	Tourism, Professional Services	Renewable Energy Industries (solar, wind, biomass, biofuels), Food and Beverage Production
East Central	Tourism, Professional Services	Food and Beverage Production, Information Technologies
Northeast	Advanced Manufacturing, Life Sciences (biotechechnology/ Pharma/ Research)	Retail, Education
Northwest	Advanced Manufacturing, Life Sciences (biotechechnology/ Pharma/ Research)	Retail, Education
Pine Belt	Advanced Manufacturing, Life Sciences (biotechechnology/ Pharma/ Research)	Retail, Education
Southwest	Advanced Manufacturing, Life Sciences (biotechechnology/ Pharma/ Research)	Retail, Education

3. How competitive is YOUR REGION in the health care?



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Overall competitiveness is viewed as highest in the Capital, Northeast, Northwest and Coast regions and lowest in the Pine Belt, Delta, East Central and Southwest regions.

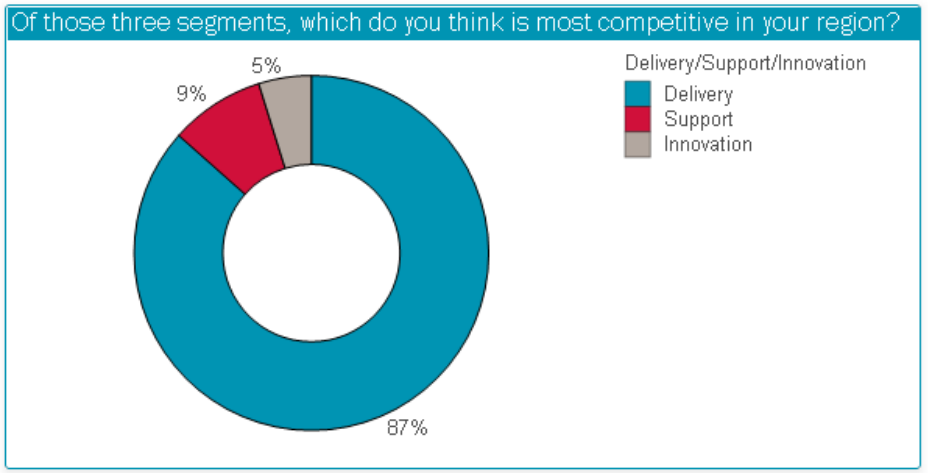
The outlook of competitiveness shows an even split which appears to be proportional to the number of responses submitted with the Northwest Region as an outlier with only two responses and a highly competitive outlook.

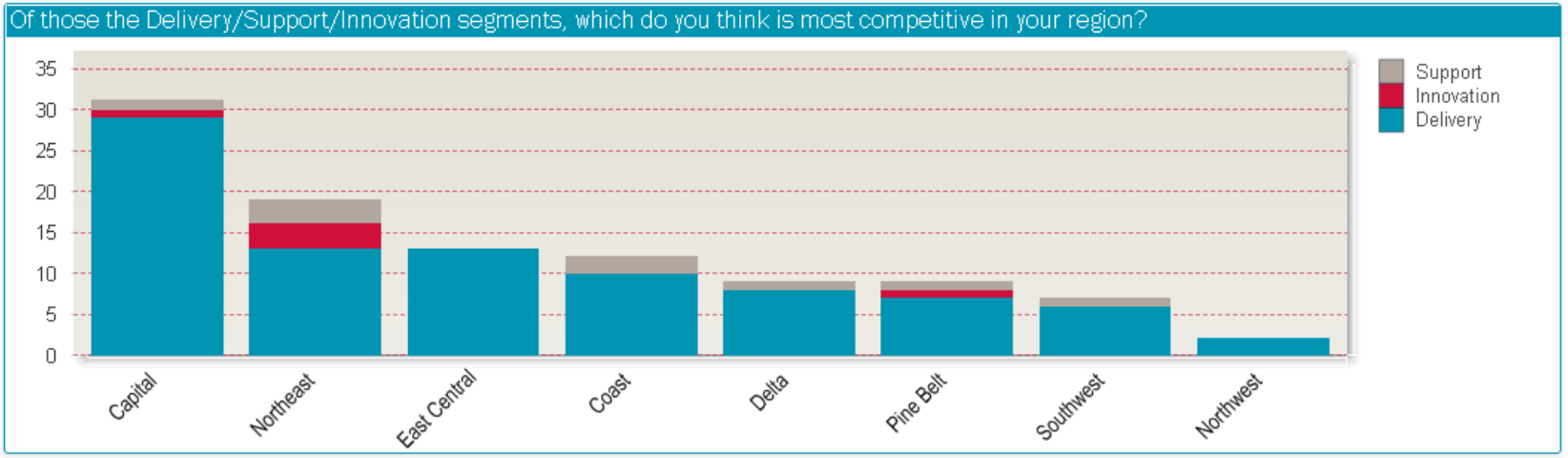
This, combined with the difference between the state vs. regional overall and industry specific competitiveness outlook, presents the possibility of disconnect between the actual, relative and perceived industry competitiveness.

4. Of the Support/Delivery/Innovation Health Care segments, which do you think is most competitive in your region?

Responses

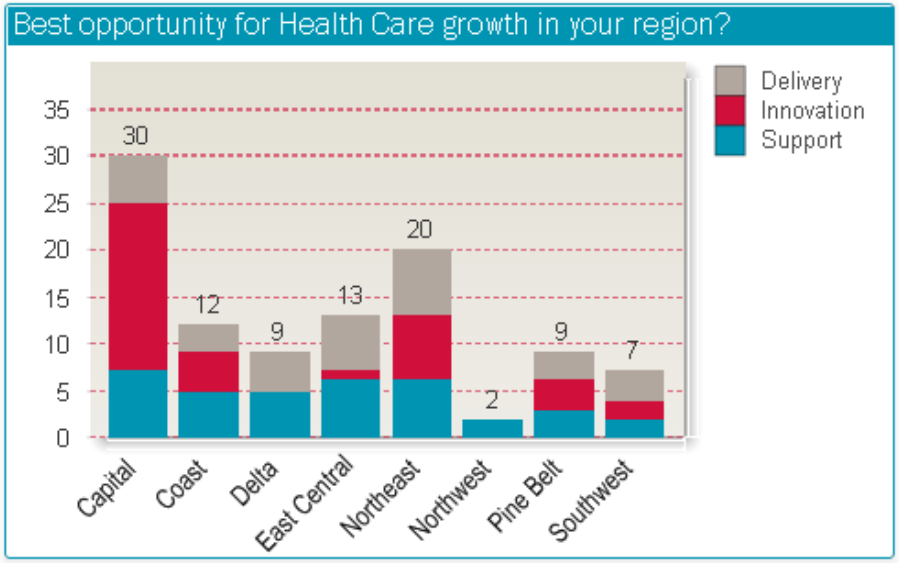
Mississippi Region	Delivery	Innovation	Support
Capital	29	1	1
Coast	10	-	2
Delta	8	-	1
East Central	13	-	-
Northeast	13	3	3
Northwest	2	-	-
Pine Belt	7	1	1
Southwest	6	-	1
Total	**88**	**5**	**9**

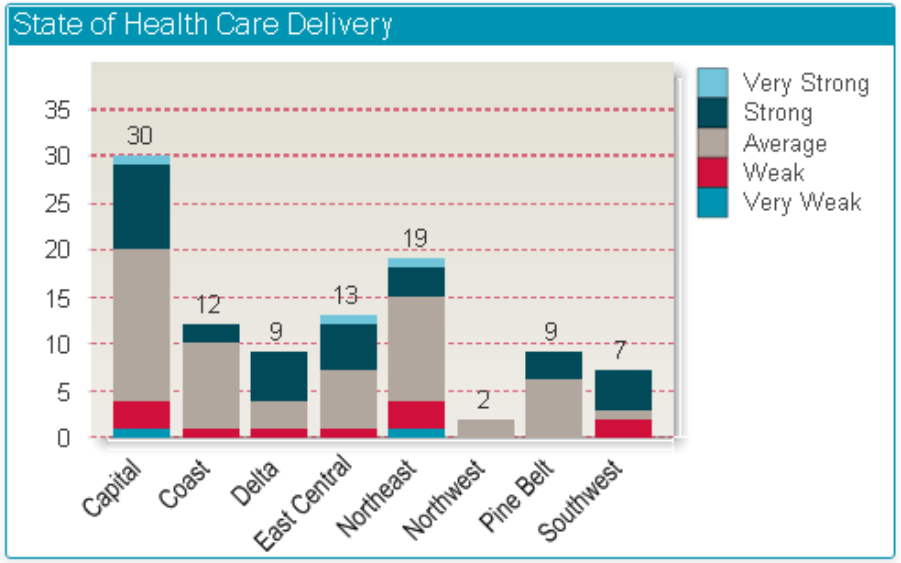


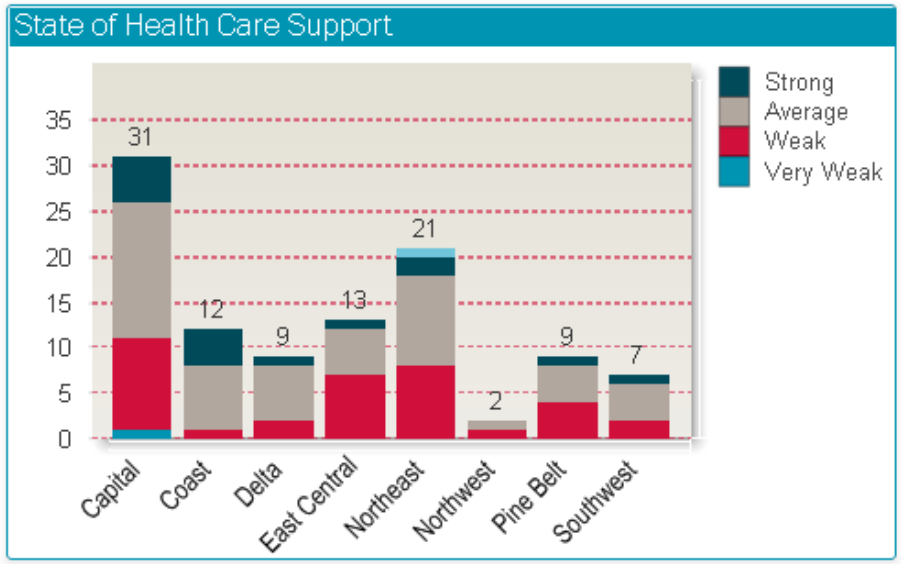


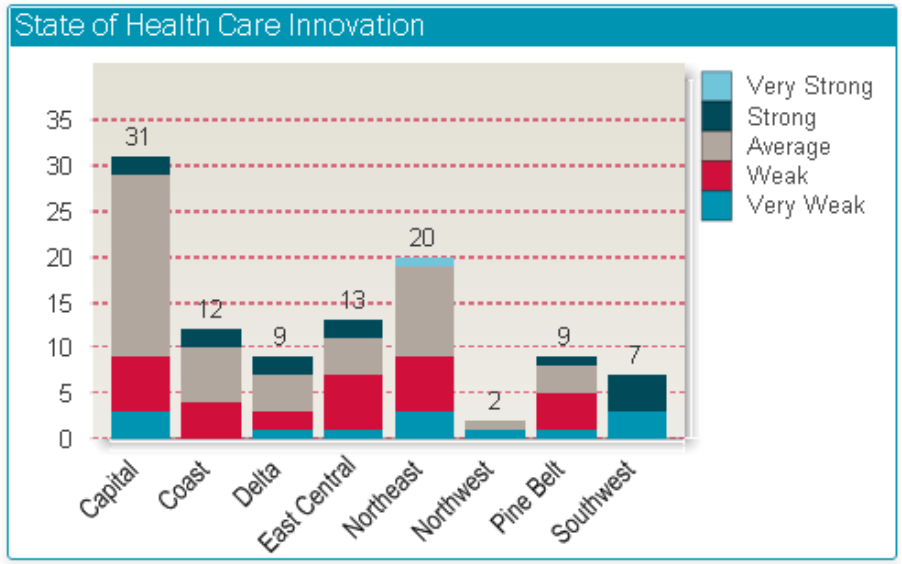
All regions agreed Delivery represents their best competitive position, with the Northeast region seeing the greatest opportunity for Innovation and Support.

Questions 5 through 7. State of Delivery, Support and Innovation by Region.









Questions 5 through 7. State of Delivery, Support and Innovation by Region.

Most regions understand growth in health care will not come through additional delivery, but primarily through improvement of support functions and innovation. Only the Delta, East Central and Northeast regions see significant growth through additional health care delivery.

Very few respondents see their region as “Very Strong” in delivery, support or innovation.

Most regions currently see themselves as “Average” in health care delivery. However, none see themselves as significantly “Poor” or “Very Poor.” There is opportunity to improve in every region.

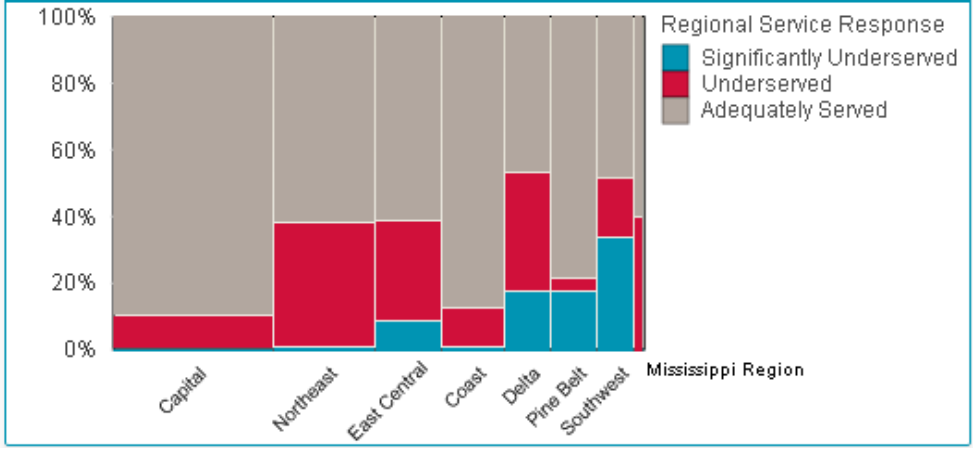
Support and innovation are seen much the same way by the regions. Every region sees these both as weaker than delivery with most being stronger in support than in innovation.

Delivery within Health Care (HC): Economic Development (ED) Potential vs. Current Service

Importance of Health Care sector to economic development potential?

Mississippi Region	Very Important	Important	Somewhat Important
Capital	24	6	1
Coast	4	5	3
Delta	7	2	-
East Central	8	4	1
Northeast	13	6	-
Northwest	1	1	-
Pine Belt	6	3	-
Southwest	5	2	-
Total	**68**	**29**	**5**

Is your region underserved or adequately served in Health Care?



**Column width is equal to number of respondents.*

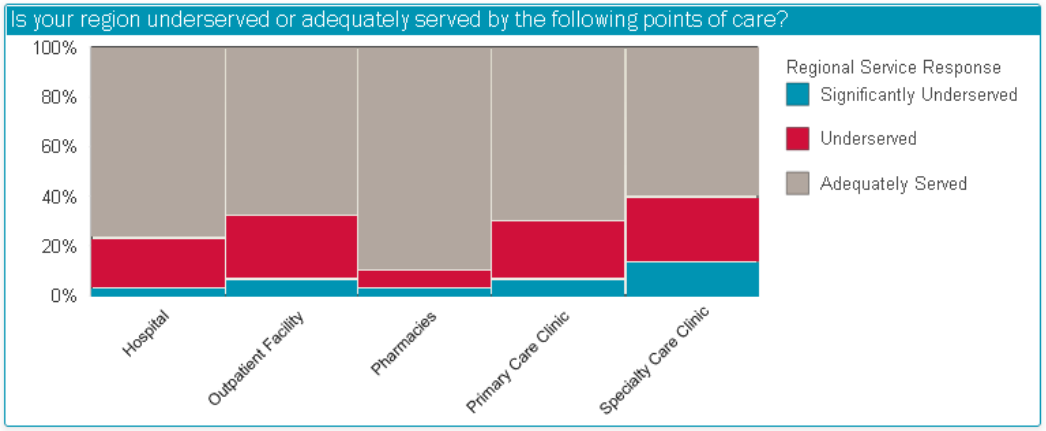
While most regions classify the Health Care sector as crucial to economic development potential, they also consider themselves as “Adequately Served” in overall Health Care delivery. This points to the fact that almost all respondents feel the greatest opportunity for economic development growth is in innovation and industry.

Very few respondents consider the Health Care sector to be “Somewhat Important” to the potential economic development of the region. None considered the Health Care sector to be “Not Important.”

Delivery Service within Health Care: Points of Care

Most regions currently see themselves as "Adequately Served" in overall health care delivery. However, the points of care that drive this result are predominately "Hospital" and "Pharmacies." Most regions considered themselves as "Underserved" or "Significantly Underserved" in one or more categories.

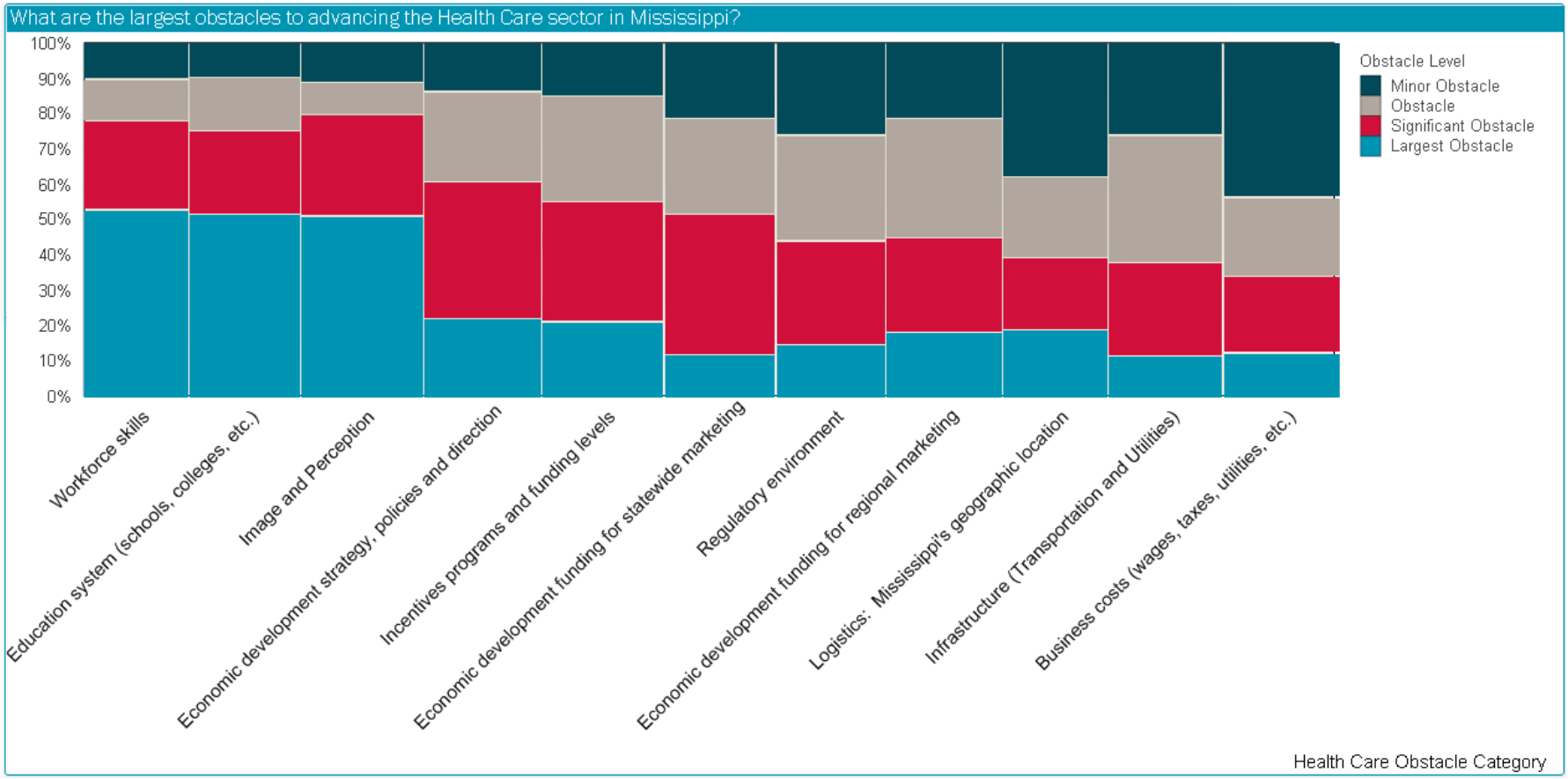
The most common categories regarded as "Underserved" or "Significantly Underserved" are Specialty Care Clinic, Primary Care Clinic and Outpatient Facility.



Is your region underserved or adequately served in Health Care?

	Adequately Served					Underserved					Significantly Underserved				
Region	Hospital	Outpatient Facility	Pharmacies	Primary Care Clinic	Specialty Care Clinic	Hospital	Outpatient Facility	Pharmacies	Primary Care Clinic	Specialty Care Clinic	Hospital	Outpatient Facility	Pharmacies	Primary Care Clinic	Specialty Care Clinic
Capital	28	29	29	25	27	3	2	2	5	3	-	-	-	1	1
Northeast	13	11	18	11	8	7	9	1	8	11	-	-	-	1	1
East Central	8	5	11	9	6	4	5	2	4	4	1	2	-	-	3
Coast	11	10	12	11	8	1	2	-	1	3	-	-	-	-	1
Delta	5	2	8	4	2	4	5	1	4	2	-	2	-	1	5
Pine Belt	7	7	7	7	7	1	-	-	-	1	1	2	2	2	1
Southwest	4	3	4	4	2	1	2	1	-	2	2	2	2	3	3
Northwest	2	1	2	-	1	-	1	-	2	1	-	-	-	-	-

11. Currently, what do you think are the largest obstacles to advancing the health care sector in Mississippi?



**Column width is equal to number of respondents*

At the state level, the professionals generally view workforce skills, educational system, and image and perception as the biggest obstacles to advancement in the health care sector. While geographic location, business costs, infrastructure (transportation) and economic development funding are regarded as the smallest obstacles.

Regional Obstacle Rankings

Capital Rankings:

1. Education system (schools, colleges, etc.)
2. Workforce Skills
3. Image and Perception
4. Economic development strategy, policies and direction
5. Logistics: Mississippi's geographic location
6. Economic development funding for regional marketing
7. Economic development funding for statewide marketing
8. Infrastructure (Transportation and Utilities)
9. Incentives programs and funding levels
10. Business costs (wages, taxes, utilities, etc.)
11. Regulatory environment

Coast Rankings:

1. Workforce skills
2. Image and Perception
3. Infrastructure (Transportation and Utilities)
4. Logistics: Mississippi's geographic location
5. Education system (schools, colleges, etc.)
6. Incentives programs and funding levels
7. Economic development strategy, policies and direction
8. Regulatory environment
9. Business costs (wages, taxes, utilities, etc.)
10. Economic development funding for statewide marketing
11. Economic development funding for regional marketing

Delta Rankings:

1. Education system (schools, colleges, etc.)
2. Workforce skills
3. Economic development strategy, policies and direction
4. Image and Perception
5. Economic development funding for statewide marketing
6. Incentives programs and funding levels
7. Regulatory environment
8. Economic development funding for regional marketing
9. Infrastructure (Transportation and Utilities)
10. Logistics: Mississippi's geographic location
11. Business costs (wages, taxes, utilities, etc.)

East Central Rankings:

1. Image and Perception
2. Education system (schools, colleges, etc.)
3. Workforce skills
4. Regulatory environment
5. Incentives programs and funding levels
6. Economic development strategy, policies and direction
7. Economic development funding for statewide marketing
8. Economic development funding for regional marketing
9. Infrastructure (Transportation and Utilities)
10. Business costs (wages, taxes, utilities, etc.)
11. Logistics: Mississippi's geographic location

Regional Obstacle Rankings

Northeast Rankings:

1. Workforce skills
2. Image and Perception
3. Incentives programs and funding levels
4. Education system (schools, colleges, etc.)
5. Economic development funding for statewide marketing
6. Regulatory environment
7. Economic development strategy, policies and direction
8. Infrastructure (Transportation and Utilities)
9. Economic development funding for regional marketing
10. Logistics: Mississippi's geographic location
11. Business costs (wages, taxes, utilities, etc.)

Northwest Rankings:

1. Workforce skills
2. Image and Perception
3. Economic development funding for regional marketing
4. Economic development funding for statewide marketing
5. Regulatory environment
6. Business costs (wages, taxes, utilities, etc.)
7. Education system (schools, colleges, etc.)
8. Logistics: Mississippi's geographic location
9. Incentives programs and funding levels
10. Economic development strategy, policies and direction
11. Infrastructure (Transportation and Utilities)

Pine Belt Rankings:

1. Economic development strategy, policies and direction
2. Economic development funding for regional marketing
3. Education system (schools, colleges, etc.)
4. Image and Perception
5. Workforce skills
6. Logistics: Mississippi's geographic location
7. Regulatory environment
8. Business costs (wages, taxes, utilities, etc.)
9. Economic development funding for statewide marketing
10. Incentives programs and funding levels
11. Infrastructure (Transportation and Utilities)

Southwest Rankings:

1. Workforce skills
2. Education system (schools, colleges, etc.)
3. Regulatory environment
4. Economic development strategy, policies and direction
5. Incentives programs and funding levels
6. Logistics: Mississippi's geographic location
7. Image and Perception
8. Infrastructure (Transportation and Utilities)
9. Business costs (wages, taxes, utilities, etc.)
10. Economic development funding for regional marketing
11. Economic development funding for statewide marketing

11. Currently, what do you think are the largest obstacles to advancing the health care sector in your region?

Four out of the eight regions regarded workforce skills as being the largest obstacle to advancing the heath care sector. While out of the remaining four, two named education system, one named economic development strategy, policies and direction, and one named image and perception as the largest obstacles.

At the state level, the top three greatest obstacles are workforce skills, educational system, and image and perception, however, while economic development strategy, policies and direction only tops one region's list, it does fall in the top five largest obstacles for four of the eight regions.

Regulatory environment and economic development funding, both statewide and regional, also have a strong presence in the top five across the regions.

Business costs and infrastructure tend to be regarded as smaller barriers overall. Business costs mostly ranks between ten and twelve with a top ranking of six in the Northwest Region. Infrastructure ranks eight or nine in the majority of the regions, however, has a top ranking of three in the Coast Region.

Conclusions

- Every region regards itself as highly competitive in the health care sector relative to the other regions in the state, and considers the state as a whole to lack competitiveness in the health care sector. The disconnect may be the result of perception, lack of knowledge, or both. This presents an opportunity for improvement by closing the gap between perceived, relative and actual competitiveness.

- The main obstacles facing the state are workforce skills, education system and image and perception. These ranks generally remain true across the regions. This presents an opportunity at the state level to focus efforts and resources in the areas that will benefit multiple, if not all, of the regions of the state.

- Economic development strategy, policies and direction fell in the top five largest obstacles in fifty percent of the regions. While the health care sector is considered to be essential for growth in most regions, this 'obstacle' is very unattractive to new businesses, and hampers attracting and retaining talent and investment for research and development. Therefore, this particular obstacle has potential to become a game changer with respect to economic growth and should be regarded as a critical focus point and an opportunity for huge improvement at both the state and regional levels.

- Other obstacles to note are incentives programs and economic development funding for statewide and regional marketing and regulatory environment. These obstacles all made an appearance in the top five in one or more regions, making them notable and in need of attention.

- Overall, the data shows that opportunity exists throughout the state and in each individual region. It also brings light to interesting topics such as the degree of disconnect that comes from conflicting perceptions. In general, focused efforts and resources allow for strengthening the delivery, support and innovation functions of the health care system and, therefore, increasing efficiency in overall service and quality.

Table of Contents

Background

During the weeks of January 16 and March 5, the Blueprint Mississippi: Health Care team conducted 30 stakeholder focus groups and interviews to discuss the State's health care and business environment. The focus groups included approximately 130 health care delivery and industry professionals representing all regions of the State. The topics of discussion ranged from research and development, to talent attraction, regional competition, incentives and business taxes. The goal of these focus groups was to develop an understanding of challenges, gaps, opportunities and best practices within the Mississippi Health Care cluster.

Two things should be noted about this summary:

1) The summary contains the main themes, highlights and most repeated opinions of the participants. It is not inclusive of all of the information we received.
2) The Blueprint Mississippi: Health Care team is not stating that anything found in this document is conclusive, or without debate. The comments in this document are simply the beliefs, opinions and perceptions of the focus and interview group participants.

Health Care Delivery Summary

Overarching Themes and Lessons Learned

Physician Extenders and Support Professionals

- **Nurses**
  - For the most part finding nurses has not been an issue. The majority of participants felt the nursing labor pool was adequate. There was some concern in the Meridian area and the Delta about the ability to attract and retain nurses.
  - The exception in adequate nurse availability is high-demand specialties like pediatrics, NICU, ICU and OR (this is true nationally).
  - Nurses trained in state's nursing programs often work for a period of time locally to get experience, then move to Jackson or Tupelo for higher wages.
  - Like physicians, quality of life plays a large role in the decision to locate in a community. Many nurses are getting their first work experience in a rural area and then moving to a city. There is a feeling that if you train more nurses (education) in rural communities they may be more likely to stay.
  - There is concern that there will be another nursing shortage within the next few years.

- **Nurse Practitioners (NPs)**
  - There is consensus across Mississippi that the supply of NPs is adequate; possibly even oversupply. However, there is significant concern that they are not trained sufficiently enough for the role they are expected to play.
  - Although there are a lot of NPs, very rural areas do have some difficulty retaining them.
  - NPs in many parts of Mississippi, specifically more rural locations, are not being used as physician extenders, but as replacements. Many times the clinics the NPs are posted in have no full-time physician for supervision or training.
  - It is estimated that approximately 30 percent of the care is being provided by NPs.
  - The opinion of hospital leadership is that to develop more qualified NPs requires more direct physician supervision; the problem is not necessarily in their training, but in their work environments. The issue is how to incent physicians to train extenders.
  - Important to examine the Mississippi scope of practice compared to other states; specifically states with a more liberal scope of practice.

- **Physician Assistance (PAs)**
  - PAs have more state restrictions than NPs; PAs also have a narrower scope of practice.
  - PAs were only approved in 2011 and have difficulty growing because the NP lobby is much stronger.
  - Almost all hospital/clinic leaders want to see the distribution of NPs and PAs to become more equal; the lack of PAs is directly attributable to the increased difficulty of practicing compared to NPs.

- **Allied Health**
  - There is a deficiency in lab-techs & med-techs. The opinion seemed to be that Mississippi needed to do a better job of training these individuals as opposed to trying to recruit them.
  - Almost all leaders in the focus groups pointed to a lack of supply in physical therapists and pharmacists.
  - In terms of non-patient facing support, there is a need for medical coders (translate patient records from providers into appropriate billing codes and claims materials for payers)
  - Very hard to get therapists (OT, PT, SLP) and hard to use them to their fullest because of Mississippi scope of practice.

Overarching Themes and Lessons Learned

Regulatory Environment

- **Physician Licensure**
  - Across every focus group the difficulty of the physician licensure process was highlighted as a major barrier.
  - Anecdotal evidence suggests the Mississippi process can take from three to as many as eight months for a doctor new to the state to receive a license. Surrounding states have four to six week processes.
  - One of the major causes of this delay appears to be a mandatory, eight hour class. The frequency of the class can delay the process. Opinion of everyone was that the class is unnecessary.
  - To compound the difficulty of licensure, a physician cannot apply for their Medicaid/Medicare number until licensed. Getting that number is another three month process. Physicians can practice without the number, but cannot receive any payment from Medicaid/Medicare even if they are licensed. This is a very limiting factor in parts of the state where those programs make-up the vast majority of payments.

- **Reporting Requirements**
  - Health care is very highly regulated at the federal level. Although the regulatory and reporting requirements cannot be addressed at the state level, there is the potential for the state to create a central reporting database which, could ease the burden on providers.

Overarching Themes and Lessons Learned

Talent: Recruitment

- **Barriers**
  - Stereotype of Mississippi is a barrier to those who aren't Mississippians.
  - It is important to remember the significant other needs to be recruited to that area as well. There has to be quality of life available to the family.
  - Quality of schools.
  - Too many parts of the state don't have an insured base. It is hard to recruit a physician to an area that relies of government funded payments.
  - Rural practices cannot offer the "incentives" – e.g. loan repayment – that larger practices out of state can.
  - Physicians increasingly want to only be part of large, specialty or multi-specialty clinics.
  - Health care IT is different enough from regular IT that many graduates are not properly trained. There needs to be a specialized educational program for health care IT.

- **Successes**
  - It can be difficult to get someone to Mississippi for that first job, but once they are here success rate in retention is better. This is not true in more rural locations where they regularly see physicians leave for bigger cities.
  - Most locations outside of Jackson like to focus on recruiting people with strong roots in Mississippi.
  - Some regions have had success in combined recruitment efforts.

- **Opportunities**
  - There needs to be focused community development efforts to improve quality of life; this is true in urban and rural locations.
  - Loan forgiveness programs. UMMC offers such a program for graduates practicing in rural areas. However, none of the "really" rural locations have seen any physicians coming out of this program. There seems to be an issue with how this program defines rural.
  - Develop a local funding source for local units of government to provide loan repayment or incentive programs for rural physicians.
  - Create a comprehensive state-wide strategy to recruit

Overarching Themes and Lessons Learned

Talent: Development

- **Residency Slots**
  - Fixing the physician shortage cannot be done through recruitment. Increasing class size at UMMC is valuable, but the big impact is training residents in the state.
  - Studies have shown that physicians are more likely to practice near their residency location than they are their medical school.
  - Currently Mississippi only has about 500 residency slots; simply not sufficient for the state. Barely sufficient to handle the graduates that come out of UMMC and William Carey (although 100% won't stay in state).
  - Funding new slots is the issue at hand. Hospitals need assistance to cover the cost and it isn't going to come out of the federal budget.
  - It should be noted that this is a national issue, not unique to Mississippi. Next year as a nation, we will graduate more MDs and DOs than we have resident slots; that doesn't even count the foreign doctors coming to US.
  - HMA is going to provide residency slots to UMMC and William Carey. They believe they will have an issue in rural areas finding the expertise for physicians to serve as adjunct faculty.

- **Education**
  - General lack of visibility of health care professions as viable opportunities for Mississippi high-schoolers. Education system needs to promote and encourage the field.
  - The University of Mississippi doesn't have some of the programs needed to support research at UMMC; e.g. engineering for equipment design, bio-informatics.
  - Brain drain of educated students is not as significant in Mississippi as some other states. Nonetheless, students do leave for specialization in other states and then stay for lifestyle reasons. Have to keep them in Mississippi throughout the educational cycle.
  - There is concern in the health care industry over the quality of training for home nursing professionals.
  - Rush Health Systems in Meridian, Mississippi will pay students to go to pharmacy school if they stay in the area after – same thing for RN and NA

Talent: Other Items

- Every participant identified a significant shortage of primary care physicians. However, quantitative data suggests that Mississippi is very much on par with other states in the presence of primary care providers. The issue seems to actually be distribution of the primary care physicians. There are far too few in rural areas.
- Where will the next wave of physicians come from? There is a significant age bubble coming up in health care providers and there is no plan in place to find the requisite number of new professionals. Up to 25 percent of Mississippi's physicians are due to retire in the next five years.

Overarching Themes and Lessons Learned

Primary Care and Rural Care Issues

- Every participant identified a significant shortage of primary care physicians. However, quantitative data suggests that Mississippi is very much on par with other states in the presence of primary care providers. The issue seems to actually be distribution of the primary care physicians. There are far too few in rural areas.
- Telemedicine is currently being used successfully in seven rural areas (55 total). There seems to be opportunity to increase its penetration.
- William Carey has five current students on rural scholarship programs, which will require that they practice in rural Mississippi.
- EMR can be extremely important to track patient's progress in rural Mississippi. Often patients run up a tab and then hop to another doctor.

Keeping Patients in State

- Outmigration is a fact of life and something that needs to be managed; where doctors train usually has the biggest influence on where they refer to. In addition, reputation of surrounding hospitals (Memphis, New Orleans, UAB, etc.) will continue to drive specialty cases to those locations.
- There is a need to increase awareness of what services are available throughout the state. Need to make doctors aware of who they can refer to in state.
- There is a perception amongst some primary care doctors that if they refer a patient to Jackson they won't be kept informed of patient developments.
- Birmingham, Memphis and New Orleans were the locations most mentioned as destinations for Mississippi patients.

Overarching Themes and Lessons Learned

Jackson Medical Corridor

- What will the corridor be?
  - The engine to coordinate, communicate and collaborate amongst stakeholders in the area to create synergies
  - A force to encourage investment
  - The driver to coordinate all the plans of the institutions
  - A place where health professionals want to live and work
  - An opportunity for Jackson to become the Health Care destination in the state
  - The Corridor would compete regionally AND nationally in certain areas:
    - Obesity
    - Diabetes
- The advantages of the corridor are its proximity to health care institutions, access to land and the "living laboratory" Mississippi provides.
- There needs to be a significant infrastructure component. For example, currently each hospital has to have their own water tower and back-up power.
- How do others feel about the corridor?
  - Recognize that Mississippi needs a flag ship and UMMC is that. BUT, they cannot try to drive all care to Jackson.
  - Fear that the corridor will increase loss of patients to the Jackson area.
  - There is no collaboration with the rest of the state.
  - Concern that the university is trying to influence how care will be provided throughout the state.

Overarching Themes and Lessons Learned

Research and Development

- There are two general models for grant funded research
  - Standard model would have research dollars go to an academic institution, and that institution partners with local providers for patient base.
  - New National Science Foundation (NSF) grants provide dollars to community and they partner with the academic institution.
  - UMMC and the other providers should be engaged in both models.
  - The popular opinion is that UMMC needs to partner better inside Mississippi for this to be fruitful.
- UMMC is focused in the following research areas:
  - Cancer Center
  - Obesity Center
  - Mind Center
  - Women's Center
  - Cardio Center
- UMMC needs world class facilities to compete and get necessary designations. This is underway with future expansion plans.
- There is no school of public health in Mississippi. This is a huge gap in ability to carry out some research and capture grant money. Because of past legal rulings only Jackson State University is able to operate a school of public health*.
- There is a significant gap in professional researchers who are not doctors (STEM occupations)
  - Right now UMMC mostly gets prospective med students; they need dedicated professionals.
  - These individuals are typically educated in biology (or other sciences), engineering (or other technologies), math, statistics, etc. Typically just a BS, sometimes a MS.
  - For every principal investigator you need 4 or 5 professional researchers.
- There is an opportunity to develop a state research grant program that aggregates available grants and funnels them to institutions.

*The Study recognizes that the University of Southern Mississippi and Jackson state University offer accredited degree programs within a department of health or related department. However, the State lacks a stand-alone School of Public Health that would be required to substantially escalate impactful research and benefit to the State.

Overarching Themes and Lessons Learned

How to Improve Health Care in Mississippi

- In almost every focus group someone pointed out that ultimately to improve health care Mississippi needs more jobs that pay well and provide insurance coverage.
- There is general consensus that something has to be done to incent physicians to work in rural areas.
- There needs to be an active campaign to train and retain more primary care physicians.
- There is really good health care in the state right now. Mississippi needs to market what it have to attract and retain patients.
- In rural areas there were hints that consolidation can be more beneficial than competition because it brings volume which drives margin and quality of care. The North Mississippi Medical Center was held up as an example of this.
- There is a need to better classify “rural.” Multiple rural providers said they don’t see the benefits of rural targeted programs (like the UMMC loan repayment program) because other “less rural” are also classified as “rural” so the talent flows there.
- Mississippi has an noncompliant population. There needs to be education to change lifestyle, otherwise all the care in the world will not make an impact.
- Disease management has potential. What is lacking, among other things, is a set of incentives and funding which is related to incentives. The payer community should be engaged in this discussion (Medicaid and Blue Cross & Blue Shield especially as they are the largest).
- There was discussion around how the network of providers across Mississippi were organized. What would the ideal system look like? Hub and Spoke, distributed, self contained in each location, etc.
- Need to locate health care facilities on site of major employers in order to impact quality and access to care.
- Lack access to gyms / indoor workout facilities was noted as a barrier. For much of the year it is too hot to exercise outside, and there are very few alternatives in much of Mississippi.

Overarching Themes and Lessons Learned

Mental Health

- One out of four Mississippians will need mental health service at some point in their lives.
- The federal government would like to transition Mississippi to a 100 percent community care model where care for patients is provided in residential based facilities as opposed to institutional facilities. In other states private companies have come in to provide some of those services. Many more mental health professionals are needed if they move to the community integration model (they employ 8,300 people right now).

Overarching Themes and Lessons Learned

Non-Delivery Economic Development Opportunities

- Smaller providers, hospitals and clinics, will likely need shared services to support necessary IT. Otherwise they will not be able to afford it.
- Create a research center/coalition that gets all of the university programs and providers working together. Right now they are all independent, fragmented and uncooperative. There needs to be trust built first.
- All of the UMMC research groups spend a lot of money sending lab and sample analysis out of state. Mississippi businesses could capture that value added opportunity and become a destination for other research operations out of state.
- There needs to be a tech transfer and commercialization focus. Researchers are not good at translating research into business opportunities. Millsaps Business Department has such assistance.
- There are three or four major hospital purchasing groups. If not already, there should be an effort to get all potential Mississippi companies to participate in those groups.
- Providers around the state seem willing to work with companies looking to locate or expand in the state. Health care can be an incentive to outside companies.
- The health care sector is key to retaining retirees and elder demographics.

Overarching Themes and Lessons Learned

Issues, Opportunities and Questions Flagged for Follow-Up

- Neshoba County has a scholarship program to put students through med school.
- Meridian High School has created learning communities for health care. Students can earn credits for college.
- There is a high school in the Jackson Medical Corridor that is engaging health care professionals (Bailey Magnet).
- We need to understand needs of workforce; there is a current study to look at health care workforce groups by region. The nursing association is doing this with the Mississippi Hospital Association.
- Many rural hospitals only survive because of their Critical Access Hospital designation and the funding they receive. How is this determined?
- Can the state system influence or change how Medicaid pays for wellness programs?
- If the federal government drastically reduces Medicaid then the Delta will lose health care; 70 percent of their payments come from Medicaid.
- Hickory Flat, Mississippi provided a building to recruit nurse practitioners.
- In the next 5 years there will be change in mental health. Department of Justice issued findings pushing for delivery in communities rather than hospitals and institutions. If this isn't done well, and if it isn't transitioned well financially, then it will hurt the hospitals and quality of care.
- It was said that there is a requirement in Mississippi for professors in nursing schools to have a PhD. This limits the ability to train.
- There is a desire by Rush Health Systems and Anderson Regional Medical Center to do shared services (Labs, security, etc.).
- North Sunflower Medical Center takes advantage of the National Health Service Corp:
  - They are a branch of military
  - Place them in health professional shortage areas
  - Repay their loans

Health Care Support Industry

Overarching Themes and Lessons Learned

Challenges and Barriers for Businesses

- The State of Mississippi requires prosthetic and brace providers/fitters to pay sales tax on all items. However, the private insurers refuse to reimburse for sales tax. Therefore, the small businesses must absorb that cost. One such business interview stated this costs them between $800 and $2,000 per month. There are approximately 80 such businesses throughout the state employing about 250 – 350 people.
- Small business involved in certain "non-physician" related activities (e.g. chiropractic and brace and limb) still deal with Medicaid coding. However, there is no coding training for their type of work. All of the coding workshops offered are focused on doctor and hospital related practice. If they had access to better coding training less time would be spent trying to solve complicated billing issues, and more focus could be placed on business development. Technology integration (e.g. a shared EMR) would help with this issue. However, cost is a significant barrier for small businesses.
- Small life science related businesses can be successful as start-ups in Mississippi but, growth in Mississippi is difficult due to a lack of talent.

Overarching Themes and Lessons Learned

Comments and Opinions on Mississippi Business Environment

Labor

- Comments on availability of labor varied depending on location and skill level.
- Hourly labor was mentioned as an issue by only one manufacturer who felt it will be difficult to expand in Mississippi because of challenges finding employees. This may have been largely due to the lack of population in the area.
- A major data center in Jackson says they have no difficulty finding the proper IT talent to manage and maintain their infrastructure and network.
- Multiple companies noted the lack of unions and Mississippi's status as a right to work state as a draw
- Almost all businesses have to recruit in mid to upper level technical talent (Chemists, R&D, Lab Technician, etc.). There can be difficulty in obtaining and retaining the talent in Mississippi. If recruits have any special medical needs in their family it is almost impossible to recruit them to Mississippi because of a belief they will have to travel out of state for their required specialized care.
- Turnover is also higher in upper level management (in some cases) because the talent "isn't the right fit" for Mississippi.

Regulatory

- Overall there were no significant complaints about the Mississippi regulatory environment. In fact, most of the interviewers had only positive things to say.
- More than one company noted the flexibility in regulations and permitting as crucial to their success.
- Sales tax exemptions for major construction projects and customized training grants were highlighted as a benefit.

Distribution

- No real issue anywhere in Mississippi
- Proximity to Memphis Airport as a distribution hub was almost universally identified as a strategic advantage.

Overarching Themes and Lessons Learned

Comments and Opinions on Mississippi Business Environment (cont.)

Operating Costs

- Mississippi can compete effectively in ease of doing business and cost of doing business for smaller companies and start-up firms relative to competitors.
- Mississippi has an angel capital network established, but there is not any major effort or funding behind it. One interviewee said that Mississippi Angel Fund was too "risk adverse." There needs to be some attention from MDA and state economic development policy leaders on this key component of the business environment. There are numerous state models for participation in early stage funding: K-Tech (Kansas), TNIvestco (Tennessee) Jumpstart (Ohio), etc.

Operating Conditions

- Poor education quality (pre-K through12) was a common theme. It is hard to recruit top talent to the state when educational infrastructure puts companies at a competitive disadvantage compared to other network locations (and larger companies are required to transfer and move talent around their systems).
- Lack of established R&D real estate assets (R&D Parks, Incubators, Flex Space, etc) can limit a company's ability to operate a full spectrum of functions in Mississippi.
- Downtown beautification, city centers and quality of place was mentioned as a barrier to attracting and retaining young talent across the board.

Business Climate

- Business climate comments all generally positive for Mississippi.

Overarching Themes and Lessons Learned

Branding and Awareness Building

- Mississippi has in its portfolio one of the most high tech, automated and state of the art pharmaceutical distribution operations in the nation, if not the world. You should use this to market your position as a viable candidate for major distribution operations.
- The health care industry (non-delivery) is not aware of success stories and other companies in the state that could be suppliers or potential customers.
- The University of Mississippi is reported to have one of the top pharmacy schools in the nation; this is an opportunity to better brand the state for health care and increase general awareness of best practices (US News & World Report, 2012).
- Ruleville North Sunflower Medical Center was recognized as one of the top 40 cleanest hospitals in the USA (Becker's Hospital Review, 2012)
- The North Mississippi Medical Center Tupelo Hospital was given the Malcolm Baldrige Performance award, The Gold Standard in 2006.

Overarching Themes and Lessons Learned

Key Quotations

- "Mississippi flattened Tennessee when it came to licensing and regulatory issues; that impacted our business location decision."
- "Culture in the state is not conducive to higher education which has a strong correlation with the health care sector in terms of moving up the value chain of the industry."
- "Health care literacy is low in the state; that forms the foundation for better awareness and business development."
- "I would have never come here to lead this institution in rural Mississippi if it was not for the community leadership and their visions."
- "Our location is not the best fit when we have to compete globally for new product lines; we get it done, but generally we have to deal with higher turnover for our top young talent base which is always looking for new opportunities outside this region."

Table of Contents

Blueprint Mississippi Case Studies Overview

- In order to provide Mississippi with real world examples of how Economic Development has partnered with other public and private groups to achieve successful clusters, we selected eight case studies for evaluation:
  - University of Tennessee Medical Center
  - Grand Rapids, Michigan Medical Mile
  - Marshfield Clinic, Wisconsin
  - Pikeville KY Hospital and Medical Center
  - Research Triangle Institute in North Carolina
  - Oklahoma State Osteopathic Program
  - Mississippi Cardiac Network
  - South Carolina Health Care Model

Summary Lessons Learned

- From the case studies we identified several key points which we believe are important for Mississippi as they continue through this process:
  - **Public/Private Partnership**
    - The long-term clusters have been successful because of consistent leadership from the private sector. In all cases the public sector has played a role in ensuring an environment for success, but the private sector leads the long-term strategy. This requires a commitment to collaboration and transparency.
  - **Local Area Infrastructure Development**
    - A solid environment/infrastructure for growth must be established for recruitment of business. This environment includes all aspects of services that businesses need: technology infrastructure (cell towers, high speed broadband, etc.), water/sewer system, entertainment, housing options, business regulations, etc.
  - **Focus on the Strengths AND Needs of the Area**
    - In all cases there was a need: either for jobs, better health care, or research. To help meet the needs of the region communities proactively recruited businesses and talent. They also gave them an opportunity and environment to succeed in.
  - **Aligning Services with Patient/Community Needs**
    - High quality of service to both employees, doctors and patients leads to higher levels of engagement with the patient base, improves community health and leads to better overall outcomes.

Case Study Lessons Learned

University of Tennessee Medical Center – Knoxville, TN

How it Relates to Mississippi

- Region's only academic medical facility.
- Serves as a training ground for new doctors into Tennessee.

Lessons Learned

- "Just Culture" training program ensures hospital staff have cultural education and training in order to better interact with patients.
- Have invested heavily into Electronic Medical Records.
- Using private money to expand the Family Medicine Clinic – planned $8M expansion.

Grand Rapids Medical Mile – Grand Rapids, MI

Community Summary

- Medical Mile was jump started through the founding of the Van Andel Institute using private funds.
- Medical Mile eventually led to the attraction of a Medical School which relocated its base of operations due to community capabilities.

How It Relates to Mississippi

- Smaller community that did not have infrastructure in place to support desired growth.
- Not known as a place where science and technical talent could be attracted.

Lessons Learned

- First improved local infrastructure through development of an arena and hotel/conference center prior to recruiting for Medical Mile; community development led, and was reinforced, by the health care cluster.
- Public/private partnership led by private groups has pushed for improvement and recruitment into target industries.
- Private initiatives raise private funding to spur significant development.
- Coordination across all groups is critical to attracting talent and businesses.

Marshfield Clinic – Marshfield, WI

Community Summary

- Grew from small beginnings to become a significant factor in a rural area.

How It Relates to Mississippi

- Smaller community in a part of the state without significant population centers.
- Services a very large area with hard to reach patients.

Lessons Learned

- Found a niche research area to leverage funds and grow research over time; focused on excelling in a few things, rather than entering numerous disciplines.
- Coordination within the medical community is important for sustained growth.

Pikeville Medical Center – Pikeville, KY

Community Summary

- Not located near a major university or medical school.
- Developed and maintained a reputation for quality and service.

How It Relates to Mississippi

- Hospital in a very rural, low density part of Kentucky.
- Difficult access from non-local areas.

Lessons Learned

- Works with the local communities to understand the issues and develop solutions proactively for community areas of concern.
- Reputation as an excellent place to work, aligned with a large number of residency positions, allows them to better maintain doctors after graduation, even in the rural setting.

Research Triangle Institute – Durham, NC

Community Summary

- Not specifically health care focused, but built a world-renowned business destination.
- Began as a way to leverage the three world-class universities in the area.

How It Relates to Mississippi

- Rural community that is not near a major population center.
- Leveraged educational institutions to increase business attraction.

Lessons Learned

- Initial growth can be slow and take years. Often an "event" is needed in order to jump start real growth and development (i.e. attracting a major anchor business).
- Private organization that leads growth and areas of focus. Receives some public support through incentives and physical infrastructure development.

Oklahoma State Osteopathic Program – Tulsa, OK

Program Summary

- One of 26 osteopathic medical colleges in the United States.

How It Relates to Mississippi

- University leveraging a non-traditional medical path to enhance total health care in the region.
- Located in Tulsa but serves a wider, rural community.

Lessons Learned

- Focused on growing capabilities through research and slowly increased influence within the traditional medical fields.
- Focused on supporting the community through a variety of means including telemedicine.

South Carolina Health Care Model – Statewide Initiative

Program Summary

- Collaboration among hospitals to maintain a high level of care and quality.
- Focus on improving health care statewide instead of institution by institution.

How It Relates to Mississippi

- Rural state with low density and diffuse population centers.
- A focus on improving the health care industry across the entire state.

Lessons Learned

- Focus on patient care first and foremost. Quality will lead to success.
- Communication of best practices across all parties in the system leads to improved outcomes.
- Statewide private led initiative with some public assistance.

University of Tennessee Medical Center, Knoxville

University of Tennessee: History/Background/Vision

- 1974: Founded as Faculty Medical Practice Corporation (FMPC)
- 1983: FMPC was reorganized as University Physicians Foundation
- 1983: Receives non-profit status
- 1984: The Heart Hospital marks the first new inpatient building constructed at The University of Tennessee Medical Center in more than a quarter century.
- 1990: Name changed to UT Medical Group Inc. to reflect its association with the University of Tennessee Health Science Center.
- 2001: Formation of the Heart Lung Vascular Institute. Providing a multidisciplinary approach for care and treatment of cardiovascular disease.

Mission Statement:

To serve through healing, education and discovery.

University of Tennessee: Basic Facts

- The Medical Center is the ***region's only academic medical facility***.
- Medical Center is a not-for-profit, non-tax supported multispecialty physician practice.
  - Medical Center has 270 doctors who also serve as faculty of the University of Tennessee Health Science Center College of Medicine.
- Hospital serves as a referral center to Eastern Tennessee, Southern Kentucky, and Western North Carolina.
  - Region's first *Certified Primary Stroke Center* and East Tennessee's first dedicated *Heart Hospital.*
- University of Tennessee Medical Center has five centers of excellence:
  - Brain and Spine Institute
  - Cancer Center Institute
  - Women and Children's Health
  - Emergency and Trauma Services
  - Heart Lung Vascular Institute
- The Medical Center has the only Level I Trauma Center in the region and is a tertiary facility, offering general, specialty and sub-specialty care in the following medical fields:
  - Heart
  - Lung
  - Vascular
  - Brain
  - Spine
  - Childbirth
  - Cancer

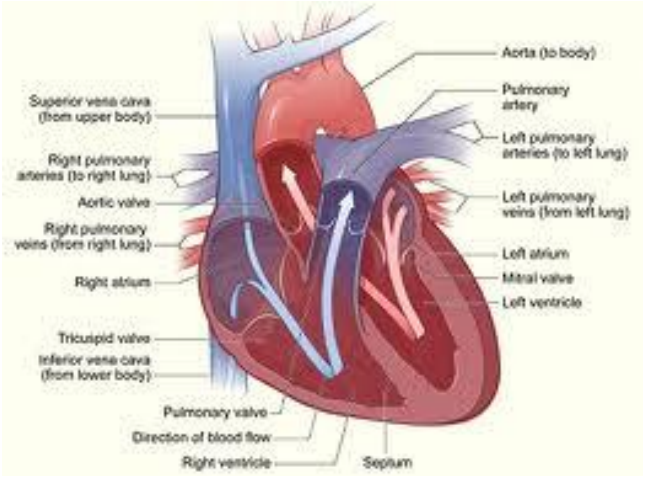
University of Tennessee: Issues/Goals

Current Improvement Projects

- **Transporter/Housekeeper Staffing Analysis**
  - Determine optimal staff scheduling necessary to meet demands using queing calculation analysis.
- **Heart Failure Patient Education**
  - Provide education to patients with heart failure in a timely matter.

Past Improvement Projects

- **Hospital Bed Needs Analysis**
  - Determined the optimal number of Acute Care and Critical Care Beds at UT Medical Center by using a queuing calculation analysis.
- **Decubitus Ulcer Team**
  - Prevent and decrease the occurrence of bed sores and pressure ulcers among patients.



Just Culture

- Hospital uses many systems and processes to enhance the experience of patients by requiring staff to have cultural education and training.
- "Just Culture" is a model that allows the medical center to identify and pinpoint where to focus efforts. They can determine if there is a break in process or if education/training is needed for the staff.
- Model continuously monitors processes, procedures and systems to ensure quality and safety for all of the patients, families and staff.

University of Tennessee: How Did They Achieve Their Goals?

Heart Hospital Expansion

- The $26 Million, 4-story, 126,000 square-foot building adjoins the front of The University of Tennessee Medical Center's main Knoxville campus.
- Hospital expansion includes a new partnership with the Cardiac Pacing and Arrhythmia Services clinic in Memphis, TN to offer new cardiac testing options including:
  - Echocardiography
  - EKG
  - Cardiac event monitoring
  - Electrophysiology (EP) studies, which document the heart's electrical activity and help to pinpoint the source of a patient's symptoms.

Ground-breaking procedures

- UT Medical Group interventional cardiologist Dr. Pranab Das recently performed what is believed to be the area's first alcohol septal ablation, a minimally invasive treatment for a heart condition known as Hypertrophic Obstructive Cardiomyopathy.

Invested in Technology Advancements: Electronic Medical Records (EMR)

- EMRs act as real-time communication devices that allow for immediate access to information, like test results, prescriptions, and pre-existing conditions.
- EMRs also can improve the quality of health care that medical practices and physicians provide by allowing for improved patient-centered treatment, increase communication with patients, and track physicians' performances and patients' progress.

University of Tennessee: Project Funding

- **Expansion of Family Medicine Clinic**
  - The first phase of the project is a *$2 Million expansion* funded through generous donations made by a local family as well as *a Health Resources and Services Agency Administration grant*. A $6 Million fundraising campaign is underway to fund the remaining work.
  - The project will add 18+ new exam rooms, two procedure rooms and an imaging suite for x-rays and ultrasounds as well as a *state-of-the art 60-seat auditorium* with audio-visual equipment comparable to top quality academic medical centers.

- **Rural Breast Cancer Awareness:**
  - The *National Breast Cancer Foundation (NBCF) has awarded a $35,000 one-year grant* to the Breast Health Outreach Program at The University of Tennessee Medical Center Cancer Institute to increase awareness of the life-saving benefits of early detection of breast cancer.

- **Cancer Institute at The University of Tennessee Medical Center in Knoxville**
  - Medical Center officials said the cost of the 100,000 square-foot facility is in the $20 - $25 Million range.

University of Tennessee: Follow-up Conversations

- **The hospital is "UT Medical Group Inc. to reflect its association with UT Health Services Center." This makes it sound like the hospital is run by the University. Is that true? Is this a different model than UMMC? Is this an important distinction?**
  - Ownership and ties to the University are most important for things like bond financing (e.g., which is part of the "obligated group" to guarantee debt payments).

- **UT determines number of beds based on "a queuing calculation analysis." Is this common? Does it result in greater efficiencies? Can it be used to develop "ideal care scenarios" for areas that are over bedded?**
  - As it is being used here, queuing calculation analysis is a method of apportioning beds between general acute or "med/surg" beds versus critical care beds. The queuing aspect comes in where patients coming out of the emergency department or surgery "queue up" waiting for CCU beds or med/surg beds. So it's an optimization of current capacity strategy. It does result in greater efficiency, but doesn't have broader "ideal care" implications.

- **What has the result of UT's "Just Culture" been? Have they seen improvements in satisfaction, outcomes, costs, etc.?**
  - The "Just Culture" program is a safety and quality improvement program. It's a "safety culture" program to get people to think about patient safety as an inherent part of their jobs as nurses, med techs, physicians, etc. Patient safety refers to things like hand washing, medication errors, slip and falls, etc. It has an impact on patient satisfaction, length of stay (and thereby cost) and re-admission rates (also with a cost savings impact).

University of Tennessee: Follow-up Conversations

- **How do they interact with rural Tennessee and other primary care clinics?**
  - They have outreach programs for breast cancer and other health screenings. They also have a limited telemedicine presence. In large part they are in "receive mode" in terms of referrals from primary care clinics throughout the state (primarily the eastern part of the state).

- **Do they have programs to keep residents and students in state?**
  - The Tennessee Rural Partnership is a non-profit organization that has worked in concert with TennCare (Medicaid program) to develop an innovative stipend program that rewards physicians who choose to serve in locations where they're needed most. The program offers $25,000 per year to qualifying residents who are selected for the program and who agree to practice full-time Primary Care medicine in a target community. Residents can receive this stipend each year for a maximum of three years. If the residency program extends to four years, they will extend the stipend an extra year for a total of $100,000.

- **What makes them a good model for Mississippi?**
  - They are a fairly close approximation of UMMC in that they have a substantial primary care orientation and draw as a referral hospital from a broad area with substantial rural areas.

Grand Rapids Medical Mile, Michigan

Grand Rapids Medical Mile: History/Background/Vision

- 1873: The Butterworth Hospital was founded by St. Mark's Church. Initially, patients were limited to elderly women.
- 1875: A initial facility opens to allow a more diverse patient load.
- 1996: Medical Mile is started with the founding of the Van Andel Institute by Jay and Betty Van Andel.
- 2000: The Grand Rapids Community College Calkins Science Center opens. Named after the 25-year president, Richard W. Calkins.
- 2004: Meijer Heart Center opens as the combination of Spectrum Health's heart programs at its Blodgett campus in East Grand Rapids and at its Butterworth campus. Center was built using the donations of over 3,000 people totaling nearly $35 Million.
- 2007: Board approves project to expand the Michigan State University College of Human Medicine campus in Grand Rapids, MI with the opening of the Secchia Center.
- 2008: The Lemmen-Holton Cancer Pavilion is constructed to bring all cancer research and patient service delivery in the Spectrum Health System under one roof. The land for the project was purchased with a donation from Fred and Lena Meijer. Project costs totaled approximately $78 Million.

Mission Statement:

Our mission is to provide independent and trustworthy health care information to the residents of West Michigan and to visitors coming to our area from anywhere around the world.

Grand Rapids Medical Mile: Basic Facts

- Health care system is approximately a mile of medical-related development in the Hillside District of downtown Grand Rapids, MI, bordering both sides of Michigan Street.
  - It has also been referred to as:
    - Grand Rapids Medical Corridor
    - Michigan Street Medical Corridor
    - Health Hill
    - Medical Hill
    - Pill Hill

- Medical Mile has since expanded to include the following:
  - Grand Rapids Community College's Calkins Science Center
  - Spectrum Health's Butterworth Hospital complex
  - Grand Valley State University's Cook-DeVos Center for Health Sciences
  - Michigan State University Secchia Center Medical School

Grand Rapids Medical Mile: Issues/Goals

Transportation

- Medical Mile's focus is on securing a highly competitive transportation grant for improving Michigan Street and bridging the divide between Belknap Lookout and Heritage Hill.
  - Linking the areas removes the current barriers that prevent people from directly crossing Ionia to Ottawa Avenues and Ottawa to Monroe Avenue.

Innovative Services and Programs

- Clinic for Refugees:
  - Through collaboration with Bethany Refugee Services in Grand Rapids, Spectrum Health establishes a new clinic to provide language-appropriate and culturally-sensitive services to refugee populations.
  - The first collaborative clinic will be specifically for refugees from Myanmar (formerly Burma) and will include an intake examination and preventive health recommendations.
  - Overall plans for clinic services are informed by reports from the Michigan Department of Community Health, the national project Healthy People 2010, and the goals of Healthy Kent 2010 (focused on Kent County's health needs). Services for people with disabilities, the elderly, and teen pregnancy were identified as areas of concern.

Shortage of Family/Primary Care Physicians:

- The number of new primary care physicians barely kept pace with the number who left the workforce over several years prior to 2008. Demands are projected to increase due to the aging of our population and when mandated health insurance coverage comes on-line.

Grand Rapids Medical Mile: How Did They Achieve Their Goals?

Opening a New Facility:

- The Spectrum Health Family Medicine Residency Center saw its first patient on June 21, 2011; and expects 7,000 patient visits during the first year of residency training.
  - Located on a city bus line makes the facility accessible to patients who do not have an automobile. When it is necessary for clinic patients to be hospitalized, they can be admitted to Spectrum Health-Butterworth Hospital or the Helen DeVos Children's Hospital, both of which are across the street. Offices and classrooms for the Michigan State University College of Human Medicine are adjacent in the Secchia Center, facilitating intellectual exchange and research opportunities with faculty in an academic department of family medicine, as well as the placement of medical students in clerkship experiences at the new clinic.

City Planning to accommodate next steps: Projected $1 Billion growth

- Medical Mile is seeking a $28 Million federal transportation grant that would compress three decades of work into three years while connecting the city's riverwalks with bike trails that feed into the regional bus system and link downtown to Medical Mile – which now has no direct path.

Grand Rapids Medical Mile: Project Funding

- **Van Andel Institute**
  - Initial funding came mainly from an *endowment from Jay Van Andel, which has been estimated at $1 Billion*.
  - Additional expansion plans were announced in May 2005 and approved by the City of Grand Rapids in October 2006. The cost for this expansion was *$178 Million, raised through donations and a bond*.

- **Michigan State University (MSU) College of Human Medicine Seccihia Center**
  - The project was ratified by the MSU Board of Trustees in January 2007 and further voted to begin construction in October 2007.
  - *Funded by private dollars through a joint fundraising initiative by MSU and Grand Action*; a nonprofit Grand Rapids based organization designed to revitalize and attract business to downtown Grand Rapids.
  - A *$10 Million lead donation* of the $90 Million construction budget was given by Ambassador Peter F. Secchia.

- **Meijer Heart Center**
  - It was built using the donations from *3000+ people donating almost $35 Million*.

- **Helen DeVos Children's Hospital**
  - The original *$100,000 donation* allowed the facility to open. In 1990, Richard and Helen DeVos donated *$5 Million* to expand its services and to offer specialized pediatric care.
  - Additional funds of $100 Million for a planned 14-story, 440,000-square-foot facility, started by a *$50 Million donation* by the DeVos Family. Total project costs estimated at $256 Million.

- **Lemmen-Holton Cancer Pavilion**
  - The *land was purchased in 2002 with a donation* from Fred and Lena Meijer.
  - The $78 Million facility opened in June 2008.

Grand Rapids Medical Mile : Follow-up Conversations

- Follow-up calls with the Research Institute, MSU and Spectrum Health (hospital)
- Each played a fundamental role in the growth of the Grand Rapids Medical Mile. But the process began with an urban redevelopment initiative which included development of a new arena.
- Grand Rapids rise began with the merger of two hospitals to form Spectrum Health Systems 15 years ago. It has grown 8x since the merger.
- The Medical Mile itself ("the Hill") began with a private endowment for the Van Andel Research Institute. This endowment grew significantly over the first few years. The Research Institute was able to succeed even without the presence of a research university or medical institute.
- In the creation of a new Cancer Center, the Hill used a strategy of recruiting a top researcher to get it off the ground. This strategy led to immediate growth. Funding for the Cancer Center was 50 percent private donations and the rest was a bond issue.
- After six years, the Medical Mile privately commissioned a gap analysis and it was identified that a medical school was needed to complete the cluster. After some due diligence, Michigan State University opened a campus in Grand Rapids and ultimately made it the base of operations for the entire medical school.
- $1 Billion has been invested into the Hill over the last decade – very little of it was public. The State of Michigan has primarily been involved through some incentives programs and policies.
- Private sector and private money has led the growth and development in the area. The process can take a long time to complete; hoping for immediate change is not a recipe for success.

Marshfield Clinic, Wisconsin

Marshfield Clinic: History/Background/Vision

- 1916: Founded by six local physicians in Marshfield, Wisconsin.
- 1924: Clinic officially becomes a part of the University of Wisconsin's first medical preceptor program.
- 1956: Board approves formal dermatology research and education program.
- 1978: First medical group approved by the State of Wisconsin to self-insure for professional liability.
- 1980: Granted tax-exempt status by the IRS.
- 1983: Community Clinical Oncology Program established.
- 1991: Marshfield Epidemiologic Research Center founded.
- 2001: 2nd genetic research center, the Personalized Medicine Research Center, established.
- 2005: The Biomedical Informatics Research Center is the fifth research center added.

Mission Statement:

The mission of the Clinic is to serve patients through accessible, high quality health care, research and education.

Marshfield Clinic: Basic Facts

- System of care reaches northern, central and western Wisconsin, however, main campus is located in the City of Marshfield.
  - 54 additional sites located throughout the region in Wisconsin.
- Clinic is the largest private group medical practice in Wisconsin and one of the largest in the United States.
  - 775 physicians
    - 86 different medical specialties
  - 6,600 additional employees
- Outreach Network covers over 1,200 hospitals, clinics and off-site locations where physicians and staff perform consultations in approximately 52 specialties.
- Marshfield Clinic establishes formal medical education programs with the University of Wisconsin in the following:
  - Internal medicine
  - Dermatology
  - Syphilogy
  - Pathology
  - Otolaryngology
  - Surgery

Marshfield Clinic: Issues/Goals

Primary focus of the clinic is to *provide quality care to its patients through progressive research and continuing education.*

Clinical research is the largest research program at Marshfield Clinic

- The Marshfield Clinic Research Foundation received its first National Institutes of Health grant in 1960 to study *farmer's lung disease*, a debilitating and sometimes fatal disease among farm workers.
  - This research led to the development of a blood test to detect exposure to the microbes that cause the disease and ultimately helped thousands of farmers. It eventually led to the establishment of the *National Farm Medicine Center*, one of the longest-running and most successful agricultural health and safety research centers in the country.

Marshfield Clinic: How Did They Achieve Their Goals?

Personalized Medicine Project

- Marshfield Clinic is conducting a landmark population-based research project to link genetic, medical, environmental and other information. Researchers hope to recruit more than 40,000 voluntary participants from specific zip code areas in northern and central Wisconsin.

Agricultural Health

Established in 1981 in response to occupational health problems seen in farm patients coming to Marshfield Clinic, the National Farm Medicine Center (NFMC) focuses on evolving issues in agricultural health and safety encompassing behavioral, laboratory and clinical research. The NFMC is composed of the following core areas:

- **Administration**
  - Provides a framework to support, guide and monitor the progress of the National Farm Medicine Center's initiatives in research, outreach and education.
- **Agro-medicine**
  - Addresses the health and safety concerns of agriculture by merging the principles of occupational health, industrial hygiene and agricultural safety.
- **Childhood Agricultural Injury Prevention Research**
  - Conducts research on childhood agricultural injury prevention, including intervention, evaluation and policy-relevant research.

Marshfield Clinic: Project Funding and Policy Influences

- *Received National Institutes of Health grant* in 1960 to study farmer's lung disease.
- In 1978, the Clinic became the *first medical group approved by the State of Wisconsin to self-insure for professional liability*
  - Saved millions of dollars over commercial liability premiums throughout the following years.
- *Granted tax-exempt status* by the Internal Revenue Service in 1980.

Marshfield Clinic: Follow-up Conversations

- **The research centers the clinic has developed are outside the usual; they decided not to focus on cancer, heart, etc. How did they identify their opportunities for excellence?**
  - They actually do focus on oncology, cardiovascular, etc. But, they also have research programs centered on epidemiology, rural health needs and genetics. Their research focus was a function of their strategic and operational planning process.
- **They have a formal education program with UW. How does that work? Is it at the clinic in Marshfield?**
  - With UW they co-run the UW Institute for Clinical and Translational Research (UW ICTR). It is a partnership between UW-Madison and the Marshfield Clinic. This Institute brings together the distinct resources of each institution and enhances clinical and translational research opportunities in Wisconsin. It is located at UW.
- **Marshfield is a rural hospital, with a reach across almost all of rural Wisconsin, unique research and a very profitable business model. How did they get to that position?**
  - They emphasized a physician network which allowed them to pull referrals into their hospital. This gave them an early start on the "integrated health system" model which has become the conventional framework for health care delivery systems today.
  - They also have a health plan which allowed them to participate in population health and earn premium revenue outside of clinical care revenue.

Pikeville Medical Center, Kentucky

Pikeville Medical Center: History/Background/Vision

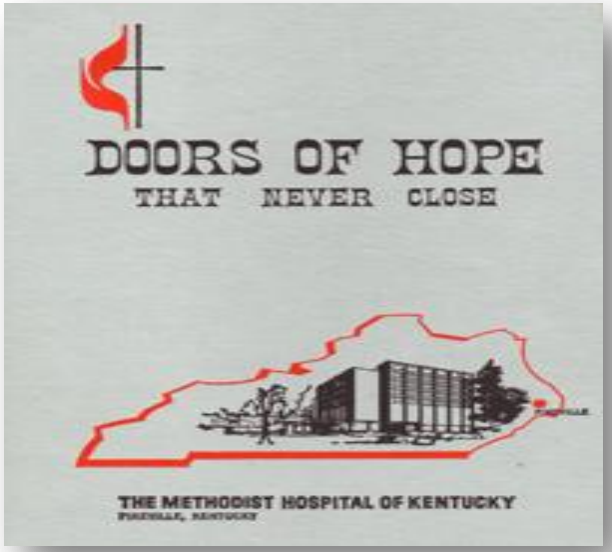
- 1924: Hospital admits its first patient on Christmas Day
- 1940: First addition to hospital made - expanding bed capacity from 56 to 90
- 1952: Bed capacity expanded again to 135
- 1971: Additional 7 story facility added
- 1996: The Leonard Lawson Cancer Center opens
- 2000: Eleven story patient tower, known as the Walter E. May Tower, is completed
- 2005-2010: Significant expansions made to facilities to provide more space and convenience to patients. Outpatient Neurosurgery, Orthopedic and Rehabilitation Center allows patients with limited mobility easier access to medical care. Outpatient Diagnostic Center offers rapid results to patients needing lab work.

Mission Statement:

Our Mission is to provide quality, regional health care in a Christian environment.

Pikeville Hospital and Medical Center: Basic Facts

- Pikeville Medical Center (PMC) is a voluntary non-profit and private organization.
  - Hospital has 261 beds
  - 555,000 Total Sq Ft.
  - Over 300 credentialed professionals
  - 2,300 total employees
- Pikeville Medical Center has been recognized for the past four years as one of the best places to work in the state and in the nation.
- In 2007 and 2008, PMC ranked as 9th and 4th best place to work in Kentucky, respectively.
- In 2009, PMC was honored by *Modern Healthcare* as one of the best places to work in the nation, and recently ranked as the #1 health care provider in Kentucky and third overall among large employers.



Pikeville Hospital and Medical Center: How Did They Achieve Their Goals?

The focus of the hospital is specifically aimed at *improving patient care, customer service and patient satisfaction.*

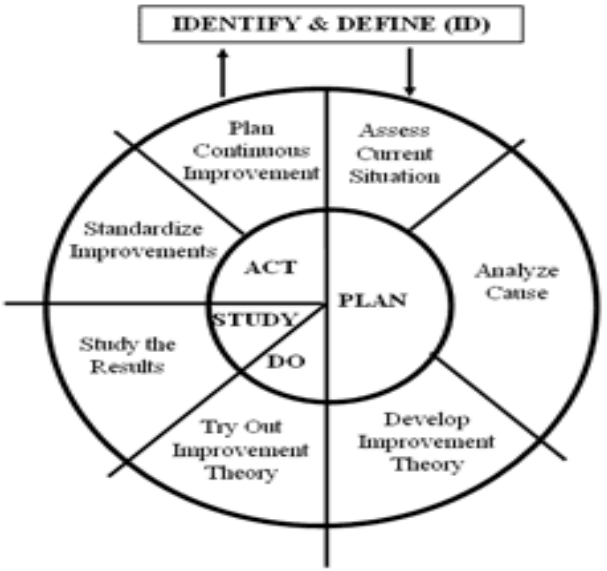
The medical center provides health care to the community by running health screening fairs at local shopping centers.

- This led to the opening of a free health screening center.
  - This center provides medical care for patients who might not have otherwise sought treatment, due to the expenses - both real and perceived - of going to the doctor.
  - During the H1N1 (Swine Flu) outbreak, the Free Health Screening Center was converted into a 24 hour; seven-days-a-week Regional Flu Center.

Pikeville Hospital and Medical Center: How Did They Achieve Their Goals?

Medical Center Adopts Performance Improvement model: ID-PDSA

- The mission of the Performance Improvement (PI) Department is to improve the quality of health care and service delivery.
- The PI Department collaborates with hospital administration and medical and nursing staff to analyze data gathered regarding the hospital's current performance.
- This analysis allows the PI Department to do the following:
  - Identify opportunities for improvement
  - Implement action plans
  - Improve performance
  - Work more efficiently
  - Reduce costs
  - Improve patient care



Preventions and Screenings:

- PMC provides free cancer screenings to the community for the following cancer types:
  - Colon
  - Skin
  - Prostate

Other programs provided by the Medical Center:

- Meals on wheels
- Residency Program
- Health Advantage Program: Work Site Wellness
- Pikeville Family Practice Program

Pikeville Hospital and Medical Center: Project Funding

- The hospital is undergoing an *expansion funded by a $44.6 Million Recovery Loan from the Department of Agriculture.*
  Source: Recovery.gov

- American Recovery and Reinvestment Act: One of the state's largest ARRA projects is under way in Pikeville, KY, at the site of the Pikeville Medical Center (PMC) where *a $44.6 Million Community Facilities Loan* will finance construction of a new medical office building and parking garage.
  - At a total cost of $100 Million, the venture will produce 1,500 jobs during the three-year construction phase and 100 permanent jobs.
  - The medical facility will house nine floors of office and clinical space for outpatient, surgery, exam rooms, and primary and specialty care physicians.
    Source: Rurdev.usda.gov

Research Triangle Institute, North Carolina

Research Triangle Institute: History/Background/Vision

- 1958: The idea of Research Triangle Park (RTP) is born with the guidance and support of government, education and business in North Carolina
- 1961: Research Triangle Institute (RTI) conducts 1st international development project
- 1966: NASA names RTI one of seven teams created to ensure technologies developed for space exploration are transferred to commercial market
- 1988: RTI begins work on the National Survey on Drug Use and Health, policy makers' major source of data on substance use and abuse
- 1995: RTI becomes one of the first organizations to put a new survey tool, audio computer-assisted self-interviewing (ACASI), to use in large scale field interviewing
- 2004: RTI begins air quality modeling and managing system to support efforts to reduce air pollution in Beijing, China, in preparation for the 2008 Olympics

Mission Statement:

We adhere to the values that have served as RTI's foundation throughout our history: integrity, excellence, innovation, respect for the individual, respect for RTI, fiscal responsibility, and objectivity.

Research Triangle Institute: Basic Facts

- As Research Triangle Park expanded and prospered after its inception, so did RTI. Growing from a handful of scientists in central North Carolina in 1959 to a staff of more than 2,800 in more than 40 countries today.
- RTI is now one of the *world's leading independent, nonprofit research and development organizations.*

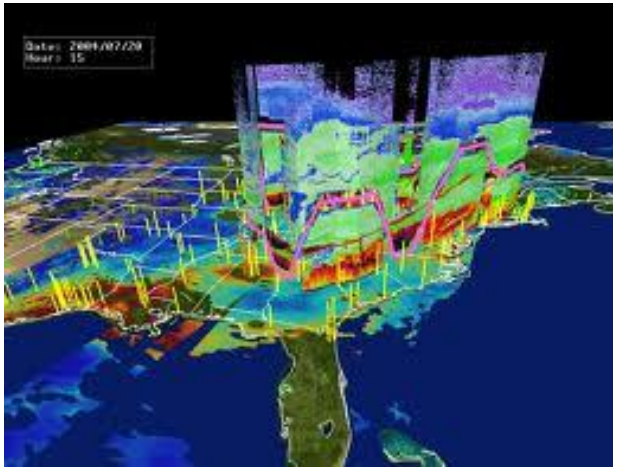
University Collaborations

- Three North Carolina universities incorporated RTI in 1958:
  - Duke University in Durham
  - University of North Carolina at Chapel Hill
  - North Carolina State University in Raleigh
- RTI works with their scientists on research programs and projects and maintains such relationships as adjunct faculty appointments, cooperative research programs, and other professional contacts.
- RTI also participates with universities and businesses in the Microelectronics Center of North Carolina and the North Carolina Biotechnology Center.

Research Triangle Institute: Issues/Goals

Commitment to Sustainability

- RTI International has been a leader in science and technology, helping address the world's most complex social and scientific challenges in fields ranging from health and education to environmental science, renewable energy research, and international development.
- RTI is taking the steps necessary to reduce environmental impact and use of natural resources, and to implement forward-looking sustainability and environmental stewardship practices in the following areas:
  - Implement permanent monitoring and public reporting of our resource use.
  - Invest in state-of-the-art research to advance scientific knowledge and technology concerning the environment and sustainability.
  - Adopt and promote environmental sustainability commitment in research and business projects, decision making, and operational practices.
  - Communicate environmental and sustainability policies and practices to staff members, clients, regulators, vendors, other stakeholders, and the public.
  - Provide environmental sustainability training and information to staff members.



Research Triangle Institute: Initiatives

Habitat for Humanity

- In support of the Habitat for Humanity of Wake County, RTI assembled volunteer teams to help build the homes and provided a donation of $5,000 in support of Habitat's efforts.

Community Partnerships Program

- Due to continuing economic difficulties, the selection board increased its emphasis on funding organizations that provide direct services in the areas of basic needs (e.g., food and housing) and domestic violence, where there is a high demand for services. Other organizations funded include childrens, disabilities, and health programs.

Community Supported Agriculture Program

- Since 2002, RTI hosted the Community Supported Agriculture (CSA) Program in RTP. This program provides locally grown vegetables, fruit, and other healthful farm products on a weekly basis to those working in RTP.

SmartCommute

- RTI is a corporate participant in the Triangle's SmartCommute program, which encourages staff members to use alternate forms of transportation in their commutes to and from work to reduce air pollution and ease traffic congestion on existing roadways.

STEM Education

- RTI routinely supports events to encourage students to pursue careers in science, technology, engineering, and math, also called "STEM" fields. Such events include NC State University's Expanding Your Horizons conference and NC Science Olympiad State Tournament, which bring together students from across the state to participate in challenging, hands-on, and interactive events in various disciplines of STEM.

Research Triangle Institute: Project Funding

- The Duke Coulter Translational Partnership in biomedical engineering is being funded by $10 Million from the Coulter Foundation, with additional investments from Duke and the Fitzpatrick Foundation that brings the endowment to $20 Million for Duke's Pratt School of Engineering.
  - Source: Duke Today: http://www.whcf.org/about/the-coulter-foundation

- **Ranked 3rd in Best States for Business:** North Carolina scored 3rd in Business Costs and Regulatory Environment and 9th in Growth Prospect. *Forbes* scored the states on six measures including business cost, labor supply, regulatory environment, economic climate, growth prospect and quality of life.

- Solstas Lab Partners, a leading medical and diagnostic laboratory, will expand its operations in Guilford County. The company plans to create as many as 500 jobs and invest about $11.6 Million over five years to gain maximum benefits from performance-based incentives approved by Guilford County and the City of High Point. The project was made possible in part by a *$450,000 grant from the One North Carolina Fund.* The state grant will be based on the company creating 300 jobs and investing $7.5 Million over the first three years of the project.
  - Source: 2/2012 - North Carolina Office of the Governor

Research Triangle Institute: Follow-up Conversations

- Research Triangle Park was created in 1959 in a poor state that was highly dependent on agriculture production as the primary industry. However, there were three strong, nearby universities for leverage. At the time graduates would leave the state in large quantities because of a lack of quality jobs.
- A public/private committee was formed to determine the best path forward to use the universities to attract industry. A private fundraising effort led by Archie Davis (Chairman of Wachovia bank at the time) was used to acquire 4,000 acres of land and provide a $500,000 seed fund for recruiting businesses.
- An anchor tenant was needed to get RTP off the ground. The first business in the park was ChemStrand (makers of Astroturf). In 1965 IBM was brought in with two other strong entities to provide a credible basis as a research park.
- It was decided early on that independence was necessary to drive success of the park. The role of public money is largely to build access roads to new businesses, and provide tax or business incentives. RTP has no private incentives money.
- RTP has made an effort to promote start-up businesses through the development of incubator space which can be used by small, technical organizations that do not need a traditional real estate environment.
- Over time, RTP has been the beneficiary of being the state's testing ground for implementation of advanced technology infrastructure. This has led to an excellent center for technology organizations.
- It wasn't until the 1980s that RTP took off. The process to get the cluster off the ground was long and time consuming. Patience is necessary.

Oklahoma State Osteopathic Program, Tulsa

Oklahoma State Osteopathic Program: History/Background/Vision

OSU College of Osteopathic Medicine, located in Tulsa, OK, is one of nine colleges at Oklahoma State University and is the Center for Health Sciences branch campus in Tulsa. The main OSU campus is in Stillwater, 64 miles west of Tulsa.

- 1972: Public institution founded
- 1988: Merged with Oklahoma State University
- 2006: Signed as a permanent teaching hospital for OSU Osteopathic Students

Mission Statement:

To provide osteopathic manipulative medicine to both ambulatory and hospitalized patients.

Oklahoma State Osteopathic Program: Basic Facts

- The program is *one of 26 osteopathic medical colleges in the U.S.*
- The program operates on an annual budget of $128 Million and is governed through OSU by the nine-member Board of Regents for Oklahoma Agricultural and Mechanical Colleges.
  - Approximately 540 employees, including residents
  - Approximately 100 full-time faculty in basic and clinical sciences
- Services are offered in:
  - general health care
  - ophthalmology
  - ear, nose, and throat
  - osteopathic manipulative therapy
  - internal medicine
  - high risk and general obstetrics
  - gynecology
  - gastroenterology
  - pediatrics
  - behavioral medicine
  - diabetes foot care
  - parent-child clinic
  - women's health
  - orthopedic surgery
  - plastic and reconstructive surgery
  - respiratory medicine

Oklahoma State Osteopathic Program: Issues/Goals

Research and Sponsored Projects

- Research continues its significant growth as projects are developed. Total annual publications among biomedical science faculty have increased nearly three-fold in the past decade. Extramural funding over the past decade has increased five-fold, with the largest focus in the neurosciences.
- Currently, research teams are focusing on broad disease-related topics relevant to the following:
  - HIV/AIDS
  - Autism
  - Diabetes
  - Childhood immunizations
  - Bioterrorism
  - Respiratory disorders.

  These research teams are comprised of members of both the biomedical and clinical faculty and staff, and utilize translational techniques to address these disease-related issues as they relate to the health of Oklahomans and the surrounding population.
- Other areas of interest include but are not limited to:
  - Neurological disorders (chronic pain mechanisms, epilepsy, neurodegenerative disorders, cellular and immune response to drugs of abuse and neurotoxicology)
  - Brain injury
  - Genetics
  - Cardiovascular disease and stroke
  - Otitis media
  - Muscular disorders
- Clinical research has goals in prevention of high risk behaviors, diagnosis, and new treatments of diseases and their symptoms. Biomedical research involves projects by faculty and investigative teams of scientists who seek to translate molecular research into new medical therapies.

Oklahoma State Osteopathic Program: How Did They Achieve Their Goals?

Clinical Research

- The College has several ongoing trials testing the efficacy of new drugs in HIV/AIDS, cardiovascular diseases, upper respiratory illnesses, asthma, and otitis media (ear aches) in children. Testing of new antibiotics and vaccines is also ongoing. Original research is being conducted in topics such as psychological factors in cardiovascular disease, endocrine factors of post-partum depression, chronic sub-clinical infections and research and development of a patented system of delivery for cognitive rehabilitation exercises.
- Students are encouraged to supplement their medical education through research activities and are supported in part by the Student Research Fellowship Program through the Auxiliary to the Oklahoma Osteopathic Association.

The Center for Rural Health researches and applies for grants in

- Medical student education
- Rural physician practices
- Hospitals, clinics and other rural health care providers
- Improving quality
- Increasing access to health care

The Center specializes in assisting with the Federal Office of Rural Health Policy grants such as the Network and Outreach grant programs and offers grant writing assistance for other similar endeavors.

Technology Advancements: Telemedicine

- OSU is a leader in telemedicine technology, with the state's largest telemedicine network connecting physicians to patients via the Internet. This medical lifeline allows patients in non-metropolitan areas the same accessibility to specialized health care as those living in large cities.
- OSU medical students receive hands-on training in telemedicine, and the College was the first medical school in the nation to require telemedicine application for all its graduates. The OSU Telemedicine Network is currently linked to more than 24 locations throughout Oklahoma, with a goal of being connected to 55 communities in the next five years.

Oklahoma State Osteopathic Program : Follow-up Conversations

- **How do they support rural care needs?**
  - OSU serves as a statewide clearinghouse for rural health information.

- **How do they keep students and residents in state?**
  - They have a Center for Rural Health which oversees the rural rotations of third and fourth year medical students. The Center funds programs aimed at providing Oklahoma's rural practitioners, hospitals, and clinics with the support necessary to ensure access to quality health care for the state's rural residents. Many of these services are free and provide important information not readily available to most rural communities.

South Carolina Health Care Model

South Carolina Model: History/Background/Vision

- South Carolina Hospital Association (SCHA) is a private, not-for-profit organization made up of some 100 member hospitals and health systems and about 900 personal members associated with institutions.
- The South Carolina Hospital Association was created in 1921 to serve as the collective voice of the state's hospital community.

SCHA Mission Statement –

"SCHA's mission is to support its member hospitals in creating a world-class health care delivery system for the people of South Carolina by fostering high quality patient care and serving as effective advocates for the hospital community."

SCHA Vision –

"South Carolina's hospitals will be national leaders in improving the quality and safety of patient care, and SCHA will be a national leader in advocacy."

SCHA Credo –

"We are stronger together than apart."

South Carolina Model – Every Patient Counts: Basic Facts

- The **Every Patient Counts (EPC) partnership**, led by the South Carolina Hospital Association, Health Sciences South Carolina, Mothers Against Medical Error and PHT Services, Ltd., a provider of risk management, was created to advance patient safety and quality of care in every hospital in South Carolina.

- The **EPC vision** is that *all South Carolina hospitals and providers will deliver safe, high quality health care with care and compassion to each patient every time.*
  - The EPC partnership aims to establish a culture of continuous improvement in the quality, efficacy and safety of patient care across all health care organizations and providers statewide. These efforts rely on collaboration among South Carolina hospitals, as well as other partners throughout the state and, in many cases, the nation. The EPC partners recognize and appreciate the extraordinary efforts by all partners as they work toward the goal of providing the best and safest care delivered with consideration and compassion.

- SCHA Quality Advisory Council membership includes administrative and clinical leaders from member hospitals across the state who provide strategic guidance and direction to the SCHA Board and member hospitals in the areas of quality improvement and patient safety. The primary focus of this Council is to provide oversight for the SCHA Quality and Patient Safety Teams regarding the specific functions and activities related to the partnership, monitor the impact and value of this partnering effort for member hospitals and the patients they serve and guide the development of strategic alliances with other key health care system stakeholders in South Carolina.

EVERY PATIENT COUNTS
INSPIRATION + COLLABORATION = RESULTS

South Carolina Model: Issues/Goals

- **The South Carolina Hospital Association** actively strives to improve the future of health care. SCHA has set **goals to:**
  - Improve population health through preventive health initiatives
  - Improve the overall health care experience for patients
  - Decrease the per capita cost of care for all South Carolinians
- This focus has resulted in great achievements throughout the state, in terms of both health communities and bottom line savings.

SCHA South Carolina Hospital Association
every patient counts

- The **SCHA Quality Advisory Council**, responsible for providing oversight and direction for the **Every Patient Counts** initiatives, has set forth **four major system aims:**
  - Create an organizational culture of safety with engaged leadership.
  - Improve the quality and outcome of evidence-based medical care for key patient populations.
  - Eliminate preventable, serious adverse events and unintended patient harm.
  - Establish a patient-centered environment of care with open and transparent communication.

*South Carolina was ranked by the federal government in 2010 as one of the **top five states** in making the most improvement in the quality and safety of health care. Well known for top programs in cancer and pediatrics, the state is now being recognized for recent achievements in the care of heart attack patients and reducing hospital-acquired infections with all points of patient contact.*

South Carolina Model – Every Patient Counts: How Did They Achieve Their Goals?

- **SC Institute for Healthcare Improvement (IHI) Open School**
  - The SCHA has partnered with IHI to provide all SC hospitals and their staff and physicians direct access to this same catalogue of online courses through IHI's Open School Program. South Carolina is the first state to ever develop such a partnership with IHI, and as the pilot state, has negotiated an extremely attractive annual rate for each hospital based on bed size. This annual fee will give the hospital full online access to all IHI Open School courses, education credits for each health professional for successful course completion and the opportunity for staff and physicians to gain IHI's basic and advanced certification.

- **SC Mission Lifeline**
  - Improves the health care system's readiness and response time for heart attack patients. The goal is to swiftly open blocked arteries since every minute is critical to saving blood-deprived heart muscle. South Carolina hospitals have reduced the statewide response time by over 30 minutes, making it one of the top states for rapid treatment.

- **Safe Surgery 2015: South Carolina**
  - Recognizing South Carolina's unique collaborative approach to health care safety and the successful results, Dr. Atul Gawande, a worldwide leader in patient safety, selected South Carolina to partner with him on a surgical safety initiative. All 61 acute care hospitals in the state have committed to implementing the World Health Organization's Surgical Safety Checklist as a routine component of surgical care. The goal is to put it in place in every operating room in South Carolina for every surgical patient.
  - At least 500 of the 5,000 patients who die each year following surgeries in South Carolina hospitals should be saved, along with an estimated $28 Million, if his pre-surgery checklist is only minimally successful, Gawande estimates.

South Carolina Model – Every Patient Counts: How Did They Achieve Their Goals?

- **Grime scene investigators: South Carolina**
  - South Carolina is the first state in the United States to embark on a statewide hand hygiene campaign in partnership with the World Health Organization (WHO).
- **Infection Prevention**
  - The **South Carolina Healthcare Alliance for Infection Prevention (SCHAIP)** is a collaborative partnership of South Carolina organizations, including SCHA, dedicated to the reduction and elimination of health care associated infections (HAIs) in South Carolina. SCHAIP is the action arm for quality improvement communication, education and data management/analysis while working in concert with the Health Information Disclosure Act (HIDA) Advisory Committee.
  - The results of the **Stop Blood Stream Infections** pilot project have been exceptional. South Carolina hospitals have reduced life-threatening blood stream infections by 30 percent and central line infections by 34 percent over the past two years. Nationally, the reduction rates for the same type of infections were 21 percent and 24 percent, respectively, over that time period. This two year collaboration involves 20 SCHA member hospitals, comprising of 40 teams.
- **SC Cares**
  - **South Carolina Comprehensive Adverse event and Response Evaluation System**
  - The overarching goal of SC CARES is to help participating South Carolina hospitals reduce the number of medical errors and harmful patient events and reduce associated medical liability claims and costs.
  - The purpose of SC CARES is to develop a customized model system for South Carolina hospitals to report and investigate near misses and adverse events, disclose those events that result in significant patient harm, track rates and patterns of events/harm and effectively reduce adverse events through performance improvement and education.

Table of Contents

Asset Mapping – Introduction

Asset mapping is an exercise to develop a better understanding of the resources within a state that could be mobilized to bring about economic development. To understand the potential of a particular asset and to make future plans, it is important to benchmark comparable states.

Asset Mapping Methodology

- **Determine Critical Success Factors:** Every industry has driving forces and factors that determine its success. With insights developed through our past projects, and by conducting industry research, we were able to group factors under five categories. These categories are –
  - Labor and talent availability
  - Cost of labor
  - Industry concentration
  - Infrastructure
  - Growth potential
- **Determine Industry Sectors:** From our interviews and further research, we determined we should focus on four main industry sectors affiliated with and related to health care. These industry sectors include the following –
  - Pharmaceutical
  - Medical Devices, Equipment and Supplies Manufacturing
  - BPO and Back Office
  - Biotech R&D
- **Exceptions:** Hospitals, Clinics, and Professional Medical Offices were not considered for this study because they constitute a highly fragmented industry that has different demand drivers. The need for health care professionals is covered in a later section.

Asset Mapping Overview

In order to evaluate the relative standing of Mississippi with respect to other Blueprint States, we have benchmarked the critical success factors of each industry.

	Industry Group	Labor/Talent Availability	Cost of Labor	Industry Concentration	Infrastructure	Growth Potential
1	• Medical Devices • Medical Equipment • Medical Supplies	• Adv. Mfg. Workers • Assembly Workers • General Mfg	Wages	Percent of manufacturing sector	• Air Freight • Distributors	State Labor Growth in Industry
2	Health care BPO • Claims Processing • Health Care Administration • Electronic Medical Records	• Claims Processors • Med Records Administration • Coding Technicians	Wages	Percent of Health Care Administration Sector	• Broadband	State Labor Growth in Industry
3	• Biotech Products • Biotech R&D	• Biomed Engineers • Biochemists • Bioinformatics Analysts	Wages	Percent of R&D Sector	• Research Universities • Teaching Hospitals	State Labor Growth in Industry
4	Pharmaceuticals • Manufacturing • Distribution	• Biochemists • Pharmacologists • Warehousing Workers	Wages	• Percent of Manufacturing • Percent of Warehousing Sector	• Distributors	State Labor Growth in Industry

Sectors and Sub-Sectors

Assets that would enable Mississippi to attract businesses in the health care and medical realm have been mapped by Industry Groups and Employment Categories that fall under those groups. Professional Offices and Centers & Services were not included in this section of analysis.

Manufacturing	Wholesale & Distribution	BPO and Back Office	Biotech R&D	Professional Offices	Centers & Services
•Medicinal and Botanical Products	•Medical, Dental, and Hospital Equipment	•Data processing, hosting	•R&D in Biotechnology	•Physicians (Not Mental Health)	•Outpatient Mental Health and Substance Abuse Centers
•Pharmaceutical Preparation	•Drugs and Druggists' Sundries	•Insurance Claims Processing	•R&D in Engineering and Life Sciences	•Mental Health Practitioners	•All Other Outpatient Care Centers
•Biological Product (except Diagnostic)		•Administrative & Support Services		•Physical, Occupational and Speech Therapists	•Medical Laboratories
•Optical Instrument and Lenses				•Miscellaneous Health Practitioners	•General Medical and Surgical Hospitals
•Electro-medical Apparatus					•Homes for the Elderly
•Analytical Laboratory Instrument					•Emergency and Other Relief Services
•Irradiation Apparatus					•Diet and Weight Reducing Centers
•Measuring and Controlling Devices					
•Magnetic and Optical Recording Media					
•Surgical and Medical Instruments & Supplies					

Key Findings

Mississippi's asset strength needs to be viewed in the context of its population and largely rural character. Low cost structure is a competitive advantage but can only be attractive when combined with availability and quality of workforce.

Pharmaceutical Industry:

- By 2010 Mississippi had lost 19 percent pharmaceutical jobs from its base in 2001. Most of this reduction coincided with the financial crisis in 2008-09 before which the trend was positive. However, Alabama had rapid growth during the same period, a phenomenon that needs to be studied for pointers towards future strategy.
- Mississippi has the lowest pharmaceutical wage structure among all Blueprint States. Low cost manufacturing could be a positioning that Mississippi could adopt if it fits with its total market strategy.

Medical Devices, Equipment and Supplies:

- South Carolina has benefited from the halo effect of North Carolina and Georgia's success as centers of Medical Devices manufacturing. Mississippi might be able to provide a lower operating cost structure to companies that could access resources in Alabama, Tennessee and even Texas.
- Nearly all states have been losing workforce in Medical Device and Equipment Industry, which suggests that the industry as a whole has reduced jobs over the last decade, possibly moving them overseas for cost reduction. Mississippi could compete for some of the higher value adding jobs with one of the lowest operating cost structures among Blueprint States.

Key Findings

Although lower cost structure is important to attract investment, moving up the value chain is equally important for Mississippi.

BPO and Back Office Industry:

- Although back office work in Mississippi grew by 100%, the starting base was very small and therefore the industry concentration of BPO and Back Office services remains very low. Since cost is of paramount importance to Back Office operations, Mississippi can compete in this field quite effectively, provided it has the workforce available for the industry.

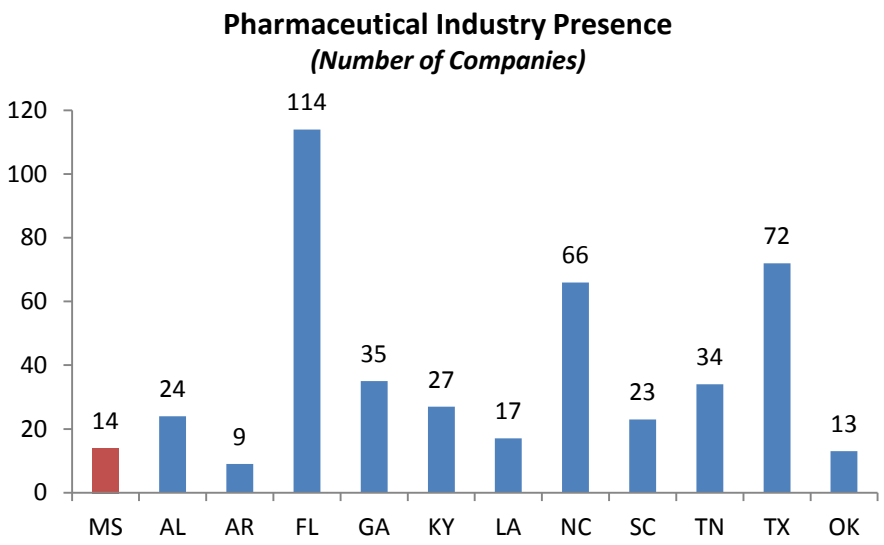
Biotech R&D:

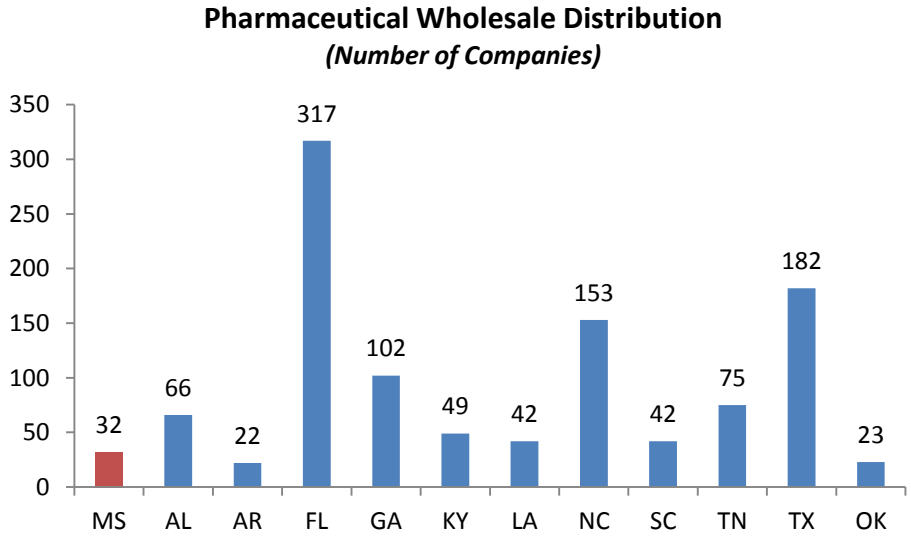
- In absolute terms, Texas attracts by far the most funding among Blueprint States. When normalized on a per capita basis, North Carolina and Texas have led the field for the past decade. However, in the past few years, Alabama has attracted more funding than any other Blueprint State on a per capita basis.
- Mississippi is not a significant competitor in the Biotech R&D space yet. Its average R&D wage dropped slightly over the last ten years while similar wages in leading R&D states like North Carolina, Texas and Tennessee increased substantially. This might suggest increasing employment of lower level technicians or junior researchers in Mississippi and higher level research in leading Blueprint States.

Pharmaceutical Manufacturing and Distribution

Pharmaceutical – Industry Presence

Florida has the highest concentration of Pharmaceutical Industry followed by Texas and North Carolina among Blueprint States. Mississippi has a smaller presence of the industry, including wholesale distribution but leads Arkansas and Oklahoma.





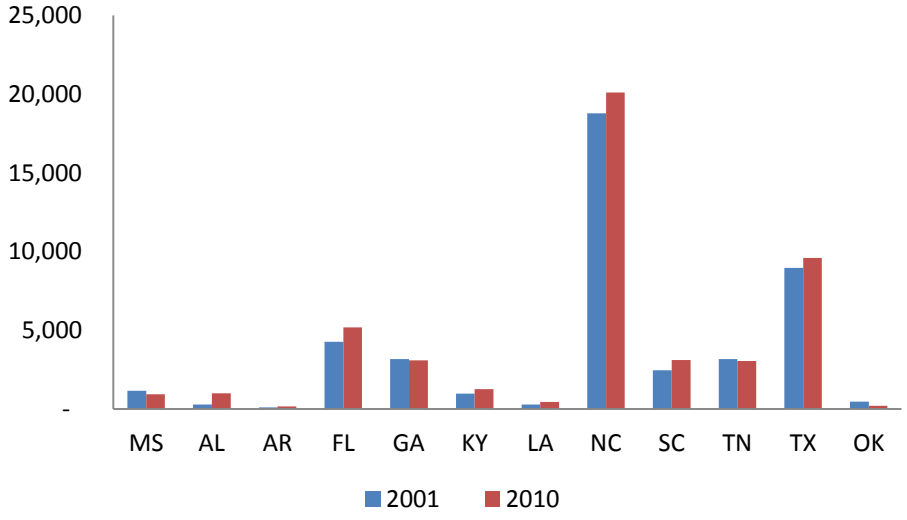
If Florida, Texas and North Carolina are considered outliers, then the presence of Pharmaceutical industry in Mississippi is somewhat proportionate to population size.

Source: Bureau of Labor Statistics & Info USA (2011)

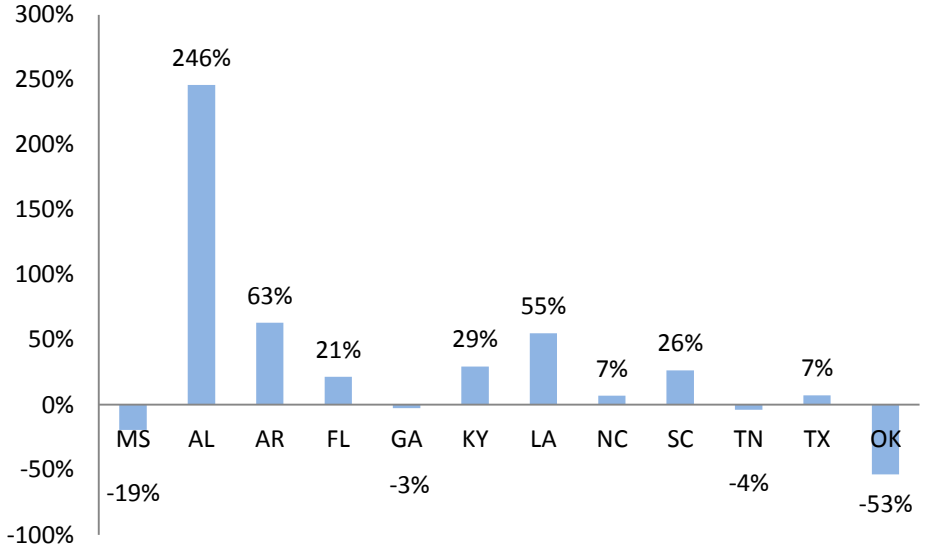
Pharmaceutical – Industry Growth

Mississippi lost 19% of its Pharmaceutical workforce over ten years whereas comparable Blueprint States like Alabama, Arkansas and Louisiana have made substantial gains. Most of this loss was in the post financial crisis economy before which the trend was positive. In 2008, Mississippi pharmaceutical industry employment stood at 1,237.

Pharmaceutical Employment Growth



% Change in Pharma Employment



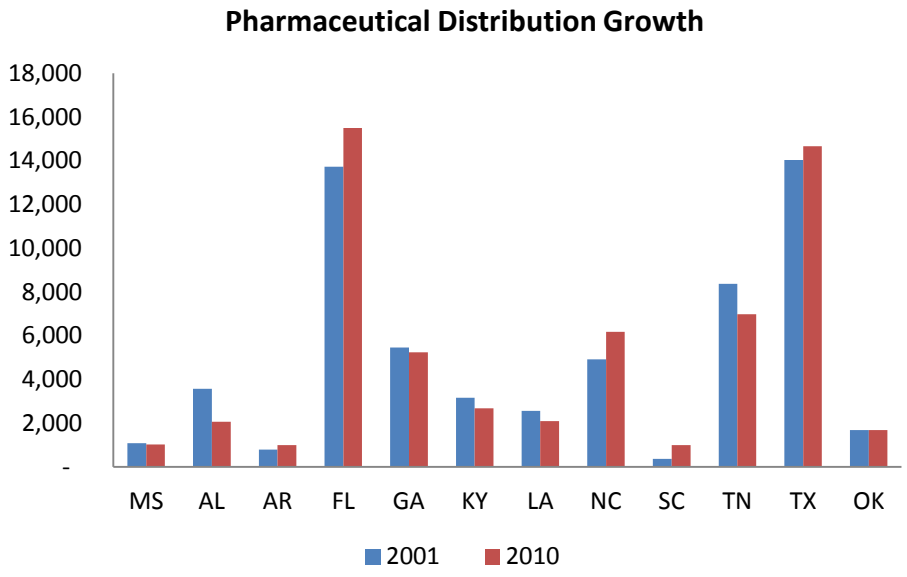
PHARMA MANUFACTURING		MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Pharma Employment	2010	930	993	173	5,186	3,089	1,256	448	20,100	3,110	3,047	9,600	215
Pharma Employment	2001	1,153	287	106	4,272	3,171	970	289	18,780	2,460	3,168	8,960	462
Change 2001-2010		-19%	246%	63%	21%	-3%	29%	55%	7%	26%	-4%	7%	-53%

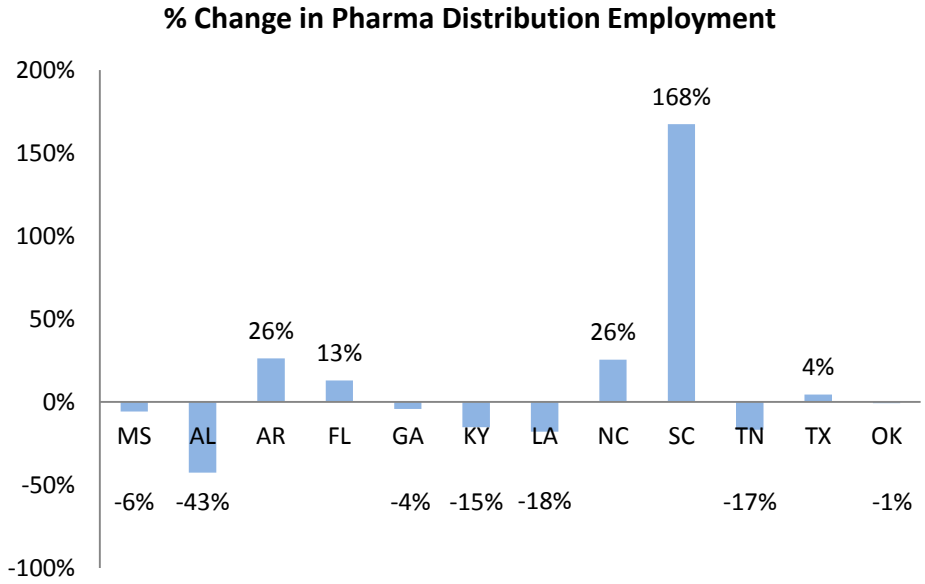
Alabama experienced growth even during the financial crisis. It is important to study if workforce and employers moved to Alabama, and identify what did Alabama do differently during the crisis.

Source: Bureau of Labor Statistics

Pharmaceutical – Distribution Access

Apart from workforce and cost structure, the most important success factor for Pharmaceutical companies is access to distribution channels. Distribution employment fell slightly in Mississippi.





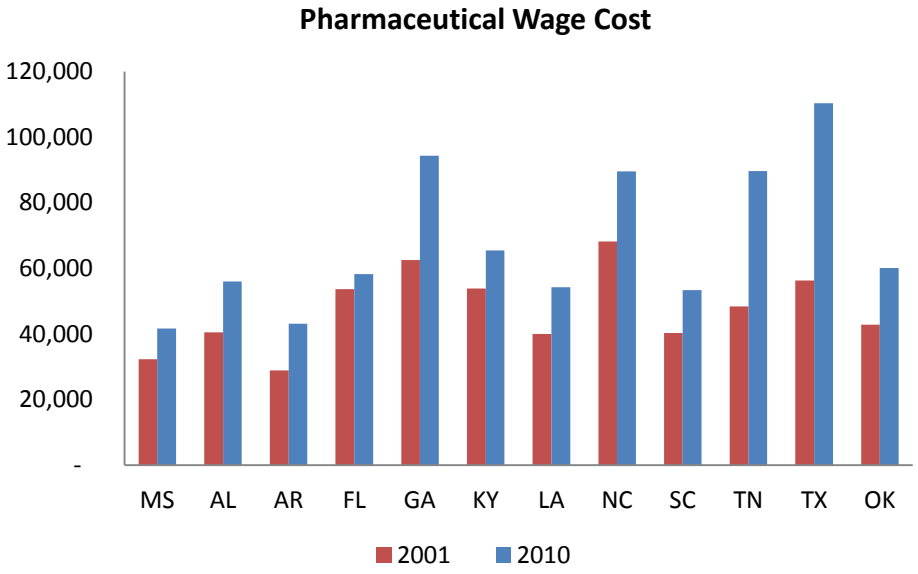
PHARMA DISTRIBUTION		MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Dist. Employment	2010	1,027	2,057	993	15,506	5,241	2,677	2,100	6,180	990	6,975	14,661	1,678
Dist. Employment	2001	1,089	3,578	786	13,726	5,465	3,155	2,555	4,920	370	8,374	14,034	1,690
Change 2001-1010		-6%	-43%	26%	13%	-4%	-15%	-18%	26%	168%	-17%	4%	-1%

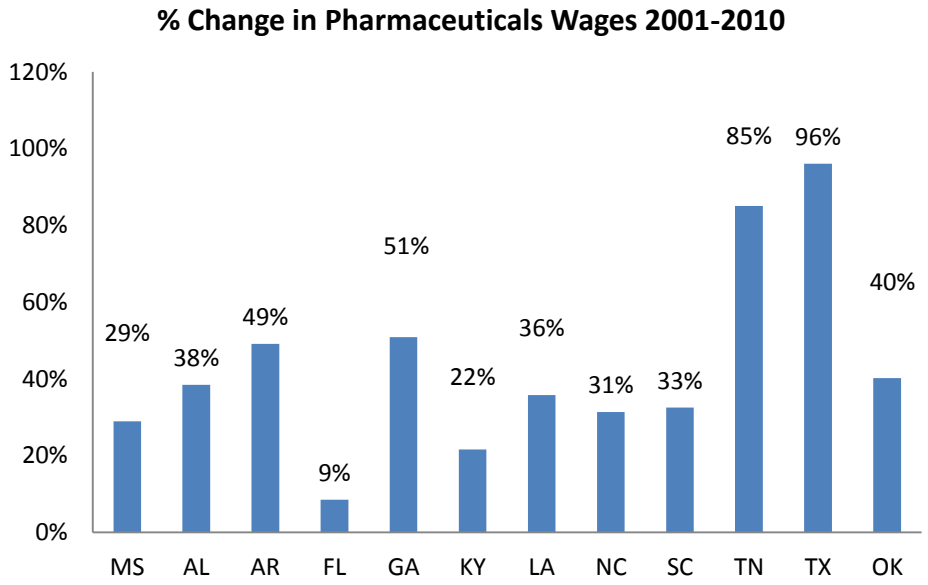
While Alabama's pharmaceutical manufacturing grew rapidly, its distribution workforce shrank just as substantially.

Source: Bureau of Labor Statistics (2010)

Pharmaceutical – Wage Cost Structure

Wages rose in every Blueprint state with Texas, Tennessee and Georgia experiencing very high wage increases. On the other hand, Mississippi's wage increase has kept pace with inflation. North Carolina, where wages were the highest, also experienced substantial increases.





Pharma Mfg		MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Avg Annual Pay	2010	41,614	56,000	43,071	58,235	94,363	65,443	54,269	89,590	53,360	89,624	110,338	60,057
Avg Annual Pay	2001	32,263	40,450	28,880	53,641	62,534	53,825	39,957	68,210	40,266	48,418	56,274	42,832
Change 2001-2010		29%	38%	49%	9%	51%	22%	36%	31%	33%	85%	96%	40%

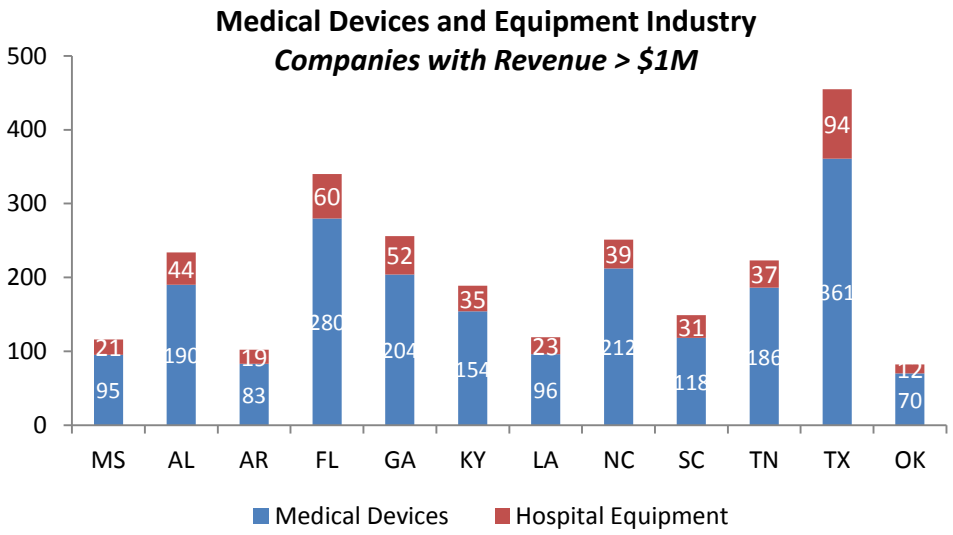
States that have seen substantial increases in wages have most likely specialized in higher order functions, such as research and drug discovery, and have moved rapidly up the value chain. It seems that Mississippi has maintained its pharmaceutical workforce as direct labor to retain its position as a low cost destination.

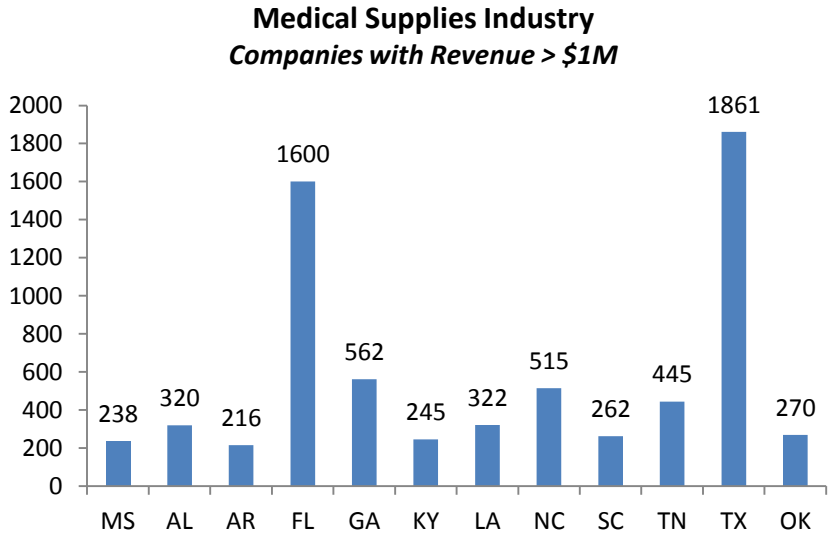
Source: Economic Research Institute

Medical Devices, Medical Equipment and Hospital Supplies

Medical Devices, Equipment and Supplies – Industry Presence

Texas, Florida, North Carolina and Georgia form the top tier of Medical Device industry among Blueprint States. Mississippi competes well in both Medical Devices and Medical Supplies if compared with relatively similar sized states.





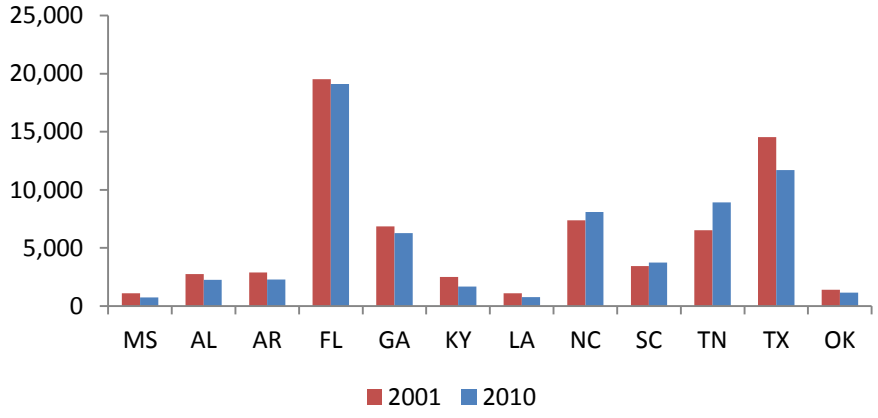
Among states of comparable size, Alabama has been relatively and proportionately more successful in growing its Medical Devices cluster. It would be advisable to study what Alabama has done compared to Mississippi to attract and retain these businesses.

Source: Bureau of Labor Statistics & Info USA (2011)

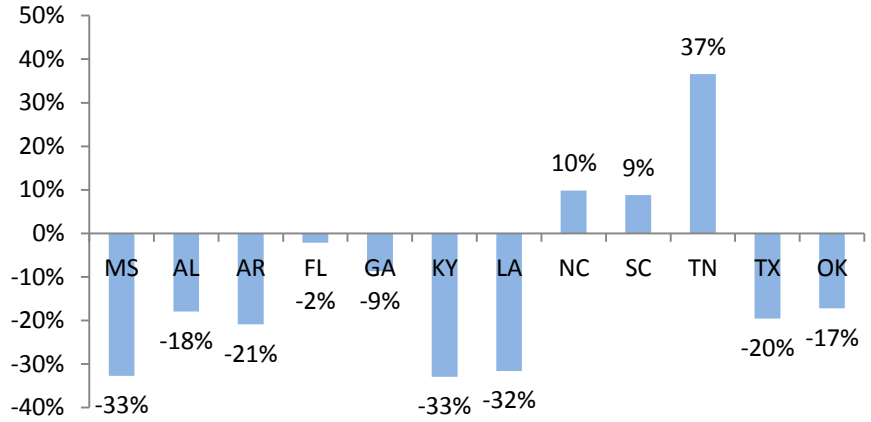
Medical Devices, Equipment and Supplies – Industry Growth

Other than the Carolinas and Tennessee, all Blueprint States have lost ground in the Medical Device and Equipment Industry. Florida has more or less retained its workforce, which is commendable considering its size. Mississippi, Alabama, Arkansas, Louisiana, Kentucky and Oklahoma have had significant reduction in Medical Devices workforce.

Medical Device Industry Employment



% Change in Medical Device Employment 2001-2010



Medical Device, Equipment and Supplies Mfg	NAICS: 3345												
Employment		**MS**	**AL**	**AR**	**FL**	**GA**	**KY**	**LA**	**NC**	**SC**	**TN**	**TX**	**OK**
Medical Device & Equipment	2010	730	2,252	2,288	19,116	6,264	1,666	754	8,094	3,730	8,917	11,690	1,150
Medical Device and Equipment	2001	1,085	2,746	2,893	19,541	6,859	2,486	1,103	7,371	3,429	6,529	14,534	1,389
Change 2001-2010		-33%	-18%	-21%	-2%	-9%	-33%	-32%	10%	9%	37%	-20%	-17%

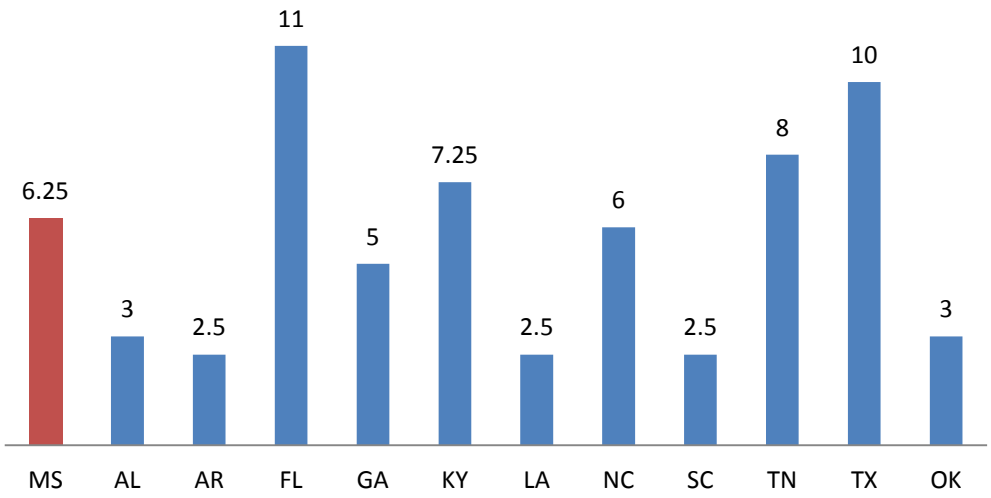
Most states losing jobs in Medical Device and Equipment Industry have been experiencing this reduction since 2005. Since this is not a recent trend, it is important to see if these jobs have moved overseas or to other states like Tennessee.

Source: Bureau of Labor Statistics

Medical Devices, Equipment and Supplies – Air Freight Access

Medical Device and some equipment manufacturers tend to prefer air freight since their goods are not bulky. Mississippi is very well placed among the Blueprint States as it can access very large air freight terminals in Memphis and New Orleans with a smaller airport in Jackson.

Air Cargo Capabilities
(Relative Scores Based on Tons per Year)



SCORING CRITERIA (Based on Tons)

1M+	5
500K-1M	4
250K-500K	3
50K-250K	2
<50K	1

WEIGHTING CRITERIA

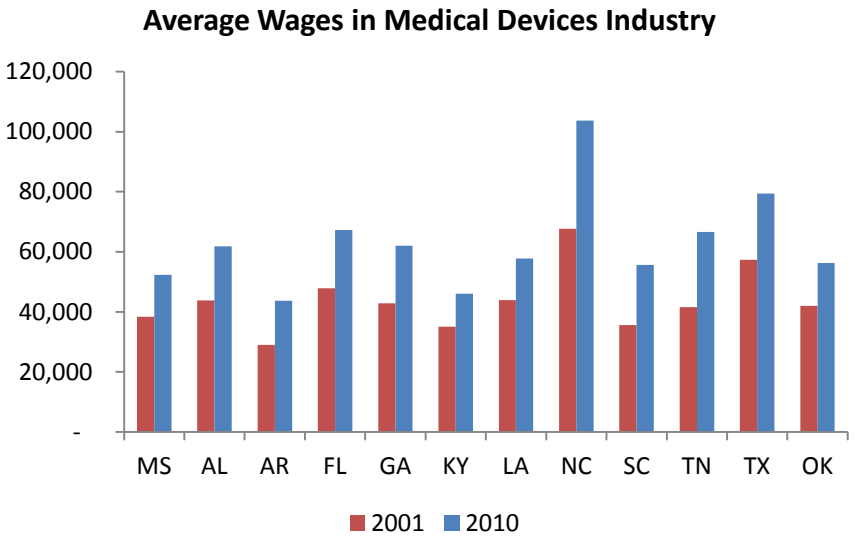
1	If the Airport is in the state
0.75	If the Airport is just over the border
0.5	If the Airport is within 2 hours in adjoining state

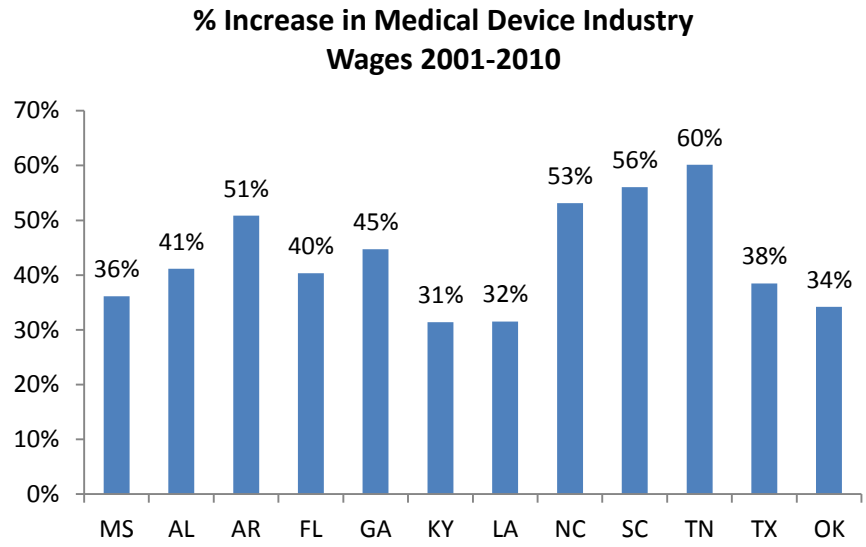
Highlight this point as positive Along with proximity to ports of Biloxi and Mobile, access to Memphis and New Orleans air freight gives Mississippi a great advantage over many of the Blueprint States. Only Florida and Texas surpass it by a significant margin.

Source: Airport Council International – North America

Medical Devices, Equipment and Supplies – Wage Cost Structure

Wages rose in every Blueprint state but in absolute terms, North Carolina experienced the most substantial increase, which could be because of functions higher in the value chain. Arkansas and Kentucky are the lowest cost alternatives with Mississippi close behind.





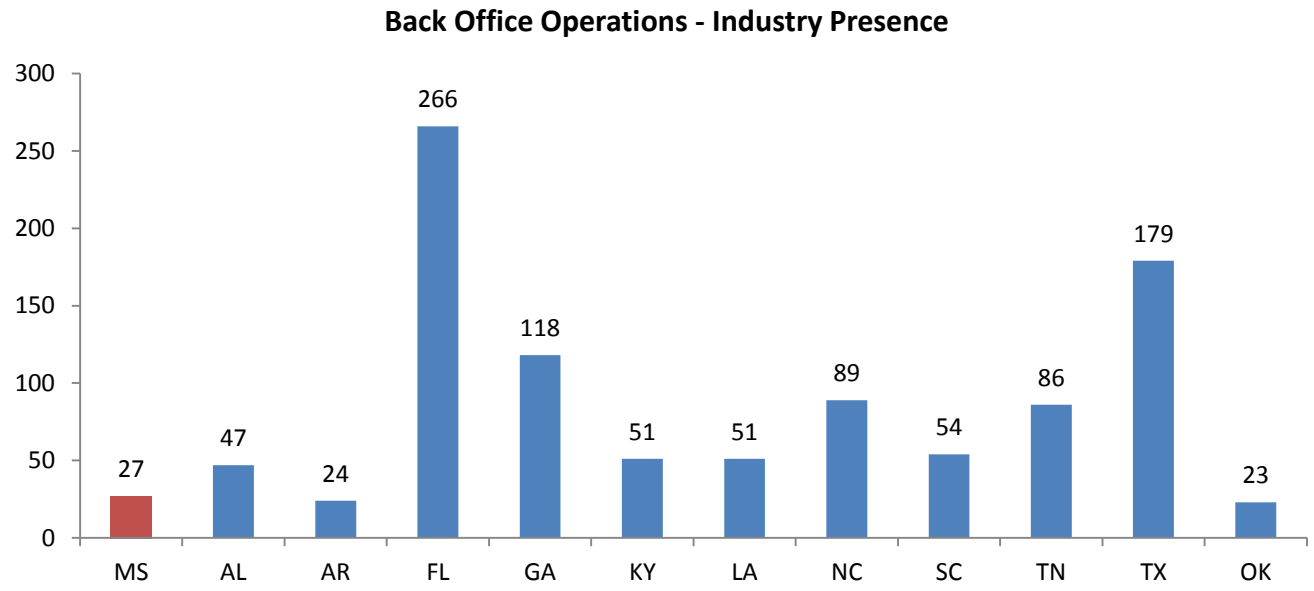
	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
2010	52,314	61,791	43,729	67,204	61,982	46,037	57,790	103,708	55,590	66,583	79,436	56,292
2001	38,425	43,770	28,992	47,892	42,822	35,036	43,934	67,718	35,622	41,585	57,374	41,954
	36%	41%	51%	40%	45%	31%	32%	53%	56%	60%	38%	34%

Source: Economic Research Institute

BPO and Back Office Services

BPO & Back Office – Industry Presence

Florida and Texas appear to have the highest number of back office operations, some of which might serve the large health care industry in these states. Mississippi is a much smaller competitor along with Oklahoma and Arkansas. Kentucky has the highest industry concentration of all Blueprint States.



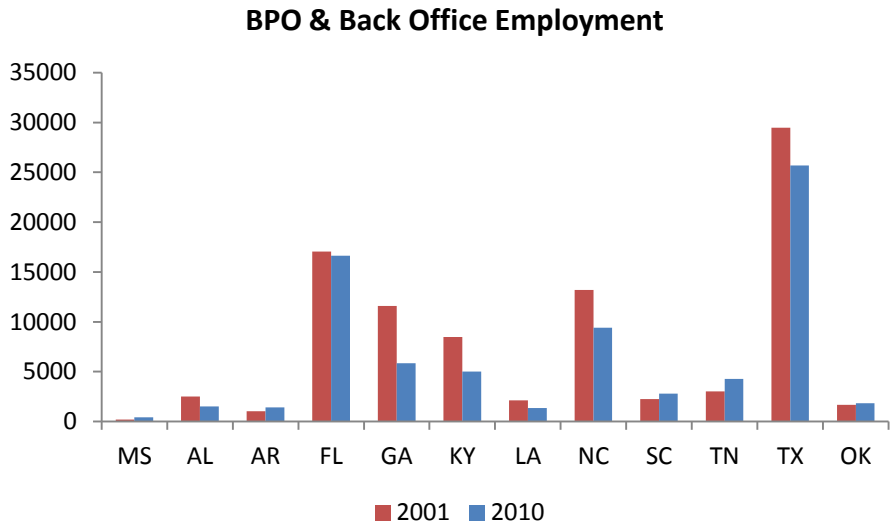
Industry Concentration

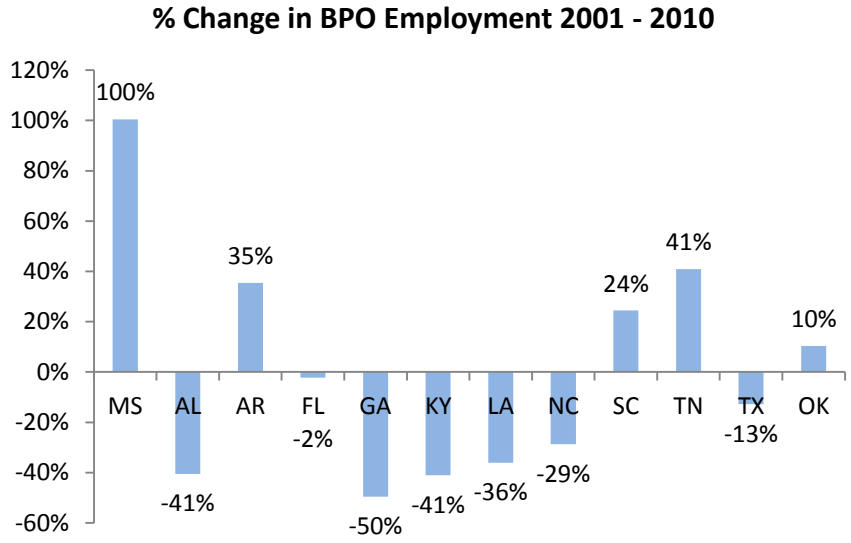
MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
50161	101162	54724	561997	266291	102892	82276	232373	131493	179381	658786	95646
1%	1%	3%	3%	2%	5%	2%	4%	2%	2%	4%	2%

Source: Bureau of Labor Statistics & Info USA (2011)

BPO & Back Office – Industry Growth

In terms of total employment, Texas has the largest workforce in BPO, an industry that declined in the State. Mississippi has the smallest Back Office industry among Blueprint States but it doubled in workforce in the last ten years.



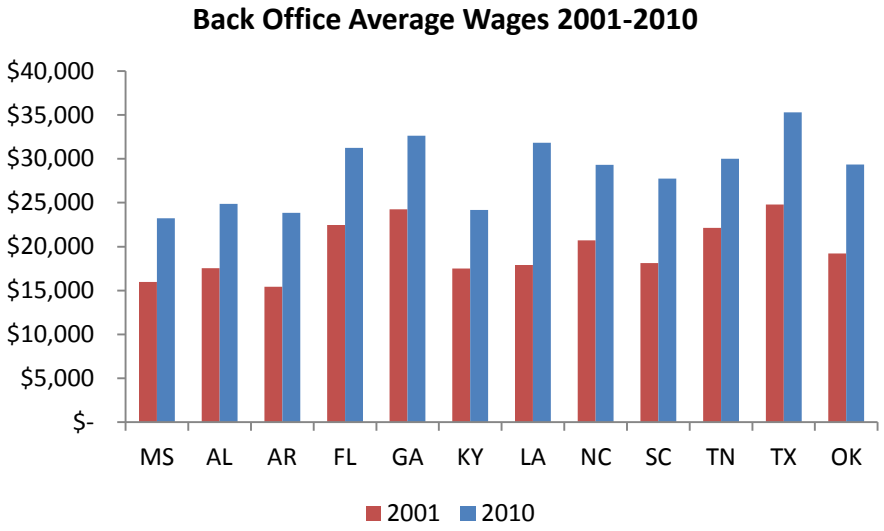


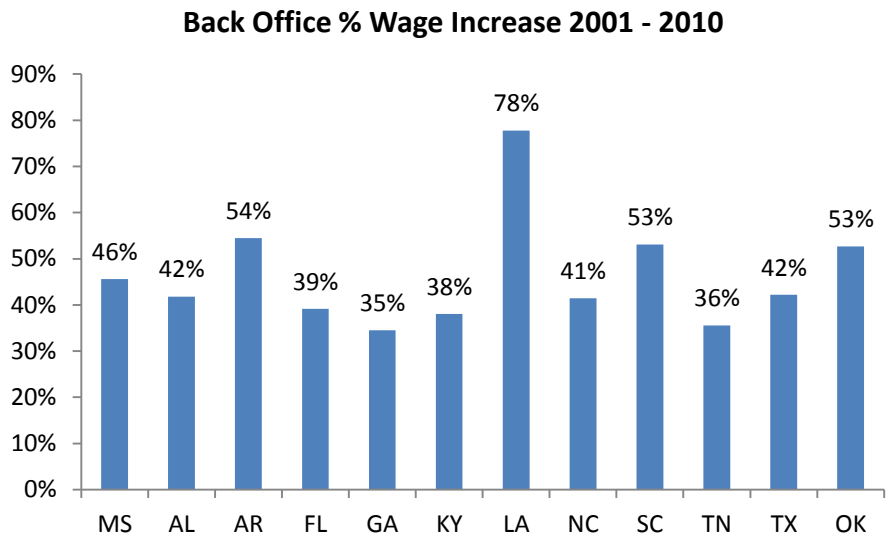
Florida has the highest number of back office operations but a smaller workforce in the industry compared to Texas. This implies that the average operation in Florida is much smaller than those in Texas.

Source: Bureau of Labor Statistics

BPO & Back Office – Wage Cost Structure

Mississippi, along with Alabama, Arkansas and Kentucky, are the lowest cost destinations for back office operations. Cost is the most critical success factor for back office operations, this is a competitive advantage if combined with availability and quality of workforce.





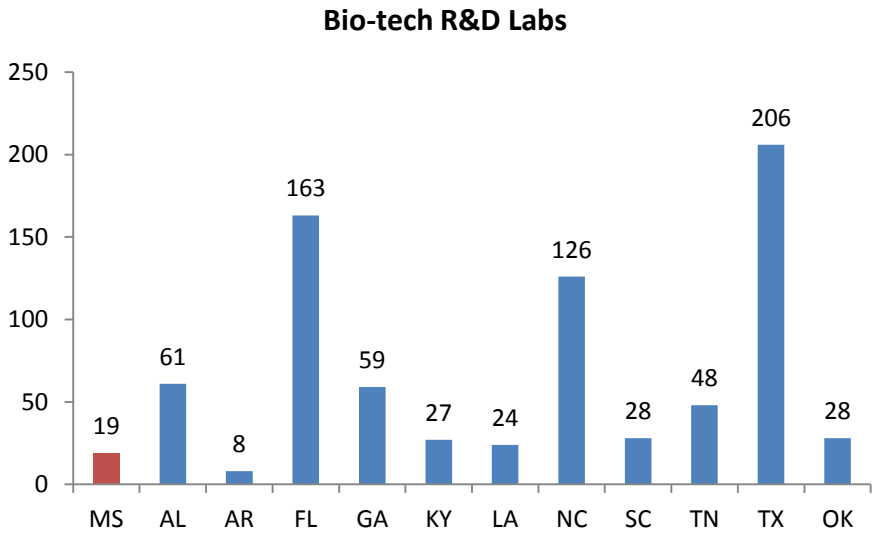
Louisiana saw a very steep increase in its back office wages taking it closer to the higher wage Blueprint States such as Texas, Georgia and Florida. Mississippi's increase in wages has kept pace with inflation but has not increased further. This suggests that the nature of back office work in Mississippi has also not changed.

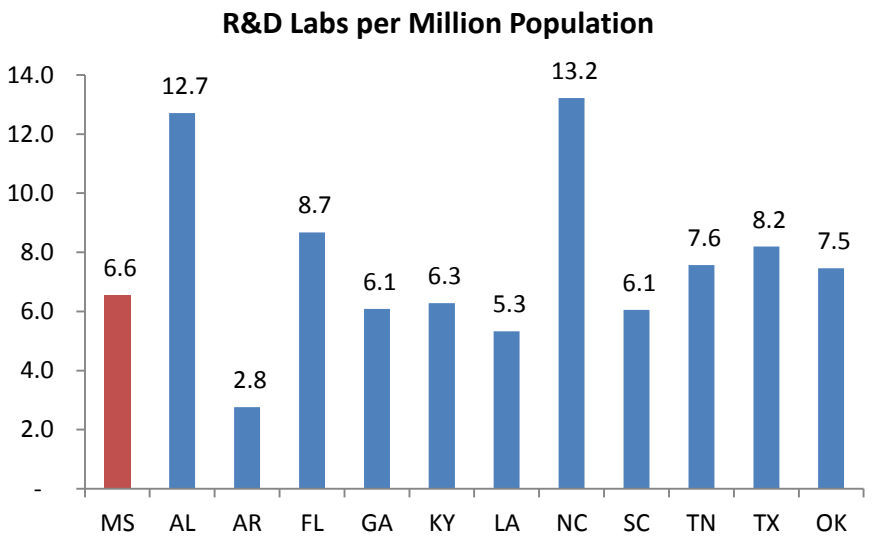
Source: Economic Research Institute

Biotech Research & Development

Biotech R&D – Industry Presence

Texas, Florida and North Carolina lead in Biotech Research and Development among the Blueprint States. However, on a per capita basis, Mississippi is middle of the pack although slightly below average of 7.6.



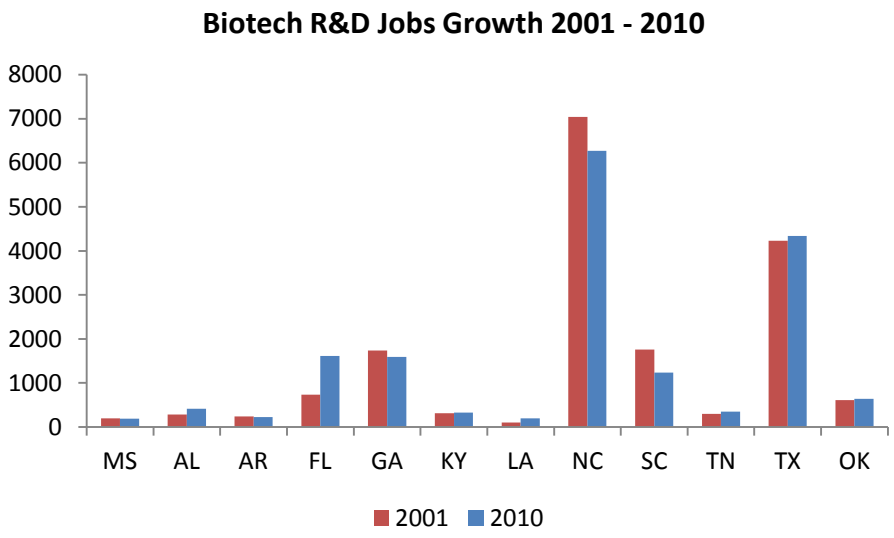


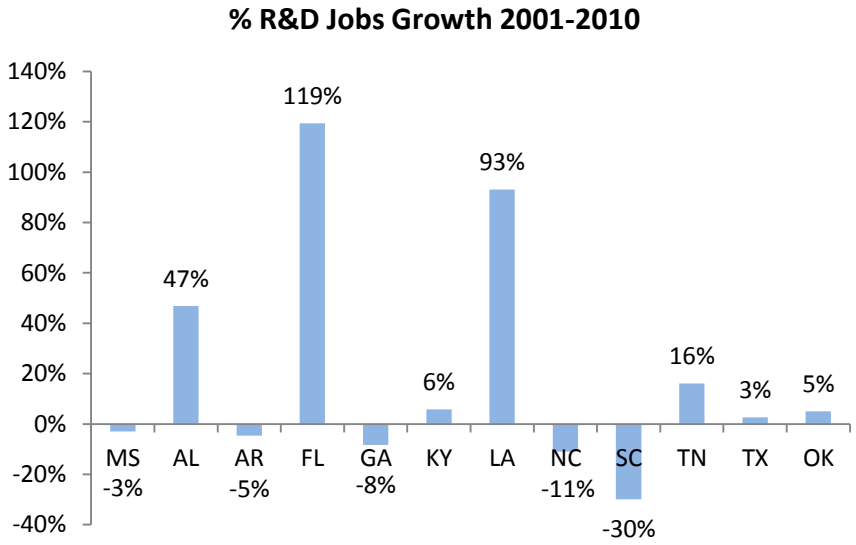
Proportionate to its population and size of the economy, Mississippi does not lag too far behind the other states. Mississippi can compete with the leading Blueprint States as long as it provides the infrastructure and workforce for R&D.

Source: Bureau of Labor Statistics & Info USA (2011)

Biotech R&D – Industry Growth

North Carolina dominates all Blueprint States in Biotech R&D, followed by Texas in a distant second spot. Florida, Georgia and South Carolina also have significant R&D activity. Mississippi is not a significant player in Biotech R&D.



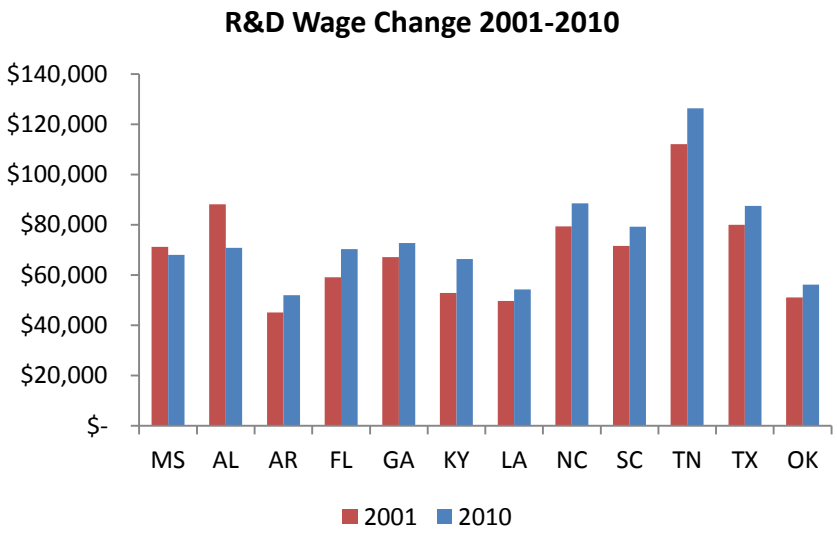


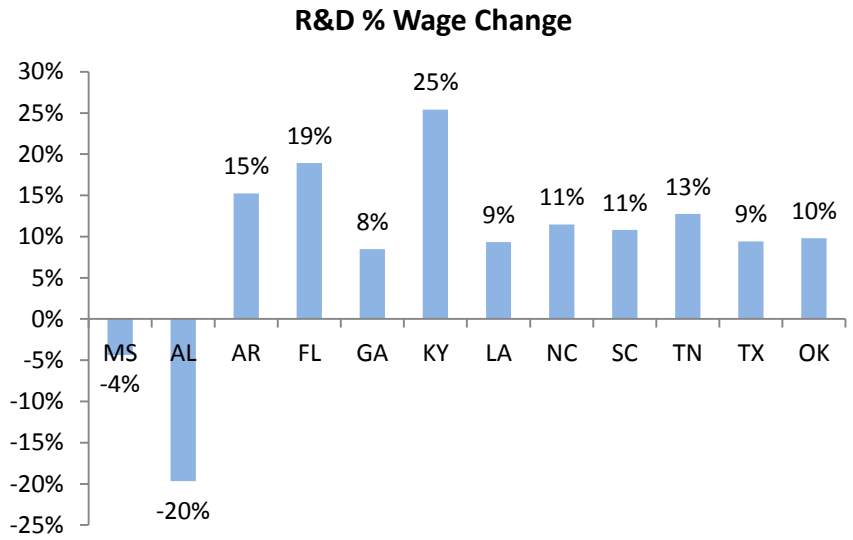
Although North Carolina experienced a recent drop in R&D related workforce, it is far ahead of its competition among the Blueprint States. Concentration of large research universities, teaching hospitals and technical talent in Research Triangle Park has created an ecosystem that is attractive to R&D units.

Source: Bureau of Labor Statistics

Biotech R&D – Wage Cost Structure

Average Biotech R&D industry wage across all Blueprint States is $74,300. However, Tennessee, North Carolina and Texas have much higher average wage while Arkansas, Louisiana and Oklahoma have the lowest average.





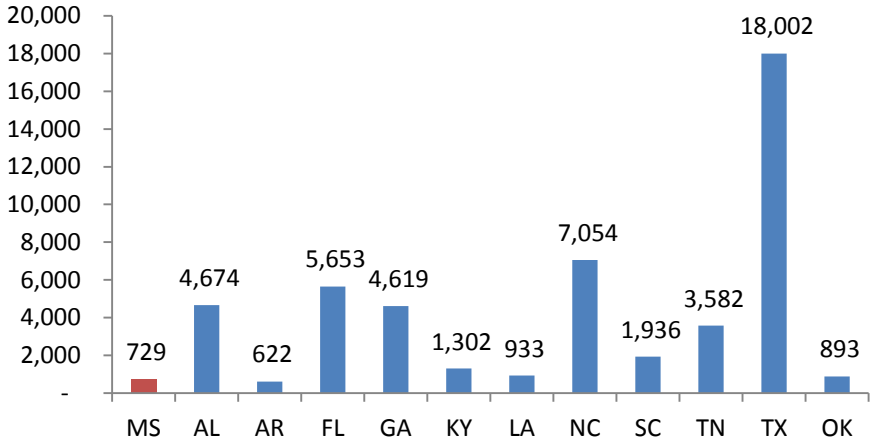
Alabama and Mississippi were the only two states that saw a drop in their average R&D wage. Usually more jobs created at a technician level lower average wages and addition of senior researchers increase average wages. Tennessee has had high wages for at least a decade, which could mean more PhDs doing Biotech research in universities and teaching hospitals. Mississippi has a moderate average that suggests an even mix of research positions.

Source: Economic Research Institute

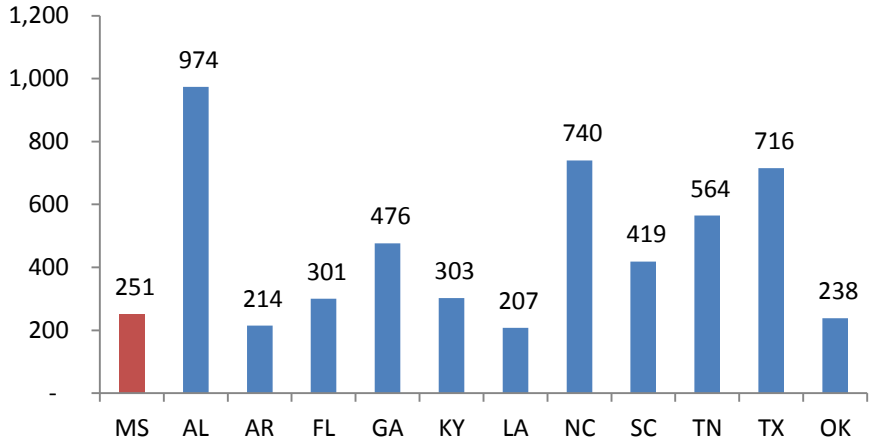
Biotech R&D – Funding

In absolute amount, Texas attracts the most funding for R&D in Health Care related fields. However, when normalized to reflect the size of the state and its resources, Alabama rises to the top due to very substantial investments made in 2010 by the Federal Government.

Total R&D Funding ($Millions)
Includes Federal, Industry and Universities



R&D Funding Per Capita ($)
Includes Federal, Industry and Universities



If recent federal investment in Alabama is considered an outlier, then North Carolina and Texas are the undisputed magnets for R&D funding. Mississippi has very low levels of funding on both absolute and per capita bases, only marginally better than Arkansas, Louisiana and Oklahoma.

Source: National Institute of Health

Research & Development Incentives

Research and Development Incentives

State	Program Name	Incentive	Requirements	Additional Information
Alabama	Certified Capital Company Program (CAPCO)	Venture capital funds	❖ Headquartered in AL or will be relocated to AL ❖ Principal business operations in AL or will be relocated to AL ❖ Have no more than 100 full-time employees, and 80% of employees are in AL or 80% of payroll is paid to employees in AL	❖ CAPCO financing, an alternative to conventional bank financing, can accommodate a slightly higher risk profile and provide a more flexible structure for growing businesses
Arkansas	University Based R&D	33% income tax credit	❖ Eligible business that contracts with one or more AR colleges or universities in performing research	❖ Tax Credit limited to qualified research expenditures
	In-House Research and Development	20% income tax credit	❖ New and existing eligible businesses that conduct "in-house" research that qualifies for federal R&D tax credits	❖ Tax Credit limited to qualified research expenditures ❖ Credit earned may be used to offset 100% of the businesses' state income tax liability
	R&D in Area of Strategic Value	33% income tax credit	1) In-house research in an area of strategic value: ❖ fields with long-term economic or commercial value to AR ❖ have been identified in the R&D plan 2) R&D project offered by the AR Science and Technology Authority.	❖ Tax Credit limited to qualified research expenditures ❖ Maximum credit of $50,000 allowed per tax yr.
Florida	High Impact Performance Incentive Grant (HIPI)		❖ R&D facility must create min 25 new full-time jobs in Florida and make a cumulative investment of min $25M in a 3-yr period.	❖ Must operate within high-impact portions of the sectors: clean energy, headquarters, financial services, life sciences, semiconductors and transportation equipment manufacturing
Georgia	Job/Investment Tax Credits	Job tax credits: $750 to $4k /job each yr for 5 yrs	❖ Available to a business or to its headquarters engaged in any of the allowed 6 categories: - Manufacturing - Telecommunications - Warehouse Distribution - R&D - Processing and Tourism	❖ Taxpayers may choose between job tax credits or investment tax credits.
Kentucky	Kentucky Business Investment (KBI)	Income Tax Credit and Wage Assessments	❖ New and existing agribusinesses, regional & national headquarters, manufacturing , and non-retail service or technology related companies that locate or expand operations in KY.	
	Kentucky Reinvestment Act (KRA)	Income Tax Credit	❖ Existing KY company engaged in manufacturing and related functions on a permanent basis for a "reasonable period of time."	❖ Invests must be in eligible equipment and related costs of at least $2,500,000.
Louisiana	Louisiana FastStart™	Workforce development program	❖ Must create at least 15 jobs.	❖ Workforce recruitment, screening, training development and training delivery to eligible, new or expanding companies – all at no cost
	Research and Development Tax Credit	Refundable tax credit of up to 40%	❖ Credit depends on the number of LA resident employees. ❖ Companies with R&D expenses may receive credits against state income and corporate franchise taxes. ❖ Companies whose R&D tax credits exceed their tax liabilities receive a refund from the state.	❖ Available to businesses that conduct research and development activities (or secure certain federal SBIR/STTR grants)

Source: Respective Economic Development Entities

Research and Development Incentives

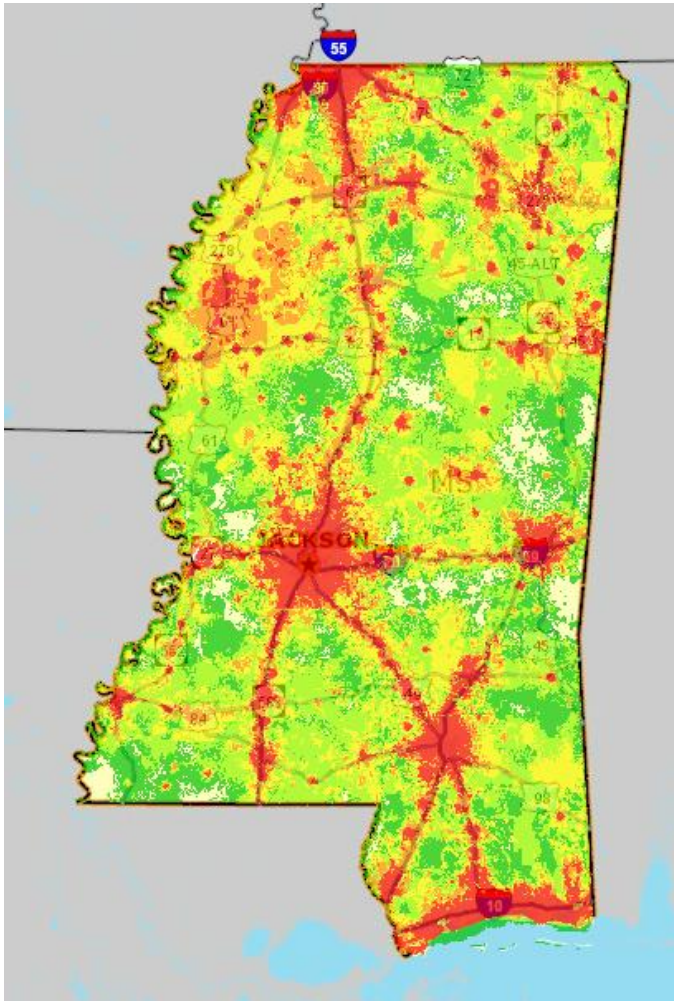
State	Program Name	Incentive	Requirements	Additional Information
Mississippi	R&D Skills Tax Credit	$1,000 per employee per year for up to 5-yrs	Qualification of jobs for this credit must require: ❖ Bachelor's degree in a scientific or technical field of study from an accredited four year college or university ❖ employment in the employee's area of expertise ❖ compensation at a professional level.	❖ These credits can be in addition to Jobs Tax Credits and can be used to offset up to 50% of state income tax liability. ❖ Any unused credits can be carried forward up to 5-yrs.
North Carolina	Technology Development Tax Credit	Qualified Expenses: $0-$50 M……..1.25% $50 -$200 M….2.25% >$200 M……..3.25%	❖ Small Business status (annual receipts < $1 M): Qualified businesses on the last day of the taxable year allowed credit of 3.25% ❖ Certain tax programs in NC are indexed to a county ranking system. A business is permitted a credit of 3.25% of expenses for research performed in a Tier 1 county.	❖ A business with North Carolina University research expenses for the taxable year is allowed a credit equal to 20% of those expenses.
Oklahoma	The Quality Jobs 10-Year Cash Incentive	Cash payments of up to 5% of new payroll for up to 10 years	❖ Must have an average county wage or $29,745, whichever is lower. ❖ Achieve $2.5M annual payroll within 3 yrs, and offer basic health insurance.	Target industries include: ❖ Manufacturing ❖ R&D
South Carolina	Job Tax Credit	$1,500 to $8,000 per job	❖ The company must create a monthly average of 10 net new full-time jobs at the facility in a single taxable year. ○ Companies with <99 employees worldwide, it may be eligible for a job tax credit if it creates a monthly avg of 2+ net new full-time jobs in a single taxable year.	❖ Credits can be used to offset up to 50% of State income tax in a single year, and unused credits may be carried forward for 15 years.
	Sales Tax Exemption	N/A	❖ Exemption applies to purchased equipment used for Research and Development	
Tennessee	Job Tax Credit	$4,500 per job	❖ Investment of at least $500,000 and creating 25 net new jobs in a 12 month period.	❖ Unused credit may be carried forward for up to 15 years. ❖ Credit Available to offset up to 50% of the combined F&E tax
Texas	Texas Emerging Technology Fund (TETF)	Commercialization Awards	❖ Funds to help companies take ideas from concept to development to ready for the marketplace.	❖ Grants intended to give State advantage in Research and Development and Commercializing Emerging Technologies
		Matching Awards	❖ Funds create public-private partnerships which leverage the unique strengths of universities, federal government grant programs and industry.	
		Research Superiority Acquisition	❖ Funds for Texas higher education institutions to recruit the best research talent in the world.	

Source: Respective Economic Development Entities

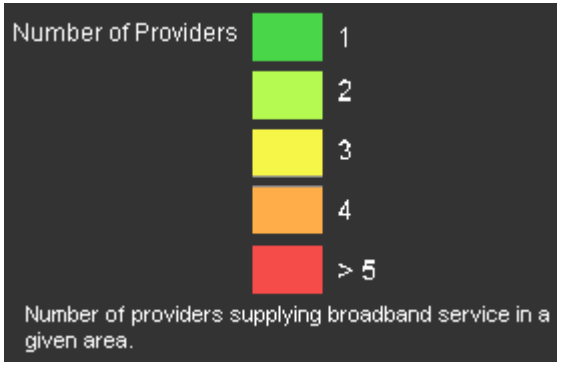
Infrastructure

Broadband Infrastructure

Broadband is a function of population density; carriers/providers will service the market according to available customer base. In Mississippi, most metropolitan areas and small towns have more than five providers. Service falls down to 1-3 providers in rural areas.



- Metropolitan areas such as Jackson, Gulfport-Biloxi, Hattiesburg, Meridian and the Mississippi part of Memphis MSA (Desoto, Tunica, Tate and Marshall Counties) are well served with five or more providers.
- Smaller towns like Tupelo, Oxford, Brookhaven, Yazoo City etc. have 4-5 providers.
- Rural areas, as they would be in most other states as well, are not as well served.
- The Delta region, although less developed when compared to other parts of Mississippi, appears to have satisfactory broadband coverage in its populated parts.

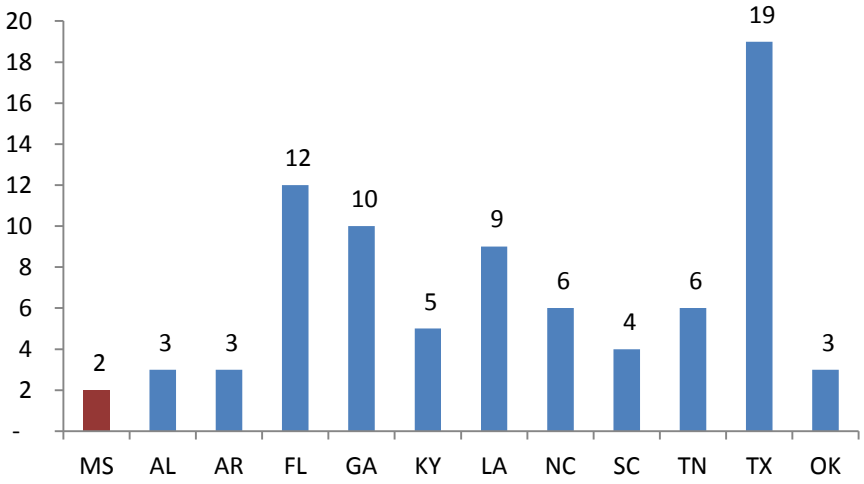


Source: Broadband Technologies Opportunities Program

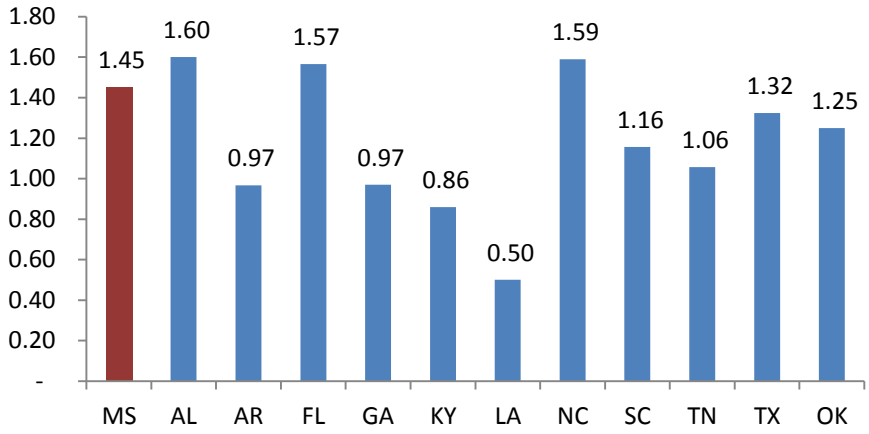
Teaching Hospitals

Texas and Florida have the highest number of teaching hospitals among the Blueprint States. When considering population served per hospital, Louisiana has the lowest number. This does not take into account capacity of hospitals but indicates distribution of services. The combination of absolute hospital number and the number relative to population puts Mississippi below the other Blueprint States in teaching hospital presence.

Number of Teaching Hospitals



Population Served Per Teaching Hospital (Millions)

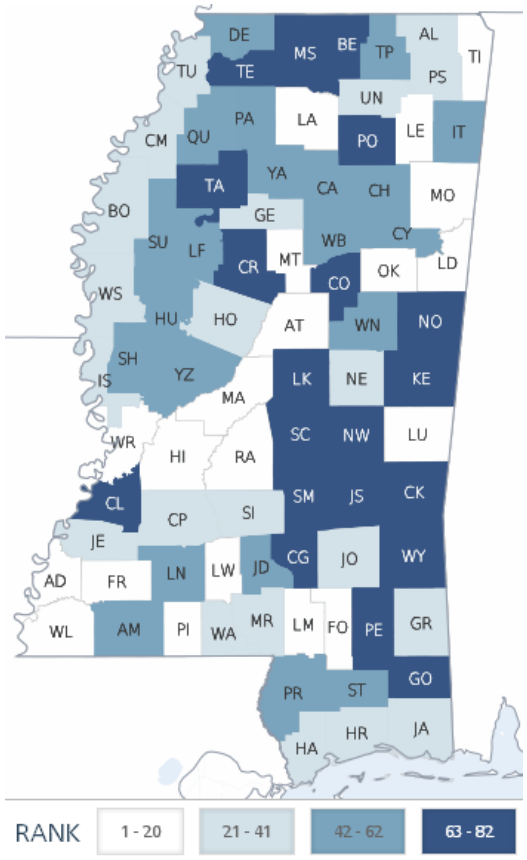


Source: Health Guide USA

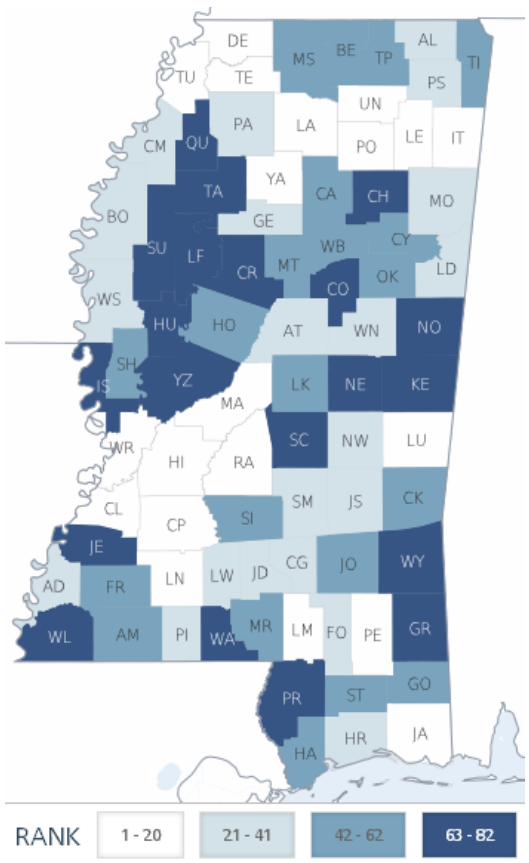
Health Services Distribution

The Delta region and rural counties are worse off than the urban centers when it comes to provision of health services. This was confirmed during interviews as well. Locations with poor health indicators and services are likely to find it more difficult to attract businesses.

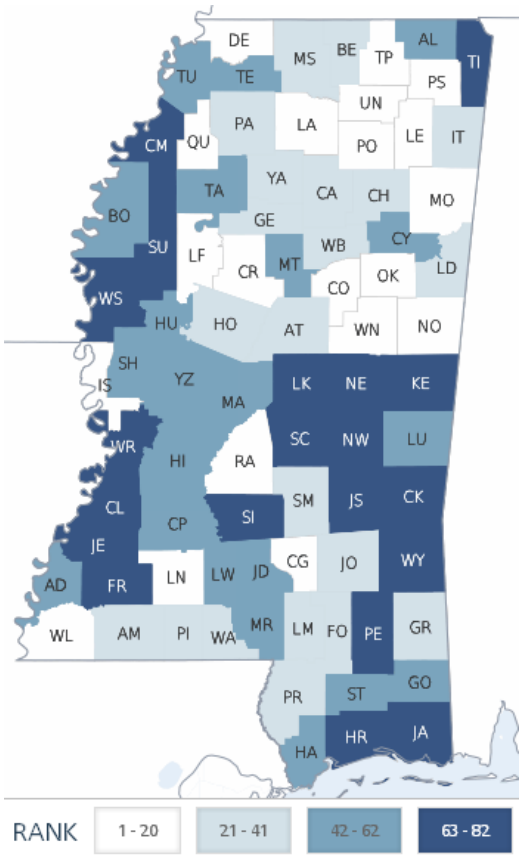
Primary Care Physicians



Uninsured Population



Preventative Health Screening

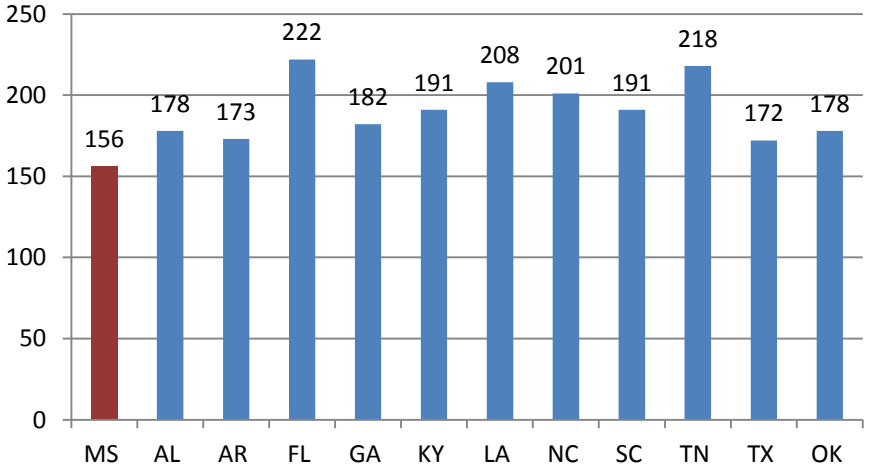


Source: Mississippi County Health Rankings and Roadmaps

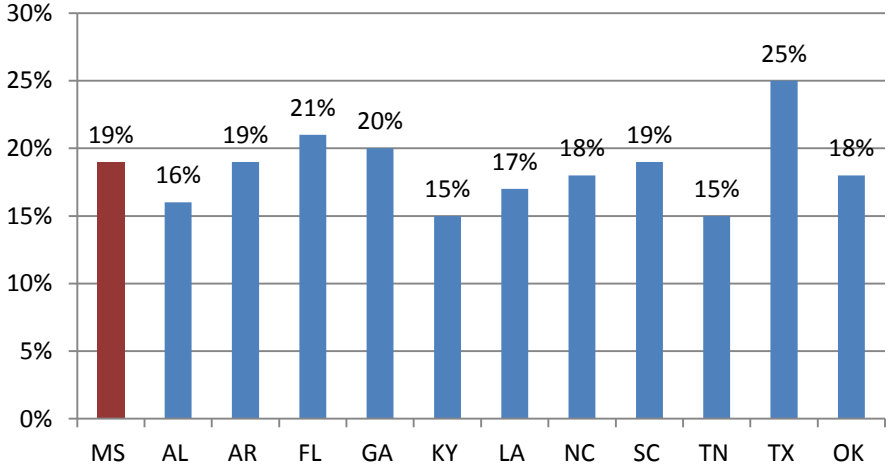
Health Care Delivery

Florida and Tennessee have the highest Physicians per Capita among the Blueprint States, with Louisiana close behind. When considering percent of total population that is uninsured, Kentucky, Tennessee and Alabama have the lowest percent uninsured.

Physicians per Capita



Percent of Total Population *Uninsured*

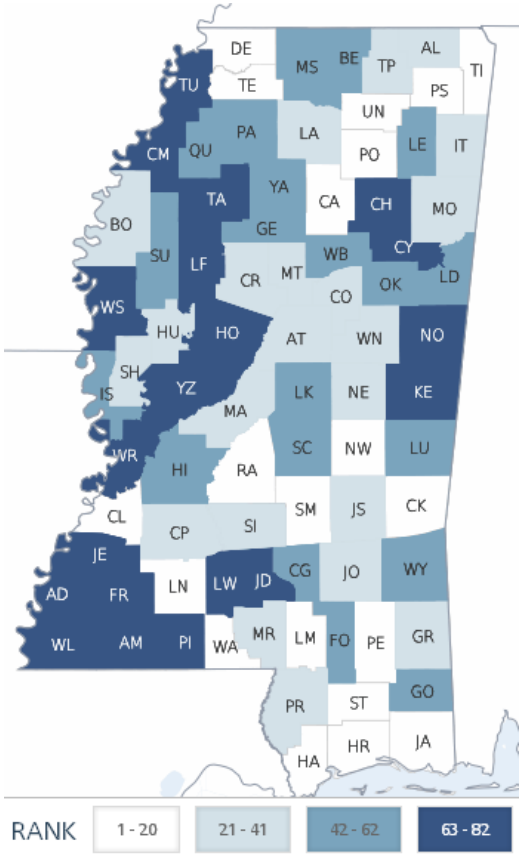


Source: The Henry J. Kaiser Family Foundation (2010-2012)

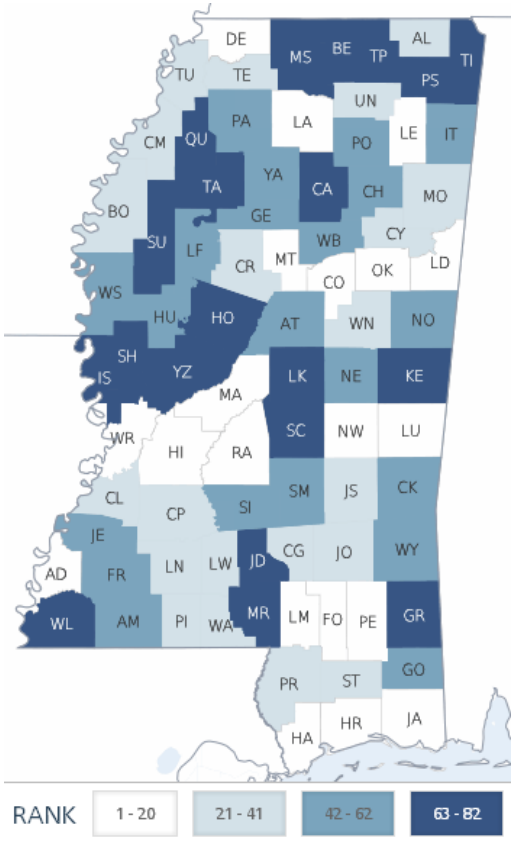
Social & Economic Indicators

Rural counties, Delta region in particular, are poorly ranked in education, which leads to low employment opportunities and poor social development indicators. Such locations may struggle with business attraction.

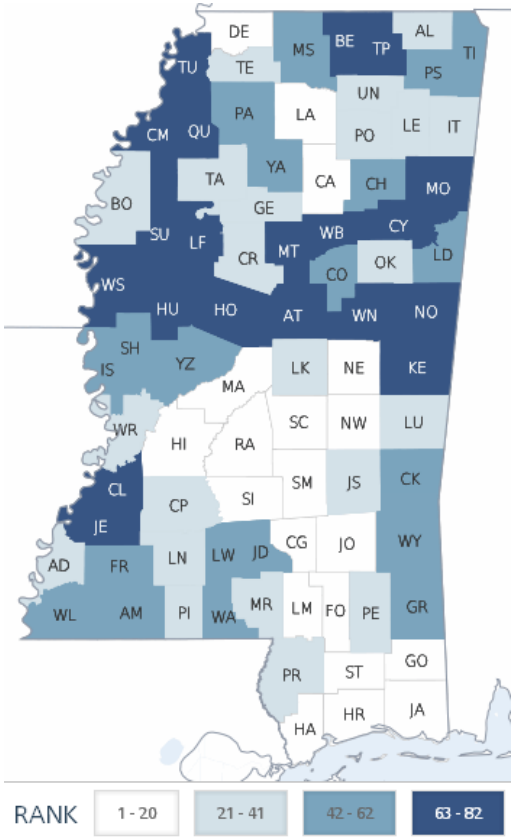
High School Education



Some College Education



Unemployment

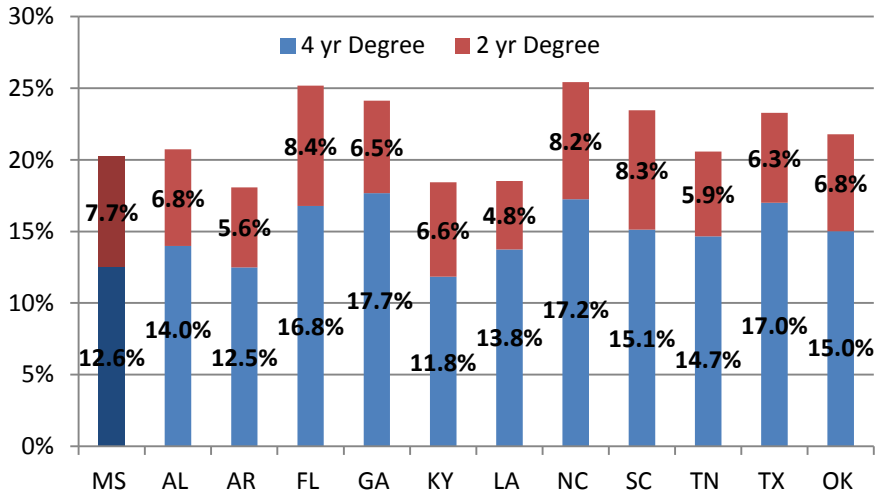


Source: Mississippi County Health Rankings and Roadmaps

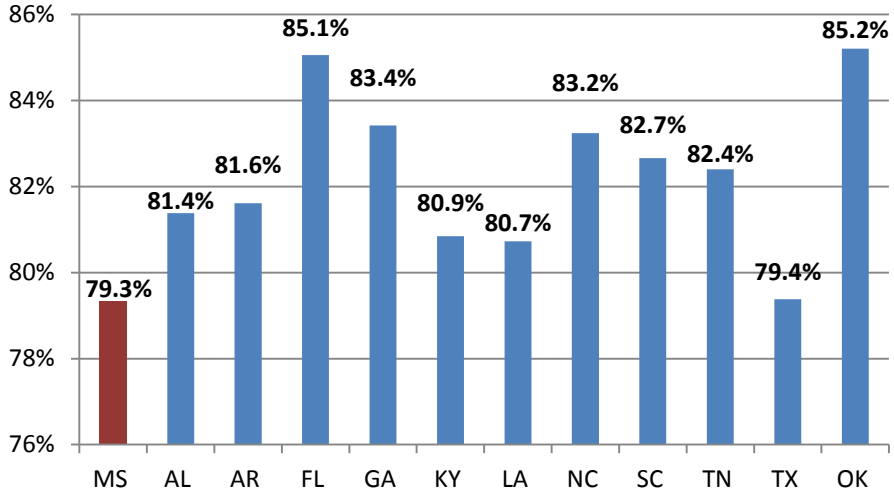
Education

Among Blueprint States, Florida, North Carolina and Georgia have the highest percentage of their population with at least a 2 yr degree. Oklahoma and Florida top high school graduation rates above 85%. Mississippi is ranked 4th for 2 year college degrees. With respect to high school graduates, Mississippi has the lowest percent of graduates of all 50 U.S. States.

Percent College Educated



% High School Graduates



Source: United States Census Bureau (2010)

Overall Comparative Rating

Comparative Performance Matrix

Attributes	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
1. Pharmaceutical Industry Presence												
2. Pharmaceutical Growth												
3. Pharmaceutical Distribution												
4. Pharmaceutical Wage Rate												
Overall Pharmaceutical Assets												
5. Medical Devices Industry Presence												
6. Medical Devices Growth												
7. Air Freight Access												
8. Medical Devices Wage Rate												
Overall Medical Devices Assets												
9. BPO Industry Presence												
10. BPO Industry Growth												
11. BPO Wage Rates												
Overall BPO Assets												

Poor Excellent

Comparative Performance Matrix

Attributes	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
12. Biotech R&D Presence												
13. Biotech R&D Growth												
14. Biotech R&D Wage Rate												
15. Biotech R&D Funding												
16. R&D Tax Credits												
Overall Biotech R&D Assets												
17. Broadband Infrastructure												
16. Teaching Hospitals												
17. Physicians per Capita												
18. % College Educated												
Overall Infrastructure Assets												
	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Overall Health Care Industry Asset Performance												

Poor Excellent

Global Trends: BPO

- The health care outsourcing market is expected to grow around 10 percent over the next five to seven years.
    - In 2006 health care outsourcing services market totaled $25 Billion and has grown steadily at 10% per year since.
        - 75% was related to ITO services
- The need for BPO industry is growing due to:
    - Mergers and Acquisitions increasing the demand for technical and support infrastructure.
    - Growing complexity of offerings and government regulatory changes.
    - Governmental payers have moved faster in sourcing operational support.
    - Confidentiality and privacy issues around personal health data has increased expense in delivery of services.
- Increased competition, regulatory pressure and informed consumers demanding the best services at lowest possible cost is driving health care providers to manage business partner relationship and outsource business functions to drive cost reductions.

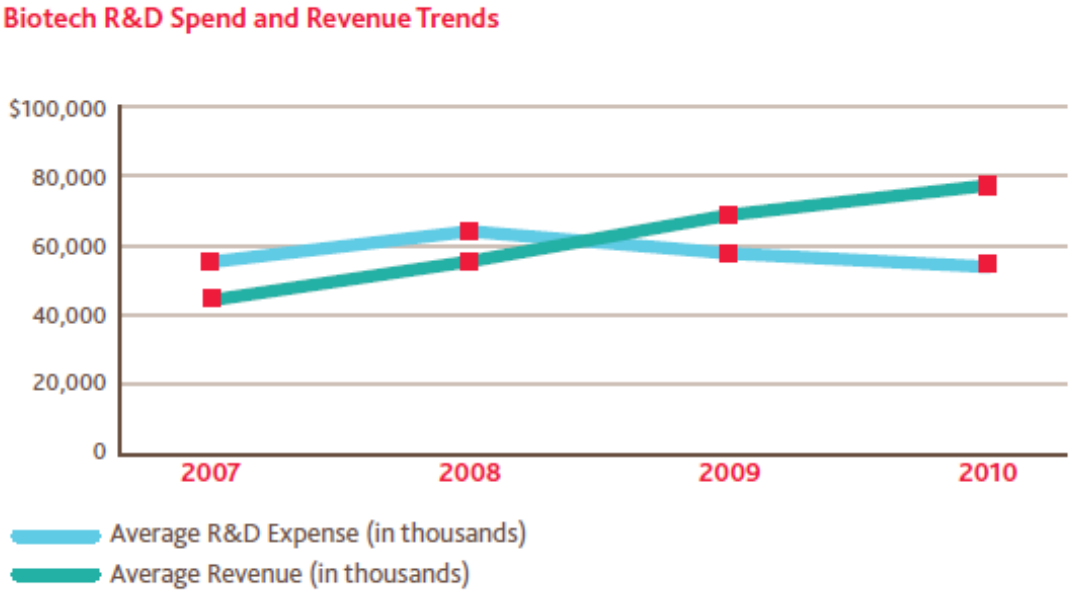
Global Trends: Distribution

- The distributor model is evolving in emerging markets. Companies are leveraging local distributors because of their familiarity with the consumer, easier market access and less financial risk.
    - Some challenges with this are diluting the companies brand and lack of customer relationships.
- The distributor model is evolving and moving from a pure distributor model to a sales, service and solution provider where the distributors are creating solutions and building their own brand.

Global Trends

Global Trends: Biotech R&D

- Companies are increasingly off shoring their R&D activity, which is resulting in greater shareholder return, operating margins and market capital growth.
- Leading biotech companies are restructuring their R&D initiatives by adopting a focused, streamlined global approach which increases strategic partnership offshore, academic collaboration and outsourcing to established networks.
- Biotech companies are cutting programs and focusing on what they believe are the best drug candidates with higher commercialization probability.
- Large pharmaceutical companies are pushing for more strategic partnership with small biotech companies, which has helped small biotech companies increase average revenue by 42% in 2010.



Industry Scorecards

Global Trends: Med Devices/Supplies/Equipment Mfg.

- The southeast Asia markets are expanding in their manufacturing of medical devices as well as consumption.
    - Countries: China, Malaysia, South Korea, Cambodia, Vietnam and Thailand

- South Korea has the highest health care expenditure in Southeast Asia, 60 percent is funded by the public sector.

- Health care development and provision is an increasing political and social priority.

- US Companies manufacturing in Asia are increasingly designing and producing for local market consumption, rather than exporting out of the country.

Scoring Industry Performance and Potential

Industry scorecards indicate how a particular industry is positioned in leading Blueprint States and Mississippi's peer states that are closer in size and scope. This subjective and relative scoring is based on success factors that are specific to that industry. The scorecard also indicates how the particular state is positioned on an industry competitiveness matrix.

Key Success Factors

- Target industry designation by the state
- Academic programs and training programs to ensure availability of workforce
- Economic incentives for the industry or function

Location Competitiveness Factors

- Differentiation: Has the state developed a brand image and reputation for an industry?
- Cost Leadership: Has the state managed to keep its costs low to attract business?
- Focus: Has the state focused on a segment or a strategy?

Pharmaceutical Manufacturing

Although University of Mississippi was ranked highly by *US News* for its school of pharmacy, Pharmaceutical industry is not listed as a target industry by the state. The leading Blueprint States target this industry and have academic programs providing research and workforce for industry growth. Mississippi, along with Arkansas and Florida are cost leaders.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Academic and Training Programs	●	●			●	●	●
Target Industry Designation					●	●	●
Clustering					●	●	●
Differentiated	●					●	
Cost Leader	●			●			●
Focused on Scope & Segment							

Medical Device and Equipment Manufacturing

Most Blueprint States have undergraduate and graduate programs in biomedical engineering from which the medical devices industry draws its talent. The leading states have life sciences as their target industry while Mississippi and its peer states are focused on other industries. In spite of that, Alabama is beginning to develop a medical devices cluster.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Academic and Training Programs	●	●	●		●	●	●
Target Industry Designation					●	●	●
Clustering		●			●	●	●
Differentiated					●	●	●
Cost Leader	●	●	●	●			●
Focused on Scope & Segment							

BPO & Back Office Operations

Mississippi has seen the largest increase in Industry presence between 2001 and 2010 of all the Blueprint States, however, BPO is not listed as a target industry by the state. The leading Blueprint States have seen a decrease in industry presence over the past decade and they have higher average industry wages. Mississippi, along with Arkansas, Kentucky and Alabama are cost leaders.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Academic and Training Programs	●	●	●	●	●	●	●
Target Industry Designation		●		●		●	
Clustering					●	●	●
Differentiated	●					●	
Cost Leader	●	●		●			
Focused on Scope & Segment							

Biotech R&D

Mississippi has very low Biotech R&D funding, even on a per capita basis, when compared to leading Blueprint States. This disparity results from lack of biotech and life science clustering and weak linkage between industry and institutional R&D.

		Peer States			Leading States		
Success Factors	**MS**	**AL**	**LA**	**AR**	**TX**	**NC**	**FL**
Biotech R&D Funding by NIH ($)	22M	134M	79M	39M	635M	600M	295M
Target Industry Designation		●		●	●	●	●
Clustering					●	●	●
Differentiated					●	●	●
Cost Leader			●	●			
Focused on Scope & Segment					●	●	

Supporting Information & Data

Data

There are numerous sources incorporated into the asset analysis. These sources are often combined and interpreted before they are presented. The raw data for all of the information found in this section comes from the following sources:

- Labor & Workforce: Bureau of Labor Statistics (2011)
- Industry Concentration: Bureau of Labor Statistics, Info USA (2011)
- Population: Census Bureau (2010)
- Wages: Economics Research Institute (2012)
- R&D Funding: National Institute of Health
- Teaching Hospitals: Health Guide USA
- Air Freight: Airport Council International – North America
- Economic Incentives: Economic Development Organizations of Blueprint States
- Health Services Distribution: Mississippi County Health Rankings and Roadmaps
- Broadband Broadband Technologies Opportunities Program
- Wireless Networks National Telecommunications and Information Administration

Site Selection Criteria Field for Health Care Industry

SITE SELECTION CRITERIA FOR HEALTH CARE

	Medical Devices (OEM)	**Detail**	**Measure (Real or Proxy)**
1	Availability of workforce	Advanced manufacturing experience labor	Labor in Med Devices or Adv Mfg
2	Cost of doing business		Labor cost index
3	Regulatory and tax environment		Corporate Income Tax
4	Proximity to a major airport	For overnight shipping	Easy access to major airport
5	Community attitude and helpfulness		Business Environment & Process

	Medical Supplies		
1	Workforce	General manufacturing skills	Manufacturing labor force
2	Proximity to distribution channels		Presence of distributors
3	Regulatory environment		Time to FDA certification

	Health Care BPO / Shared Services		
1	Cost / Labor Arbitrage	Depends on clients if they're comfortable with offshore or not	Clerical labor cost
2	Work ethic / quality	Ability to do shift work	Employee Experience
3	IT Infrastructure	Need to keep workforce both in the US and offshore	Presence of BPO
4	Flexible workforce	Ease of hiring and firing employees	Labor laws / unions

Site Selection Criteria Field for Health Care Industry (contd.)

	Bio-tech		
1	Funding	Many biotechs are start ups	Number of start ups
2	Access to funding		Venture dollars
3	Industry concentration	Results in specialized workforce	Number of Bio-Tech companies
4	Specialized facilities	Requires build-to-suit because of specialized functions	Wet labs
5	Community support to mitigate credit risk		Qualitative assessment
6	Incentives to mitigate capex	They buy expensive equipment.	Incentives to mitigate capex
7	Scalability	Ability to rapidly grow when second stage growth occurs	Educational pipeline
	Biomedical R&D		
1	Proximity to academic institutions	Teaching hostpitals and prominent university faculty	Number of faculty in Biomed Science
2	Funding	R&D Dollars	Funding dollars received
3	Qualified workforce	PhDs and other higher level degrees in required fields	Number of PhDs
4	Industry concentration	Biomedical industry concentration makes workforce available	Number of Bio-Tech R&D companies
5	Tax Breaks and Incentives		Incentives for R&D
6	Growth potential	Industry should be growing in the target geography	Biotech R&D growth rate
7	Supportive regulatory environment	Highly regulated industry - therefore need to minimize red tape	Qualitative assessment
	Pharmaceutical Distribution		
1	Proximity to logistics hub (FedEx or UPS)	Major airports are preferred	Major hub airport in 100 miles radius
2	Quick state licensing (6 weeks or less)	For new DC	Time to license new operation
3	Training grants with community colleges	For workforce	Training grant per employee
4	Proximity to Pharma manufacturing	To reduce supply chain cost	Number of pharma mfg companies

Key Labor Across Industries

Industry	NAICS	Labor Availability
Medical Devices Mfg	42345015	Adv. Mfg Workers
Medical Equipment Mfg	33911201	Manufacturing Assembly Workers
Medical Supplies	42345028	General Manufacturing
Healthcare BPO		
Medical Claim Processing	53429201	Insurance Claim Processor
Medical Business Administration	56111012	Medical Records Administrator
Medical & Health Record Information	62199918	Medical Records Coding Technician
Health Recording Service	62199920	Medical Records Clerk
Bio-tech Products & Services	54171144	Biomedical Engineer, Biochemist, Biomed Technician
Research & Development Labs	54171101	PhD, Biologists, Bioinformatics Analyst
Pharma Distribution	42421014	Warehouse Workers
Pharma Mfg	32541207	Biochemists
Drug Mfg	32541202	Biochemists
Pharma Preparation	32541206	Pharmacologist

R&D Funding

Funding in $ Millions

	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Fed Govt	465	3,582	176	2,265	1,668	279	466	1,835	592	1,993	4,461	272
Industry	179	922	399	3,009	2,501	879	303	4,903	1,125	1,451	12,830	521
Universities	85	170	47	379	450	144	164	316	219	138	711	100
Total Funding	**729**	**4,674**	**622**	**5,653**	**4,619**	**1,302**	**933**	**7,054**	**1,936**	**3,582**	**18,002**	**893**
Population	2,900,000	4,800,000	2,900,000	18,800,000	9,700,000	4,300,000	4,500,000	9,535,000	4,625,000	6,346,000	25,145,000	3,751,000
Dollars/Capita	251	974	214	301	476	303	207	740	419	564	716	238

Economic Impact

	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Pharmaceutical	930	993	173	5,186	3,089	1,256	448	20,100	3,110	3,047	9,600	215
Medical Devices	730	2,252	2,288	19,116	6,264	1,666	754	8,094	3,730	8,917	11,690	1,150
R&D, Testing, Labs	1,200	3,783	1,658	24,574	8,294	2,823	2,723	21,359	2,087	8,437	27,485	3,420
Total Private Sector	890,051	1,570,232	971,321	6,355,113	3,344,119	1,490,812	1,541,393	3,359,661	1,538,918	2,306,517	8,710,000	1,240,000
Industry Concentration	0.32%	0.45%	0.42%	0.77%	0.53%	0.39%	0.25%	1.47%	0.58%	0.88%	0.56%	0.39%

Wages

	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Pharmaceutical	41,614	56,000	43,071	58,235	94,363	65,443	54,269	89,590	53,360	89,624	110,338	60,057
Medical Devices	52,314	61,791	43,729	67,204	61,982	46,037	57,790	103,708	55,590	66,583	79,436	56,292
R&D and Testing	68,053	70,780	51,933	70,294	72,789	66,316	54,332	88,490	79,275	126,332	87,549	56,173
Total Private Sector	32,855	37,772	34,442	39,596	43,016	37,033	40,389	39,373	35,425	40,021	46,735	37,126
% of Average Wage	1.69	1.74	1.36	1.71	1.69	1.63	1.36	2.32	1.70	2.37	1.93	1.52

Teaching Hospitals Source: HealthguideUSA.org

	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Number of Hospitals	2	3	3	12	10	5	9	6	4	6	19	3
Population	2,900,000	4,800,000	2,900,000	18,800,000	9,700,000	4,300,000	4,500,000	9,535,000	4,625,000	6,346,000	25,145,000	3,751,000
Popln served per hospital	1,450,000	1,600,000	966,667	1,566,667	970,000	860,000	500,000	1,589,167	1,156,250	1,057,667	1,323,421	1,250,333
	1.45	1.60	0.97	1.57	0.97	0.86	0.50	1.59	1.16	1.06	1.32	1.25

Biotech R&D Growth

RESEARCH AND DEVELOPMENT 541711

Employment	**MS**	**AL**	**AR**	**FL**	**GA**	**KY**	**LA**	**NC**	**SC**	**TN**	**TX**	**OK**
Research and development in biotechnology 2010	192	417	228	1617	1591	328	195	6273	1233	346	4340	641
Research and development in biotechnology 2007	198	284	239	737	1736	310	101	7042	1758	298	4229	610
Change 2007-2010	-3%	47%	-5%	119%	-8%	6%	93%	-11%	-30%	16%	3%	5%
Other physical and biological research 2010	309	5606	814	10476	2103	895	807	10757	1103	7759	17234	1044
Other physical and biological research 2007	280	4688	741	9436	1967	786	458	8800	811	6585	17382	1284
Change 2007-2010	10.36%	19.58%	9.85%	11.02%	6.91%	13.87%	76.20%	22.24%	36.00%	17.83%	-0.85%	-18.69%

Annual Wages	**MS**	**AL**	**AR**	**FL**	**GA**	**KY**	**LA**	**NC**	**SC**	**TN**	**TX**	**OK**
Research and development in biotechnology 2010	$ 68,053	$ 70,780	$ 51,933	$ 70,294	$ 72,789	$ 66,316	$ 54,332	$ 88,490	$ 79,275	$ 126,332	$ 87,549	$ 56,173
Research and development in biotechnology 2007	$ 71,154	$ 88,096	$ 45,065	$ 59,109	$ 67,099	$ 52,874	$ 49,687	$ 79,381	$ 71,536	$ 112,050	$ 80,020	$ 51,159
Change 2007-2010	-4%	-20%	15%	19%	8%	25%	9%	11%	11%	13%	9%	10%
Other physical and biological research 2010	$ 50,234	$ 87,736	$ 61,485	$ 83,250	$ 71,257	$ 70,606	$ 75,519	$ 98,824	$ 56,294	$ 85,346	$ 85,766	$ 59,863
Other physical and biological research 2007	$ 51,577	$ 79,481	$ 53,219	$ 77,137	$ 72,874	$ 72,268	$ 60,968	$ 86,094	$ 56,611	$ 78,256	$ 75,444	$ 57,810
Change 2007-2010	-2.60%	10.39%	15.53%	7.92%	-2.22%	-2.30%	23.87%	14.79%	-0.56%	9.06%	13.68%	3.55%

BPO Sector Growth

HEALTH CARE BPO (5182)

	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Data processing, hosting and related services 2010	413	1496	1397	16643	5844	5005	1348	9398	2808	4256	25693	1836
Data processing, hosting and related services 2001	206	2516	1032	17035	11594	8485	2108	13193	2257	3020	29469	1664
Change 2001-2010	100%	-41%	35%	-2%	-50%	-41%	-36%	-29%	24%	41%	-13%	10%
Direct life and health insurance carriers 2010	2195	6827	3290	30771	13143	11700	N/A	N/A	12103	12252	30756	4026
Direct life and health insurance carriers 2001	2822	8640	2962	34373	14481	8632	N/A	N/A	12832	15853	34875	5275
Change 2001-2010	-22.22%	-20.98%	11.07%	-10.48%	-9.24%	35.54%	#VALUE!	#VALUE!	-5.68%	-22.71%	-11.81%	-23.68%
Administrative and support services 2010	47553	92839	50037	514583	247304	86187	80928	222975	116582	162873	602337	89784
Administrative and support services 2001	36762	90839	47463	773732	242479	80371	85298	201099	101375	171416	557687	95552
Change 2001-2010	29.35%	2.20%	5.42%	-33.49%	1.99%	7.24%	-5.12%	10.88%	15.00%	-4.98%	8.01%	-6.04%
	Industry Concentration											
	MS	**AL**	**AR**	**FL**	**GA**	**KY**	**LA**	**NC**	**SC**	**TN**	**TX**	**OK**
	50161	101162	54724	561997	266291	102892	82276	232373	131493	179381	658786	95646
	1%	1%	3%	3%	2%	5%	2%	4%	2%	2%	4%	2%

Annual Wages	MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Data processing, hosting and related services 2010	$ 47,978	$ 50,592	$ 49,167	$ 76,028	$ 78,521	$ 45,424	$ 52,259	$ 84,449	$ 64,694	$ 60,262	$ 81,964	$ 46,829
Data processing, hosting and related services 2001	$ 31,850	$ 44,809	$ 47,221	$ 54,023	$ 63,397	$ 32,747	$ 44,582	$ 58,100	$ 55,183	$ 43,873	$ 64,915	$ 38,230
Change 2001-2010	51%	13%	4%	41%	24%	39%	17%	45%	17%	37%	26%	22%
Direct life and health insurance carriers 2010	$ 65,360	$ 67,740	$ 60,375	$ 67,465	$ 70,442	$ 78,094	N/A	N/A	$ 59,517	$ 68,603	$ 68,448	$ 57,049
Direct life and health insurance carriers 2001	$ 36,563	$ 45,853	$ 44,424	$ 46,366	$ 54,864	$ 49,350	N/A	N/A	$ 37,492	$ 43,771	$ 47,709	$ 38,992
Change 2001-2010	79%	48%	36%	46%	28%	58%	#VALUE!	#VALUE!	59%	57%	43%	46%
NAICS 561												
Administrative and support services 2010	$ 23,229	$ 24,868	$ 23,829	$ 31,238	$ 32,622	$ 24,184	$ 31,831	$ 29,299	$ 27,753	$ 30,020	$ 35,274	$ 29,346
Administrative and support services 2001	$ 15,957	$ 17,535	$ 15,429	$ 22,451	$ 24,249	$ 17,522	$ 17,907	$ 20,711	$ 18,127	$ 22,142	$ 24,801	$ 19,223
Change 2001-2010	46%	42%	54%	39%	35%	38%	78%	41%	53%	36%	42%	53%

Air Freight

Major Logistics Airport Hubs

MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
MEM	ATL	MEM	FLL	ATL	SDF	MSY	CLT	CLT	MEM	DFW	OKC
MSY	BHM		MIA	SAV	CVG	IAH	RDU	CHS	BNA	IAH	DFW
JAN			MCO				ATL		ATL	MSY	
			JAX							SAT	
										AUS	
ASSIGNED SCORES BY AIRPORT											
5	4	5	2	4	5	2	2	2	5	4	1
2	1		5	1	3	1	2	1	1	1	4
1			2				4		4	2	
			2							2	
										2	
ASSIGNED WEIGHTS BY AIRPORT											
0.75	0.5	0.5	1	1	1	1	1	0.75	1	1	1
0.75	1		1	1	0.75	0.5	1	1	1	1	0.5
1			1				0.5		0.5	0.5	
			1							1	
										1	
TOTAL SCORE											
MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
6.25	3	2.5	11	5	7.25	2.5	6	2.5	8	10	3

Airport	Cargo Tonnes	Score
MEM	3,916,000	5
MSY	52,600	2
ATL	659,000	4
BHM	25,000	1
FLL	89,000	2
MIA	1,836,000	5
MCO	136,000	2
SAV	7,400	1
SDF	2,166,000	5
CVG	371,000	3
IAH	11,200	1
CLT	122,000	2
CHS	9,700	1
DFW	645,000	4
BNA	40,300	1
OKC	31,000	1
RDU	92,000	2
JAX	54,000	2
JAN	6,000	1
SAT	124,000	2
AUS	69,000	2

Medical Devices & Equipment Manufacturing

Medical Device, Equipment and Supplies Mfg		NAICS: 3345											
Employment		**MS**	**AL**	**AR**	**FL**	**GA**	**KY**	**LA**	**NC**	**SC**	**TN**	**TX**	**OK**
Medical Device & Equipment	2010	730	2,252	2,288	19,116	6,264	1,666	754	8,094	3,730	8,917	11,690	1,150
Medical Device and Equipment	2001	1,085	2,746	2,893	19,541	6,859	2,486	1,103	7,371	3,429	6,529	14,534	1,389
Change 2001-2010		-33%	-18%	-21%	-2%	-9%	-33%	-32%	10%	9%	37%	-20%	-17%

Annual Wages		**MS**	**AL**	**AR**	**FL**	**GA**	**KY**	**LA**	**NC**	**SC**	**TN**	**TX**	**OK**
Medical Device & Equipment	2010	52,314	61,791	43,729	67,204	61,982	46,037	57,790	103,708	55,590	66,583	79,436	56,292
Medical Device and Equipment	2001	38,425	43,770	28,992	47,892	42,822	35,036	43,934	67,718	35,622	41,585	57,374	41,954
Change 2001-2010		36%	41%	51%	40%	45%	31%	32%	53%	56%	60%	38%	34%

	MS	**AL**	**AR**	**FL**	**GA**	**KY**	**LA**	**NC**	**SC**	**TN**	**TX**	**OK**
Med Device Employment	730	2,252	2,288	19,116	6,264	1,666	754	8,094	3,730	8,917	11,690	1,150
Manufacturing Employment	134,000	236,325	160,000	307,500	343,111	209,130	139,800	432,000	210,000	300,500	819,000	125,000
Industry Concentration	0.5%	1.0%	1.4%	6.2%	1.8%	0.8%	0.5%	1.9%	1.8%	3.0%	1.4%	0.9%

Pharmaceutical Manufacturing

PHARMA MANUFACTURING		MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Pharma Employment	2010	930	993	173	5,186	3,089	1,256	448	20,100	3,110	3,047	9,600	215
Pharma Employment	2001	1,153	287	106	4,272	3,171	970	289	18,780	2,460	3,168	8,960	462
Change 2001-2010		-19%	246%	63%	21%	-3%	29%	55%	7%	26%	-4%	7%	-53%
2010 Mfg Employment		134,000	236,325	160,000	307,500	343,111	209,130	139,800	432,000	210,000	300,500	819,000	125,000
Industry Concentration		0.7%	0.4%	0.1%	1.7%	0.9%	0.6%	0.3%	4.7%	1.5%	1.0%	1.2%	0.2%
Pharma Mfg		MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Avg Annual Pay	2010	41,614	56,000	43,071	58,235	94,363	65,443	54,269	89,590	53,360	89,624	110,338	60,057
Avg Annual Pay	2001	32,263	40,450	28,880	53,641	62,534	53,825	39,957	68,210	40,266	48,418	56,274	42,832
Change 2001-2010		29%	38%	49%	9%	51%	22%	36%	31%	33%	85%	96%	40%

PHARMA DISTRIBUTION		MS	AL	AR	FL	GA	KY	LA	NC	SC	TN	TX	OK
Dist. Employment	2010	1,027	2,057	993	15,506	5,241	2,677	2,100	6,180	990	6,975	14,661	1,678
Dist. Employment	2001	1,089	3,578	786	13,726	5,465	3,155	2,555	4,920	370	8,374	14,034	1,690
Change 2001-1010		-6%	-43%	26%	13%	-4%	-15%	-18%	26%	168%	-17%	4%	-1%
2010 Wholesale Employment		34,235	71,858	46,435	308,484	196,278	71,778	70,377	164,957	63,897	117,300	497,400	55,710
Industry Concentration		3%	3%	2%	5%	3%	4%	3%	4%	2%	6%	3%	3%
Drugs Wholesale													
2010 Avg Annual Pay		47,295	54,923	55,084	60,652	65,988	51,769	54,267	59,233	54,485	57,503	67,926	48,940
2001 Avg Annual Pay		35,567	39,978	37,294	45,636	53,079	40,241	37,776	43,273	40,000	41,964	53,187	38,045
Change		33%	37%	48%	33%	24%	29%	44%	37%	36%	37%	28%	29%

Manufacturing Data Across Blueprint States

Geographic area name	2007 NAICS codes and NAICS-based rollup	Meaning of 2007 NAICS codes and NAICS-based	Year code	Number of paid employees for pay period including March 12	Relative standard error of total number of employees (%)	Annual payroll ($1,000)	Production workers avg per year	Production workers wages ($1,000)	Production workers hours (1,000)	Total cost of materials ($1,000)	Total value of shipments ($1,000)	Value added ($1,000)	Relative standard error of value added (%)	Total capital expenditures (new and used) ($1,000)	Relative standard error of total capital expenditures (new
Alabama	3391	Medical	2010	2,752	38	110,767	2,242	74,572	4,356	206,192	536,085	332,761	24	8,470	17
Alabama	3391	Medical	2009	3,135	34	106,053	2,246	55,208	3,871	249,231	488,124	239,258	17	5,865	22
Arkansas	3391	Medical	2010	1,577	3	50,749	1,332	38,699	2,515	101,983	170,634	68,606	11	4,230	23
Arkansas	3391	Medical	2009	2,603	36	118,860	1,789	74,310	3,424	155,729	366,429	211,161	52	3,927	42
Florida	3254	Pharmac	2010	4,830	14	398,000	1,638	97,320	3,345	386,073	1,741,637	1,337,928	15	159,539	73
Florida	3254	Pharmac	2009	6,574	13	492,969	2,683	158,341	5,364	458,205	1,823,904	1,311,074	14	240,797	67
Florida	3391	Medical	2010	15,549	3	942,384	9,464	363,948	18,781	1,300,994	5,364,356	4,136,612	2	153,273	10
Florida	3391	Medical	2009	17,302	2	923,677	10,527	399,969	21,439	1,244,415	5,265,918	4,004,289	2	291,143	54
Georgia	3254	Pharmac	2010	1,910	1	139,536	1,017	65,201	2,071	213,179	1,060,930	811,417	1	29,192	1
Georgia	3254	Pharmac	2009	1,939	1	135,291	1,102	74,545	2,269	209,892	928,506	831,441	1	31,617	1
Georgia	3391	Medical	2010	5,969	18	329,133	4,116	157,307	7,638	654,531	1,605,883	986,441	25	107,297	64
Georgia	3391	Medical	2009	5,906	18	282,971	4,229	142,725	7,919	572,038	1,435,918	897,461	17	76,261	51
Kentucky	3391	Medical	2010	1,780	8	74,421	1,236	37,265	2,390	117,828	289,099	169,572	8	4,158	5
Kentucky	3391	Medical	2009	1,807	7	72,186	1,241	36,990	2,395	118,451	286,918	165,180	8	5,820	3
Mississippi	3254	Pharmac	2009	1,049	1	41,785	699	21,628	1,277	62,533	197,350	134,690	1	10,195	1
Mississippi	3391	Medical	2010	1,344	35	53,734	890	24,680	1,904	311,619	619,581	319,475	69	6,581	71
Mississippi	3391	Medical	2009	1,374	34	55,631	894	22,170	1,723	120,467	605,511	534,664	75	2,899	61
North Carolina	3254	Pharmac	2010	14,579	1	965,244	8,339	459,768	16,166	5,538,405	21,629,247	16,010,411	1	281,643	2
North Carolina	3254	Pharmac	2009	14,736	1	939,024	8,551	441,137	16,467	5,721,563	23,305,316	17,676,478	1	404,900	3
North Carolina	3391	Medical	2010	5,924	20	288,206	3,645	148,946	7,683	756,052	2,123,146	1,403,142	12	47,611	25
North Carolina	3391	Medical	2009	5,983	20	310,874	3,381	149,389	6,994	830,762	2,294,515	1,462,300	12	78,409	24
Oklahoma	3391	Medical	2009	1,069	4	47,581	651	23,631	1,259	117,749	237,756	119,403	3	2,660	1
South Carolina	3254	Pharmac	2010	3,094	1	166,005	2,078	87,020	4,249	632,455	1,202,561	595,714	1	48,829	1
South Carolina	3254	Pharmac	2009	3,165	1	173,230	2,118	87,325	4,145	684,680	1,284,880	607,706	2	75,682	1
South Carolina	3391	Medical	2010	2,795	3	117,337	2,079	82,036	4,406	219,040	882,773	668,745	1	27,254	4
South Carolina	3391	Medical	2009	3,291	2	129,048	2,432	83,680	5,175	308,818	1,291,881	971,679	1	26,889	5
Tennessee	3254	Pharmac	2010	2,244	5	197,276	1,186	64,031	2,343	617,137	2,634,181	2,059,996	2	28,259	1
Tennessee	3254	Pharmac	2009	2,249	5	175,748	1,122	55,556	1,996	561,847	2,641,132	2,081,600	2	16,855	1
Tennessee	3391	Medical	2010	8,156	5	455,393	5,148	156,145	9,536	685,934	2,580,295	1,901,985	2	50,343	3
Tennessee	3391	Medical	2009	8,412	4	438,901	5,519	174,741	9,941	697,083	2,652,577	1,909,136	2	54,605	5
Texas	3254	Pharmac	2010	5,745	1	352,885	3,907	201,693	8,179	859,252	4,715,750	3,892,401	1	99,028	1
Texas	3254	Pharmac	2009	5,961	2	335,876	3,993	202,577	8,262	828,131	3,821,846	2,983,757	1	79,169	2
Texas	3391	Medical	2010	13,427	4	694,157	8,771	315,659	17,199	1,433,658	4,352,582	2,957,567	2	100,327	6
Texas	3391	Medical	2009	13,679	4	637,264	9,065	295,718	17,485	1,394,445	4,175,622	2,840,326	2	96,844	5

Source: Bureau of Labor Statistics

Mississippi BPO Sector

Region	Occupation Code	Occupation Title	Employment	Average Wage
Gulfport-Biloxi, MS	29-2071	Medical Records and Health Information Technician	140	$34,300
Gulfport-Biloxi, MS	31-9094	Medical Transcriptionists	30	$28,230
Gulfport-Biloxi, MS	43-4199	Information and Record Clerks, All Other	250	$39,650
Gulfport-Biloxi, MS	43-5111	Weighers, Measurers, Checkers and Samplers, Recordkeepers	70	$23,380
Gulfport-Biloxi, MS	43-6013	Medical secretaries	120	$29,630
Gulfport-Biloxi, MS	43-9021	Data Entry Keyers	130	$27,150
Hattiesburg, MS	29-2071	Medical Records and Health Information Technician	120	$26,590
Hattiesburg, MS	31-9094	Medical Transcriptionists	150	$28,050
Hattiesburg, MS	43-6013	Medical secretaries	40	$30,300
Hattiesburg, MS	43-9021	Data Entry Keyers	120	$22,980
Jackson, MS	29-2071	Medical Records and Health Information Technician	420	$31,090
Jackson, MS	31-9094	Medical Transcriptionists	170	$33,150
Jackson, MS	43-4199	Information and Record Clerks, All Other	240	$39,100
Jackson, MS	43-5111	Weighers, Measurers, Checkers and Samplers, Recordkeepers	70	$22,570
Jackson, MS	43-6013	Medical secretaries	270	$29,320
Jackson, MS	43-9021	Data Entry Keyers	380	$24,030
Pascagoula, MA	29-2071	Medical Records and Health Information Technician	90	$27,260
Pascagoula, MA	43-6013	Medical secretaries	40	$27,540
Pascagoula, MA	43-9021	Data Entry Keyers	50	$26,240

Mississippi BPO Labor by Zonal Non-Metro Areas

State	Occupation Code	Occupation Title	Employment	Average Wage
Northeast Mississippi nonmetropolitan area	29-2071	Medical Records and Health Information Technicians	510	24,590
Northeast Mississippi nonmetropolitan area	31-9094	Medical Transcriptionists	110	29,170
Northeast Mississippi nonmetropolitan area	43-4199	Information and Record Clerks, All Other	90	35,110
Northeast Mississippi nonmetropolitan area	43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	140	24,390
Northeast Mississippi nonmetropolitan area	43-6013	Medical Secretaries	130	26,620
Northeast Mississippi nonmetropolitan area	43-9021	Data Entry Keyers	150	26,580
Northwest Mississippi nonmetropolitan area	29-2071	Medical Records and Health Information Technicians	210	25,040
Northwest Mississippi nonmetropolitan area	31-9094	Medical Transcriptionists	**	24,680
Northwest Mississippi nonmetropolitan area	43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	70	29,870
Northwest Mississippi nonmetropolitan area	43-6013	Medical Secretaries	90	24,370
Northwest Mississippi nonmetropolitan area	43-9021	Data Entry Keyers	110	23,620
Southeast Mississippi nonmetropolitan area	29-2071	Medical Records and Health Information Technicians	190	28,010
Southeast Mississippi nonmetropolitan area	31-9094	Medical Transcriptionists	110	26,520
Southeast Mississippi nonmetropolitan area	43-4199	Information and Record Clerks, All Other	50	33,540
Southeast Mississippi nonmetropolitan area	43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	100	25,940
Southeast Mississippi nonmetropolitan area	43-6013	Medical Secretaries	130	24,830
Southeast Mississippi nonmetropolitan area	43-9021	Data Entry Keyers	230	21,020
Southwest Mississippi nonmetropolitan area	29-2071	Medical Records and Health Information Technicians	240	25,830
Southwest Mississippi nonmetropolitan area	31-9094	Medical Transcriptionists	40	32,370
Southwest Mississippi nonmetropolitan area	43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	50	22,820
Southwest Mississippi nonmetropolitan area	43-6013	Medical Secretaries	110	23,370
Southwest Mississippi nonmetropolitan area	43-9021	Data Entry Keyers	130	25,010

Cargo Airport Ranking

NORTH AMERICAN AIRPORTS TRAFFIC

RANK	CITY (AIRPORT CODE)	TOTAL CARGO (metric	% CHG
1	MEMPHIS TN (MEM)	3 916 811	5.9
2	ANCHORAGE AK (ANC)**	2 646 695	36.6
3	LOUISVILLE KY (SDF)	2 166 656	11.2
4	MIAMI FL (MIA)	1 835 797	17.9
5	LOS ANGELES CA (LAX)	1 747 629	15.8
6	CHICAGO IL (ORD)	1 376 552	31.4
7	NEW YORK NY (JFK)	1 344 126	17.5
8	INDIANAPOLIS IN (IND)	1 012 589	7.2
9	NEWARK NJ (EWR)	855 594	9.8
10	ATLANTA GA (ATL)	659 129	17.1
11	DALLAS/FORT WORTH TX (DFW)	645 426	12.1
12	OAKLAND CA (OAK)	510 947	4.0
13	TORONTO ON (YYZ)	482 486	11.8
14	SAN FRANCISCO CA (SFO)	426 725	4.6
15	HOUSTON TX (IAH)	423 483	13.6
16	PHILADELPHIA PA (PHL)	419 702	(3.2)
17	CINCINNATI OH (CVG)	371 297	178.9
18	ONTARIO CA (ONT)	355 932	0.4
19	WASHINGTON, DC (IAD)	332 275	13.5
20	SEATTLE WA (SEA)	283 425	4.9
21	BOSTON MA (BOS)	259 539	4.7
22	TOLEDO OH (TOL)	254 794	5.5
23	DENVER CO (DEN)	251 777	12.2
24	PHOENIX AZ (PHX)	250 704	12.1
25	VANCOUVER BC (YVR)	228 387	15.3
26	MINNEAPOLIS MN (MSP)	211 691	11.6
27	DETROIT MI (DTW)	193 344	19.4
28	PORTLAND OR (PDX)	190 117	6.4
29	WINNIPEG MB (YWG)	173 034	7.5
30	SALT LAKE CITY UT (SLC)	145 412	7.3
31	ORLANDO FL (MCO)	135 895	(0.9)
32	FORT WORTH TX (AFW)	126 577	27.9
33	SAN ANTONIO TX (SAT)	123 788	7.2
34	CHARLOTTE NC (CLT)	121 847	12.4
35	HARTFORD CT (BDL)	120 569	2.1
36	CALGARY AB (YYC)	119 452	7.2
37	SAN DIEGO CA (SAN)	115 378	4.7
38	MONTREAL QC (YUL)	112 000	28.7
39	ST LOUIS MO (STL)	103 742	(6.2)
40	BALTIMORE MD (BWI)	102 362	2.0
41	MONTREAL QC (YMX)	93 000	7.0
42	RALEIGH-DURHAM NC (RDU)	92 361	0.7
43	FORT LAUDERDALE, FL (FLL)	88 965	2.7
44	TAMPA FL (TPA)	87 882	2.7
45	KANSAS CITY MO (MCI)	87 092	(1.8)
46	GREENSBORO NC (GSO)	86 498	7.3
47	LAS VEGAS NV (LAS)	82 764	(3.3)
48	EL PASO TX (ELP)	82 190	39.7
49	CLEVELAND OH (CLE)	79 607	9.1
50	MANCHESTER, NH (MHT)	79 119	7.9
		23 366 467	**12.2**

Source: ACI North America

Tax Incentives

State	Corporate Income Tax Exemption	Personal Income Tax Exemption	Tax Exemption or Moratorium on Land, Capital Improvements	Tax Exemption or Moratorium on Equipment, Machinery
Alabama	Incentives Available	Incentives Available	Incentives Available	Incentives Available
Arkansas	Credit on state income tax equal to 1% - 4% of new payroll for 5 yrs. Employees must be AR taxpayers. Begins in the year the new employees are hired. Unused portion may be applied for the succeeding 9-yrs.	N/A	Negotiable using Act 9 bonds.	Negotiable using Act 9 bonds.
Florida	Incentives Available	State does not have personal income tax.	Local option, school and special district taxes are excluded.	Local option, school and special district taxes are excluded..
Georgia	N/A	N/A	Incentives Available	Incentives Available
Kentucky	Incentives allow 100% credit against state corporate income tax.	Allows certain employers to keep state income tax withholdings, w/ employees receiving an equal credit.	Incentives Available	Exemption does not apply to finished-goods inventories.
Louisiana	Allows full deduction of federal income tax paid from taxable income.	Allows all federal exemptions and deduction of federal income tax paid.	Applicable to all new capital improvements.	Incentives Available
Mississippi	Incentives Available	Incentives Available	Incentives Available	Incentives Available
North Carolina	Grants and credits are available through the William S. Lee Act.	N/A	Sales tax refunds are available for large projects with significant investment levels.	A reduced sales tax of 1% or $ 80 /piece of equipment. Property tax grants are available from local governments.
Oklahoma	Credit of 1% for investment in qualified depreciable property over $ 50k placed in service or credit of $ 500 /new full-time job. Investments over $ 40M, credit is 2% or $1k/new job. Credit doubled in enterprise zones.	Incentives Available	5-yr tax exemption (local and state option in Oklahoma) on new industrial building, construction and expansions.	Incentives Available
South Carolina	Incentives Available	N/A	Incentives Available	Incentives Available
Tennessee	Incentives Available	Personal income tax exemption on wages only.	Applicable to plants financed with industrial revenue bonds.	No sales or use tax on machinery or repairs.
Texas	State does not have corporate income tax	State does not have personal income tax.	10-year annexation or de-annexation exemption.	10-year annexation or de-annexation exemption.

Tax Incentives

State	Inventory Tax Exemption on Goods in Transit (Freeport)	Tax Exemption on Manufacturers' Inventories	Sales/Use Tax Exemption on New Equipment	Tax Exemption on Raw Materials Used in Manufacturing
Alabama	Incentives Available	Incentives Available	Incentives Available	Incentives Available
Arkansas	Incentives Available	Exempt if inventory destined for out of state	Incentives Available	Incentives Available
Florida	Incentives Available	Incentives Available	For manufacturing machinery & equipment for new businesses and a $50k cap on taxes for expanding businesses. All manufacturing machinery & equipment purchases for the silicon technology industry are completely exempt.	Incentives Available
Georgia	Incentives Available	Incentives Available	Incentives Available	Incentives Available
Kentucky	Does not apply to finished goods inventories.	Does not apply to finished goods inventories.	Incentives Available	Incentives Available
Louisiana	Incentives Available	Incentives Available	Quality Jobs and Enterprise Zone Programs allow sales tax exemption.	Sales /use tax exemption.
Mississippi	Incentives Available	Applicable to raw materials and in-process goods only.	Incentives Available	Incentives Available
North Carolina	Incentives Available	Incentives Available	Incentives Available	Incentives Available
Oklahoma	Incentives Available	Incentives Available	Incentives Available	Incentives Available
South Carolina	Incentives Available	Incentives Available	Incentives Available	Incentives Available
Tennessee	Incentives Available	Incentives Available	Incentives Available	Raw materials for processing are exempt from sales and use taxes. Personal property inventory tax is levied at the local level on raw materials on hand on Jan. 1. Finished goods are exempt from taxation.
Texas	Incentives Available	N/A	Exemption applies only to manufacturing and processing equipment.	Incentives Available

Tax Incentives

State	Tax Incentive for Creation of Jobs	Tax Incentive for Industrial Investment	Accelerated Depreciation of Industrial Equipment	Tax Stabilization Agreements for Specified Industries	Tax Exemption to Encourage Research and Development
Alabama	Incentives Available	Incentives Available	Incentives Available	N/A	Incentives Available
Arkansas	Incentives Available	Incentives Available	N/A	N/A	Incentives Available
Florida	Incentives Available	Incentives Available	5-yr tax exemption on new industrial building, construction and expansions.	N/A	labor component of prototypes is exempt from the use tax
Georgia	Incentives Available	Incentives Available	Incentives Available	N/A	Incentives Available
Kentucky	Incentives Available	Incentives Available	Depreciation is accelerated even more for certain types of manufacturing equipment.	N/A	Incentives Available
Louisiana	All new job credits in enterprise zones are $2,500/employee. New job credits outside enterprise zones are up to $750/new full-time job created. 6% payroll credited in quality jobs program.	Incentives Available	Depreciation is accelerated even more for certain types of manufacturing equipment.	Tax Equalization Program to make its taxes as low as any competing state.	Louisiana's Research and Development Tax Exemption is marketable.
Mississippi	Incentives Available	Incentives Available	Depreciation is accelerated even more for certain types of manufacturing equipment.	N/A	Incentives Available
North Carolina	Incentives Available	Incentives Available	Incentives Available	N/A	Incentives Available
Oklahoma	Incentives Available	Incentives Available	Depreciation is accelerated even more for certain types of manufacturing equipment.	A gross production tax on textile mills in lieu of property tax.	Incentives Available
South Carolina	Incentives Available	Incentives Available	Incentives Available	N/A	Incentives Available
Tennessee	$2k/job ($3k/job in Special Enhanced Counties); Applied to franchise & excise tax; Must create 25 jobs & increase capex by $ 500k in fiscal year; May be carried forward 15 yrs; liability offset 33.3% -100% for employment 1k -5k+.	1% of investment in machinery against corporate excise tax.	Incentives Available	N/A	Incentives Available
Texas	Applies in enterprise zones. A $ 2,500 state tax refund per new job ($ 250k max/yr for 5 yrs). Franchise tax credit for businesses creating 10 fulltime jobs in "Strategic Investment Areas."	Incentives Available	N/A	N/A	Incentives Available

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Labor Analysis

This section studies the capacity of the Mississippi labor force to support business creation and expansion in each of the targeted industries including:

- Medical Equipment and Supplies Manufacturing
- Pharmaceutical and Medicine Manufacturing
- Pharmaceutical Wholesaling and Distribution
- R&D in the Physical, Engineering and Life Sciences
- Health Care BPO and Back Office

A labor profile was created based on occupation employment in each of these target industries nationally. The labor profile identifies key occupations that drive the industry; both occupations which have a large share of the employment in that industry and occupations which capture a large share of the compensation. Those which capture a large portion of the compensation are typically the knowledge workers, management and sales forces that drive innovation and revenue.

After the labor profile was created, local occupation data was collected for each county in Mississippi. It included total employment and compensation of each occupation by county. The counties were then given a score for how well-suited they were to support each of the target industries, based on the presence of the key occupations employed nationally by each industry. Both low-skilled and high-skilled occupations are needed to drive many industries but the high-skilled are weighted more heavily, because the low-skilled can typically be re-trained from other occupations given that the local workforce is sufficiently large.

Finally, the scoring was mapped to understand where in Mississippi was best suited for each of the target industries. Mapping also allows identification of regional specialties and clusters of counties that together form suitable environment for the desired industries.

Labor Analysis Summary

- The top 20% of Counties in scoring appear to have sufficient labor pools in the necessary occupations to support a hypothetical 300-employee business in the **Medical Equipment and Supplies Manufacturing** industry sector. Clusters of multiple counties that can support businesses in these industries are found around the Tupelo, Jackson and Gulf Coast regions.

- There were no counties which appeared to have an internal workforce sufficient to support a hypothetical 150-employee operation in the **Pharmaceutical and Medicine Manufacturing** industry segment. This does not consider recruitment from outside the county or training of the local workforce. The best opportunities for this sector is in areas with multiple counties that come close to meeting the requirement; these can be found around the Jackson, Tupelo and Gulf Coast areas. Similar to Medical Manufacturing, these areas have a good combination of technical skill and manufacturing production workforces.

- This **Pharmaceutical Wholesaling and Distribution** industry is driven by salespersons, general office positions and transportation. Several of the larger metro areas and more populous counties appear to have sufficient labor pools to support a hypothetical 300-employee operation in this industry segment. Key areas include the Jackson and Hattiesburg metro areas, the Gulf Coast Counties and DeSoto County.

- Several companies appear to have sufficient labor pools to support a hypothetical 50-employee operations in the **R&D in the Physical, Engineering and Life Sciences** industry segment. This is a highly technical industry but firms are generally smaller and there is a good ratio of required talent in several counties to support such an operation. Key areas include the Jackson metro area and north central counties near Tupelo.

- **Health care BPO and Back Office** requires a large workforce of general business occupations. Several of the State's more populous and urban counties had a sufficient labor force to support 250-employee and greater operations in this industry segment. Key areas include Jackson, Greenville and Hattiesburg metro areas and the Gulf Coast Counties.

Note: The hypothetical firm sizes were chosen to reflect both common businesses in each sector, as well as a size at, or near, the maximum supported by existing labor. Not factoring in recruiting, or fluid labor pools. This analysis is to understand the existing landscape of skills. A detailed skills audit and matching study would be required to identify strategies to build the talent base.

339100 Medical Equipment and Supplies Manufacturing

Prominent Major Occupation Codes and Key Individual Occupations

Occupation Code	Occupation Title	Employment	% of Employment	Mean Wage	% of Wages	Weight
51-0000	**Production Occupations**	**165,280**	**54.08**	**35,040**	**39.24**	**10%**
51-2092	Team Assemblers	32,410	10.60	29,230	6.42	10%
51-9081	Dental Laboratory Technicians	31,280	10.24	38,050	8.06	10%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	10,820	3.54	37,220	2.73	5%
51-1011	First-Line Supervisors of Production and Operating Workers	9,650	3.16	61,070	3.99	5%
43-0000	**Office and Administrative Support Occupations**	**42,150**	**13.79**	**36,970**	**10.56**	**5%**
17-0000	**Architecture and Engineering Occupations**	**20,370**	**6.66**	**73,960**	**10.21**	**5%**
17-2112	Industrial Engineers	6,300	2.06	78,940	3.37	10%
17-2031	Biomedical Engineers	3,830	1.25	86,280	2.24	10%
17-2141	Mechanical Engineers	3,000	0.98	77,020	1.57	10%
11-0000	**Management Occupations**	**20,250**	**6.62**	**130,940**	**17.97**	**5%**
13-0000	**Business and Financial Operations Occupations**	**13,070**	**4.28**	**69,110**	**6.12**	**5%**
53-0000	**Transportation and Material Moving Occupations**	**12,600**	**4.12**	**27,290**	**2.33**	**5%**
41-0000	**Sales and Related Occupations**	**8,740**	**2.86**	**71,110**	**4.21**	**5%**
	All Other Major Occupation Codes	**23,130**	**7.59**	**59,746**	**9.36**	**0%**
					Total	**100%**

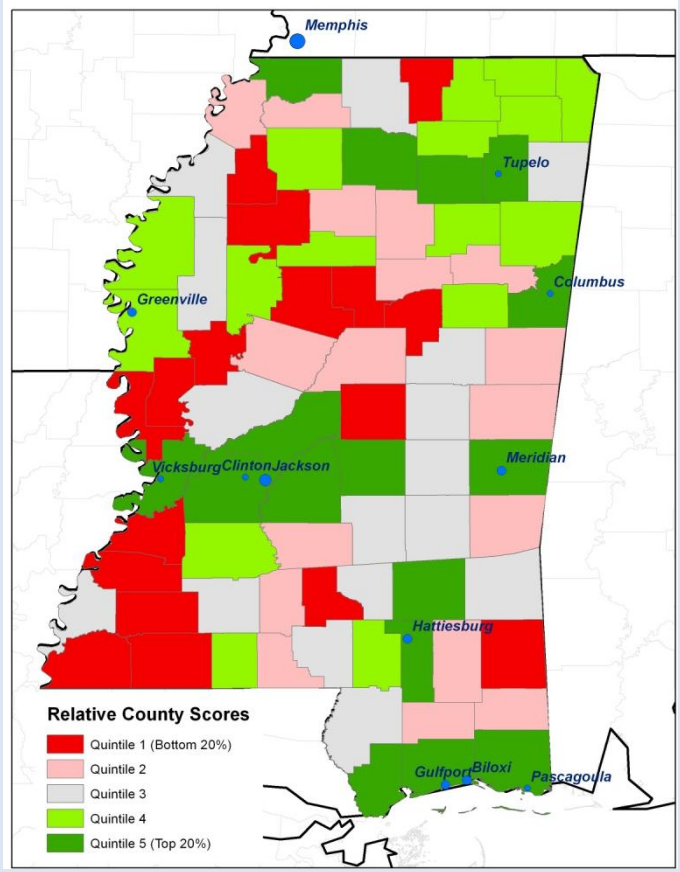
Labor Occupation Criteria Summary: Areas with critical mass of Engineering, Production and General Business Support Talent are conducive to Medical Equipment and Supplies Manufacturing Businesses. Specific combinations of Production and Engineering talent will benefit industry subcategories.

Source: US Bureau of Labor Statistics (2011)

339100 Medical Equipment and Supplies Manufacturing

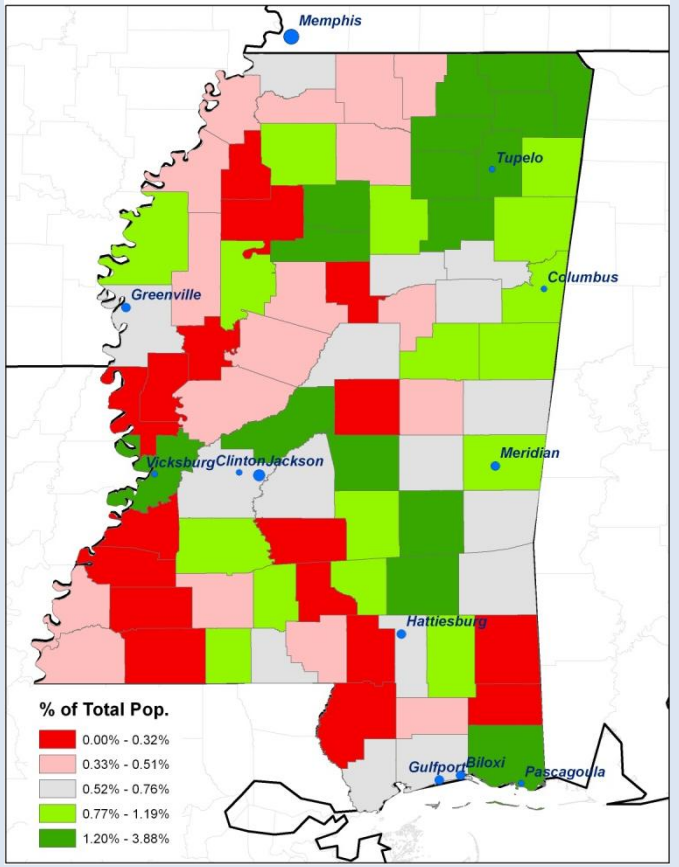
Total Occupation Presence
The map below shows the relative results for the total occupation scores. The darkest green color are the top 20% of counties in scoring, and those which can support a 300-employee operation with a healthy labor pool / hiring ratio.

Highest Scores: Jackson, Hinds, Lee, Harrison, Madison



Occupation Concentration
The map below shows the needed specialty occupations as a percentage of total county employment. Here the northeastern counties stand out as a manufacturing center.

Most Concentrated: Scott, Pontotoc, Chickasaw, Lee, Jackson



325400 - Pharmaceutical and Medicine Manufacturing

Prominent Major Occupation Codes and Key Individual Occupations

Occupation Code	Occupation Title	Employment	% of Employment	Mean Wage	% of Wages	Weight
51-0000	**Production Occupations**	**81,360**	**30.59**	**38,400**	**18.56**	**10%**
51-9111	Packaging and Filling Machine Operators and Tenders	21,340	8.02	30,650	3.89	10%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	12,650	4.76	35,750	2.69	5%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	9,870	3.71	39,860	2.34	5%
51-9011	Chemical Equipment Operators and Tenders	8,070	3.03	43,740	2.10	5%
51-1011	First-Line Supervisors of Production and Operating Workers	8,040	3.02	63,730	3.04	5%
19-0000	**Life, Physical, and Social Science Occupations**	**45,820**	**17.23**	**71,760**	**19.53**	
19-2031	Chemists	13,960	5.25	71,990	5.97	10%
19-1042	Medical Scientists, Except Epidemiologists	8,060	3.03	96,480	4.62	10%
19-4021	Biological Technicians	6,470	2.43	48,250	1.85	5%
19-4031	Chemical Technicians	4,860	1.83	45,820	1.32	5%
19-1021	Biochemists and Biophysicists	4,820	1.81	85,190	2.44	4%
19-1022	Microbiologists	3,960	1.49	68,550	1.61	3%
43-0000	**Office and Administrative Support Occupations**	**28,020**	**10.53**	**43,850**	**7.30**	**3%**
11-0000	**Management Occupations**	**27,930**	**10.50**	**129,760**	**21.53**	**5%**
13-0000	**Business and Financial Operations Occupations**	**21,510**	**8.09**	**76,320**	**9.75**	**5%**
17-0000	**Architecture and Engineering Occupations**	**13,400**	**5.04**	**79,890**	**6.36**	**5%**
17-2112	Industrial Engineers	4,140	1.56	81,750	2.01	5%
49-0000	**Installation, Maintenance, and Repair Occupations**	**12,990**	**4.88**	**52,400**	**4.04**	**0%**
	All Other Major Occupation Groups	**34,950**	**13.13**	**62,244**	**12.92**	**0%**
					Total	**100%**

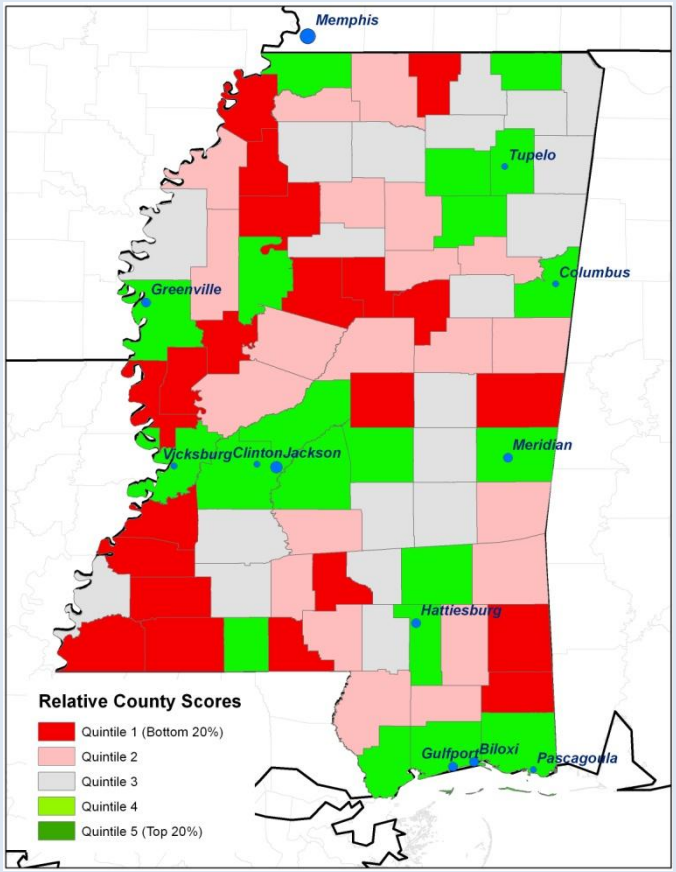
Labor Occupation Criteria Summary: Industries require specialized Chemists, Biologists and other Scientists, and sufficient support in Production and General Business labor.

Source: US Bureau of Labor Statistics (2011)

325400 - Pharmaceutical and Medicine Manufacturing

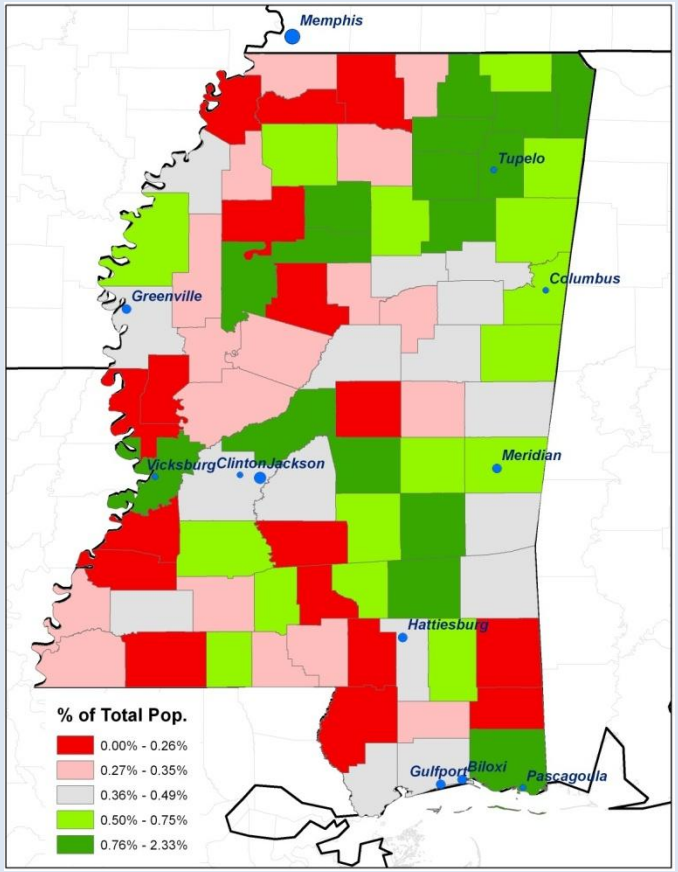
Total Occupation Presence
Similar to medical equipment manufacturing, Hinds and Jackson counties score highest in this industry. Still, none appear to have a sufficient labor pool to support a 150-employee operation with a strong hiring ratio without recruitment or training.

Highest Scores: Hinds, Jackson, Lee, Harrison, Madison



Occupation Concentration
Similar to medical equipment manufacturing, the northeastern counties around Tupelo have a high concentration of manufacturing occupations.

Most Concentrated: Scott, Pontotoc, Chickasaw, Lee, Jackson



424200 - Pharmaceutical Wholesaling and Distribution

Prominent Major Occupation Codes and Key Individual Occupations

Occupation Code	Occupation Title	Employment	% of Employment	Mean Wage	% of Wages	Weight
41-0000	**Sales and Related Occupations**	**59,950**	**31.73**	**78,590**	**40.67**	**0%**
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	33,490	17.73	94,510	27.32	20%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	15,690	8.30	62,070	8.41	10%
43-0000	**Office and Administrative Support Occupations**	**48,060**	**25.44**	**35,070**	**14.55**	**10%**
43-5081	Stock Clerks and Order Fillers	9,690	5.13	28,010	2.34	8%
43-4051	Customer Service Representatives	8,120	4.30	34,380	2.41	5%
43-5071	Shipping, Receiving, and Traffic Clerks	7,040	3.72	31,460	1.91	4%
53-0000	**Transportation and Material Moving Occupations**	**27,690**	**14.65**	**29,380**	**7.02**	**5%**
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	14,120	7.47	28,460	3.47	10%
53-7064	Packers and Packagers, Hand	5,320	2.82	24,070	1.11	5%
53-3033	Light Truck or Delivery Services Drivers	3,070	1.63	28,340	0.75	3%
11-0000	**Management Occupations**	**14,980**	**7.93**	**132,240**	**17.10**	**5%**
13-0000	**Business and Financial Operations Occupations**	**10,680**	**5.65**	**71,380**	**6.58**	**5%**
29-0000	**Healthcare Practitioners and Technical Occupations**	**8,880**	**4.70**	**67,480**	**5.17**	**0%**
29-2052	Pharmacy Technicians	4,090	2.16	31,540	1.11	5%
29-1051	Pharmacists	3,830	2.03	107,660	3.56	5%
	All Others	**18,630**	**9.86**	**55,449**	**8.92**	
					Total	**100%**

Labor Occupation Criteria Summary: Businesses require a large number of salesmen, general business support and transportation and warehousing resources.

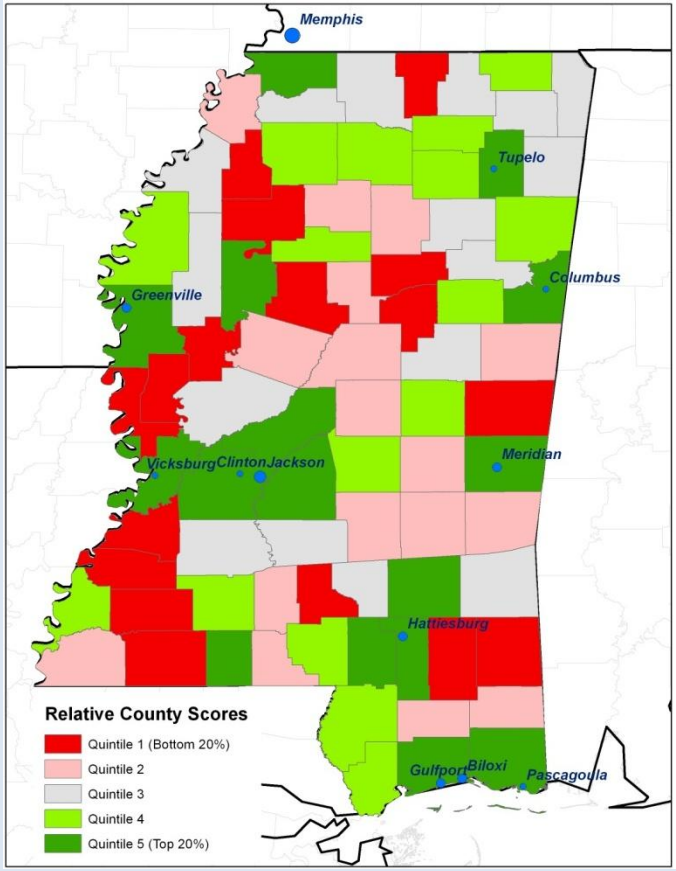
Source: US Bureau of Labor Statistics (2011)

424200 – Pharmaceutical Wholesaling and Distribution

Total Occupation Presence

More than any other industry, scores in this industry are highly related to the total population of the counties. The top 20% of counties in scoring (shown in dark green below) appear to have labor pools sufficient to support a 300-employee operation.

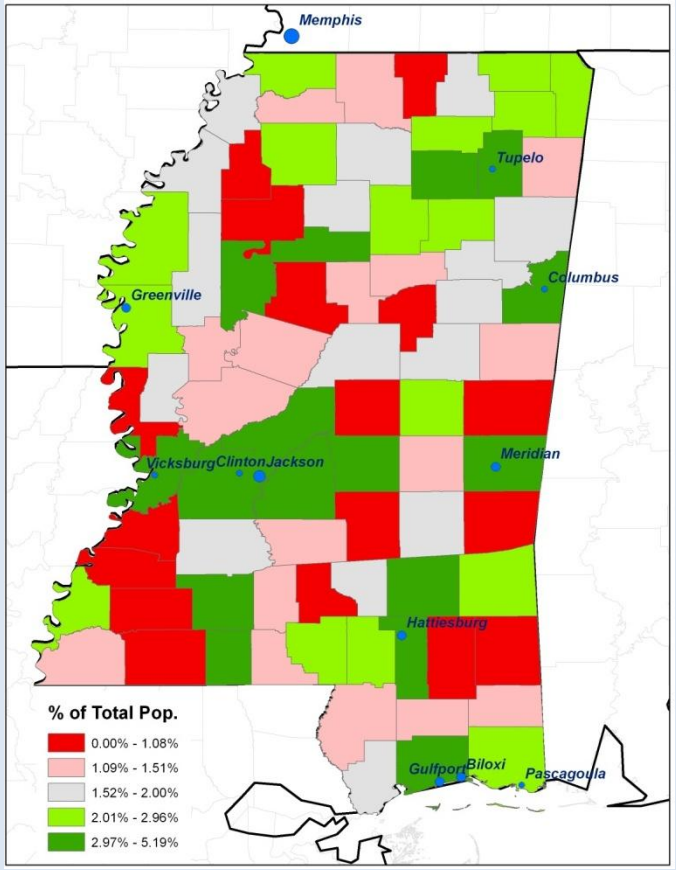
Highest Scores: Hinds, Harrison, Rankin, DeSoto, Lee



Occupation Concentration

Concentrations of these occupations are also highest in some of the State's most populous and urban counties.

Most Concentrated: Lee, Madison, Rankin, Grenada, Scott, DeSoto.



541710 – R&D in the Physical, Engineering and Life Sciences

Prominent Major Occupation Codes and Key Individual Occupations

Occupation Code	Occupation Title	Employment	% of Employment	Mean Wage	% of Wages	Weight
19-0000	**Life, Physical, and Social Science Occupations**	**149,690**	**26.18**	**77,750**	**24.11**	**10%**
19-1042	Medical Scientists, Except Epidemiologists	37,680	6.59	95,740	7.47	10%
19-4021	Biological Technicians	19,560	3.42	44,910	1.82	8%
19-2031	Chemists	16,500	2.88	83,180	2.84	5%
19-1021	Biochemists and Biophysicists	11,690	2.04	92,430	2.24	5%
19-4099	Life, Physical, and Social Science Technicians, All Other	9,590	1.68	48,590	0.97	2%
17-0000	**Architecture and Engineering Occupations**	**87,470**	**15.30**	**91,210**	**16.53**	**10%**
17-2011	Aerospace Engineers	11,750	2.05	109,710	2.67	5%
17-2141	Mechanical Engineers	10,720	1.87	88,780	1.97	5%
15-0000	**Computer and Mathematical Occupations**	**68,510**	**11.98**	**91,900**	**13.04**	**10%**
15-1133	Software Developers, Systems Software	15,030	2.63	106,010	3.30	3%
15-1132	Software Developers, Applications	13,130	2.30	94,870	2.58	3%
11-0000	**Management Occupations**	**65,760**	**11.50**	**150,250**	**20.47**	**5%**
11-9121	Natural Sciences Managers	11,510	2.01	162,010	3.86	5 %
43-0000	**Office and Administrative Support Occupations**	**58,520**	**10.23**	**44,720**	**5.42**	**3%**
13-0000	**Business and Financial Operations Occupations**	**56,940**	**9.96**	**80,430**	**9.49**	**5%**
51-0000	**Production Occupations**	**18,130**	**3.17**	**49,570**	**1.86**	**3%**
29-0000	**Healthcare Practitioners and Technical Occupations**	**15,270**	**2.67**	**65,400**	**2.07**	**3%**
	All Others	**51,540**	**9.00**	**65,738**	**7.02**	
					Total	**100%**

Labor Occupation Criteria Summary: Industry driven by innovation in the Scientific, Engineering and Computer Fields and supported by other general business categories.

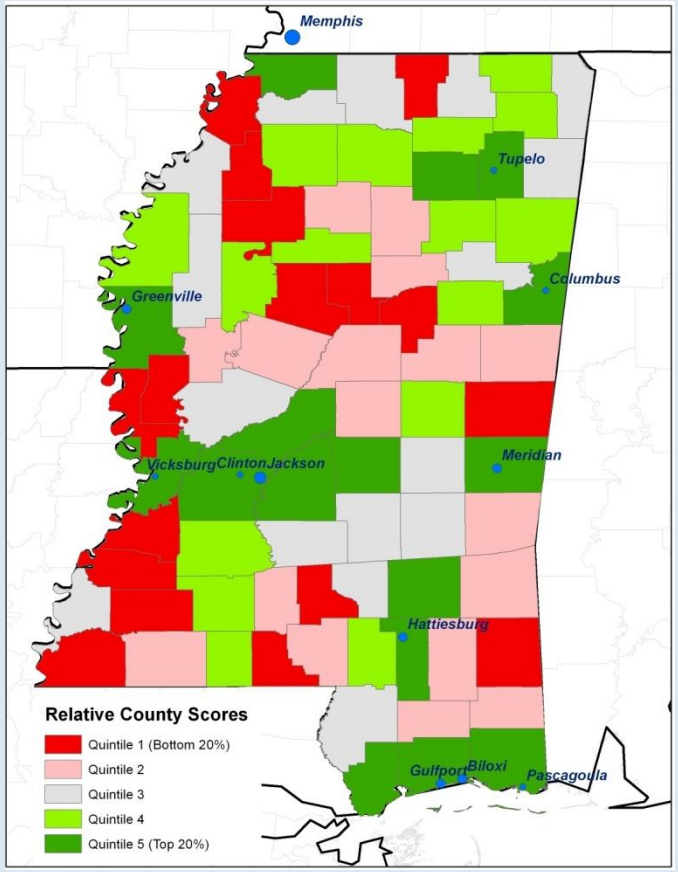
Source: US Bureau of Labor Statistics (2011)

541710 – R&D in the Physical, Engineering and Life Sciences

Total Occupation Presence

Companies in the biotech sector rely on a highly-educated workforce of chemists, biologists and engineers. The top 20% of counties in scoring (shown in dark green below) appear to be sufficient to support a 50-employee operation from the local labor pool with health hiring ratios.

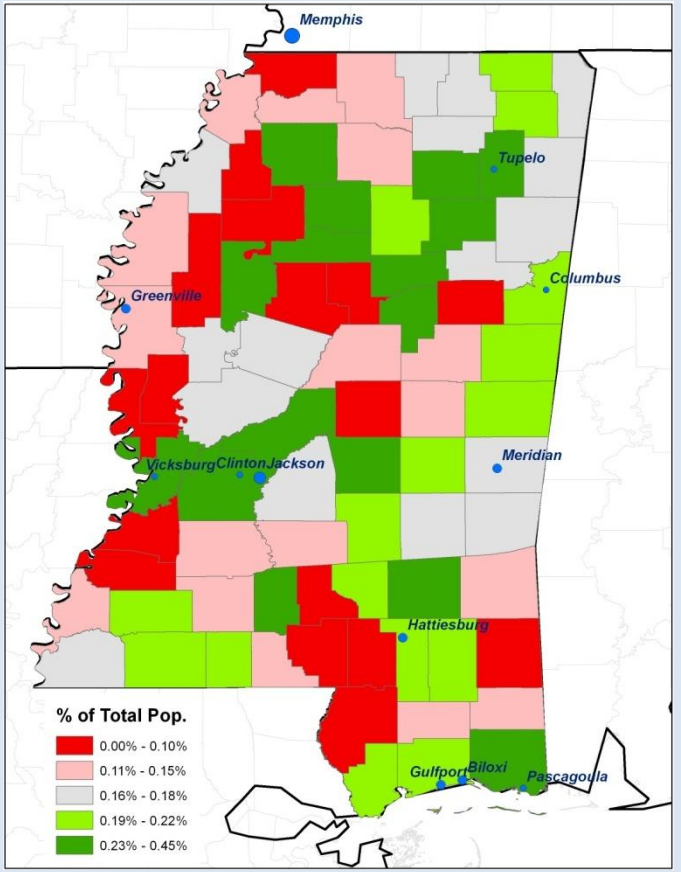
Highest Scores: Hinds, Harrison, Jackson, Lee, Madison



Occupation Concentration

The concentration map below shows occupations in the biotech sector. There is a strong presence of these occupations in the north central counties--three of the five most concentrated counties are around the City of Tupelo. There is a low overall concentration in the delta region

Most Concentrated: Scott, Pontotoc, Lee, Chickasaw, Warren



Health Care BPO and Back Office

This is not an industry defined by NAICS and companies in this sector fall into several different categories. Therefore, a sample of similar industries were studied and a custom group of occupations relevant to health care BPO and Back Office was assembled.

Occupation Code	Occupation Title	Weight
15-0000	**Computer and Mathematical Occupations**	**5%**
15-1121	Computer Systems Analysts	5%
15-1150	Computer Support Specialists	5%
43-0000	**Office and Administrative Support Occupations**	**5%**
43-4051	Customer Service Representatives	10%
43-3011	Bill and Account Collectors	10%
43-4131	Loan Interviewers and Clerks	10%
43-9021	Data Entry Keyers	10%
43-9041	Insurance Claims and Policy Processing Clerks	10%
43-9061	Office Clerks, General	10%
13-0000	**Business and Financial Operations Occupations**	**5%**
13-1031	Claims Adjusters, Examiners, and Investigators	5%
11-0000	**Management Occupations**	**5%**
41-0000	**Sales and Related Occupations**	**5%**
	Total	**100%**

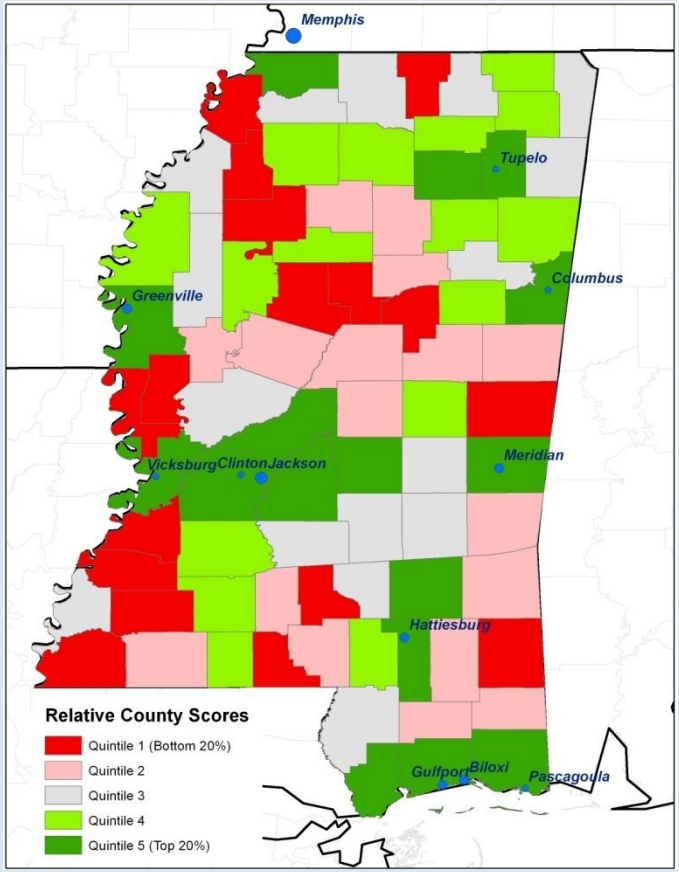
Labor Occupation Criteria Summary: Requires a sufficient supply of general business support tasks and some specialized occupations related to information management, bill processing and insurance claims processing.

Source: US Bureau of Labor Statistics (2011)

Health Care BPO and Back Office

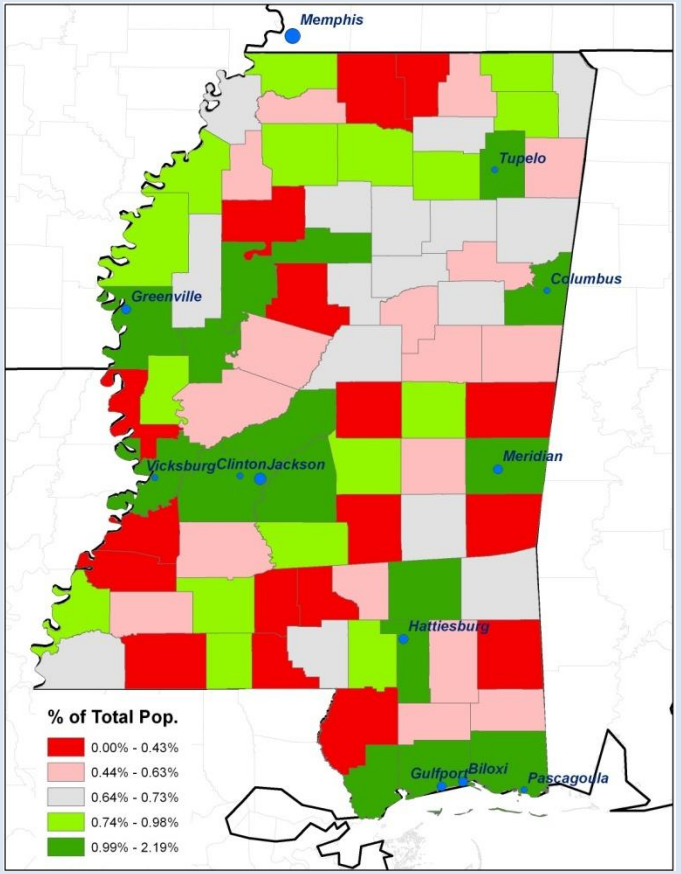
Total Occupation Presence
These occupations are general office and business administration positions which are plentiful in urban areas. As such, the counties with a large workforce generally scored highest. The top 20% of counties in scoring would be to be sufficient to support a 250+ operation in this industry with health hiring ratios.

Highest Scores: Hinds, Harrison, Madison, Rankin, Lee



Occupation Concentration
The concentrations of Health Care BPO and Back Office generally mirrors the overall scores map. This is a less technical labor pool requirement but requires a larger population.

Most Concentrated: Hinds, Madison, Lee, Forrest, Harrison



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Health Care Supply/Demand Analysis

Demand projections for health care professions are a function of the size and nature of the population, their unique health needs and the practice patterns of the local delivery system. As a complex industry, health care delivery professionals span a wide range of skill types, education levels and degrees of licensure. These range from nursing to medical technologists to "mid-level" providers and physicians. The availability of needed health care professionals is a key input into the overall vitality of any local delivery system. For skilled positions, turn-over and vacancies are a fact of life in most markets, but the degree of the shortage varies widely. In Mississippi there are severe shortages in many key skill positions including primary care providers of all types.

The methodology to estimate future health care demand relied on current populations by profession as supplied by the U.S. Department of Labor. The totals were reviewed at the regional level (Southeast comprising Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee). A measure of total "patients for care" was then computed which included inpatient and outpatient demand estimates for the Southeast region for the period 2012-2017. The Southeast growth rate for patient demand was then converted to a population-based ratio. This population-based ratio was then applied to the Mississippi's estimated future population growth to arrive at an estimate of future demand for the various health professions.

Summary of Findings

- **Physicians**
  - Primary Care: Approximately 190 net new primary care physicians will be needed by 2016 to keep up with expected demand for health care services. This number excludes primary care physicians needed to replace retiring physicians.
  - Specialty Care: Approximately 280 net new specialty care physicians will be needed by 2016 (again excluding retirements that take place).

- **Nurses**: Up to 4,880 new nurses will need to enter the delivery system to provide necessary inpatient and outpatient nursing support. Nurse practitioners can play a role in stretching the workforce where appropriate.

- **Mid-level providers**: Modeling suggests the need for 25 additional physician assistants or nurse practitioners by 2016. The state, however, may wish to encourage further growth of mid-level providers as a way of satisfying the need for primary care, which is likely to outstrip available supply.

- **Other Allied Health**: A series of additional "med-tech" and other allied professionals will be needed to support physicians in diagnostic and therapeutic services:
  - Radiation technologists: Approximately 430 net new rad techs needed by 2016
  - General med-techs: Approximately 100 net new rad techs needed by 2016
  - Physical therapists (PT): Approximately 340 net new physical therapists needed by 2016
  - Respiratory therapists: Approximately 270 net new respiratory therapists needed by 2016
  - Pharmacists: Approximately 410 net new pharmacists needed by 2016

Note that labor demand estimates are based on regional estimates and other factors which are consistent with trends and needs for Mississippi but may differ from future growth in Mississippi due to general economic conditions and individuals' willingness to work in the areas of greatest need.

Physicians – Primary Care

Total Active Primary Care Physicians in direct patient care	
State	**2011**
Alabama	3,359
Florida	13,990
Georgia	6,713
Kentucky	3,213
Mississippi	1,830
North Carolina	7,099
South Carolina	3,286
Tennessee	5,196
Regional Total	**44,635**

Estimated Demand for Primary Care Physicians						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	1,859	1,889	1,931	1,973	2,017	188
% Growth	1.62%	1.60%	2.20%	2.22%	2.24%	

Source: US Bureau of Labor Statistics; calculated demand

Physicians – Specialists

Total Active Specialist Physicians in direct patient care	
State	**2011**
Alabama	5,703
Florida	26,595
Georgia	11,649
Kentucky	5,613
Mississippi	3,154
North Carolina	12,236
South Carolina	5,767
Tennessee	8,996
Regional Total	**79,763**

Estimated Demand for Specialist Physicians						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	3,165	3,216	3,286	3,359	3,434	280
% Growth	0.34%	1.60%	2.20%	2.22%	2.24%	

Source: US Bureau of Labor Statistics; calculated demand

Registered Nurses

Total Number of Employed Registered Nurses in the Southeastern US						
State	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Alabama	37,270	40,010	42,180	41,560	42,880	44,300
Florida	138,760	146,290	148,180	146,040	150,940	158,390
Georgia	59,720	60,850	62,230	64,920	65,370	65,390
Kentucky	37,720	38,120	39,120	41,080	43,250	44,920
Mississippi	25,970	25,100	25,350	27,350	28,030	28,200
North Carolina	72,130	74,400	80,090	84,230	88,190	90,730
South Carolina	31,160	31,810	35,040	36,880	38,020	40,520
Tennessee	52,090	52,780	54,960	61,570	61,980	61,890
Regional Total	**454,820**	**469,360**	**487,150**	**503,630**	**518,660**	**534,340**

Estimated Demand for Registered Nurses						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	29,745	30,726	31,744	32,803	33,904	4,880
% Growth	2.48%	3.29%	3.32%	3.34%	3.36%	

Source: US Bureau of Labor Statistics; calculated demand

Nurse Practitioners

Total Number Nurse Practitioners in the Southeastern US	
State	**2010**
Alabama	1,726
Florida	12,237
Georgia	4,534
Kentucky	2,634
Mississippi	2,547
North Carolina	3,665
South Carolina	3,401
Tennessee	5,329
Regional Total	**36,073**

Estimated Demand for Nurse Practitioners						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	2,582	2,638	2,696	2,756	2,818	271
% Growth	1.37%	2.18%	2.20%	2.22%	2.24%	

Source: US Bureau of Labor Statistics; calculated demand

Physician Assistants

Total Number of Employed Physician Assistants in the Southeastern US						
State	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Alabama	480	540	470	380	470	500
Florida	4,130	3,950	4,100	4,010	3,860	3,460
Georgia	2,100	2,160	2,700	2,400	2,610	2,430
Kentucky	550	500	460	630	650	740
Mississippi	140	180	240	230	200	160
North Carolina	2,930	3,030	3,010	3,060	3,540	3,660
South Carolina	460	460	510	590	650	720
Tennessee	690	860	1,320	1,330	1,700	1,600
Regional Total	**11,480**	**11,680**	**12,810**	**12,630**	**13,680**	**13,270**

Estimated Demand for Physician Assistants						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	168	173	178	183	189	25
% Growth	2.15%	2.96%	2.98%	3.00%	3.02%	

Source: US Bureau of Labor Statistics; calculated demand

Radiation Technologists

Total Number of Employed Radiation Technologists in the Southeastern US						
State	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Alabama	3,200	3,210	3,290	3,300	3,360	3,590
Florida	12,270	12,770	13,220	13,250	13,770	14,490
Georgia	4,950	5,410	5,620	5,850	5,940	5,900
Kentucky	3,660	3,510	3,810	4,040	4,090	4,050
Mississippi	1,960	1,890	1,860	2,000	2,170	2,230
North Carolina	5,610	6,150	6,790	6,970	7,470	7,410
South Carolina	2,550	2,600	2,990	3,140	3,210	3,270
Tennessee	5,060	5,660	5,650	5,920	5,900	5,950
Regional Total	**39,260**	**41,200**	**43,230**	**44,470**	**45,910**	**46,890**

Estimated Demand for Radiation Technologists						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	2,368	2,454	2,544	2,637	2,735	432
% Growth	2.82%	3.64%	3.66%	3.68%	3.70%	

Source: US Bureau of Labor Statistics; calculated demand

Medical Technologists

Total Number of Employed Medical Technologists in the Southeastern US						
State	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Alabama	2,150	2,260	2,350	2,400	2,380	2,420
Florida	8,220	8,070	9,280	9,910	10,400	9,610
Georgia	5,110	5,250	5,380	5,630	5,550	5,510
Kentucky	2,360	2,450	2,480	2,530	2,430	1,890
Mississippi	1,580	1,660	1,740	1,790	1,710	1,660
North Carolina	4,250	4,600	5,120	5,230	4,500	4,210
South Carolina	2,240	2,260	2,090	2,160	2,310	2,590
Tennessee	3,800	3,740	3,620	3,610	3,670	3,680
Regional Total	**29,710**	**30,290**	**32,060**	**33,260**	**32,950**	**31,570**

Estimated Demand for Medical Technologists						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	1,682	1,703	1,724	1,746	1,769	95
% Growth	0.45%	1.24%	1.26%	1.28%	1.30%	

Source: US Bureau of Labor Statistics; calculated demand

Physical Therapists

Total Number of Employed Physical Therapists in the Southeastern US						
State	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Alabama	1,730	1,740	1,710	1,790	1,750	1,860
Florida	9,380	10,080	10,620	10,640	11,010	11,070
Georgia	2,930	3,200	3,600	3,690	3,820	3,720
Kentucky	1,940	1,920	1,810	1,790	2,200	2,390
Mississippi	1,210	1,340	1,320	1,430	1,480	1,550
North Carolina	3,780	3,950	3,950	4,210	4,340	4,530
South Carolina	1,850	2,030	2,110	2,190	2,300	2,670
Tennessee	3,350	3,310	3,300	3,490	3,810	4,090
Regional Total	**26,170**	**27,570**	**28,420**	**29,230**	**30,710**	**31,880**

Estimated Demand for Physical Therapists						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	1,659	1,726	1,796	1,870	1,946	339
% Growth	3.23%	4.05%	4.07%	4.09%	4.11%	

Source: US Bureau of Labor Statistics; calculated demand

Respiratory Therapists

Total Number of Employed Respiratory Therapists in the Southeastern US						
State	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Alabama	1,180	1,180	2,220	1,510	1,640	1,940
Florida	5,840	6,340	6,420	6,470	6,410	6,450
Georgia	3,110	3,150	3,170	3,170	3,380	3,560
Kentucky	1,420	1,580	1,630	1,960	2,030	2,160
Mississippi	1,150	1,200	1,180	1,290	1,300	1,280
North Carolina	2,690	2,900	3,170	3,030	3,160	3,110
South Carolina	1,310	1,380	1,680	1,770	1,890	1,700
Tennessee	2,590	2,540	2,440	2,470	2,830	3,140
Regional Total	**19,290**	**20,270**	**21,910**	**21,670**	**22,640**	**23,340**

Estimated Demand for Respiratory Therapists						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	1,366	1,419	1,475	1,533	1,594	269
% Growth	3.09%	3.91%	3.93%	3.95%	3.97%	

Source: US Bureau of Labor Statistics; calculated demand

Pharmacists

Total Number of Employed Pharmacists in the Southeastern US						
State	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Alabama	4,300	4,360	4,440	4,330	4,550	4,690
Florida	15,130	17,020	17,690	16,720	16,890	17,080
Georgia	6,710	7,180	7,530	8,210	8,060	7,980
Kentucky	3,470	3,580	4,000	4,270	4,280	4,270
Mississippi	2,280	2,290	2,250	2,300	2,330	2,330
North Carolina	6,480	6,990	7,590	7,900	8,030	8,210
South Carolina	3,570	3,500	3,950	4,450	4,480	4,630
Tennessee	5,430	5,680	6,130	6,640	6,530	6,570
Regional Total	**47,370**	**50,600**	**53,580**	**54,820**	**55,150**	**55,760**

Estimated Demand for Pharmacists						Positions Needed
State	**2012**	**2013**	**2014**	**2015**	**2016**	
Mississippi	2,460	2,542	2,627	2,716	2,808	409
% Growth	2.52%	3.34%	3.36%	3.38%	3.40%	

Source: US Bureau of Labor Statistics; calculated demand