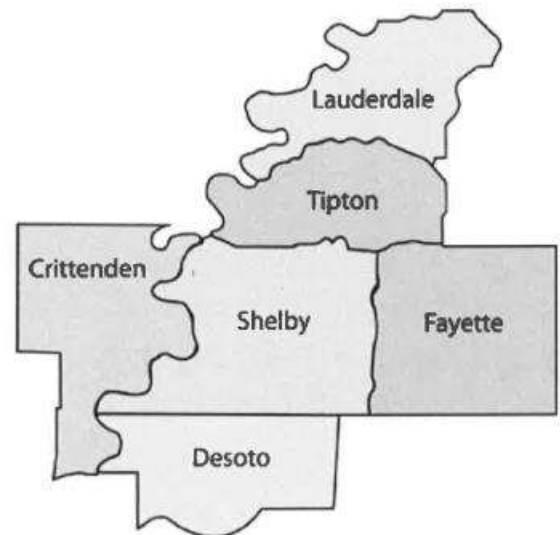


PART 1: BACKGROUND & TARGET INDUSTRY REPORT

COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY (CEDs)

For the Memphis Area Association of Governments (MAAG)



Prepared March 31, 2017
for MAAG

Randall Gross / Development Economics (RGDE)

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INTRODUCTION

This report represents Part 1 of a two-part Comprehensive Economic Development Strategy (CEDS) for the Memphis Region. The Part 1 Report provides the background economic base assessment as well as findings from a targeted industry analysis, as a basis for strategic recommendations for regional economic development that are contained in Part 2. The Memphis Region CEDS was prepared for the Memphis Area Association of Governments (MAAG) through a grant from the U.S. Economic Development Administration (EDA).

Various inputs helped to inform this Part 1 Report, including a review of existing documentation relating to economic development and planning within the region. Interviews, surveys, and focus groups were conducted as part of a stakeholder engagement process with representatives of business, government, and institutions throughout the area. Field reconnaissance was conducted and information collected on existing physical conditions. Analysis of various economic and demographic data was conducted as input to both the economic baseline assessment and the target industry analysis.

Section 1 of this Part 1 Report provides a summary of findings from the Economic Base Assessment relating to existing economic conditions, regional context, key assets, demographic trends, and various factors impacting on the region's economic development. Section 2 provides a summary of findings from the Target Industry Analysis, indicating potential opportunities for regional growth and business development within the framework of existing targets for business recruitment and retention identified by area economic development agencies. Section 3 summarizes existing labor force education and skills status, while Section 4 provides a summary of existing economic development agency resources.

Acknowledgements

This report acknowledges the assistance of the Memphis Area Association of Governments (MAAG) and its staff in coordinating logistical resources to help guide this process. The report also acknowledges the participation and guidance of the Project Steering Committee established for this CEDS. Steering Committee members included the following individuals, representing key organizations and institutions, and providing their time and attention.

The CEDS Steering Committee

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Honorable Woody Wheelless, County Judge	Crittenden County
Luke Yancy, III, President	Mid-South Minority Business Council Continuum

Steering committee members, along with representatives of various chambers of commerce and other organizations in the region helped provide input and assistance where possible.

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Section 1. ECONOMIC BASE ASSESSMENT

This economic base assessment provides the results of research and analysis, as well as output from existing documentation, interviews, surveys, and focus groups examining the regional economy. The region's location and national context are examined, along with transportation and access, the physical environment, and key assets for economic development. Demographic trends are examined, along with an assessment of major industries and economic indicators including labor force and unemployment trends, at-place employment, and other relevant factors. Ultimately, this section provides an overview of the Memphis-area economy, its unique attributes and challenges impacting on future growth.

Location and National Context

The Memphis region is located in the Mississippi Delta, straddling the intersection of Tennessee, Mississippi, and Arkansas. Due to its strategic location on the Mississippi River, Memphis has long served as a major shipping hub. Memphis served as the port of origin in the Antebellum South for shipping cotton and other crops to Europe and her colonies worldwide. During the Civil War, the Port of Memphis was among the largest and busiest on the Mississippi River. The confluence of river and rail infrastructure also made Memphis an important transportation hub. Partly as a result of its accessible distribution networks, the city also became a center for manufacturing.

Memphis maintained its prominence as a transportation hub into the 20th and 21st centuries. Due to its central location, interstate highway and freight rail access, Memphis developed as an important distribution center. Memphis has the 3rd-largest rail center in the U.S. and is one of only four American cities with five Class 1 Railroads. The Memphis International Airport expanded with the development of Federal Express Corporation (FedEx), into the 2nd largest cargo airport in the world, and the busiest in the United States. Memphis has marketed itself as "America's Distribution Hub" for several decades.

The regional economy has become more diversified over time, with the Memphis area GDP exceeding \$60 billion (2013). Over 80% of this GDP is now generated by service industries.

Transportation and Accessibility

The Memphis area has long-served as a transportation hub for the central United States, rivaled in many ways only by Chicago. The city has major infrastructure and facilities for rail, water, air, and road transportation. Perhaps most significantly (as noted above), Memphis International Airport is the nation's

busiest cargo airport, thanks in large measure to the airport's status of international base hub for FedEx.

Water

The International Port of Memphis is the 5th largest inland port in the United States, and among the largest ports on the Mississippi River system. Major uses and resources associated with the port include Bunge North America, Lafarge North America, Westway Terminal Company, Cargill Inc., Lucy Woodstock Marine Terminal, Fullen Dock & Warehouse, American Commercial Lines, Exxon Mobile Corporation, Inspectorate America, Nucor Steel, Economy Boat Store, and others. There are 150 business facilities accommodated at port-related facilities, ranging from terminals to grain elevators, chemicals processing and steel mills to maintenance and supply shops. Two large manufacturing concerns – Electrolux (appliances) and Mitsubishi (transformers) – located at the port since 2010. Many of the industrial businesses generate bulk output geared to river freight transport – fuel, chemicals, iron and steel, coal, large machinery & equipment, lumber, grain, asphalt, etc.

Port facilities include six grain elevators with more than 2,200 feet of berthing space. Overall storage capacity exceeds 12.3 million bushels. A total of 18 facilities handle about 89 million gallons of liquid bulk storage. The port's dry bulk facilities can store 581,000 tons. The only petroleum refinery in Tennessee, Valero's facility at the Port of Memphis, has a direct pipeline carrying jet fuel to Memphis International Airport. The port is also home to the 157-acre Ensley engineering yard, operated by the U.S. Army Corps of Engineers, which supports a fleet of 33 vessels.

The port was negatively impacted by the recession, with a 35% decrease in overall port volumes. But the port has slowly recaptured some of this lost business. According to its 2011 analysis, the Port of Memphis generated \$7.1 billion in economic impacts and almost 20,000 jobs (including 7,145 direct jobs) to the regional economy.

Rail

Memphis is well-served by rail for both passenger and freight uses. Memphis is the only large Tennessee city with Amtrak passenger service. While that service is limited to northern (Chicago) and southern (New Orleans) routing, it is nevertheless more than Nashville or other cities in Tennessee have available. More importantly, Memphis is a national rail freight hub, one of only three cities nationwide with three Class I railroads, along with major intermodal and switching operations. The region offers rail yards and access for all six major North American rail operators:

- BNSF (Memphis Intermodal Facility – formerly Tennessee Yard),
- CN (Intermodal Gateway-Memphis, opened with CSX in 2005),
- CSX (Intermodal Gateway-Memphis, 2005),
- Norfolk Southern (Forrest Yard and Rossville), and
- Union Pacific (Marion, AR rail yard, opened 1998).

These facilities are situated along an east-west corridor extending from Collierville to Marion. Among the newest of these facilities, a 185-acre yard operated by BNSF, opened in 2010 with 72 employees and capacity for 600,000 lifts per year. BNSF selected Memphis for its 10th largest facility because of its strategic location for reaching Southeastern U.S. markets. Cargo moved through BNSF's Memphis facility is 50% domestic and 50% international.

NS invested \$112 million in building an intermodal facility at Rossville (Fayette County). The facility opened in 2012 with future expansion capacity for 400 acres, six loading tracks and 2,200 parking spaces. The federal government contributed \$52.5 million in infrastructure incentives for the Rossville yard, one of four anchors NS is developing to move freight from the Gulf Coast to the northeast. Expansion of the Panama Canal will shift more freight through Houston and into this corridor. More truck traffic is expected to this facility from the south, namely north Mississippi, yielding more demand for warehouse & distribution facilities. Growth in intermodal and automotive shipping volumes bodes well for Memphis' position as a hub for such activity.

The region also offers 15 equipment depots and one drayage trucking facility. The depots serve all major global shipping lines, including Horizon Lines, Hapag Lloyd, Matson, NYK, Hamburg Sud, Mitsui, K-Line, Cosco, Yang-Ming, CCM, Hanjin, Zim, COFC, CFQU, APL, Maersk, Evergreen, CN, Hyundai, Seaboard Marine, CSAV, ACL, MSC, US Lines, China Shipping, Seastar, and MCCP (Tropical and Chassis Depot).

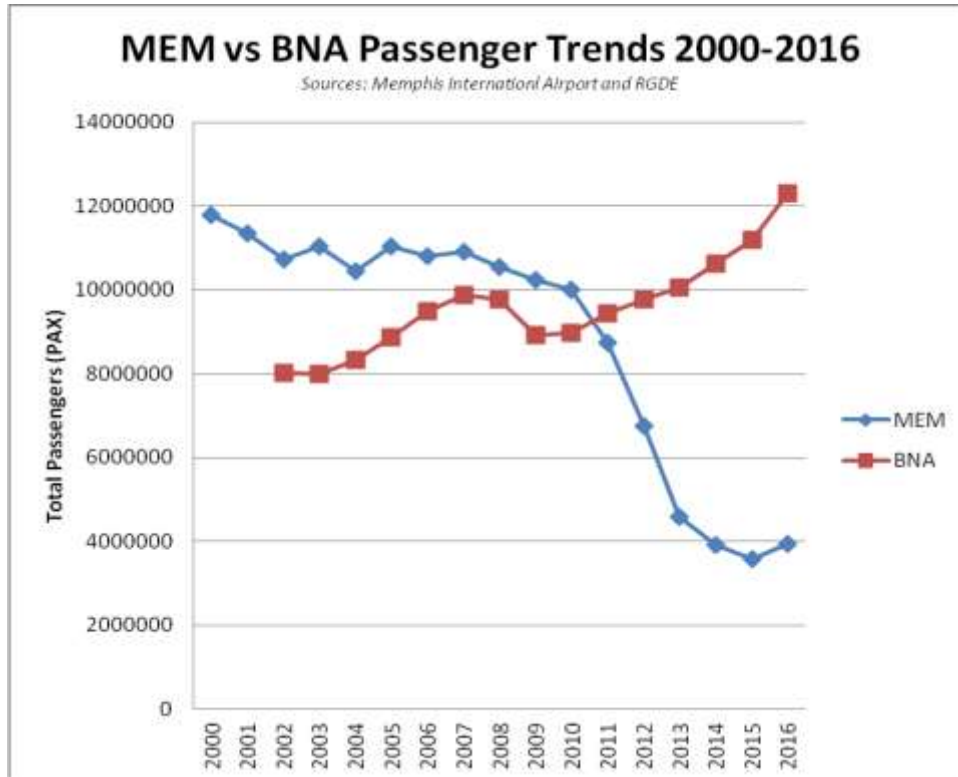
Air

Memphis International Airport (MEM) became a major global freight center as the hub for FedEx Express. Up until 2009, Memphis was the busiest cargo airport in the world, only supplanted that year by Hong Kong. Memphis remains the busiest cargo airport in the U.S. primarily due to the FedEx hub, which has also helped support various freight forwarding and cargo support operations.

Southern Airways and later, Republic Airlines, had major passenger hub operations based in Memphis. The merger of Republic and Northwest Airlines in 1986 continued the Memphis hub and expanded it to include KLM service to Amsterdam in 1995. However, Delta Airlines' purchase of Northwest resulted in the reduction and gradual elimination of the Memphis hub and its international service. The loss of passenger hub status had a devastating impact on airport

traffic and passenger count. Nashville International Airport (BNA), has not had a passenger hub since American Airlines withdrew in the 1990s, has surpassed Memphis as the state's busiest airport. However, an aggressive strategy to attract airlines and new routes to Memphis is beginning to pay off in increasing passenger counts.

Chart 1



Road

The region is served by five branches of the interstate highway system, I-40 (East & West), I-55 (North & South), and I-22 (East). I-40 provides direct access east to Nashville and west to Little Rock. I-55 North extends to St. Louis and Chicago, while I-55 South connects Memphis to New Orleans. U.S. Highway 78 just received its upgrade to interstate status (as I-22) in 2013, connecting Memphis to Birmingham. In addition, a small segment of proposed I-69, which would eventually connect Port Huron (near Canada) to the Mexican border in Texas, has been completed through DeSoto County. I-240 and I-269 serve as inner and outer beltways on the eastern and northern flanks of Memphis and Shelby County. Thanks to this convergence of interstate highways, Memphis is accessible by road to 76% of the geographic area of the United States in a single-day.

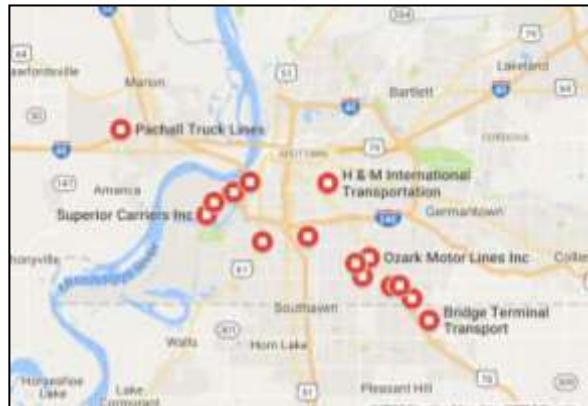
In addition to interstate highway access, the region is served by federal highways including U.S. 51 (N to Dyersburg and S to Canton/Jackson), U.S. 79

(NE to Milan/Humboldt and SW to Pine Bluff), U.S. 64 (E toward Chattanooga, W toward Fort Smith), U.S. 78 (SE to Holly Springs, becomes I-22), and U.S. 61 (S toward Clarksdale, N to Blytheville). The region is a hub for MS-AR-TN state and county routes. The TN 385 Corridor (Bill Morris Parkway) is a major office/commercial corridor extending southeast of the city from I-240 into Collierville.

The region is notably home to a large number of trucking and shipping terminals, thanks to its large intermodal facilities for rail, trucking, air, and river shipping. Swift, Wilson, Superior, TCW, Ozark, J.B. Hunt, Empire, Estes, Averitt Express, Hub Group, Kinder Morgan, Old Dominion, XPO, YRC, UPS, and others operate trucking, freight forwarding, and related facilities in the region. Several of these companies, like Ozark Motor Lines, are also headquartered in the area.

Sample trucking terminals, Google Earth

Many of these trucking and logistics facilities are located within a distinct corridor that extends northwest to southeast, from Marion along the south side of I-240 east to U.S. 78 south into Olive Branch. There is also a cluster on President's Island along Channel and Harbor avenues near the port facilities.



Physical Assets & Environment

Various physical assets and features were inventoried and assessed as they impact on the region's competitiveness for economic development. Several of these assets and features are discussed below.

Office and Industrial Parks & Sites

There are a number of public- and privately-operated business and industrial parks in the region. Belz Enterprises, which is headquartered in Memphis, has played a significant role in developing and operating commercial and industrial real estate properties throughout the region. Belz owns and operates more than 9,000,000 square feet of industrial space with airport, rail, highway, and water access in the Memphis area. Much of the region's office space is located not in office parks, per se, but in downtown Memphis, Germantown and other non-park nodes and corridors.

- **Frank C. Pidgeon Industrial Park.** The Port of Memphis operates the Frank C. Pidgeon Industrial Park on Presidents Island. The 3,500-acre

park was opened in 1967 on land purchased by Memphis, Shelby County, and the Port Commission. The park offers river, truck, and expanding rail service. Tenants in the park include Canadian National (CN) Railway Company's Ridgeport Logistics Center, Nucor Steel, TVA, Electrolux and an associated 600-acre supplier park, and several smaller uses. TVA is constructing the \$975 million Allen Fossil (gas-fired electrical generating) Plant on 75 acres in the park.



- **Rivergate Industrial Park.** Located at 490 Rivergate Drive, Belz developed this 250-acre industrial park with slack-water harbor access, billed as “the largest privately-owned and developed multi-use industrial port on the U.S. inland waterway system.” One 100,000 square-foot warehouse-distribution building with 27-foot clear height was recently available for lease at \$2.50 Net per square feet. Available sites range in size from one to 150 acres.
- **Belz Industrial Park,** located at 2000 Latham Street (near U.S. Highway 61), this Belz-owned park offers 258,033 square feet of available industrial space in five older manufacturing and distribution buildings; and up to 20 acres of land for lease or sale. The park has access to Canadian National Railway. Southgate Shopping Center (north and south) is located adjacent to the park. Kolmar Laboratory is one of the larger uses there.
- **Memphis Depot Industrial Park,** a Mayfield property, is located at 2028 Memphis Depot Parkway (near I-240 and the airport). This is among the largest industrial nodes in the Memphis region, with 4,200,000 square feet

of industrial space built as part of the 1997 redevelopment of the ca 1942 Memphis Defense Depot. More than \$30 million in capital repairs were made to upgrade and modernize the former military facility as a major warehouse and distribution hub. The gated and secure park includes 43 buildings on 250 acres, with 29 (about 19%) of the park's 152 units vacant. Mayfield Properties purchased the park in 2011, so it is privately owned and managed. The park's tenants benefit from being part of the general-purpose Foreign Trade Zone #77 (Site 4). Prime anchor tenants include Cargill Cotton, Buck Gardner Calls, United Parcel Service, Louis Dreyfus, and Avery Outdoors.

- **Northridge Industrial Park.** This 550-acre business and industrial park is located at New Allen Road and Frayser (just north of I-240 in Raleigh). Another Belz property, Northridge is undeveloped, offering sites from 10 to 83 acres for build-to-suit, lease, or purchase.
- **Southridge Industrial Park,** located at Shelby Drive and Crumpler, is yet another Belz property offering sites for industrial development, leasing or sale. The park currently has 1.6 million square feet of industrial space with 24-26 foot ceiling heights and access to Burlington Northern Rail. Of the total, 640,000 square feet is available for lease. About 54 acres in three large sites is available for lease or sale. Adjacent uses include the McKesson Regional Offices and Distribution Center.
- **Mid-America Industrial Park,** located on Mid-America Boulevard at Family Dollar Parkway in West Memphis, is one of the few municipally-owned and operated industrial parks in the region. The 258-acre park is located four miles from the Union Pacific Intermodal Yard and six miles from the Port of West Memphis. I-40 and I-55 are also located within a few miles of the park. Nearby are the Family Dollar Regional Distribution Center, FedEx Ground, and the Skil Bosch Distribution Center. Land is offered at \$40,000 to \$45,000 per acre.
- **Shelby Oaks Corporate Park.** This Belz property at Shelby Oaks Drive and Sycamore View offers 1.2 million square feet of multi-use office/warehouse space. About 94,600 square feet is available in about 24 spaces, mostly smaller units of under 5,000 square feet (one as small as 360 square feet).
- **Gateway Industrial Park** is located at Jackson Avenue and Farmville Road, two miles from I-240. This Belz property has 1.5 million square feet of industrial space in freestanding and multi-tenant buildings. Of this number, 710,760 square feet in 22 spaces or nearly one-half of all space is available for lease or sale in the park.

- **North Memphis Industrial Park.** This 433-acre, 1.9 million square-foot, Belz-owned industrial park is located near the I-55 and I-240 interchange on Thomas Street at Firestone. About 443,500 square feet of space is available in 15 buildings. About one-half of the land parcels are developed. One outparcel is designated for the Mid-south Junior Golf Association. Sites have access to the Union Pacific rail line.
- **Germantown Park Center** consists of six, Class A corporate office buildings on Germantown Parkway, across from Agricenter International. The six buildings together comprise about 535,000 square feet. Anchor tenants among the 65 businesses in the park include Campbell Clinic, Mass Mutual, and Ford Motor Company. Buildings in the park have recently been purchased for about \$46 per square foot.
- **Metro Industrial Park** is an industrial park located at Hacks Cross Road and Stateline Road in Olive Branch, MS. The park has about 17,000 available square feet of building space and up to 66 acres of land for sale or lease. Weyerhaeuser is a major tenant, and the park is operated by Belz.
- **Lenox Office Park.** Lenox, located about 11 miles from the airport in the 385 Corridor Sub-market, includes one of the largest concentrations for Class-A office space in the Memphis region. On-site amenities include a Marriott Courtyard Hotel, security, fitness center, walking trails, and T-1 Internet connectivity. Recent tenants include C.H. Robinson, W.M. Barr, Verso Paper, and Metro PCS.
- **Nonconnah Corporate Center.** This 32-building office and warehouse node provides direct proximity to Memphis International Airport and access to I-240, an on-site fitness center, security, and day care center. Medtronic is a key anchor tenant.
- **East Pointe Business Center.** Park offering high-end office, showroom and warehouse space near 385, 240, and US Highway 78.
- **Tipton County Industrial Parks.** There are three industrial parks in the Covington area of Tipton County, including Industrial Parks North and South and the Rialto Industrial Park. IP North off U.S. Highway 51 houses existing businesses including Charms Company Distribution, Rose Integrated Services, World Wide Lines, Burns, and ITW Paslode. IP South on Mueller Brass Road houses Mueller Brass, Delfield, HT Hackney and the County Justice Complex. There is no additional land available for development in IP North, but there are four sites with 22.6 acres at IP South.

Rialto Industrial Park at U.S. Highway 51 and Rialto is partially developed but offers three available sites with a total of 112.19 acres. Existing

tenants in the park include Unilever, Quebecor World, Producer Midsouth, Sustainable Fiber Solutions, TOPPS, and Covington WWTP. CSC Sugar announced in 2014 that it would open a sugar processing facility in the park, employing 50. The company noted Covington's proximity to key food and beverage customers (such as Unilever, which expanded its ice cream production with 400 jobs and a \$108.7 million investment in their facility in 2011-13). Larry Bowman Trucking relocated from Joplin MO to Covington partly as a result of the need for increased transportation from these facilities. U.S. Cold Storage also opened a \$48 million, 336,500 square-foot facility employing 100 people in the area to accommodate growth at Unilever.

- **Southwind Business Center.** Highwoods Properties operates Southwind Business Center, an office park located on Poplar Avenue. Affordable multi-tenant space is operated by Regus within the park. Another Highwoods development, **Shadow Creek**, also offers high-quality office space in the 385 Corridor area.
- **Lauderdale County Industrial Parks.** Lauderdale County offers the Ripley East/Walker, Ripley North, and Halls Industrial Parks as well as the American Way Site. The West Tennessee Industrial Association helps market the parks which together have upwards of 424 acres available for potential development. Ripley East/Walker IP has 110 acres with one building at 374 Highland in Ripley. The park lacks interstate highway access but does offer direct CN Railway service. Halls Industrial Park has 30 undeveloped acres located in the community of Halls, off of U.S. Highway 51. Ripley North Industrial Park has 101 undeveloped acres (with 162 additional acres available if needed). This park is located off of North Main Street in Ripley, not far from U.S. Highway 51 and the Wal-Mart Supercenter. The park has access to CN Rail service, but also lacks interstate highway access. The American Way site off North Main in Ripley has 21 undeveloped acres. Available buildings in Lauderdale County include T.P. Tool (14,900 square feet) and the Harrison Building (23,000sf).
- **Cottonwood Office Park.** This small (5-acre, 50,000 square-foot) business park built in 1984 is located on Mendenhall and Cottonwood Roads, with access to I-240 and the 385 Corridor. About 20% of the space is vacant.
- **Century City Business Park,** located off I-40 near Whitten Road, was recently sold for more than \$48 million, according to the *Memphis Business Journal*. The light industrial park has seven buildings with about 520,000 square feet on 50 acres that form part of a larger mixed-use development. According to the *Journal*, major tenant uses include pharma, hospital, advertising, and distribution.

- **TraVure** is a 10-acre, \$90 million mixed-use development underway by Gill Properties on Poplar, east of Kirby Parkway. The project includes 150,000 square feet of office space in a mixed-use environment, with on-site dining, retail, fitness center, covered parking and a dual-branded Hilton Hotel.
- **Bellbrook Industrial Park.** This 100-acre industrial park has 1,667,560 square feet in 13 buildings located near I-55 and I-240. Most of the buildings were constructed between 1968 and 1974, with little new construction on site. Tenants include DHL, Wingfoot (Goodyear), Sherwin Williams, Smith & Nephew, ICEE, Office Max, ThyssenKrupp Elevator, Ballet Memphis, and Dunbar Armored.
- **Gateway Global Logistics Center** is a 1,500-acre site straddling the state line between Fayette County (TN) and Marshall County (MS). The newly-developing park is adjacent to the Norfolk-Southern Intermodal Terminal that opened in 2012 and offers direct access to U.S. Highway 72 (I-22). The park is located two miles from the I-269 interchange at Goodman Road. WCA Land and Panattoni Development are partners in the project, which includes the 1.0 million square foot Volvo Group facility and a 554,000 square-foot spec warehouse, expandable to 1.3 million square feet.
- **Champion Hills Office Park.** This small, 80,000 square-foot office complex is located off of I-240 near Windyke Country Club. About 11,000 square feet of space is available for lease, and the property is owned and managed by Belz.
- **Schilling Farms** is a newly-developing, 443-acre mixed-use project in Collierville that includes 80 acres designated for office space. This Boyle Investment Group property has attracted uses such as Helena Chemical to a 70,000 square-foot facility, and a 62,000 square-foot spec building (Schilling Farms Business Center) is being marketed to attract more corporate use.
- **Ridgeway Business Center.** Ridgeway is located off of Poplar at I-240 and offers shared and “virtual” office space for smaller businesses as well as larger office space for corporate use.
- **Other Sample Office & Industrial Locations:** Belover Industrial District (223,000 square-foot buildings and 22 acres on Steele Road); Northwest Industrial Park (Northwest Progress Parkway); Dunn Avenue Industrial Park (Bulk warehouse, truck terminal and maintenance facilities at 1700 Dunn Avenue); Tri-Buildings (70,000 square feet of office/warehouse space near the airport); Florida Industrial Park (Light industrial/warehouse

space near I-55); Wolf River Professional Center (Germantown medical office condominiums of 6,000 to 40,000 square feet); Gayoso, North Main, South Front, and North Front industrial (Industrial buildings located downtown, with some 80,000 square feet of space available); Interstate Industrial Park (warehouse and distribution park with about 50,000 square feet available and sales of \$8.25/SF, located at Brooks Road and Lakeview near the airport); Weston Companies' Tournament Trails (offers space in the 385 Corridor); Parkway Industrial (100,000 square-foot warehouse with about 22,000 square feet of available space); Holmes Road Industrial Park (massive multi-tenant industrial warehouse building located at 5900 East Holmes Road); Southpoint Industrial Park (including massive warehouse/distribution buildings like the 525,000 square foot Toys R Us Building or the 700,000 square-foot South Point IV Building on South Point Drive in the Southeast sub-market); and others.

Business Districts, Nodes, and Corridors

The region has several large business nodes and corridors of regional significance, as discussed below.

Downtown Memphis is certainly the largest and best-known of these nodes. Even so, Downtown (with 5.3 million square feet) is only the 3rd largest office sub-market in the region, after the East sub-market (10.4 million SF), and the 385 Corridor (6.2 million SF). Still, several of the region's largest individual office buildings are located downtown, including Clark Tower (668,500sf), First Tennessee Building (416,000sf), One Commerce Square (399,000sf), and Crescent Center (337,000sf). Downtown vacancy (13.5%) is still higher than the regional average and is second only to the airport area (24.8%).

Downtown has benefitted over time from tourism and convention center development. Memphis Cook Convention Center offers a 125,000 square-foot main exhibit hall and 300,000 square-foot special exhibition space, 31 meeting rooms, and the 2,100-seat Cannon Center for the Performing Arts. Beale Street, the National Civil Rights Museum, Stax Museum of American Soul Music, Mud Island, the Peabody Ducks, and the Rock and Soul Museum are among the many popular visitor attractions that have helped make Memphis a must-see destination for music lovers. There are about 3,000 hotel rooms in the downtown area, with another 3,000 in 15 projects planned, proposed, or under construction. The 58-room Hotel Napoleon recently opened in a restored office building. The old train station is being converted into a 120-room Hotel Curio. Downtown occupancy rates are up to nearly 75% and ADR is up to \$159, with RevPar (revenue per room) up nearly 6% between June 2015 and June 2016.

Downtown revitalization has also attracted new housing development over time, especially along the riverfront in Harbor Town, Downtown Flats (Barboro Flats, Cornerstone Flats, Main Street Flats, Radio Center Flats, and Van Vleet

Flats), South End (South Bluffs), the proposed Central Station mixed-use development, and similar projects.

Midtown & Medical District. The Midtown area is a major hub for cultural and institutional uses, and is adjacent to the Memphis Medical District. Institutions located in the Midtown and Medical District areas include Rhodes College, Memphis College of Art, University of Tennessee Health Sciences Center, LeMoyne-Owen College (just south of Midtown), Methodist Hospital and associated training facilities, Regional One Health, Memphis Veterans Administration Medical Center, LeBonheur Children's Hospital, Christian Brothers University, Memphis Theological Seminary, Southern College of Optometry, and Baptist College of Health Sciences. The Memphis Medical District Collaborative, a not-for-profit 501 (c)3, promotes the area for revitalization and collaboration among the various institutional and business entities. The organization is focused on improving the public realm, coordinating safety and security, activating and programming the district, and facilitating community development.

The Midtown area is also known for its many cultural, recreational, and entertainment attractions, including Overton Park (including the Memphis Zoo, Brooks Museum of Art, Pink Palace Museum, and other assets), Overton Square, Liberty Bowl, and others. Overton Square has been undergoing a renaissance of late, with new restaurants, retail, and mixed-use development underway. Overton Square functions as Memphis' Theatre District; with Circuit Playhouse, Ballet Memphis, Hattiloo Theatre, Playhouse on the Square, Theatreworks, and the Malco cinema. The nearby Cooper-Young neighborhood has attracted young Millennials in search of urban living in the heart of the city.

Poplar Corridor (Germantown-Collierville). Poplar Avenue (U.S. Highway 72) extends southeast from downtown Memphis and passes the University of Memphis campus en route to suburban Germantown, Collierville, and on to Piperton in Fayette County. Germantown's population exploded in the 1970s and 1980s, when the city was largely built out for housing and commercial development. Affluent Germantown and Collierville have significant retail/commercial components (e.g, Saddle Creek), much of which is concentrated in the Poplar Avenue Corridor. There is very little industrial use zoned in the corridor.

385 Office Corridor. Tennessee State Route 385 (Bill Morris Parkway) extends from I-240 in east Memphis to I-269 near Collierville. This corridor has become a major office/corporate node within the Memphis region and is sometimes referenced as the Memphis Technology Corridor. Nonconnah Parkway has attracted major corporate uses like FedEx Corporate HQ (Hacks Cross), Thomas & Betts, and International Paper. The 385 Corridor Economic Development Alliance (CEDA, representing the Chambers of Commerce in Arlington, Bartlett, Collierville, Germantown, Lakeland, and Millington) is working to encourage and sustain growth in the outer suburban ring of Shelby County.

The Corridor is perceived as a primary location for future economic growth in the Memphis region. The CEDA bills the Corridor as home to the region's growth industries including medical technology, agribusiness, logistics, energy, and information technology. Newly-annexed lands like the 360-acre Forest Hill Heights area in Germantown are zoned for attracting more corporate office to the area. Among the new uses in Forest Hill are the Better Business Bureau, Orgill, SCB Computers, and Crew Training International. Shadow Creek, Southwind, Tournament Trails, Champion Hills, Lenox Park and other office developments are concentrated in or near this corridor. Clark & Clark recently purchased 112 acres to develop another 1.6 million square feet of office space in the corridor.

Wolfchase. The Wolfchase Galleria is Memphis's largest super-regional mall, located off of I-40 and Germantown Parkway. The 1.3 million square-foot shopping mall has spawned significant commercial activity in the surrounding area, including the 336,000 square-foot Commons at Wolfchase. The mall has 130 stores anchored by Dillard's, JC Penney, Sears, and Macy's; and is owned and managed by the Simon Group.

Winchester Road Corridor. The Winchester/Mitchell Road Corridor extends east-west in southern Shelby County, connecting a surprising number of major corporate and economic drivers in the region. The corridor skirts Memphis International Airport, connecting Social Security Administration offices, Mendenhall Square, Hickory Ridge Mall, Kirby Parkway (whose intersection forms a major commercial node), Riverdale Road (another commercial hub), and the 385 Corridor with Hacks Cross Road/Southwind, FedEx World Headquarters, Nike Returns Distribution Center, Windyke Country Club, Champion Hills, ServiceMaster HQ, Orgill, ThyssenKrupp, Sygenta Crop Protection, C&L Shoes Corporate Campus, South Houston Levee Road (yet another commercial node), Schilling Farms, and Collierville, practically all the way to U.S. 72.

Downtown Collierville. Suburban Collierville is a Main Street community and offers an historic (National Register) downtown and traditional town square. The downtown business mix includes traditional banks, insurance companies and other office uses as well as restaurants, antiques, specialty shops and remnants of Collierville's rural past, such as farm supply store.

Arlington Depot Square. Downtown Arlington has a similar historic town center, oriented to its Depot Square. As the community's growth has accelerated, its downtown has attracted boutiques, wine & liquor, florists and gift shops catering to an increasingly affluent clientele.

Other Corridors and Nodes. The U.S. 78 Corridor (Lamar Avenue, I-22) extends southeast from Memphis towards Olive Branch and includes a significant distribution and logistics complex strengthened by the presence of Memphis International Airport, BNSF rail yards, and other infrastructure. Elvis Presley

Boulevard (U.S. Route 51) extends past Graceland (perhaps the region's most visited and recognizable global brand) and includes commercial nodes like Southland Mall. U.S. Highway 61 passes by International Paper, Belz Park and Southland Shopping Center, into Horn Lake and Walls. Summer Avenue (U.S. Route 79) connects Memphis to Bartlett and Arlington. U.S. 51 (Thomas Street) extends to Millington and Naval Support Activity Mid-South (formerly the Millington Naval Air Station). U.S. 51 continues into Tipton County and Covington, then on to Henning (birthplace of Alex Haley) and Ripley in Lauderdale County. West Memphis is another small historic business node just outside of Memphis.

While offering the quintessential small-town Tennessee courthouse square, Downtown Ripley suffers from high levels of vacancy exacerbated by ground-floor office use that generates little street activity. U.S. 51 forms a bypass around the downtown area, thereby siphoning sales away from the limited business base that remains. By contrast, U.S. 51 enters Covington in the downtown area, thereby helping to bring traffic through the business district. Partly as a result, Covington offers a somewhat more vibrant business center, with cafes, antique stores and other retail beyond the requisite law firms and other courthouse-dependent business base. Covington, like Olive Branch and other communities closer in to Shelby County, benefit from proximity to the suburban population base. Communities like Piperton do not yet offer a business hub, but stand to benefit from new highway access and long-term growth in nearby suburbanizing areas.

Institutions and Assets

Already mentioned in this baseline report are the many institutions based in the Memphis region and the high concentration of these resources within the Medical Center and Midtown districts of Memphis. Methodist University Hospital, Baptist Memorial Hospital, St. Jude Children's Research Hospital, LeBonheur Children's Hospital, Memphis Veterans Administration Medical Center, and other medical facilities are concentrated in the heart of Memphis. But various branches of hospital and health care networks including Baptist, Regional One, Methodist/LeBonheur, St. Francis, HealthOne and others are represented throughout the region. About the only large hospital operating outside of these regional networks is Crittenden Regional Hospital, located in West Memphis, Arkansas.

Also concentrated within or near the Midtown and Medical Center districts are universities and research institutions, including UT-Health Sciences Center, Rhodes College, Christian Brothers University, LeMoyne-Owen College, Memphis College of Art, Baptist College of Health Science, Southern College of Optometry, Memphis Theological Seminary, and various small private colleges. St. Jude Children's Research Hospital is an institution of national importance in

the fight against childhood disease, attracting nationally and internationally-recognized research scientists and practitioners to its Memphis facilities.

The city and the broader region are also home to the University of Memphis, Southwest Tennessee Community College, Tennessee College of Applied Technology (Covington, Memphis, and Ripley), Delta Technical College (Horn Lake), Belhaven University, University of Mississippi-Desoto, Mid-South Community College (West Memphis), East Arkansas Community College (Forrest City), and Arkansas State University-Mid-South (West Memphis). Together, these 20 2- and 4-year colleges and universities have a combined enrollment of about 37,400 students. The University of Memphis, with 14,000 students, is by far the largest.

By comparison, the Nashville MSA (together with Clarksville) has 30 colleges and universities with more than 100,000 enrolled and the Nashville area is a top job producer (Williamson County ranked as #1 and Rutherford County as #4 nationwide in job growth in 2016). The constant flow of young, educated people into the local workforce helps to reinforce economic development momentum achieved by attracting and growing companies seeking this young, relatively low-cost but high-value workforce. The correlation between college enrollment and job growth is also indicative of metro areas like San Francisco, Austin, Raleigh-Durham, Boston, and Washington DC, all of which are top job producers.

Natural Features, Assets and Amenities

The Memphis region has access to the Mississippi River, perhaps one of the world's most recognizable natural landmarks. T.O. Fuller State Park, Mud Island, and other parklands provide access to the river or adjacent bottomlands for recreation. Fuller State Park also offers historical significance as home to the Nash Museum at Chucalissa, an ancient burial ground. Shelby Farms Park provides a tremendous resource on the eastern flank of Memphis and Shelby County, conserving the natural landscape within a growing and suburbanizing area of the region. Urban parks like 126-acre Overton Park help create an oasis for city dwellers while also presenting cultural amenities of regional and national significance, such as the Memphis Zoo, Overton Park Golf Course, and Brooks Museum of Art. Other key assets include the Memphis Botanical Garden, Lichterman Nature Center, Audubon Park, Chickasaw Heritage Park, Meeman-Shelby Forest State Park, John F. Kennedy Park (Bartlett), W.C. Johnson Park (Collierville), Oaklawn Garden, Olive Branch City Park, Fort Pillow, and two nature reserves in the region – Hatchie National Wildlife Refuge and Chickasaw National Wildlife Refuge. The area also offers greenways including the Wolf River Greenway, Big River Crossing, Mississippi River Greenbelt Park, and the Downtown Riverfront.

Demographic Trends

Baseline demographic analysis reveals that the region is growing, but that growth is relatively slow compared with some other comparable or competitive communities in the region. The region’s population and household base is highly concentrated in Shelby County, which is by far Tennessee’s largest county in area (755 square miles) and can therefore accommodate a sizeable population.

Population

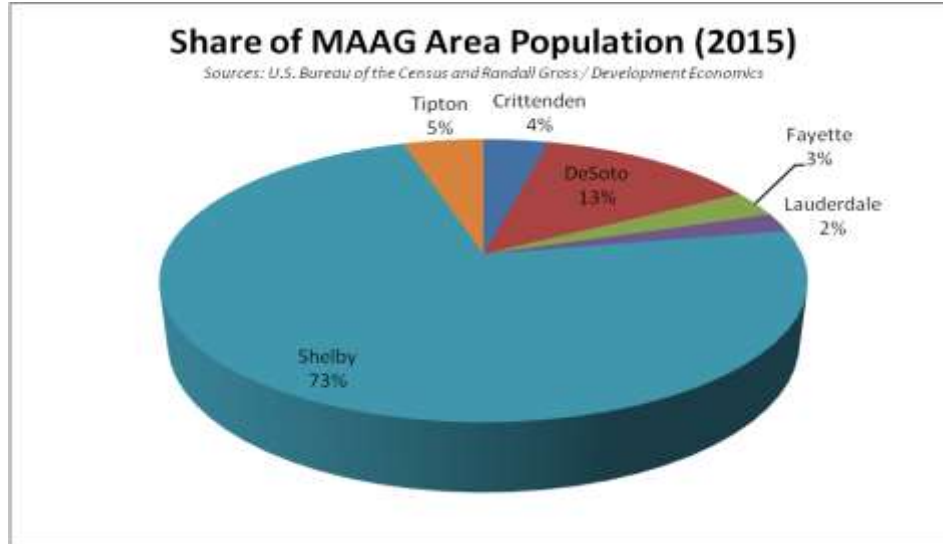
The **MAAG region**, comprising of Fayette, Lauderdale, Shelby, and Tipton counties in Tennessee; Crittenden County, Arkansas; and DeSoto County, Mississippi; had a total population of about 1,284,000 in 2015. This region has seen its population increase by approximately 31,000 or 2.5% since 2010, for an annual average increase of 6,200 or 0.5%.

The region targeted by this **CEDS** (the four MAAG counties in Tennessee) had a 2015 population of 1,065,665, up by 18,000 or 1.7% since 2010, yielding annual growth of 3,600 or 0.3%.

Table 1. POPULATION TRENDS, MAAG REGION, 2010-2015				
Area/Factor	2010	2015	2010-2015 Change	
			Number	Percent
Crittenden County	50,673	49,765	(908)	-1.8%
DeSoto County	154,715	168,586	13,871	9.0%
Fayette County	37,458	38,814	1,356	3.6%
Lauderdale County	27,745	27,427	(318)	-1.1%
Shelby County	922,696	937,750	15,054	1.6%
Tipton County	59,689	61,674	1,985	3.3%
TOTAL	1,252,976	1,284,016	31,040	2.5%
<i>CEDS Region</i>	<i>1,047,588</i>	<i>1,065,665</i>	<i>18,077</i>	<i>1.7%</i>
Sources:	U.S. Bureau of the Census and Randall Gross / Development Economics.			

Shelby County has by far the largest population base within the MAAG and CEDS regions, with 937,750 in 2015 or more than 73% of the total. Shelby County added over 15,000 people since 2010, yielding an annual growth rate of about 0.3%. The share of population within each of the counties comprising the MAAG region is illustrated in the following chart.

Chart 2



DeSoto County is the second-largest county in the MAAG region, with a 2015 population of about 168,600, and also the fastest-growing. DeSoto County added 13,870 people between 2010 and 2015, yielding an annual growth rate of 1.8%. Two counties lost population between 2010 and 2015: Crittenden and Lauderdale. The population of Crittenden County, Arkansas fell below 50,000, with the loss of more than 900 people or 1.8% (0.4% per year) of the population base. Fayette County, with the smallest population in the MAAG and CEDS study region, lost about 320 of its 27,750 people, yielding population loss of 1.1% (0.2% per year).

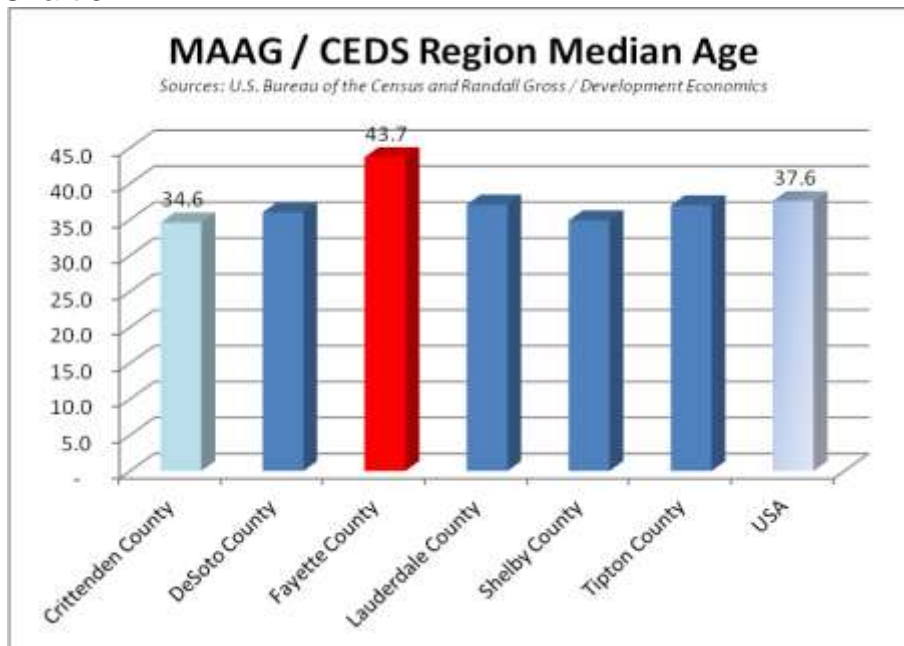
The **Memphis Metropolitan Statistical Area (MSA)**, which comprises of the MAAG counties (less Lauderdale), plus Benton (AR), Marshall (MS), Tate (MS), and Tunica (MS), had a total population of 1,334,127 in 2015, up by **3,900 per year** or just **0.3%** annual growth since 2010. (The Memphis-Forrest City Combined Statistical Area (CSA) had a roughly similar population at 1,370,716, ranked 41st in the country).

For comparison, Tennessee's other large metro (the Nashville MSA) had a 2015 population of 1,830,345 and the 2015 Nashville-Murfreesboro-Franklin Combined Statistical Area (CSA) population approached 2.0 million (ranked 31st in the country). The Nashville MSA has seen population growth averaging **32,000** per year or about **2.0%** annual growth. As such, the Nashville MSA is adding more than eight times the number of people (at nearly seven times the rate of growth) added by the Memphis MSA each year.

Age Cohorts. Nationally and within this region, the population is aging. The median age in the United States was 37.6 in 2015, up from 36.9 in 2010. Within the region, Fayette County has by far the oldest population, with a median

age of 43.7. Crittenden and Shelby counties have relatively younger populations, with their respective medians slightly below the national average.

Chart 3



As a whole, the Memphis MSA had a 2015 median age of 35.5, up from 34.6 in 2010, but still lower than the national average.

Race and Ethnicity. Memphis has long served as an economic and cultural magnet for African-Americans and others from the Deep South states of Mississippi, Louisiana, and Arkansas. A great American migration from the rural south to cities certainly includes the thousands of hardscrabble tenant farmers, factory workers, artists & musicians and others who left their homes in the Antebellum south for economic opportunities in cultural-rich Memphis. As the largest city in the Mississippi Delta, Memphis attracted thousands of African-Americans in the 19th and early 20th centuries and became a center for black culture in America.

The legacy of the Great Migration continues today, with more than 50% of residents in the CEDS study area (and nearly that share in the MAAG region) designating themselves as black or African-American. By comparison, only about 13% of Americans nationwide are black. Memphis is among the handful of large metro areas like Atlanta, Washington, D.C., Detroit, and Chicago with burgeoning middle-class black suburban populations. A reverse migration pattern has emerged since 2000, with many well-educated and mobile blacks moving back to the South.

Table 2. BLACK POPULATION, MAAG REGION, 2015				
Area/Factor	2010	2015	2010-2015 Change	
			Number	Percent
Crittenden County	50.5%	51.8%	1.3%	2.6%
DeSoto County	18.6%	24.4%	5.8%	31.2%
Fayette County	29.0%	27.9%	-1.1%	-3.7%
Lauderdale County	35.3%	35.4%	0.2%	0.4%
Shelby County	52.2%	53.6%	1.4%	2.7%
Tipton County	19.1%	18.4%	-0.6%	-3.4%
TOTAL	45.2%	46.9%	1.7%	3.7%
<i>CEDS Region</i>	49.0%	50.2%	1.1%	2.3%
Sources:	U.S. Bureau of the Census & Randall Gross / Development Economics.			

Memphis has not attracted its “fair share” of this reverse migration trend but it does rank in the top 20 of large cities offering the best economic opportunities for blacks. Wendell Cox ranked 52 large metros for Forbes Magazine based on such factors as homeownership, entrepreneurship (measured by the level of self-employment), median household income, and the change in African-American population (2000-2013). Southern growth capitals like Atlanta, Raleigh, and Washington D.C. were ranked at the top. “Rust-Belt” cities like Milwaukee, Grand Rapids, and Buffalo were ranked near the bottom. In many ways, the migration pattern for African-Americans closely resembles that of all Americans towards the Sun-Belt states.

Memphis was ranked 16th in the Forbes analysis, behind Nashville and Birmingham. Memphis fared well on homeownership (ranked 5th of the top 52 metro areas) and 7th on entrepreneurship. But Memphis ranked 31st on population growth and 40th on household income. If cost-of-living had been considered in this assessment, Memphis might have been ranked slightly higher. Ultimately, Memphis has not yet proven to be a top choice for young, well-educated African-Americans to seek high-paying jobs. Growth is slow, despite the city’s many black institutions, its rich cultural and Civil Rights heritage, and “reverse migration” patterns currently favoring the South.

Language and Origin. The Memphis region is less diverse than the nation as a whole, in terms of language, ancestry, and foreign-born population. Out of 27 ancestry groups tracked by the Census, the Memphis MSA’s share of population only exceeds the national average for two groups – Scots-Irish and Sub-Saharan Africa, reflecting the region’s broad white-black ethnic categorization.

About 5.1% of residents in the Memphis MSA were foreign-born in 2015. While this share is up slightly from 4.9% in 2010, it falls well below the national average of 13.2% (up from 12.7% in 2010). The Memphis area has just 0.16% of the nation's foreign-born population, despite having large corporate headquarters, an international airport and major river port. A larger share of Memphis's foreign-born population (65.1%) lacks full citizenship status as compared with the nation as a whole (53.4%). These numbers only include documented permanent residents or citizens.

While more than 13.0% of Americans speak Spanish at home, only 4.6% of those in the Memphis MSA speak Spanish. The largest share of the Memphis area's foreign-born population is from Latin America (48.1%), but sizeable communities are from Asia (31.5%) and Africa (11.4%).

Households

The region's household base has been increasing at a somewhat faster pace than population, due to a continued decrease in average household size. Between 2010 and 2015, the MAAG region's household base increased by about 12,780 or 2.8% (0.6%/year) to 471,800. Thus, the region's household growth rate is double that of population growth. A growing household base bodes well for industries like retail, that rely on the purchasing power of households.

Table 3. HOUSEHOLD TRENDS, MAAG REGION, 2010-2015				
Area/Factor	2010	2015	2010-2015 Change	
			Number	Percent
Crittenden County	18,717	18,348	(369)	-2.0%
DeSoto County	55,768	60,010	4,242	7.6%
Fayette County	13,498	14,846	1,348	10.0%
Lauderdale County	9,365	9,800	435	4.6%
Shelby County	340,443	347,224	6,781	2.0%
Tipton County	21,235	21,575	340	1.6%
TOTAL	459,026	471,803	12,777	2.8%
<i>CEDS Region</i>	<i>384,541</i>	<i>393,445</i>	<i>8,904</i>	<i>2.3%</i>
Sources:	U.S. Bureau of the Census and Randall Gross / Development Economics.			

Interestingly, the fastest household growth has been in Fayette County, which saw the addition of about 1,350 households since 2010, yielding a growth rate of 2.0% per year. Shelby County has the largest household base and also added the largest number of households, about 6,800 (nearly 1,400 per year)

since 2010. Only Crittenden County saw a decrease in its household base since 2010, with a loss of about 400 households or 2.0% (0.4% per year).

Family Composition. Nearly 20% of households in the Memphis MSA are headed by single females, compared with only 13.0% nationwide. Further, nearly 12.0% of these Memphis-area households have children, compared with only 7.3% in the country as a whole. In general, a concentration of single households with children is correlated with higher rates of poverty and associated economic hardships.

Major Employers and Existing Industry

Around 40 entities, excluding local governments and school systems, have at least 1,000 employees in the Memphis area. Most of these entities are located in the city of Memphis, although there are a few in surrounding communities including Arlington, West Memphis, Collierville, Olive Branch, and Cordova. By far the largest single employer in the region is **FedEx**, with approximately 30,000 employees. The impact of FedEx on the regional economy cannot be underestimated, since the Fortune 500 company generates jobs and income not only through its Memphis world headquarters but also through its distribution hub at Memphis International Airport and its various distribution networks in the region. FedEx also contributes through corporate giving and supports many community amenities and efforts in the region.

Health & Education

Several of the other large employers in the region are hospital and medical facilities providing services to a broad swath of the region's population. These institutions also serve as destinations for research and specialized medical services. Methodist Healthcare and Baptist Memorial Healthcare Corporation are the largest (with 10,890 and 8,000 employees, respectively), but St. Jude Children's Research Hospital has perhaps the broadest and most-recognized reputation as a research institution of national importance. These institutions, along with St. Francis Hospital, VA Medical Center, and Arlington Developmental Center, among others, help bring world-class medical care to the region. Educational institutions like University of Memphis, University of Tennessee Medical School, Southwest Tennessee Community College and others are also important employers and anchors for the community.

Transportation & Logistics

Transportation and distribution-related companies are clustered in the Memphis area and, like FedEx, generate important employment resources for the region. United Parcel Service, Swift Transportation, Schneider National Carriers (West Memphis), Roadway Express, and others generate significant employment but FedEx dominates this sector. Several retail companies and manufacturers

also have major distribution hubs in the MAAG region, including Williams Sonoma and Nike. Williams Sonoma's distribution facility in Olive Branch is the region's largest employer that is not located in the city of Memphis. While not a transportation company per se, Cognisa provides security services to the transportation industry and forms part of the logistics chain.

Management (Corporate Offices)

Memphis was once an important banking hub, but today only one financial institution ranks among the area's largest employers – First Horizon National Corporation, the holding company for First Tennessee Bank. There are service businesses with major operations in the Memphis area including ServiceMaster (headquartered in the city), Sedgewick Claims Management, Mid-America Apartments, and Universal Protection Services (formerly Guardsmark, which was headquartered in Memphis until it was purchased in 2015). In addition to these current and former corporate offices, the region has the home or major division offices for retailers AutoZone and Fred's; manufacturers International Paper, Advanced Surgical Devices (Cordova), Thomas & Betts, and Georgia-Pacific Cellulose (formerly Buckeye Technologies).

Manufacturing

Carrier's air conditioning manufacturing facility in Collierville is among the few large manufacturing facilities in the region with over 1,000 employees.

1. FedEx Corporation	HQ	Memphis	Freight Dist.	32,000
2. Methodist Healthcare	NP	Memphis	Hospitals	10,890
3. Baptist Memorial	NP	Memphis	Hospital	8,000
4. Wal-Mart Stores	P	Regional	GM Retailer	6,500
5. St. Jude Rsch. Hospital	NP	Memphis	Hospital	3,700
6. Kroger Delta Marketing	DIV	Memphis	Groceries	3,500
7. First Horizon Natl. Corp.	HQ	Memphis	Bank HC	3,290
8. University of Memphis	ED	Memphis	University	2,800
9. Memphis LG&P	UTIL	Memphis	Utility	2,630
10. Century Management	P	Memphis	Restaurants	2,500
11. United Parcel Service	P	Regional	Freight Dist.	2,500
12. AutoZone Incorporated	HQ	Memphis	AS Retailer	2,300
13. Swift Transportation	P	Memphis	Trucking	2,100
14. International Paper	HQ	Memphis	Paper Prod	2,000
15. Regional Medical Center	G	Memphis	Hospital	2,000
16. St. Francis Hospital	NP	Memphis	Hospital	2,000
17. UT Medical Group	P	Memphis	Physicians	2,000
18. VA Medical Center	G	Memphis	Hospital	2,000
19. Valenti Mid-South Mgt.	P	Memphis	Restaurants	1,800
20. Williams Sonoma	DIV	Olive Branch	Distribution	1,800
21. Mirabile Investment	P	Region	Property Mgt.	1,500

22. Nike Returns	DIV	Memphis	Distribution	1,400
23. Advanced Surgical Dev.	DIV	Cordova	Med. Devices	1,400
24. Arlington Dev. Center	G	Arlington	Psy. Hospital	1,300
25. Commercial Appeal	P	Memphis	Info Svces	1,300
26. Schneider Natl. Carriers	P	W. Memphis	Trucking	1,300
27. Southwest TN CC	ED	Memphis	College	1,300
28. Walgreens	P	Region	Drugstores	1,300
29. Universal Protection Svc	P	Memphis	Security Svcs	1,260
30. ServiceMaster	HQ	Memphis	HH Services	1,200
31. Carrier	DIV	Collierville	AC Mfg.	1,200
32. Crye-Leike Realtors	P	Region	Realtors	1,200
33. K-Mart Stores	P	Region	GM Retailer	1,100
34. Dillard's	P	Region	DS Retailer	1,100
35. Roadway Express	P	Memphis	Trucking	1,040
36. AT&T	P	Memphis	Telecomm.	1,000
37. Cognisa	P	Memphis	Security/Tran	1,000
38. Sewell-Allen	P	Memphis	Wholesale	1,000
39. Thomas & Betts	DIV	Memphis	Elect. Comp.	900
40. Sedgewick Claims Mgt	HQ	Memphis	Risk/Benefit	870
41. Fred's Stores	HQ	Memphis	Pharmacies	500
42. Georgia-Pacific Cellulose	DIV	Memphis	Spcl. Fibers	200
43. Mid-America Apartments	HQ	Memphis	Apt. REIT	190

Retail & Wholesale Trade

There are a number of large employers that, while not based in Memphis, service the Memphis-area market. Among these are retailers like Wal-Mart, Dillard's, Kroger, K-mart, Walgreens, and others. Property management companies like Century Management and Valenti Mid-South Management operate McDonald's and other restaurant chains in the region. Sewell-Allen serves as one of the larger wholesale businesses in the region.

Other

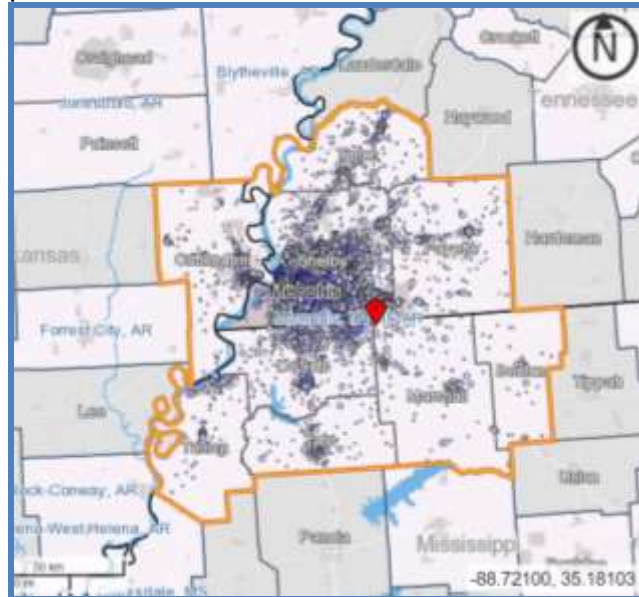
Large employers are also represented in other industries like telecommunications (AT&T), small equipment (Hunter Fan, Cordova) and others.

Labor Force and Employment Base

Memphis and Shelby County form the hub for a labor market spanning three states and dozens of counties. Aside from the nine counties that comprise the Memphis Metropolitan Statistical Area (MSA), the region draws commuters from a broad region in the mid-South. Most of the areas' jobs are concentrated in Memphis and Shelby County, as shown in the map below, extending along key commercial and industrial corridors into neighboring counties. Jobs are also

clearly concentrated in the northern tier of DeSoto County, Mississippi, and to a lesser extent, Tipton (TN), Fayette (TN), and Crittenden (AR) counties.

Map 1. JOB DISTRIBUTION IN METRO MEMPHIS



Source: U.S. Bureau of the Census

Labor Force

The region's labor force of about 600,000 has remained remarkably stable since 2007. And since 2000, the MAAG-area labor force increased by just 26,000 or 4.5% over the 16-year period. Perhaps the one area that has seen substantial labor force growth has been DeSoto County, Mississippi. In 2000, that county had a labor force of about 59,000 people. But DeSoto County's labor force expanded by about 26,000 or 43.7% by 2016.

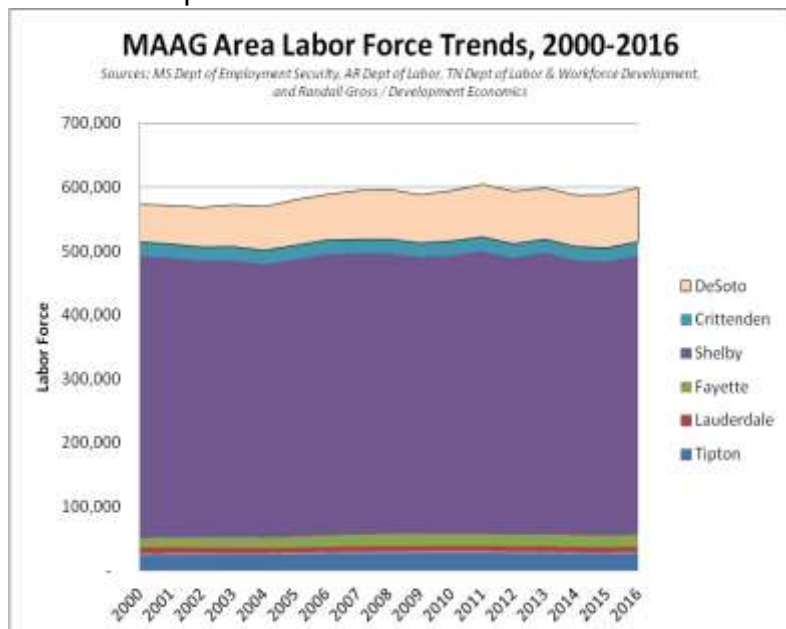
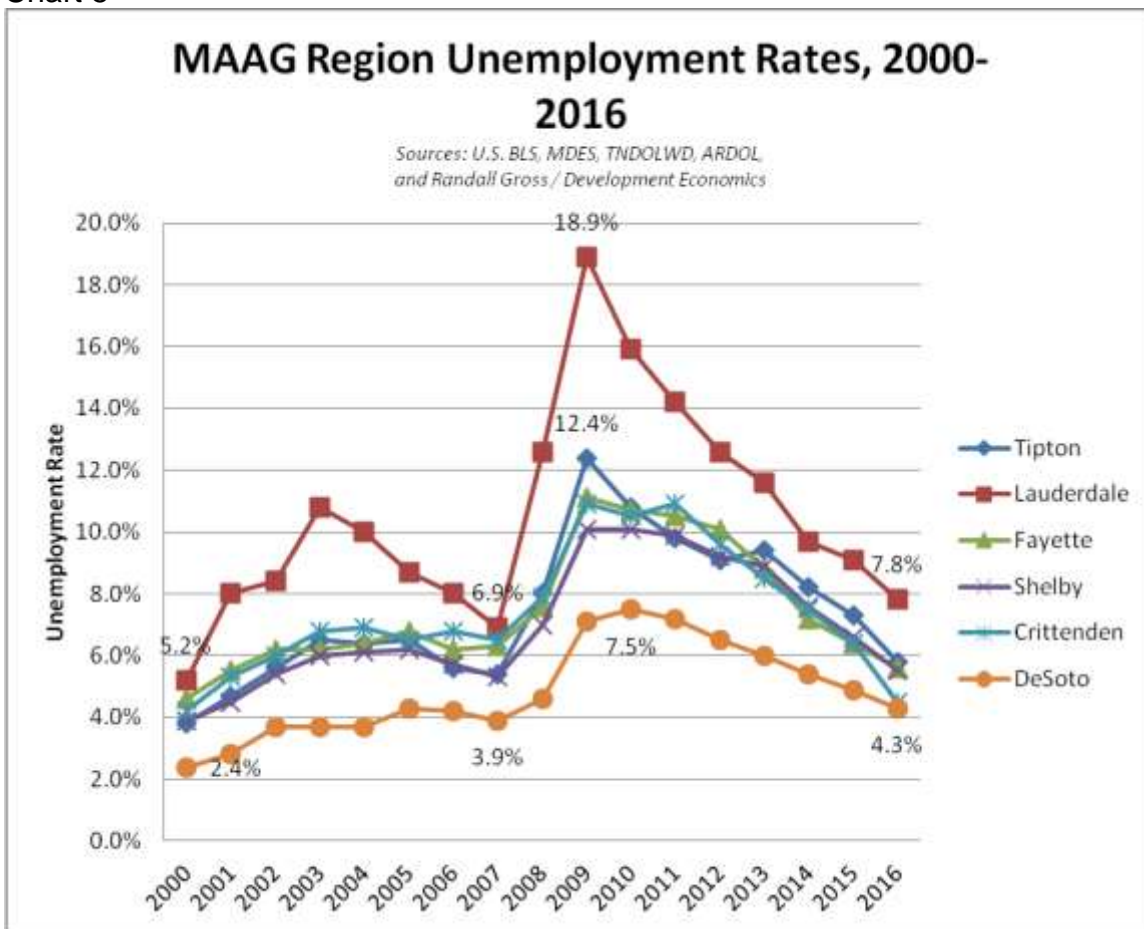


Chart 4.

Unemployment

Unemployment trends in the region have roughly mirrored national economic cycles, including the global financial crisis and recession in 2008-09. However, downturns have impacted on this region more severely than other parts of the country. For example, unemployment peaked at 10.0% nationally during the “Great Recession” of 2008-09. But that rate was exceeded in five of the region’s six counties that year, peaking at 10.1% in Shelby, 10.9% in Crittenden, 11.1% in Fayette, 12.4% in Tipton, and 18.9% in Lauderdale County. Only DeSoto County fared better than the region and the nation as a whole, registering a peak unemployment rate of 7.5% in 2010.

Chart 5



In reality, two of the region’s counties are outliers at opposite ends of these cycles. As noted above, DeSoto County has typically fared better than the region and the nation, with unemployment as low as 2.4% in 2000, increasing to 7.5% during the recession and falling back to 4.3% by 2016 (and 4.0% by December of that year). DeSoto County functioned largely as a relatively affluent

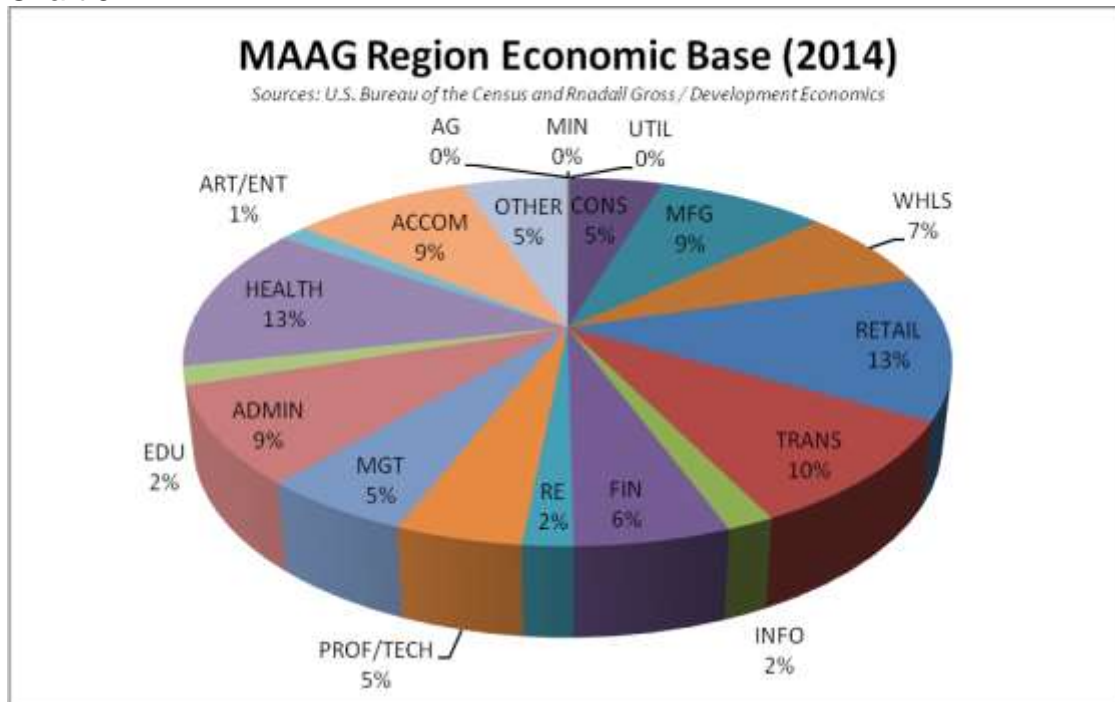
bedroom community until relatively recently, so it's jobs base is fairly new and stable.

By contrast, Lauderdale County has not only consistently fared worse than the rest of the region and the nation, the county has experienced extremely rapid spikes and valleys in unemployment. For example, the county's unemployment rate increased from 6.9% in 2007 to 18.9% just two years later in 2009 before falling back to 7.8% by December 2016. The county's unemployment rate has been consistently higher than all other counties in the region for at least 16 years. This issue suggests a need to target certain strategies to counties like Lauderdale that experience extreme distress during an economic downturn. Economic diversification can help reduce the spikes in unemployment that severely and negatively impact on community stability.

At-Place Employment

The MAAG region had about 512,000 private sector jobs in 2014, the last full year for which at-place employment data is available from the Census Bureau. Based on this data, the region had a healthy and diversified sector mix, with no one or two sectors dominating the regional economy. Even so, there are only three sectors with more than 10% of total employment: Health (13%), Retail (13%), and Transportation (10%). The health and retail sectors are primary oriented to the local market base, while transportation generates more exogenous economic returns to the region.

Chart 6



Randall Gross / Development Economics

Other sectors with at least 5% of the employment base include accommodation & foodservice (9%), administrative services (9%), manufacturing (9%), wholesale trade (7%), financial services (6%), management services (5%), professional, scientific, and technical services (5%), and construction (5%). Sectors that are less represented include information services, real estate, education, and arts & entertainment. Agriculture, mining, and utilities each has less than 1% of the jobs base in the region.

Key Trends. The region added about 4,700 jobs or just 0.9% (less than 0.1% per year) in the ten year period between 2005 and 2014. This period included a global financial crisis and deep national recession in 2008-9. The MAAG region was negatively impacted by these events, losing about 16,000 jobs or 3.0% of the employment base. So, since 2010, the region has gained back more than the number it had lost in the recession, adding about 20,200 jobs over the four-year period.

Table 4. AT-PLACE EMPLOYMENT TRENDS BY MAJOR INDUSTRY SECTOR, MAAG REGION, 2005-2014					
Sector	2005	2010	2014	2005-2014 Change	
				Number	Percent
Agriculture	382	332	124	(258)	-67.5%
Mining	83	93	85	3	3.0%
Utilities	384	322	318	(66)	-17.2%
Construction	18,505	19,160	24,011	5,507	29.8%
Manufacturing	36,490	35,123	43,904	7,414	20.3%
Wholesale Trade	34,001	36,208	35,946	1,946	5.7%
Retail Trade	62,228	57,356	64,742	2,514	4.0%
Transport	56,295	53,786	48,995	(7,300)	-13.0%
Information	6,501	6,778	8,623	2,122	32.6%
Finance & Insurance	17,757	20,531	28,329	10,573	59.5%
Real Estate	7,792	7,016	9,125	1,333	17.1%
Prof/Tech Services	18,159	18,673	23,061	4,902	27.0%
Management Svcs	25,792	29,300	27,416	1,624	6.3%
Administrative Svcs	52,966	46,815	43,986	(8,981)	-17.0%
Education	12,064	10,155	8,413	(3,651)	-30.3%
Health	78,834	74,268	65,063	(13,771)	-17.5%
Arts, Entertain, Rec	6,794	6,367	7,150	356	5.2%
Accommodation/FS	49,345	45,602	45,451	(3,894)	-7.9%
Other Services	23,278	24,258	27,566	4,288	18.4%
NEC	63	74	142	79	124.6%
TOTAL	507,711	492,213	512,438	4,727	0.9%
Note:	Some data estimated based on Census ranges.				
Sources:	U.S. Bureau of the Census and Randall Gross / Development Economics.				

This recovery has been uneven among the various economic sectors represented in the region. Overall, the key growth sectors have included finance and insurance (nearly 60% growth since 2005), construction (30%), professional & technical services (27%), and manufacturing (20%). Aside from manufacturing, growth has been consistent throughout the ten-year period for these sectors. The largest number of jobs has been created in finance and insurance, with the addition of nearly 10,600 jobs since 2005. Manufacturing added 7,400 jobs, followed by construction (5,500), professional & technical services (4,900), and other services (4,200). Other growing industry sectors in the region include information services, real estate, management services, wholesale trade, arts & recreation, and retail trade.

Several key sectors have declined, most distressingly health care, which lost 13,800 jobs or 17.5% in the employment base. Given the importance of health care to the regional economy and its role as a “brand” for Memphis, there is a concern that the MAAG region has consistently lost a significant share of this base since 2005. Similarly, the region lost 7,300 jobs (13%) in transportation services, which is another key component of the region’s brand as “America’s Distribution Hub.” Other sectors experiencing decreasing employment include administrative services (9,000 jobs, 17%), education (3,700, 30%), accommodation & foodservice (3,900, 8%), as well as agriculture and utilities.

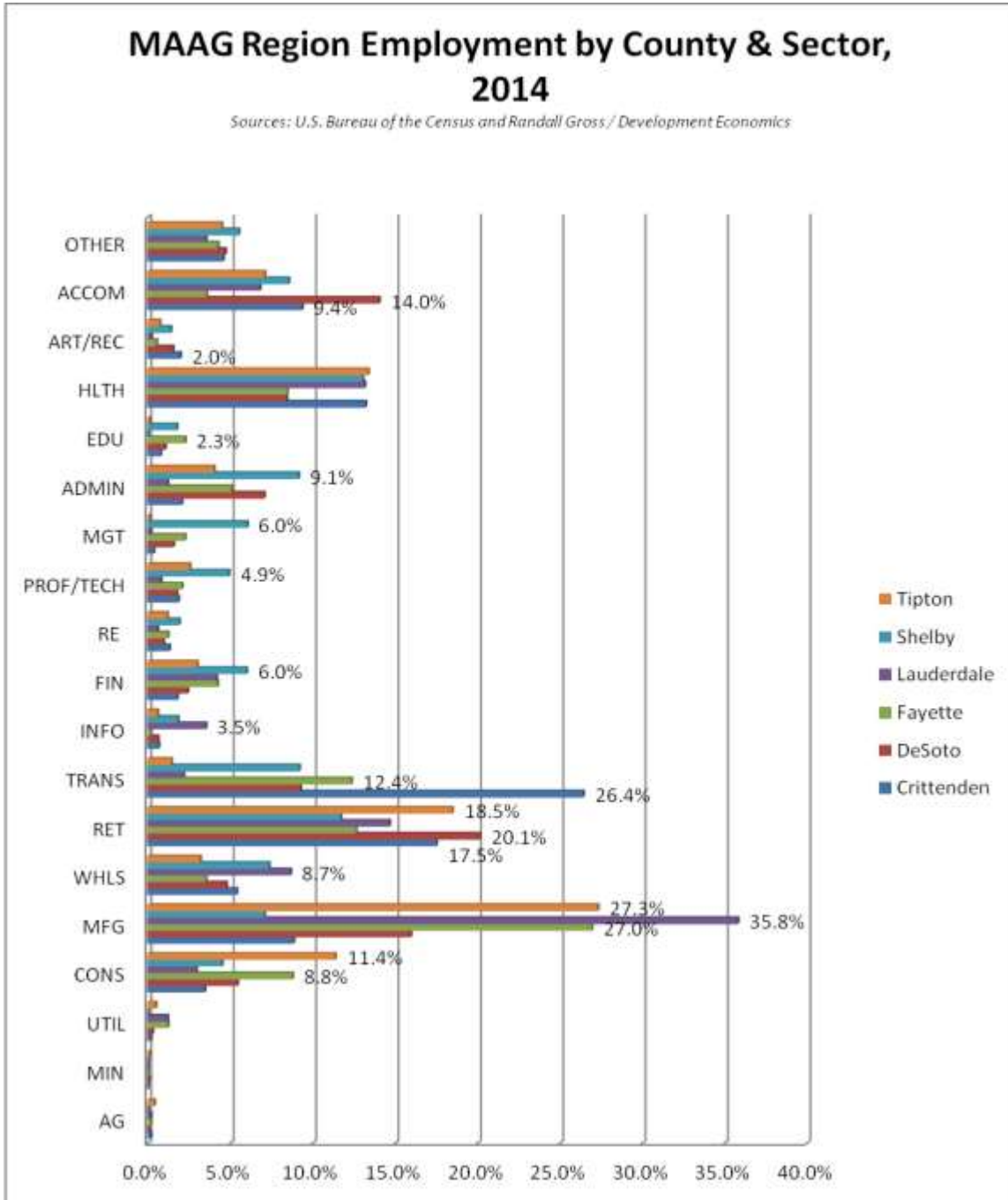
Role of Industries by County. The region’s economy is highly concentrated in Memphis and Shelby County. As such, any “hiccups” or changes in employment in the central city can drive the overall numbers for the region. The chart on the following page indicates the role of each sector (or percentage of jobs) in the economy of the six counties that comprise the MAAG region. It does not necessarily illustrate concentrations or clusters, but it does show how dependent each of the counties may be on certain sectors.

Agriculture and Extraction Industries. The chart illustrates how few jobs in the region are directly tied to agriculture and extraction industries (like mining or quarrying). Even in the rural counties, a very small percentage of jobs is focused in these sectors. For example, Tipton County has the highest *share* of its employment base in agriculture, but even there the share of total jobs in this sector is only 0.4%. Part of the reason is that many family-run farms do not employ large numbers of full-time workers. They may employ seasonal workers (e.g., pickers, balers, etc) who are not counted among the permanent employment base. And some family members who work on farms also have part-time or full-time jobs in other sectors. The downstream impact of the agricultural sector is much larger, in terms of the supply base, transportation, and services that are counted in other sectors.

Surprisingly, Shelby County has had the largest absolute number of jobs in the agricultural sector (more than 200 in 2010), but some of these jobs are associated with services as discussed later in this report. It should be noted that

Shelby County not only contains the largest city and population base in the region, it is also the largest county in geographic area, which includes rural, suburban and urbanized areas.

Chart 7



The MAAG region is also not a major center for extraction industries, like parts of nearby Arkansas, Oklahoma, Texas, or Louisiana. Nor has the region benefitted directly from the rapid recent growth in shale extraction (e.g.,

“fracking”) seen in the Dakotas, Pennsylvania or upstate New York. Quarrying does employ people in the region, but much of that process is highly mechanized. Only Tipton County has enough extraction to register at or more than 0.1% of its economic base.

Utilities. The utility sector also accounts for a very small share of the region’s economic base. Only in Lauderdale and Fayette counties does utilities account for more than 1.0% of all jobs. That being said, Memphis Light, Gas & Power is among the region’s largest employers, with about 2,630 jobs. Since the utility is headquartered in the area, jobs housed at home offices are classified as part of the management services sector rather than as utilities, per se. DeSoto County has the largest number of utilities jobs, slightly over 100, but other counties in the region have 60 or more jobs in the sector.

Construction. Several counties in the region have a higher share of their economic base in construction. For example, more than 11% of private sector jobs in Tipton County are in construction, due in part to exurban housing development. Almost 9% of Fayette County’s jobs are in construction. By contrast, construction accounts for less than 3% of jobs in Lauderdale County. Construction is a highly cyclical industry, where many jobs are dependent on real estate (especially residential) development.

Manufacturing. The manufacturing sector is the largest employer in three of the region’s counties, Three of the region’s counties are highly-dependent on manufacturing, with more than 25% of their local employment generated by that sector: Lauderdale (35.8%), Tipton (27.3%), and Fayette (27.0%). DeSoto also has a substantial manufacturing base, accounting for 16.0% of its total private employment. Manufacturing has located in the more rural areas of the region, where land costs are lower but there is access to a labor base. Only 7.0% of Shelby County’s employment is in manufacturing. Shelby County has relatively costly land, services, and more competition for labor.

Wholesale & Retail Trade. A fairly significant share of employment in Lauderdale (8.7%) and Shelby (7.4%) counties is in wholesale trade, but the sector does not represent a sizeable portion of employment in most of the region. Retail trade, however is important to all of the counties in the region. Retail represents at least 10% of employment in all six counties, and about 15% of more in four of the six: DeSoto (20%), Tipton (19%), Crittenden (18%), and Lauderdale (15%). Much of the region’s retail activity is concentrated in highway commercial corridors, which also generate a significant share of local tax base. Among the key commercial corridors and nodes are Poplar Avenue (U.S. Highway 72) through Midtown, Germantown, and Collierville; Union Avenue (U.S. Highway 79) through the Medical District, and Idlewild, Lamar Avenue (U.S. Highway 78) through the Memphis International Airport area, Elvis Presley Boulevard (U.S. Highway 51) to Southland Mall; Broadway (U.S. Highway 70) through West Memphis; and others.

Transportation. The transportation sector is important to the region, and its direct impact on employment is most pronounced in Crittenden County, where the sector accounts for 26.4% of all private jobs. West Memphis has a number of truck terminals, with a density of transportation service jobs. Transportation accounts for 12.4% of Fayette County jobs and about 9.3% of jobs in both Shelby and DeSoto counties. Despite its importance in the regional economy, transportation accounts for only 1.4% and 2.2% of jobs in Tipton and Lauderdale County, respectively.

Finance, Real Estate, and Information Services. FIRE (finance, insurance and real estate) does not account for a major share of employment in any of the counties. Relatively, Shelby County has a sizeable share (6%) of employment in financial services. The sector is slightly less significant to Fayette and Lauderdale (4.2%). Real estate services is a relatively small share of employment in all of the counties, with the highest at 1.9% in Shelby County. Only 0.6% of Lauderdale County jobs are in the financial sector. Information services constitutes a relatively small share (less than 1%) of the employment base, although 3.5% of the job base in Lauderdale County is in information services.

Professional, Scientific, and Technical Services. Again, professional service industries are not employing a major share of the region's labor force. The most significant impact may be in Shelby County, where the sector accounts for nearly 5.0% of all private sector jobs. Nevertheless, the sector represents a small share of employment in the region's other counties. Only 0.8% of jobs in Lauderdale County are in professional and technical services.

Management Services primarily represents corporate offices, management services, and holding companies. These services have a similar profile to that of professional services. The sector's jobs are fairly concentrated in Memphis and Shelby County (where the sector represents 6.0% of private employment. Only 0.1% of Tipton's and 0.2% of Lauderdale jobs are in management services.

Administrative Services. Business services and related industries only represent a small part of the local employment base in Lauderdale and Crittenden counties. However, they are fairly substantial in Shelby (9.1%), DeSoto (7.1%) and Fayette (5.1%).

Health & Education. As noted earlier, Memphis and the surrounding area is identified as a health care center, Health care services represents a roughly equal share of employment (around 13.2%) in four of the region's counties, but is a somewhat lower share (8.4%) of the base in DeSoto and Fayette counties. Private education generates some 2.3% of the employment base in Fayette, but is otherwise negligible (less than 1% in most of the MAAG study area).

Arts, Entertainment & Recreation. The Memphis region is a cultural and sporting hub for the country, as a home to the Blues and Rock 'n Roll, the Civil Rights Movement, Elvis Presley's Graceland, and the Memphis Grizzlies NBA team. While most of the region's major cultural, entertainment and sports venues are concentrated in Memphis, Crittenden is the county with the largest share of its employment in this sector, at 2.0%. West Memphis is home to both Southland Park (gaming and greyhound racing) and Riverside International Speedway, thus lifting Crittenden County's recreation and entertainment employment.

Accommodation & Foodservice. Given that most of the region's resident population and tourist venues are situated in Memphis, it is not surprising that restaurants, drinking places, and hotels are focused in Shelby County. Nevertheless, DeSoto County has the largest share of its employment base in accommodation & foodservice, at 14%, followed by Crittenden (9.4%), and Shelby (8.6%).

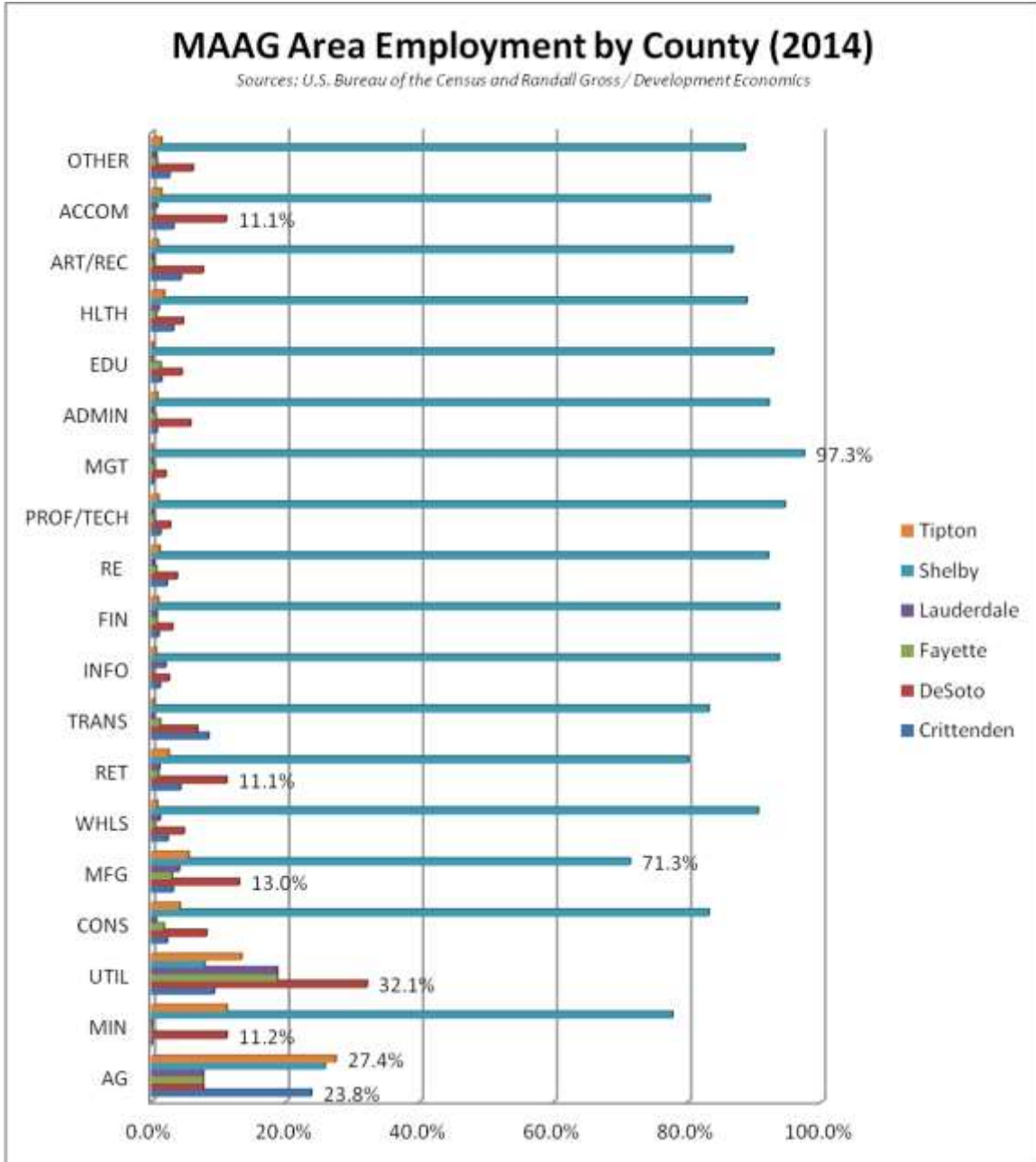
Where are the Jobs?

Shelby County's dominance in the regional economy is undisputed. As shown below, Shelby County is by far the largest employer among all major economic sectors except for agriculture and utilities. Tipton County has 27.4% of the region's agricultural sector jobs (but Shelby County still has nearly as many, at 25.8%). DeSoto County has nearly one-third of the region's utility jobs (and Shelby has the smallest share, at just 7.9%).

Shelby County contains more than 90% of the region's employment in accommodation, arts & recreation, health care, education, administration, management, professional & technical, real estate, financial services, information services, transportation, wholesale trade, and construction; and more than 60% of the region's jobs in mining, manufacturing, and retail trade. The sector most concentrated in Shelby County is management services, where more than 97% of all of the region's corporate headquarters and divisions, bank holding companies and similar main offices are located in Shelby County. This represents a striking difference to Nashville, where a substantial share of that region's corporate jobs is located outside of Nashville-Davidson County in suburban Williamson County.

Manufacturing represents the one sector (other than extraction sectors) where Shelby County does not have the lion's share of the jobs. Just over 70% of the region's manufacturing employment is in Shelby County, while about 30% is in the remaining five counties in the MAAG region, led by DeSoto (13%), Tipton (6%), Lauderdale (4%), Crittenden and Fayette (3% each). The chart on the following page disaggregates employment by sector and county.

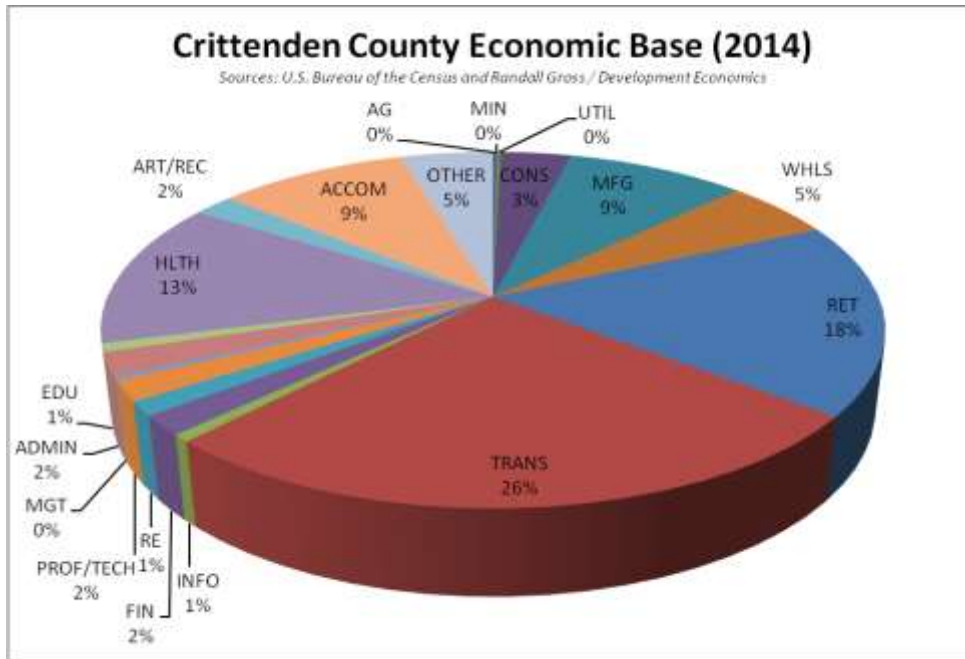
Chart 8



Crittenden County. Among Crittenden County, Arkansas' competitive advantages are its interstate highway access (I-55 and I-40) and location just west of Memphis, capturing a large service catchment area and market base extending north, west and south into Arkansas. The county has approximately 15,600 jobs. Crittenden County's economic base is dominated by transportation services, which account for 26% of all jobs. With relatively low-cost land and interstate highway access on the western fringe of Memphis's urbanized area,

the county has attracted major trucking terminals and other operations that support long-distance transportation geared to markets west, north and south.

Chart 9

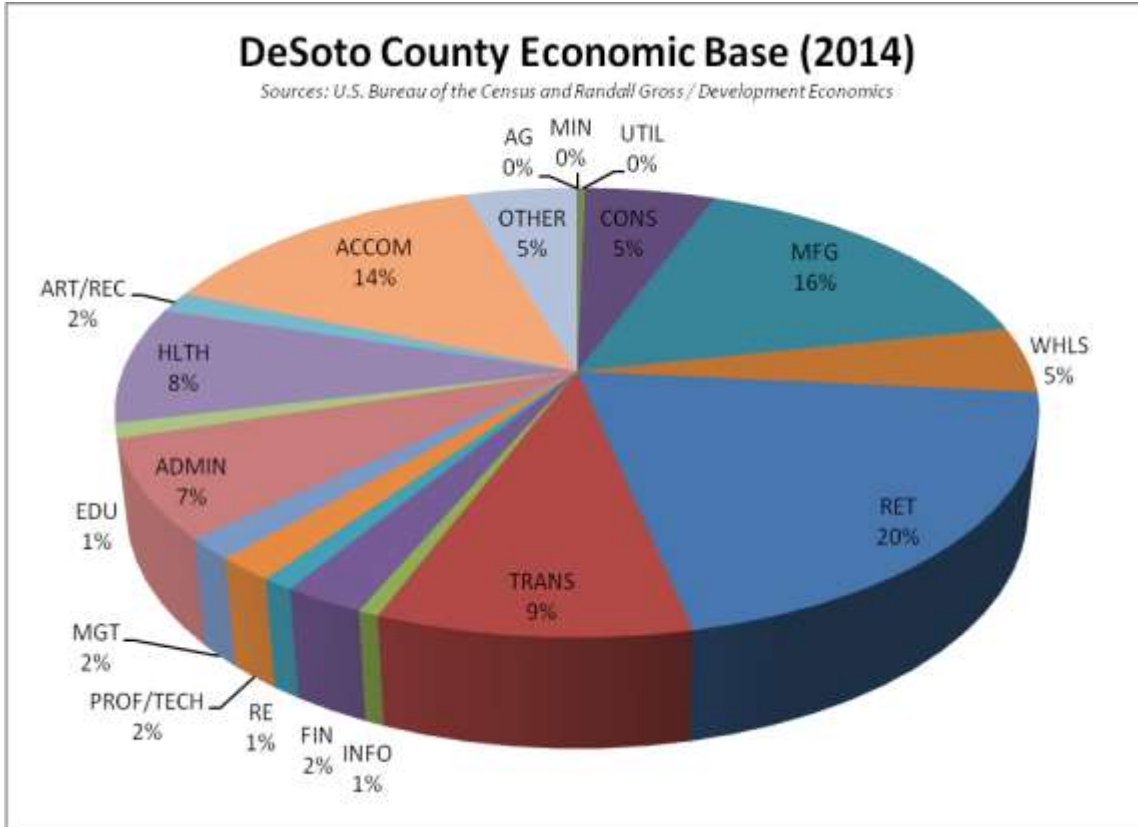


The county's location also helps it sustain retail (18% of the employment base) for a broad trade area. With proximity to Memphis and as the first point of contact for travelers entering the region from the north and west, West Memphis and Crittenden County supports a substantial accommodation and foodservice industry (representing 9% of the economic base). Similarly, Crittenden County offers a hospital and health care for a broad service area extending into rural communities north, west and south in Arkansas. As such, health care represents 13% of the county's employment base. Manufacturing is also important to the county, generating about 9% of its employment. Crittenden is otherwise lagging in most other service industries, including finance and real estate, information services, professional and technical services, arts & recreation, management services, administrative services and education. Nor does the county have many jobs in extraction industries (mining and agriculture) or utilities.

DeSoto County. DeSoto County, Mississippi is the second-largest in the region, in terms of population and labor force, and generates substantial inflow to the Memphis-Shelby County economy. However, its employment base is smaller than Crittenden, with just 35,800 jobs. The county had functioned for many years as a bedroom community for Memphis, but has more recently developed an industrial base of its own. Within DeSoto County itself, the economy is driven by four, relatively diverse sectors: retail trade (20% of jobs), manufacturing (16%), accommodation & foodservice (14%), and transportation (9%). Retail trade primarily services the local household base within this suburban community,

while accommodation and foodservice also serve a broader regional visitor market focused on Memphis. The county's substantial manufacturing base benefits from proximity to the region's labor force, Memphis, the international airport, and the transportation network, including I-55 and the newly-designated I-22 (formerly U.S. Highway 78 southeast of Memphis).

Chart 10

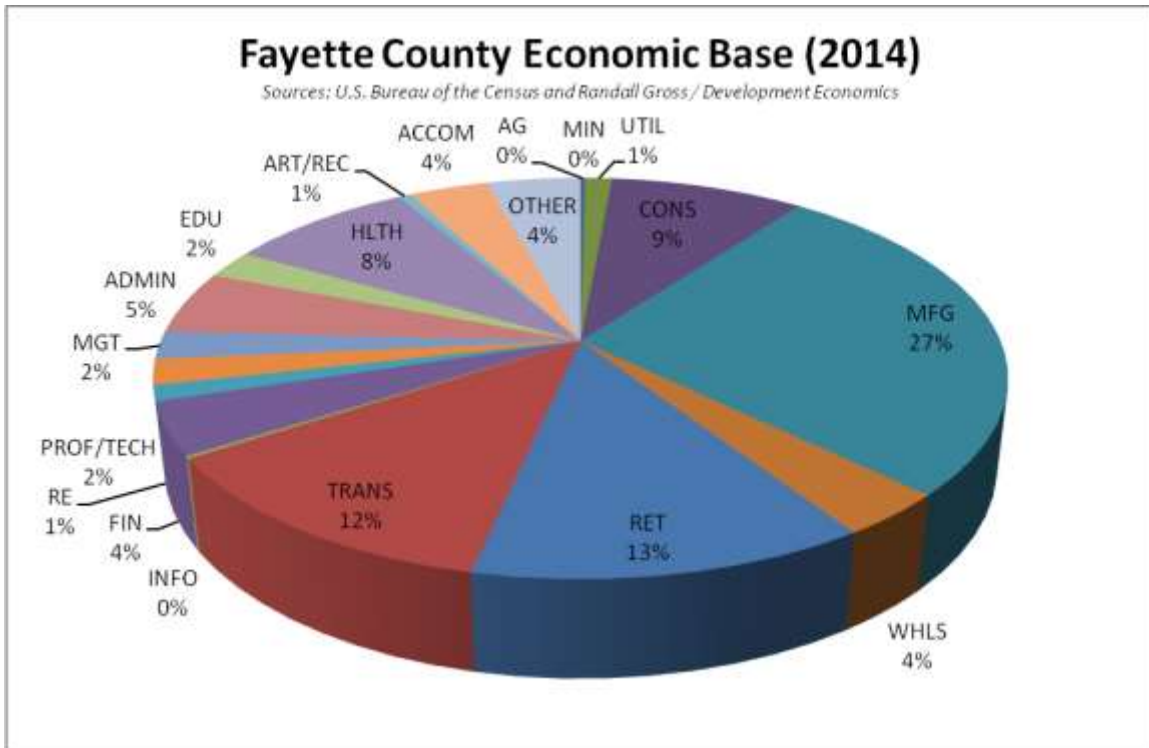


Like Crittenden, DeSoto lags behind in professional & technical service jobs, management services, real estate, finance, education, arts & recreation, and information services. Extraction and utility industries employ few in the county. However, the county has substantial health care and administrative service employment.

Fayette County. Fayette County is less-developed and has a smaller market base than either Crittenden or DeSoto. The county only has about 4,900 jobs, or less than one-third of Crittenden County's economic base and just slightly over 1% of Shelby County's economy. This relatively small economic base is dominated by three sectors, manufacturing (27% of jobs), retail (13%), and transportation (12%). So, even in relatively rural Fayette County, transportation plays an important role in the local economy. Construction and health care are relatively important, with 9% and 8% of the employment base, respectively. There are only a handful of jobs in information services, utilities,

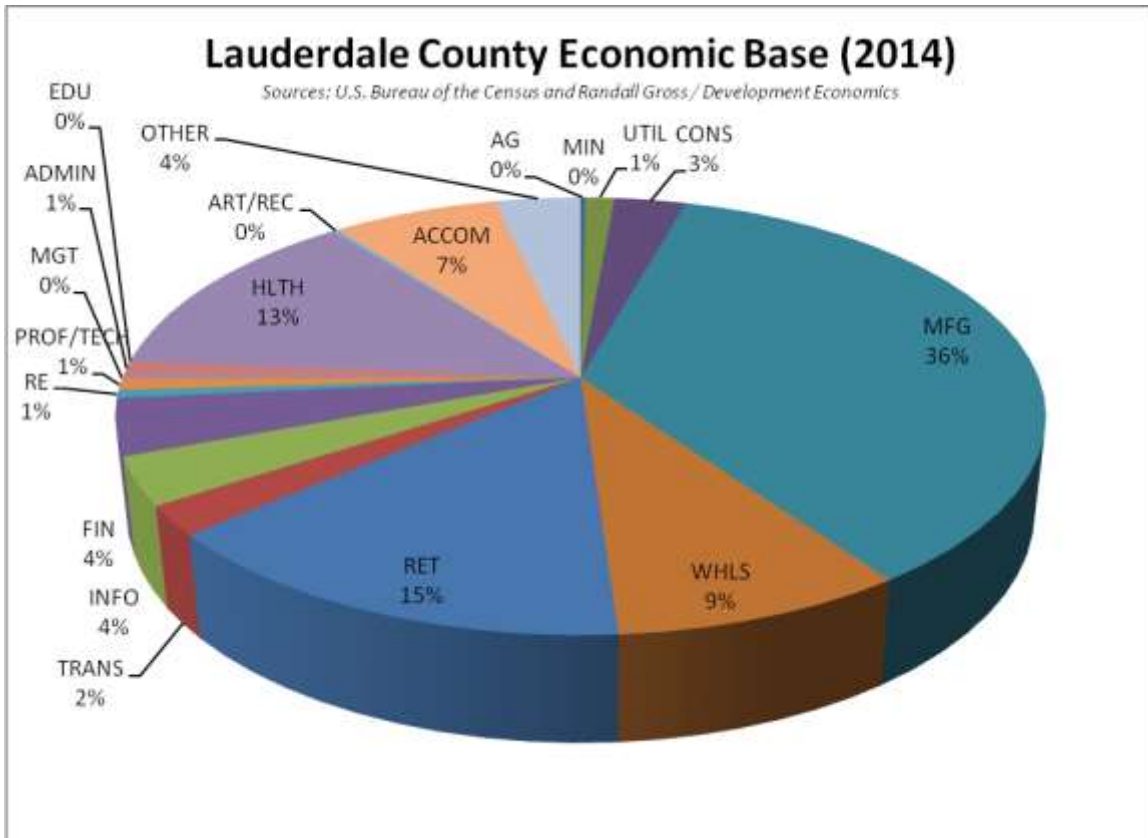
arts & recreation, education, management, professional & technical services, and real estate.

Chart 11



Lauderdale County. Like Fayette County, Lauderdale has a relatively small economic base, supplying just under 5,000 jobs. The county is highly dependent on manufacturing, which generates nearly 40% of the employment in Lauderdale. Retail trade supplies 15% of jobs, followed by health care (13%), and wholesale trade (9%). Accommodation & foodservice yields 7% of the county's jobs. As with many of the other counties aside from Shelby, Lauderdale County generates relatively few jobs from the services sectors or from extraction industries. However, unlike the other counties, Lauderdale captures less from the transportation sector which is otherwise concentrated in the Memphis region. Only 2% of Lauderdale County jobs are positioned in transportation. The Lauderdale County economic base is illustrated in the chart shown on the following page.

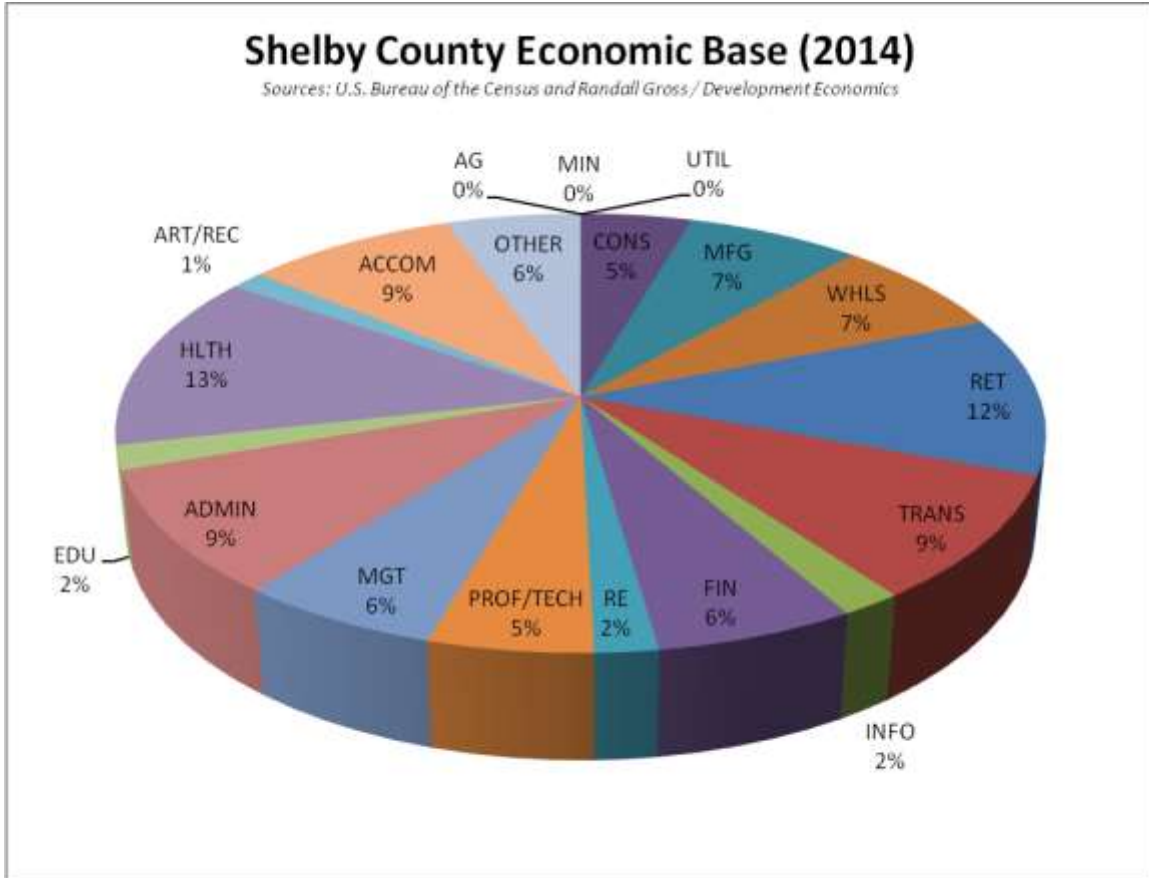
Chart 12



Shelby County. Memphis and Shelby County are the primary drivers for the regional economy, with about 442,000 jobs (in 2014) or 86.3% of all jobs and 73.0% of the population in the six-county MAAG region. Shelby County's economy is also the most diversified in the region, with no individual sector claiming more than 13% of the economic base. By comparison, all five of the other MAAG counties have at least two, if not 3 or 4 industry sectors having more than 13% of the counties' respective employment.

Health care, retail, transportation, accommodation & foodservice, and administrative services are all important to the local economy. Certainly there are sectors that are less-represented in Shelby County than others. Extraction industries (agriculture and mining) and utilities have less than 1% of the county's jobs. Arts & recreation, private education, real estate, and information services all have 2% or less of the county's employment. But there are 12 other sectors that each has at least 5% of the county's base. Such diversity helps cushion the county's economy from catastrophic events, such as the closure of a major manufacturing plant or rising gas prices impacting on tourism. Certainly there are exceptions. The relocation or loss of a major employer like FedEx (with its 32,000 local employees) would have devastating impacts not only on Shelby County but would generate ripple effects throughout the region. And a serious decrease in tourism would impact not only the hotel industry but also arts, entertainment and recreation venues; retail trade; and other sectors.

Chart 13

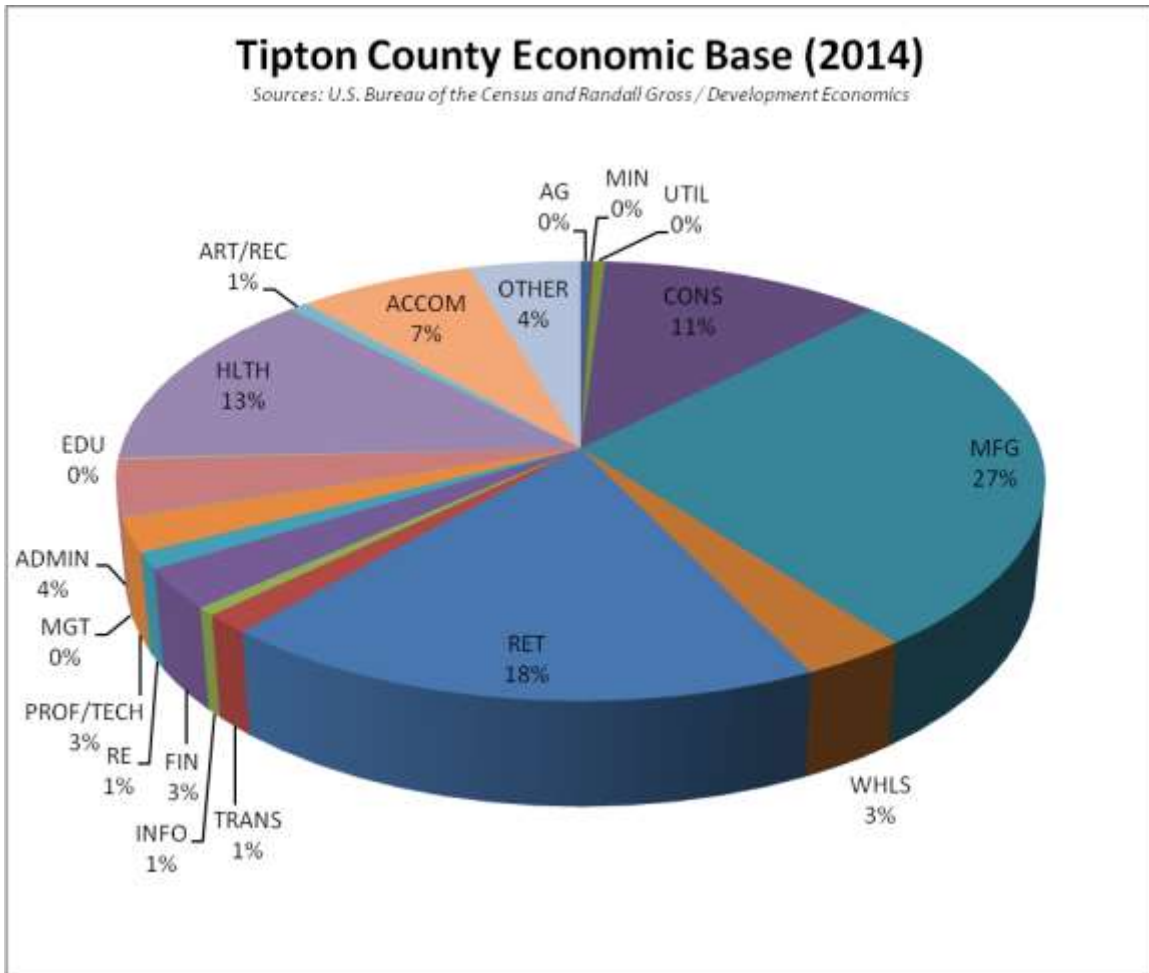


Memphis and Shelby County also benefit from having broader linkages beyond a dependency on the local market, that shield them from local shocks. For example, Shelby County is home to a number of corporate headquarters and divisions (representing 6% of the county's employment), as noted previously. Those companies are less dependent on any local or even regional downturns, since they operate in a national and often, global, marketplace. Unlike its neighbors, Shelby County also has a substantial employment base in professional & technical services, financial services, and administrative services. So, the county is not only the driver for these sectors but also the primary location for most of this service employment.

Tipton County. Tipton County has about 8,800 jobs, so its economic base is much smaller than that of Shelby County, but is still nearly twice as big as that of Fayette County. Like some of the other rural counties, Tipton generates a larger share of its employment from manufacturing (27%). Lower-cost land but proximity to Memphis and the transportation network are helpful in attracting manufacturing activities. However, the county has no direct access to the interstate highway system and is located on the opposite side of Memphis from the airport. These deficiencies no doubt impact on the county's competitiveness

for transportation-related and other businesses including certain types of manufacturing.

Chart 14



The county has a substantial share of employment in retail trade. Due to its location on the northern edge of the Memphis region, Tipton County captures commuter inflow from those areas of Lauderdale County further north along with its own base in Covington and other markets within the county. Health care (13%) and construction (11%) are also important sectors. While the services are under-represented, the county does have at least 1% or more in most of these sectors aside from management and education services.

Growing/Declining Industries

The industries that are growing or declining differ by county, although there are some consistencies. For example, manufacturing is the fastest growing industry in the more rural counties of Lauderdale and Tipton. Transportation is growing in Fayette and Crittenden, while management services (corporate

offices) and finance are growing in the more urban/suburban counties of Shelby and DeSoto.

County	Growth Sector	Rate	Declining Sector	Rate
Crittenden	Transport	122.0%	Admin Svcs	-58.4%
DeSoto	Mgt Svcs	460.3%	Admin Svcs	-52.4%
Fayette	Transport	346.7%	Accom/FS	-73.8%
Lauderdale	Mfg	73.8%	Wholesale	-45.1%
Shelby	Finance	66.2%	Education	-30.5%
Tipton	Mfg	32.3%	Accom/FS	-35.6%
MAAG	Finance	59.5%	Education	-30.3%
Sources:	U.S. Bureau of the Census and Randall Gross / Development Economics.			

Crittenden and DeSoto have been losing administrative services jobs at a fast clip, while both Fayette and Tipton counties have lost accommodation and foodservice employment. Lauderdale County's fastest decrease was in wholesale jobs, while Shelby lost education employment. In some of the more rural counties, the absolute number of jobs in any given industry is so small that a minor uptick or closure can yield a high-percentage change.

Wages, Income and GDP

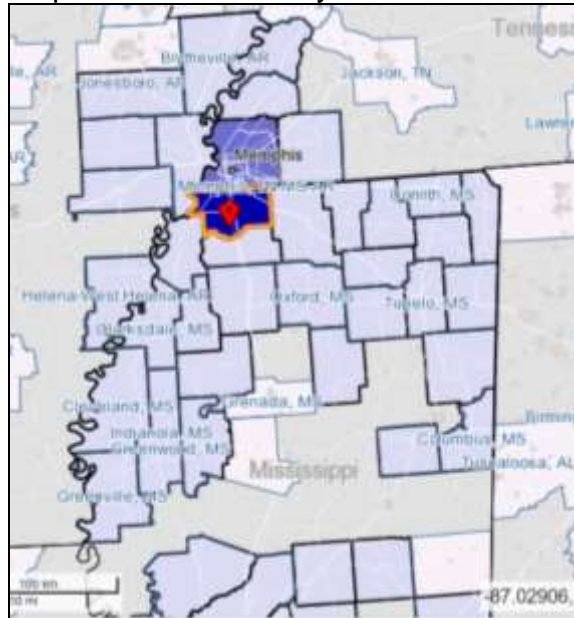
The region has surprisingly high wages, given its location straddling three of the lowest-wage states in the country, Mississippi, Arkansas, and Tennessee. The average weekly wage is estimated at about \$937 in the MAAG region, compared with a national average of \$843.

Not surprisingly, the highest wages in the region are in Shelby County, at \$991.00. As an urbanized county, this relatively high wage pulls up the overall average for the region. By comparison, the second-highest wage in Fayette County is only 78.8% of the Shelby County wage. The lowest wages in the region are found in DeSoto County, \$637 or just 64.3% of those in neighboring Shelby.

Table 6. AVERAGE WEEKLY WAGE, MAAG REGION, 1/2016				
County	Average Weekly Wage	Rank	Annual Change	Total Wage Income
Crittenden 1/	\$ 738.00	3	11.1%	\$ 12,805,038
De Soto 2/	\$ 637.00	6	0.5%	\$ 36,018,528
Fayette	\$ 781.00	2	5.1%	\$ 6,082,428
Lauderdale	\$ 642.00	5	3.2%	\$ 3,838,518
Shelby	\$ 991.00	1	-1.8%	\$ 482,765,650
Tipton	\$ 659.00	4	5.8%	\$ 7,229,230
Weighted Av/Total	\$ 936.76		-1.1%	\$ 548,739,392
vs US Average	\$ 843.00		2.8%	
Notes:	1/ 4th Quarter 2015; 2/ 2nd Quarter 2016.			
Sources:	U.S. Bureau of Labor Statistics and Randall Gross / Development Economics.			

While household incomes in DeSoto County are relatively high, wages are low. More than 50% of workers in DeSoto County are commuting in from Shelby or rural counties in the region.

Map 2. DeSoto County Commutershed



Source: U.S. Bureau of the Census

Household Income Trends

Average and median household incomes were calculated for the region, and trends observed between 2010 and 2015. Median household income for the MAAG region was about \$47,700 in 2015 (\$46,600 within the CEDS study area). Incomes ranged from a low of just \$30,300 in Lauderdale County to nearly twice that amount, \$60,000, in DeSoto County. Shelby County median household income was \$46,200 in 2015.

Table 7. MEDIAN HOUSEHOLD INCOME TRENDS, MAAG REGION, 2010-2015				
Area/Factor	2010	2015	2010-2015 Change	
			Number	Percent
Crittenden County	\$ 36,373	\$ 38,004	\$ 1,631	4.5%
DeSoto County	\$ 64,100	\$ 58,278	\$ (5,822)	-9.1%
Fayette County	\$ 61,199	\$ 54,890	\$ (6,309)	-10.3%
Lauderdale County	\$ 35,486	\$ 30,281	\$ (5,205)	-14.7%
Shelby County	\$ 48,228	\$ 46,224	\$ (2,004)	-4.2%
Tipton County	\$ 53,269	\$ 53,669	\$ 400	0.8%
TOTAL	\$ 50,028	\$ 47,719	\$ (2,308)	-4.6%
<i>CEDS Region</i>	\$ 48,651	\$ 46,562	\$ (2,089)	-4.3%
Note:	Incomes expressed in constant 2015 dollars.			
Sources:	U.S. Bureau of the Census and Randall Gross / Development Economics.			

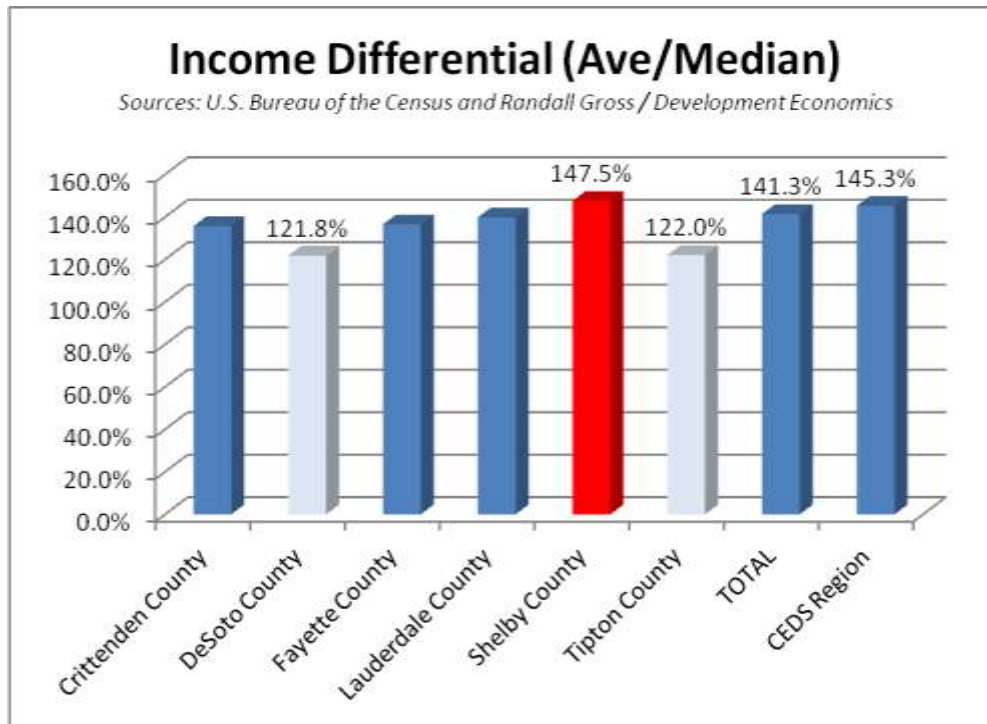
Incomes continued to fall in constant dollars (after adjusting for inflation) in the region even after the recession had ended in 2009. Overall, the MAAG region saw a 4.6% inflation-adjusted decrease in household incomes between 2010 and 2015. Within the 4-county study area, the loss was 4.3%. The fastest and most severe income loss was in Lauderdale County (15%), followed by Fayette County (10%). Only two counties saw an increase in median incomes above the rate of inflation: Crittenden County (4.5%) and Tipton County (0.8%), since 2010.

Poverty and Income Inequality

The region’s average household income is skewed upwards by a clutch of high-income households. While the area’s median household income was \$47,700 in 2015, its average household income was \$67,400. When comparing the differential between median and average income, the MAAG region’s average income was 41% higher than its median income (and the CEDS study area average 45% higher than its median).

At the county level, Shelby County had the highest differential between median and average incomes, suggesting that some very high-income households skew the average upward. The differential in Shelby indicates that average household income was nearly 50% higher than median income. The lowest differential was in DeSoto and Tipton counties, which both indicate a differential of 22%.

Chart 15.



A more accurate and targeted measure of income inequality is the Gini Coefficient (or index). Memphis had a Gini Coefficient of 0.91 in 2014, which is considered among the highest rates for cities in America. The city was ranked 14th among 102 major markets, or in the top 15% for income inequality, according to data released by the U.S. Census Bureau. Memphis had a similar Gini index to Birmingham (0.98), Philadelphia (0.85), Charlotte (1.10), Jackson (1.10), Greenville (0.78), and Houston (1.16), mostly other cities in the South.

Of these same 102 major markets, Memphis was ranked 9th in terms of its **high poverty level**. Nearly 20% of the area's population (19.3%) was living below the federal poverty line in 2014. Memphis's poverty level is comparable to that of Augusta (19.8%), Durham (18.4%), Jackson (19.6%), Modesto CA (21.2%), New Orleans (18.8%), and Toledo (19.1%).

According to the Brookings Institution, the Memphis MSA also has among the highest ratios of low-income people living in a neighborhood with poverty rates exceeding 20%. In the Memphis area, 72.9% of low-income residents live in these conditions, an indication of **geographically-concentrated poverty**. The

only metro areas with higher rates of concentrated poverty were McAllen, TX (93.3%), El Paso (75.5%), Fresno (86.9%), and Bakersfield (77.4%). These are all areas with large concentrations of migrant farm workers, while Memphis has a permanent resident population living in concentrated poverty. Even Jackson, MS had a lower level of concentrated poverty than the Memphis MSA. As noted below by the Brookings Institution, “the intersection between poverty and place matters...”

The intersection between poverty and place matters. Poor neighborhoods come with an array of challenges that negatively affect both the people who live in those neighborhoods—whether they themselves are poor or not—as well as the larger regions in which those neighborhoods are located.¹ Residents of poor neighborhoods face higher crime rates and exhibit poorer physical and mental health outcomes. They tend to go to poor-performing neighborhood schools with higher dropout rates. Their job-seeking networks tend to be weaker and they face higher levels of financial insecurity.²

Being comparable to Jackson, Toledo, or Modesto does not really help the Memphis region’s brand. The region’s status among the top 10% in poverty, and its ranking as 5th among the top 100 metros in the concentration of poverty, presents challenges for image enhancement, business recruitment, entrepreneurship, labor force development, and other factors impacting on overall economic development, above and beyond poverty alleviation.

Cost-of-Living Adjusted

The Memphis Metropolitan Statistical Area (MSA) has among the lowest average wage rates among large metros in the country, but wages are adjusted upwards when cost-of-living factors are taken into consideration. Even then, Memphis has relatively low wages.

The Memphis MSA has an average hourly wage of \$21.30, but the cost of living is very low. After adjusting for cost-of-living factors, the wage would be higher, at \$24.31 per hour. Still, among comparable and competitive cities, only Milwaukee clearly has a lower adjusted wage, at \$23.92. Louisville and Columbus have adjusted wages almost identical to that of Memphis. But many other cities, including Nashville, Birmingham, Indianapolis, and Houston have higher adjusted wages than Memphis. Thus, while the cost of living is low in Memphis, so are wages. This is good news for business but not great for attracting highly-qualified and educated workers. Further analysis of this issue is provided later in this report.

¹ U.S. Federal Reserve Bank and the Brookings Institution: “The Enduring Challenge of Concentrated Poverty in America: Case Studies from Communities Across the U.S.” (Richmond, VA, 2008).

² Elizabeth Knoebone and Natalie Bones, The Brookings Institution: “U.S. Concentrated Poverty in the Wake of the Great Recession.” (Washington, D.C., March 31, 2016).

Table 8. MEMPHIS-AREA COST-OF-LIVING COMPARISON, 2016			
Metro Area	Average Hourly Wage	Ave Cost-of-Living Adj. Wage	Share of Memphis
Cincinnati	\$ 22.61	\$ 23.83	98%
Milwaukee	\$ 24.38	\$ 23.92	98%
Louisville	\$ 22.28	\$ 24.19	100%
Memphis	\$ 21.30	\$ 24.31	100%
Columbus	\$ 22.26	\$ 24.33	100%
New Orleans	\$ 24.33	\$ 24.73	102%
Kansas City	\$ 24.47	\$ 24.84	102%
Birmingham	\$ 22.92	\$ 25.03	103%
Nashville	\$ 22.87	\$ 25.08	103%
Chicago	\$ 26.76	\$ 25.11	103%
Dallas	\$ 25.95	\$ 26.56	109%
St. Louis	\$ 25.89	\$ 27.34	112%
Indianapolis	\$ 25.38	\$ 27.37	113%
Houston	\$ 26.83	\$ 27.66	114%
Sources:	U.S. Bureau of Labor Statistics; Governing Magazine; and Randall Gross / Development Economics.		

Gross Domestic Product (GDP)

The U.S. Bureau of Economic Analysis (BEA) has calculated the GDP for the Metro Memphis area at \$71,728,000,000 in 2015, ranked 47th among metropolitan areas in the country. Memphis GDP increased by \$9,136,000,000 between 2000 and 2015. GDP is the total value of all goods and services produced in that region. In a comparison with selected metro regions, Memphis ranked last in total GDP per capita, but 4th in GDP growth per capita:

GDP Per Capita

1. Houston
2. Nashville
3. New Orleans
4. Kansas City
5. Cincinnati
6. Birmingham
7. Louisville
8. St. Louis
9. Memphis

GDP Growth Per Capita (2010-2015)

1. Birmingham
2. New Orleans
3. Louisville
4. Memphis
5. Nashville
6. Kansas City
7. Cincinnati
8. Houston
9. St. Louis

GDP incorporates output from industries beyond that generated by the local market. Thus, Houston's GDP includes significant revenue generated globally to locally-based companies by the sale of oil and petroleum products. Tourism has boosted output for several of these cities, especially New Orleans, Memphis, and Nashville. Memphis output includes revenues generated by global distribution entities like FedEx. So, GDP is useful as a gauge of output but not necessarily indicative of the health of the broader economic base.

Summary

This economic base analysis provided a review of key factors impacting on the economic health and growth of the Memphis region. The region's economic and demographic base are growing, but at a relatively slow pace in comparison to other metro areas in the Southeast. Memphis has tremendous advantages in terms of its central location, transportation infrastructure, and cultural asset base. However, the Memphis area has a high level and concentration of poverty, which can impact on the overall performance of the regional economy and its long-term growth. Inequality also pervades the geographic distribution of economic resources and growth, with certain urban (central city Memphis) and rural areas (e.g., Lauderdale County) lagging the rest of the region in economic performance. For the Memphis area to prosper and reach its full potential, there is a need to examine approaches to bridge the economic divisions that hold large swaths of the region back.

Section 2. WORKFORCE SKILLS & TRAINING DELIVERY ASSESSMENT

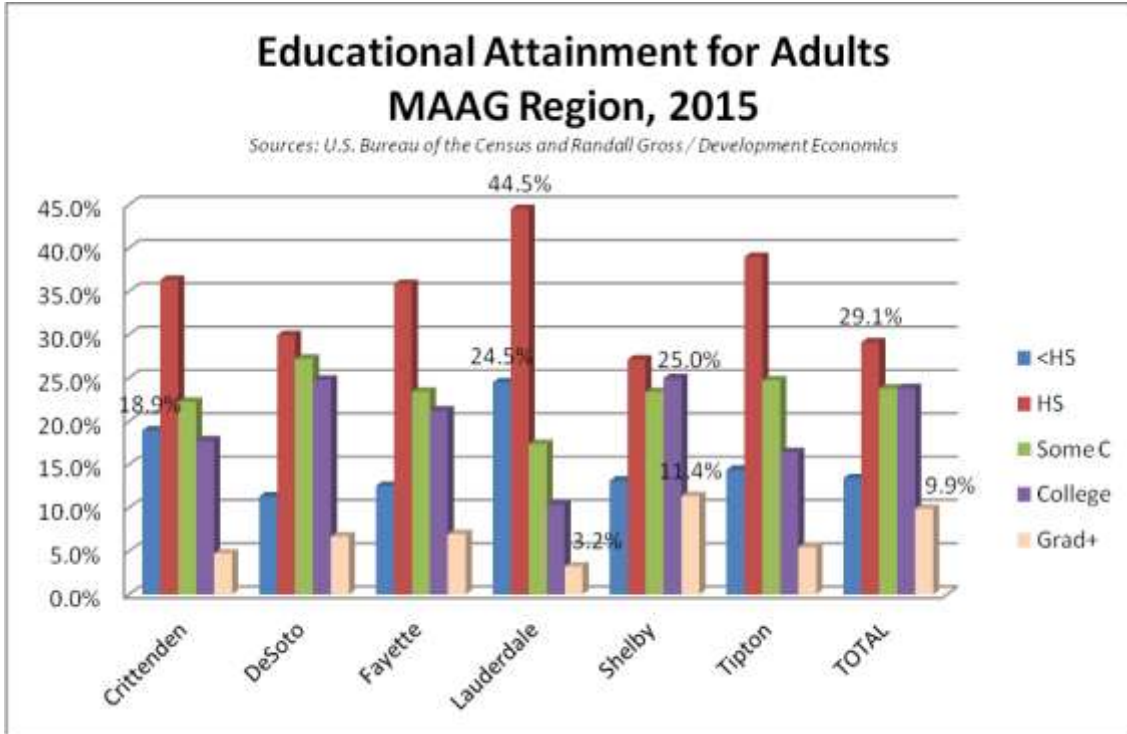
This section summarizes an assessment of labor force education and skills, as well as an inventory of existing education and training resources. Some information used in this assessment has been gleaned from an employer survey conducted as an input to this CEDS study. Documents generated by the State of Tennessee, Brookings Institution, and Chambers of Commerce in the region were also analyzed. In 2016, Younger Associates produced a *Strategic Sector Workforce Analysis* for the Greater Memphis Alliance for a Competitive Workforce (GMACW). Supplementing that analysis were reports completed by the University of Memphis, U3 Advisors, the Manufacturing Institute, the U.S. FHA, the College of William and Mary, and Thomas P. Miller & Associates for the Memphis region, southeast, and nation including the following:

- *The Equipment Industry Technician Shortage: Causes, Impacts, and Policy Recommendations* (2016, AED Foundation for the College of William and Mary)
- *Job Priorities and Needs Report, Phase 1: Southeast Region* (University of Memphis Southeast Transportation Workforce Center, for the U.S. Federal Highway Administration).
- *Major Hiring Trends – Medical District Anchors* (March 2016, U3 Advisors, for the Greater Memphis Alliance for a Competitive Workforce)
- *Career Pathway implementation Report: Steel Fabrication* (2016, The Manufacturing Institute and Thomas P. Miller and Associates).
- *Mid-South Community College Right Skills Now – Bridge to Employment Process Technology Certifications* (2016, The Manufacturing Institute and Thomas P Miller and Associates)
- *Ibid, Apprenticeships in Process Technology* (2015)
- *Ibid, Machining Certifications* (2014)

Educational Attainment

In all but one of the six counties in the MAAG region, more than 80% of adults over 25 have at least a high school education. In Lauderdale County, about 75% of adults have at least a high school education, but 25% do not. The fact that 4,500 adults in Lauderdale County, and 110,900 (13.4%) in the region have not attained at least a high school education is unacceptable. While it can be argued that higher education is neither a requirement nor a prerequisite for everyone to succeed, a high school education is necessary for even many menial jobs in today's workplace.

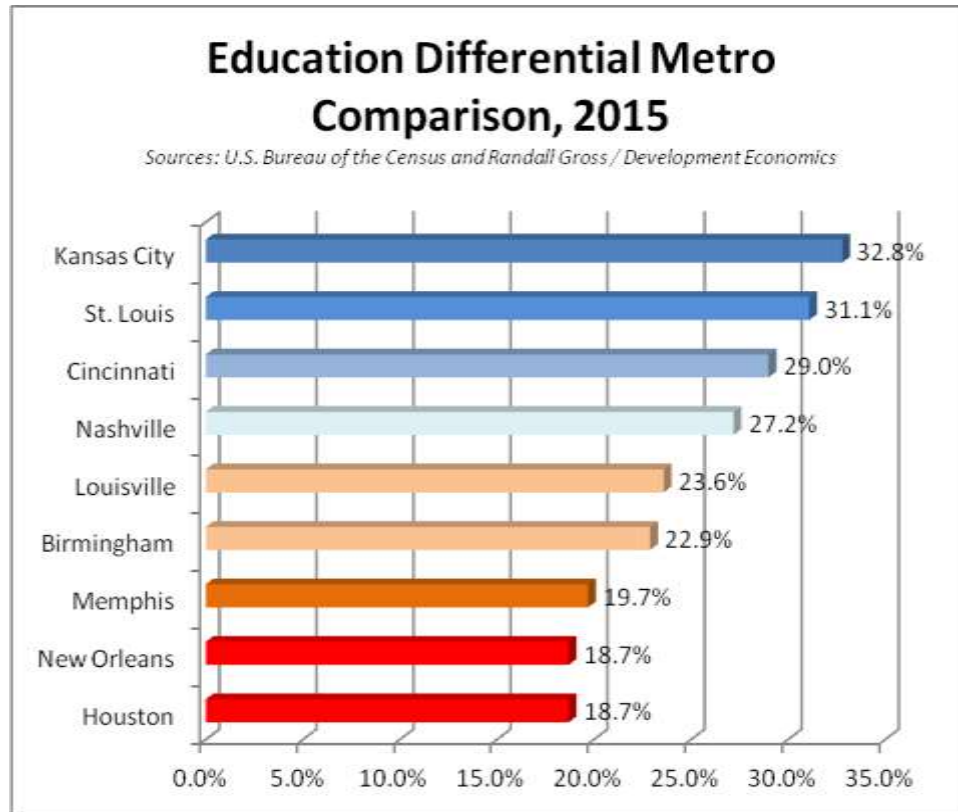
Chart 16



Overall, 86.6% of adults in the region have attained at least a high school education, 23.8% have received a college diploma (2- or 4-year degree) and 9.9% have a graduate degree or higher. Within Lauderdale County, only 3.2% of adults have achieved a graduate degree and only 10.4% have graduated with either a 2- or 4-year college degree. Adults in Shelby County have achieved a higher level of education, on average, with 11.4% having received a graduate degree and 25.0% a college degree. Still, 13.1% of adults in Shelby County have less than a high school education.

On a comparison of educational attainment in Metro Memphis with other, relatively comparable regions, Memphis has relatively low educational attainment on average. One measure that captures the range of attainment issues is the differential between the share achieving at least a college degree and the share with less than a high school education. In Memphis, this differential is 19.7%, ranked 7th out of the 9 metro areas compared in this analysis, just above New Orleans and Houston.

Chart 17



By comparison, the differential in Kansas City and St. Louis was over 30%. This means that a much larger share of the population has achieved higher education than those that have lagged behind. A high differential is not necessarily correlated with economic growth (Houston is growing rapidly and Kansas City is not), but does provide an indication of overall education levels and availability for work in the information economy. Ultimately, it's the number of available workers, not the percentage that provides a basis for economic growth.

Skills Base

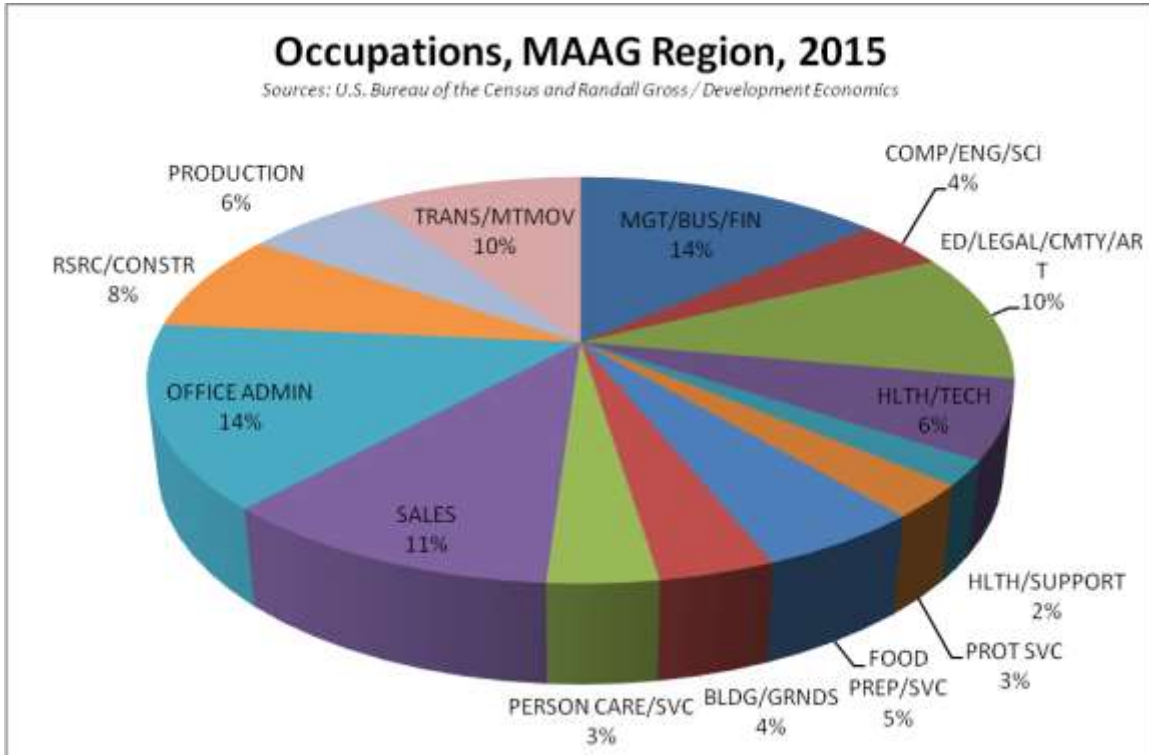
An assessment of existing skills within the MAAG region and counties included in this CEDS was conducted based on resident occupations and training, input from employer surveys conducted as part of the Strategic Sector Workforce Analysis completed in 2016 for the GMACW, and an employer survey conducted in 2016 as input specifically to this Comprehensive Economic Development Strategy (CEDS).

Occupation

Within the MAAG region, residents are highly represented in office administration (14%), management/business/finance (14%), sales (11%), transportation & material moving (10%), and education/community/legal/art

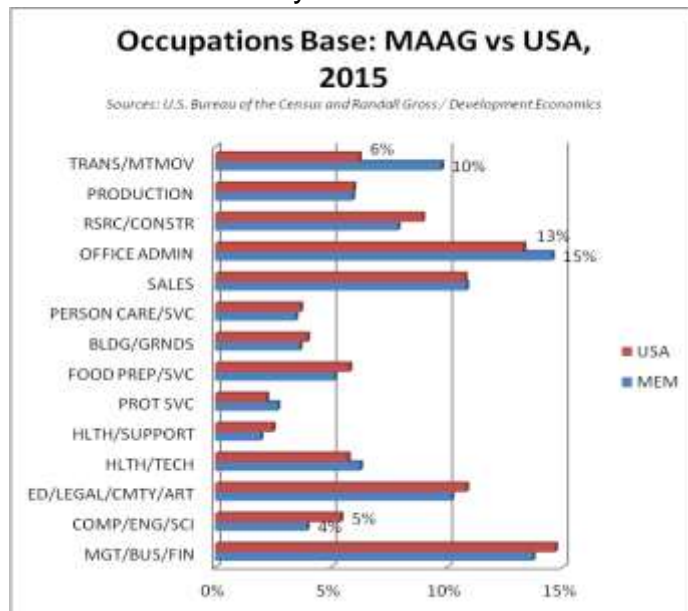
(10%) occupations. Residents are least represented in health support, personal care & services, building & grounds, and computer/engineering/science occupations. Aside from computer, engineering, and science, most of these less-represented occupations require less educational attainment.

Chart 18



In general, the occupational mix is remarkably similar to that of the nation as a whole, with two or three notable exceptions. The Memphis region, not surprisingly, has a much higher share of its workforce in transportation (truck drivers, cargo agents, etc) and material moving occupations, at 10% in Memphis versus 6% nationwide.

Chart 19



The Brookings Institution notes that infrastructure-related jobs (including and beyond transportation) tops 17% of total Memphis MSA employment, the highest of any large metro.

The Memphis area also has a slightly higher share in office administration occupations (15% versus 13%) and protective service (3% versus 2%). Otherwise, the region's occupational mix is roughly equivalent to that of the nation as a whole. The occupational mix implies that, at least among those who are already employed, the Memphis area has a fairly standard set of skills available in the workforce with the exception of the higher base of those with transportation-related skills.

A 2016 labor force survey conducted in 2016 for the Greater Memphis Alliance for a Competitive Workforce (GMACW) found that those not working most frequently stated that they had skills in the following occupations:

- Office and administrative support (9.7%),
- Computer/IS-support (9.7%),
- Warehouse & distribution (6.8%),
- Transportation & material moving (5.8%),
- Construction (4.9%),
- Healthcare/tech (4.9%),
- Special trades (4.9%),
- Personal services (3.9%),
- Installation & repair (3.9%), and
- Information/media services (3.9%).

The survey found that few if any of the non-working adults had skills in management, legal professions, skilled manufacturing, extraction, architecture & engineering, computer/IS-professional, customer support, manufacturing production, entertainment, and utilities. Many, but not all, of these occupations, generally require post-high school education. Exceptions include customer support, production, extraction, and entertainment. It should be noted that nearly 36% of those surveyed were under 24 or over 55 years of age.

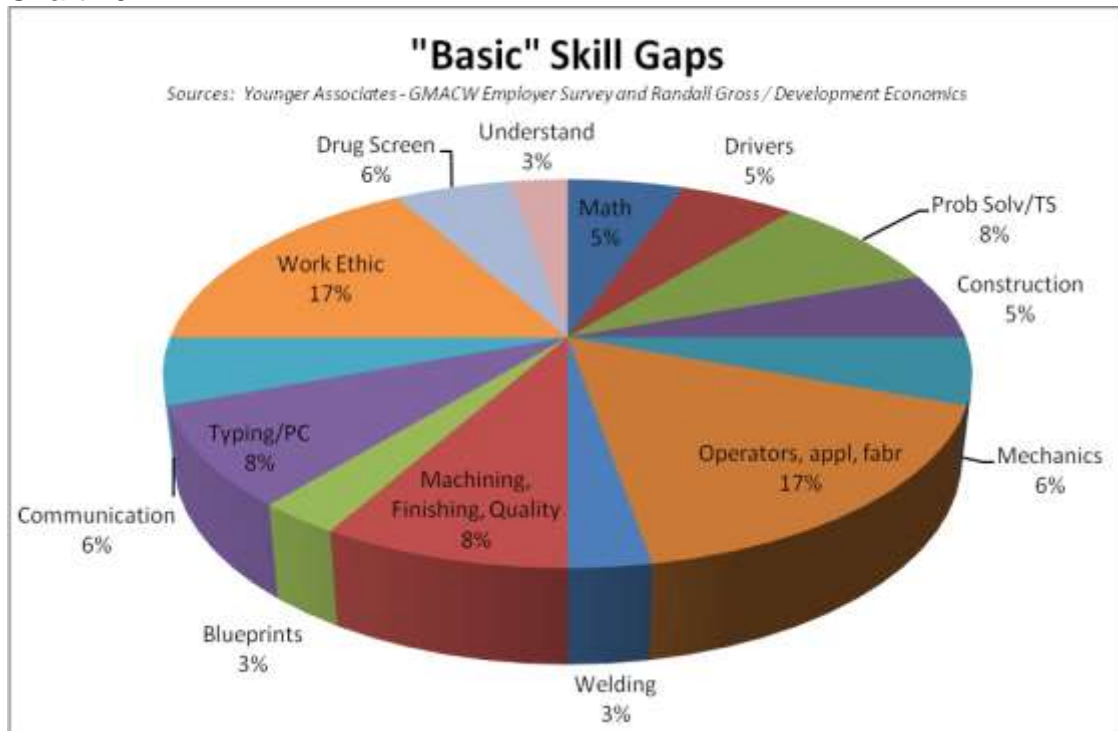
In terms of work experience, the most frequently cited were cleaning & maintenance (14.2%), warehouse & distribution (12.9%), and food preparation and serving (9.4%). The Most recent experience cited was often warehouse & distribution (20.4%), followed by retail sales and service (12.6%). Those seeking employment were most frequently looking for jobs in warehouse & distribution (20.6%), office administration & support (13.9%), and food preparation and serving (10.8%).

Skills Gaps

The Strategic Sector Workforce Analysis conducted for the GMACW also included an employer survey. A total of 86 employers in an eight-county region responded to the survey. That survey found that there is a serious overall skills gap in the Memphis labor force, with 81.2% of employers agreeing with the

statement: “Applicants don’t have the skills we require.” More than 50% of employers also noted that job applicants often lack “soft” skills (communication, team work, customer service, etc) and nearly 50% stated that new hires generally lack specific technical skills required for the job. Based on an analysis of individual responses generated by the survey, it appears that about 54% of employers see a gap in basic skills and performance, 39% in technical skills, and 8% see other issues.

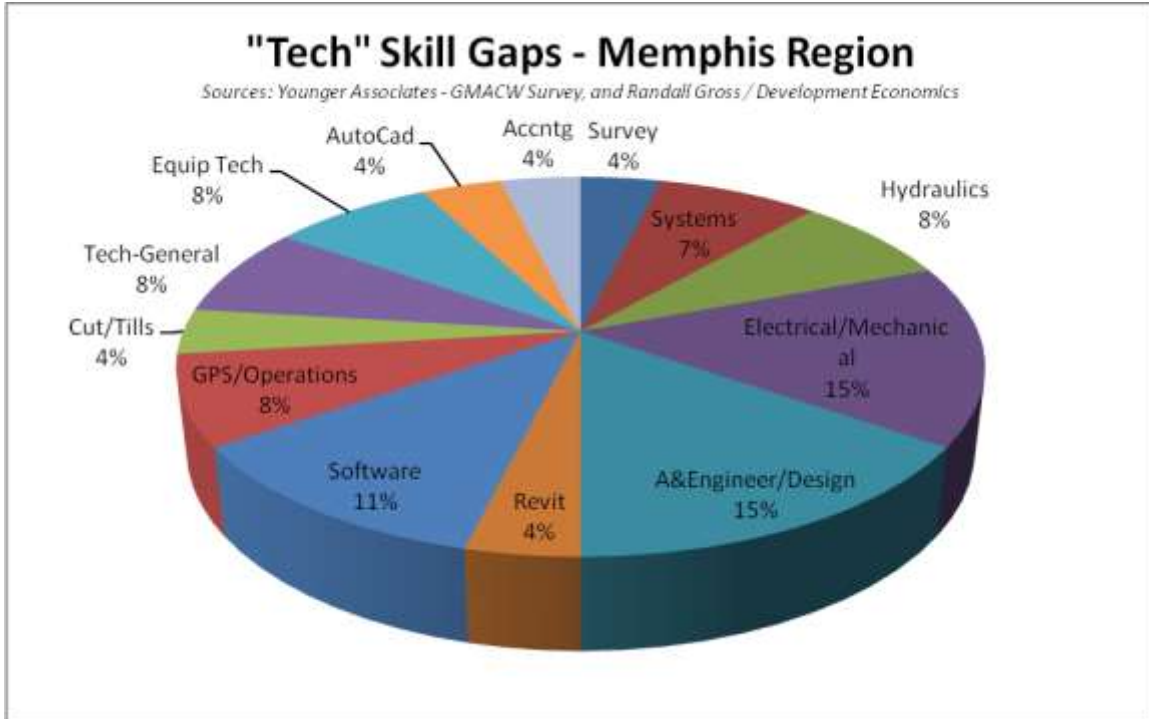
Chart 20



Basic (and “soft”) skill gaps identified by employers in the GMACW survey include a lack of work ethic – such as showing up for work (17%) and the specific need for qualified operators, applicators, and fabricators (17%). Other basic skill gaps include machining, finishing and quality control (8%), problem solving and trouble-shooting (TS) (8%), communication and presentation skills (6%), passing a drug test (6%), and having basic mechanic skills (6%).

The GMACW employer survey also identified a number of more specific technical skills, led by electrical/mechanical (15%), architect/engineer/design (15%), software (design and/or use in operations, 11%), hydraulics (8%), GPS (in operations (8%), and others.

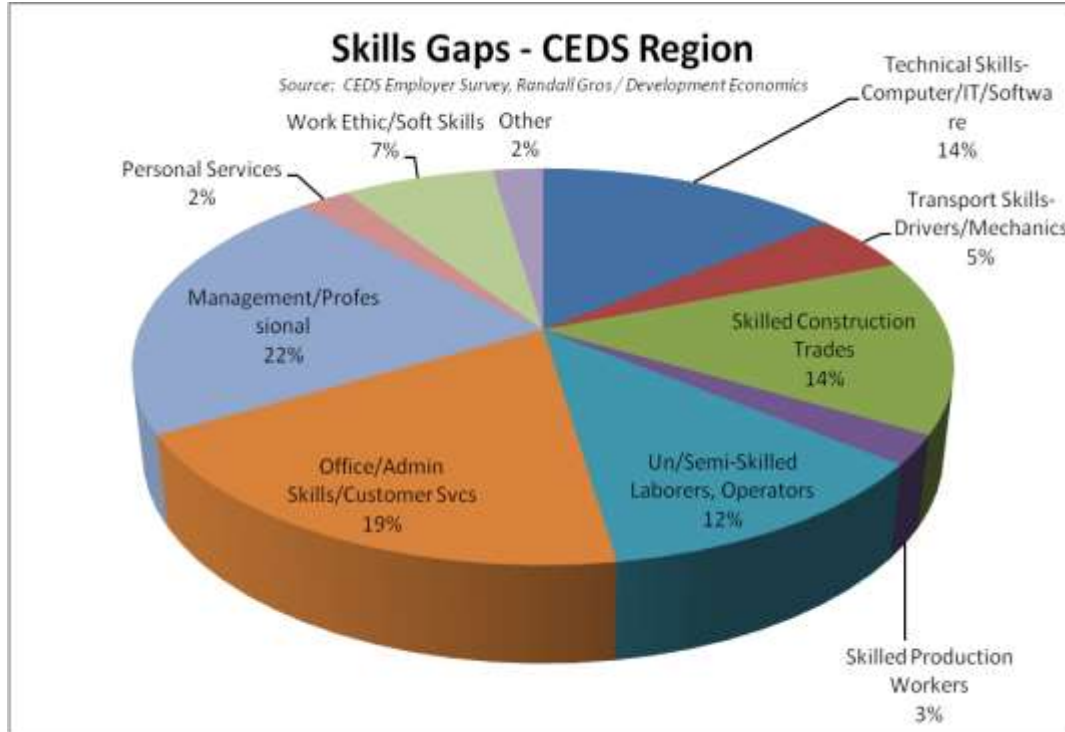
Chart 21



Another employer survey was conducted in 2016 specifically for this CEDS study to examine a variety of factors impacting on business in the Memphis region. A total of 78 employers responded to that survey. In a question about the region's competitive advantages, access to "qualified labor" was ranked only 9th out of 13 factors. Similar, among the region's disadvantages or challenges, the "lack of skilled labor" was ranked 2nd (nearly 60% agreed that it's a disadvantage), behind only perception of the region's crime rate (65%). Overall workforce skills gaps are identified below for the CEDS region, based on open-ended responses to this survey.

About 22% of the employers who responded to the CEDS survey identified a gap in management and professional skills (such as architecture & engineering, management, etc). Another 19% identified a gap in office & administrative skills and customer service. Gaps in computer-related technical skills (IT, software) were identified by 14% of respondents, as were gaps in skilled construction trades (HVAC, electrical, etc). About 12% identified gaps in basic skills for laborers, operators and other semi- and unskilled jobs. Finally, 7% saw a serious gap in "soft" skills related to work ethic, communication, and presentation.

Chart 22



Challenges and Deficiencies

There is a wealth of information produced in a plethora of recently-released reports as indicated at the start of this section, which provide indications of skills needs and targets for meeting the requirements of industry in the region. Below is a summary of key findings from these analyses indicating the key challenges and suggesting workforce skills and development needs.

Education-Job Match Gap. The Brookings Institution determined in 2012 that the Memphis region has a serious lag in employment levels required to meet the demand for jobs. The Brookings study found that:

“...nearly 40 percent of jobs in Metro Memphis require a bachelor’s degree or higher education, but only 26 percent of adults in the region over age 25 possess that level of education. Another one-third of available jobs required some postsecondary training or an associate degree.”

Disability. The 2016 labor force survey conducted in 2016 for the GMACW found that among those who were not working, nearly 20% were not seeking employment. The primary reason cited by respondents for not seeking employment was having a disability. Disability issues play an even larger role within the MAAG region and the CEDS study area. About 26.0% of non-working

adults in the MAAG region and 26.2% in the study area have a disability, according to Census data.

Transportation. Among the most frequently-cited reasons for not having a job were the lack of transportation and the incompatibility of work schedules (12.8% each). The survey found that nearly two-thirds of those seeking employment would use public transportation.

Training Financial Gap. While 75% of those not working would seek job training, financial constraints have proven to be the most significant challenge, along with the availability of child care and transportation.

Recruitment. Both the GMACW and CEDS employer surveys identified a recruitment challenge impacting on the Memphis region. Many employers state that it is difficult to recruit high-skilled and professional workers to the Memphis area. On a scale of 1 (poor) to 5 (excellent), those surveyed for GMACW rated their ease of recruiting top managers and professionals as a 2.6 (fair to satisfactory) and for recruiting young (age 25-34) professionals a 2.5. In all fairness, comparable surveys conducted in other cities are increasingly finding the same issue, which is compounded by a soaring economy (unemployment below 2.0% in some places), demographics (dearth of young graduates), and policies (increasing real or perceived restrictions on immigration).

Workforce Training Targets and Resources

Work recent completed for the Greater Memphis Alliance for a Competitive Workforce and other entities identified specific workforce training goals, resources, and approaches for meeting key targets.

Resources

As noted earlier, there are nearly 20 colleges and universities in the region, the largest by far being the University of Memphis. Dedicated training and vocational colleges in the region include the Southwest Community College, Mid-South Community College (Arkansas State), Northwest Mississippi Community College, Phillips Community College, and the Tennessee College of Applied Technology (Covington and Memphis). Vocational institutions like the William R. Moore College of Technology also help support workforce development. The region's employers recruit largely from about 14 colleges and universities in the region. The largest share of recruits is generated from the University of Memphis, Christian Brothers College, Southwest Community College, and Rhodes College. However, employers rated their relationships with programs at the region's universities on a scale of 1 (low) to 5 (high), and the highest-rated institutions were UT-Health Sciences Center, Union University (Germantown), and the Tennessee College of Applied Technology (Covington).

Secondary education resources are also important. The Maxine Smith STEAM Academy (operated by Shelby County Schools and Christian Brothers University) is often cited by the IT industry as a model for better integration of emerging technologies into the school curriculum. The Memphis Catholic High School program has also been cited as a good job launching pad for the labor force. Expansion of these programs has been promoted, such as through development of dedicated sector-specific high schools. Several career placement programs are also cited for their success, such as Olympic Career Training Institute and Prestigious Placement. According to the GMACW strategy, the latter is recognized for its success in “transitioning” those with felony and misdemeanor records into the workforce.

Skills Needs and Target Occupations

Skills needs and targets have been identified through the GMACW and other labor force assessments. The GMACW study targeted seven economic sectors: Information Technology (IT), Architecture & Engineering (A&E), Heavy Equipment Technology (HET), Logistics & Warehousing (LW), Medical Device Manufacturing (MDM), Advanced & General Manufacturing (AM), and Finance, Insurance, and Business Services (FIBS). The study focused on these sectors based on growth patterns, concentrations, and wage potential. The study identified the top jobs in demand in the region in 2015, which were:

1. Customer Service Reps in IT, logistics, manufacturing, and FIBS
2. Information Technology (Skilled Entry Level) among all sectors
3. Machinists, in medical device manufacturing and AM industries.

Within the seven target sectors, the GMACW report generated the following findings:

- **Information Technology (IT).** The sector comprises of software publishers, data processing, hosting & related services and computer systems design and related services. The Greater Memphis IT Council is active in promoting the sector and its business interests. Among the highest growth occupations is information security analyst, where there is significant unmet demand. Key requirements among employers include internship experience, knowledge of Java Script, C#, or C++ and .net programming. Education is less importance than training, experience, and communication skills. The GMACW workforce training partners offer various programs to meet the needs of the sector, although one issue is in identifying students to attract and enter the programs.

For the purposes of this CEDS study, data provided through the GMACW study was analyzed further to identify those IT occupations where the Memphis region is expected to see growth that exceeded or nearly equals the expected rate of national growth. Memphis only exceeds the expected

national growth rates in two (2) out of 25 IT occupations, and comes close on another two:

1. Computer Network Architects (SOC 15-1143), 18% > national average.
 2. Business Operations Specialists, All Other (SOC13-1199), 6%>
 3. Software Developers, Systems Software (SOC 15-1133), 3%<
 4. Software Developers, Applications (SOC 15-1132), 6%<
- **Architecture & Engineering (A&E).** This sector includes architecture, design, interior design, consulting engineers, civil engineers, and related services. Job growth was rapid between 2007 and 2015, but is slowing for the Memphis region. Employers indicate that growth would be higher if the talent was available and they are instead shifting work and resources to offices where the talent exists. A large number of local firms are dissatisfied with the quality of A&E graduates being produced by local institutions. There was a feeling that programs like Revit are not being taught locally, but institutions that are teaching it are seeing declining enrollment. So again, finding students has been the challenge. There are high rates of retirement and attrition, with replacement difficult in the local market. Local firms are active in the Memphis Chapter of the American Institute of Architects (AIA).

As noted above, Memphis will see rapid growth in A&E occupations, but that growth is slowing. Still, Memphis is expected to see faster growth in demand than the nation as a whole for many A&E occupations.

1. Civil Engineering Technicians (SOC 17-3022), 700% > national average
 2. Electronics Engineers, exc Computer (SOC 17-2072), 468%>
 3. Mechanical Engineers (SOC 17-2141), 262%>
 4. Architectural & Civil Drafters (SOC 17-3011), 181%>
 5. Engineers, Other (SOC 17-2199), 179%>
 6. Electrical & Electronics Engineering Technicians (SOC 17-3023), 50%>
 7. Environmental Engineers (SOC 17-2081), 49%>
 8. Electrical Engineers (SOC 17-2071), 42%>
 9. Secretaries & Admin Assistants (SOC 43-6014), 39%>
 10. Civil Engineers (SOC 17-2051), 38%>
 11. Business Operations Specialists, Other (SOC 13-1199), 6%>
- **Heavy Equipment Technology (HET).** This group includes construction machinery wholesalers, heavy equipment installation, and heavy construction (e.g., road building, infrastructure development, etc). The Memphis Association of Equipment Distributors represents part of this group of employers. The association is working with the GMACW on developing a new program locally in equipment technician training to help fill a gap in the need for field equipment technicians (industrial machinery mechanics) and diesel mechanics. Several area community colleges are working with GMACW on expanding their technical training for this industry. The Associated General Contractors (AGC) represent heavy

construction. This group sees a need for more heavy equipment operators. As with the equipment wholesalers, AGC is working with GMACW to enhance training programs at local community colleges. For this CEDS study, an analysis was conducted of HET occupations and it was determined that demand in only two in Memphis will exceed national growth rates, and many are slated to decline.

1. Machinists (SOC 51-4041), 22%> than expected national growth
 2. Sales Reps/Services, Other (SOC 41-3099), 6%>
- **Logistics.** The logistics group includes logistics support, transportation arrangement, and warehousing & storage. The Traffic Club represents logistics employers in the Memphis area. Employers suggested a gap in the availability of workers with expertise in sales and customer service. Dispatching and accounting jobs are also difficult to fill. In warehousing and storage, fork lift operators are where the biggest gap has been identified among local employers. Five area institutions are focused on training to fill gaps in logistics-related occupations. There will only be three areas out of 25 where Memphis occupational demand is expected to exceed nationwide growth in this group:
 1. Packers & Packagers (SOC 53-7064), 50%> than expected national growth
 2. Business Operations Specialists, Other (SOC 13-1199), 6%>
 3. Sales Reps/Services, Other (SOC 41-3099), 2%>
 - **Medical Device Manufacturing- MDM** (and General Purpose Machinery Manufacturing). The Greater Memphis Medical Device Council represents the employers in this group. While team assemblers is noted for overall demand in manufacturing, MDM employers noted a specific need for inspector/testers, machinists, and bead-blasting/inking production workers. The highest demand noted by the employers will be for machinists, particularly metal finishers. Other machinery manufacturers agreed that there is high demand for machinists (namely, grinders, manual machinists, and CNC operators) as well as certified welders, industrial maintenance technicians, and first-line supervisors. Career-Readiness Training and Industrial Readiness Training (CRT/IRT) was cited as a serious need in the region. A Steel Fabricators Council has recently been formed to help work on developing these key occupations in support of local industry. Recruitment is an issue for top managers, plant managers, IT professionals, and engineers. Area training institutions are well placed to provide training to meet the needs of these industries, offering intensive coursework in machining technology, welding technology, mechatronics, mechanical engineering, metal finishing, machine tool technology, and other relevant courses. There are a number of MDM and other machinery manufacturing occupations where expected local demand will exceed national growth rates by 2020, as follows:

MDM

1. Dental Lab Techs (DOC 51-9081), 1,547%> than national average
2. Helpers-Production (DOC 51-9198), 1,014%>
3. Assemblers/Fabricators, Other (DOC 51-2099), 530%>
4. Medical Appliance Techs (DOC 51-9082), 330%>
5. Production Workers, Other (DOC 51-9199), 319%>
6. Mechanical Engineers (DOC 17-2141), 280%>
7. Ophthalmic Lab Techs (DOC 51-9083), 185%>
8. Biomedical Engineers (DOC 17-2031), 156%>
9. Molders, Casting, Machine Setters (DOC 51-4072), 70%>
10. Machinists (DOC 51-4041), 22%>

General Purpose Machinery Mfg

1. Electromechanical Equip Assemblers (DOC 51-2023), 1,460%>
2. Helpers-Production (DOC 51-9198), 1,014%>
3. Multiple Machine Tool Setters/Operators (DOC 51-4081), 920%>
4. Electrical & Electronic Equip Assemblers (DOC 51-2022), 670%>
5. Team Assemblers (DOC 51-2092), 406%>
6. Mechanical Engineers (DOC 17-2141), 280%>
7. Machinists (DOC 51-4041), 22%>
8. Computer-Controlled Machine Tool Operator (DOC 51-4011), 17%>

- **Finance, Insurance, Business Services (FIBS).** This group includes banks, financial brokerages, insurance operations and related services. Businesses in this group note that they are facing a serious shortage of talent in the Memphis region, so they are taking some of their operations elsewhere like Charlotte and Nashville. Memphis has lost its former high-level position as a financial center, resulting in a dearth of experience and talent to feed growing local demand. Among the occupations in high demand in the region are customer service representatives, high-level IT skills, claims adjusters, analysts, accountants and auditors, etc. While local colleges and universities offer degree programs, the businesses envision more connection to K-12 educators in the region. Despite this high-demand pressure expressed by businesses interviewed for the GMACW study, there are only three occupations where Memphis area growth is expected to exceed the national growth rate:

1. Insurance underwriters (DOC 13-2053), 1,350%> than national ave.
2. Business Operations Specialists, Other (SOC 13-1199), 6%>
3. Receptionists and Info Clerks (DOC 43-4171), 21%>

- **Other Occupational Groups.** As noted above, other studies have been completed to examine workforce gaps and need within the Memphis region. The Medical Center study, for example, identified high demand and a gap for the following five occupations: Nursing (3,450 jobs), Research positions (875), IT Professionals (130), Rehabilitation Workers (95), and HIM/Coding Analysts (90). Other specific occupational needs

and targets have been identified for steel fabrication, process technology, machining, transportation, and equipment technician occupation groups.

Section 3. DEVELOPMENT POLICY & PROGRAM ASSESSMENT

The existing development policy and program context in the region has been assessed in broad terms as an input to this CEDS. This analysis began with an inventory and review of the economic development-related entities and resources in the region, which are many. Programs including incentives and financing packages were examined, mainly as they are administered by the various entities. Development planning and policy was also examined, with additional input under review as part of the final draft process.

Economic & Business Development Entities

The region's various economic and business development entities are summarized below as a basis for strategy development. There are many types of entities relating to economic development, including government agencies, chambers of commerce, industrial development boards, incubator and accelerators, industry associations, entrepreneurship development organizations, and others. A sample of these entities is summarized below.

Memphis & Shelby County EDGE & IDB

The Economic Development Growth Engine for Memphis and Shelby County (EGDE) was formed in 2011 to help coordinate economic development incentives and other assistance programs for the Memphis area. The organization and its staff focus on tax incentives, project financing, and technical assistance for leveraging business and real estate development projects in Memphis and Shelby County.

EDGE resulted from a merger of the City and County economic development offices with the Memphis-Shelby County Industrial Development Board, Port Commission, Depot Redevelopment Authority, Frank C. Pidgeon Industrial Park and the City of Memphis Foreign Trade Zone #77 (and associated Renewal Community programs).

EDGE has helped establish and manage 52 payment-in-lieu of tax (PILOT) projects and 40 loans. The organization claims to have leveraged 12,811 jobs and \$2.3 billion in investment, plus \$930.7 million in new tax revenue (generating a 2.94 benefit-to-cost ratio) from its PILOT program. EDGE has also generated \$3.1 million in loans (each up to \$20,000). These programs have focused on business retention, expansion, consolidation, new business development, and relocation.

The **Industrial Development Board (IDB)** of Memphis and Shelby County is a partner in EDGE. The IDB was formed by the City and County governments in accordance with the Tennessee Industrial Development Corporation Act to assist in financing new business and industry, and to promote industrial expansion.

Downtown Memphis Commission (DMC)

The DMC is focused on “advancing Downtown for the betterment of all of Memphis and Shelby County.” Downtown is perceived as a “vital economic engine” for the region, so the organization focuses on ways to encourage investment and development of Downtown as a place to work, live, learn, invest, and visit. DMC is a partnership between local Memphis and Shelby County Governments and local business. It is funded mainly through a special levy on commercial properties in the Central Business Improvement District (CBID) and thus, is not dependent on public grants. The DMC works with four other affiliated boards through shared staff and resources: the Center City Development Corporation (CCDC), Center City Revenue Finance Corporation (CCRFC), the Downtown Parking Authority, and the Design Review Board.

CCDC. The Center City Development Corporation is a non-profit chartered by the City of Memphis, Shelby County, and the State of Tennessee to “promote redevelopment and combat the deterioration in the CBID.” The CCDC also “acts to expand employment opportunities, increase personal income, establish and finance business ventures, coordinate governmental planning, promote housing development, and promote the common good and general welfare of the central city.” CCDC accomplishes all of this through project development and low-interest loans to property owners to “renovate, redevelop, or stabilize properties in the downtown area.

CCRFC. The Center City Revenue Finance Corporation is a State-chartered Industrial Development Board (IDB) authorized to “finance, own, lease, and dispose of properties in order to maintain and increase employment opportunities and increase the quantity of housing in the center city.” CCRFC also helps “promote industry, trade, commerce, tourism, and recreation, and housing construction,” and encouraging business retention and attraction. CCRFC overseas PILOTS and can issue bonds for redevelopment projects.

Memphis Area Association of Governments (MAAG)

MAAG serves as the regional “clearinghouse” for coordinating federal and state programs in economic development, housing and community development. MAAG serves a six-county region including Shelby, Tipton and Lauderdale counties in Tennessee; Crittenden County, Arkansas; and DeSoto County, Mississippi. MAAG constitutes a Development District of Tennessee, and works to design and promote legislation that assists residents of the member counties.

Regional planning, community development and economic development are the focus of the organization. As part of its mission to assist with regional economic development, MAAG is sponsoring this Comprehensive Economic Development Strategy (CEDs) as a blueprint for diversifying and strengthening the regional economy.

Greater Memphis Chamber of Commerce

The Greater Memphis Chamber has an economic development division focused on relocation and expansion services. Staff members in this division provide data gathering, incentive applications, and other assistance. The Chamber also has an international division generating outreach to existing and potential overseas business partners and investors. The Chamber has targeted business networking and resources to key sectors including Biosciences, Logistics & Distribution, Manufacturing, Corporate Office, and International Business.

Memphis and Shelby County economic development organizations including the Chamber and EGDE worked with the Brookings Institution's Metropolitan Policy Program and in partnership with 150 leaders from the public, private, and institutional sectors to help establish the Regional Economic Development Plan for Memphis & Shelby County. This Plan outlines key goals and targets, along with strategies for targeted sectors aimed at growing the region's economy. A collaboration of 19 organizations from throughout the metro Memphis area known as MemphisED is working to implement components of this plan. MemphisED forms one part of the Memphis Fast Forward Initiative (MFFI), which also includes People1st! (focused on education and workforce development), Operation Safe Community and City/County Government Efficiency. The Greater Memphis Chamber coordinates the MFFI, which is led by a Steering Committee comprised of public and private leaders.

Mid-South Minority Business Council (MMBC)

The region's leading organization for minority-owned and operated businesses, the Minority Business Council focuses on economic and business development in the region's minority communities. MMBC operates an incubator, the Center for Emerging Entrepreneurial Development (CEED) and works with strategic partners.

West Tennessee Industrial Association (WTIA)

The West Tennessee Industrial Association (WTIA) is a 60 year-old regional economic development organization established by electric power distributors and focused on attracting and expanding business in the 15-county region that they serve. The organization provides information and assistance with

site selection and development. Two of the counties included in this CEDS are covered by the WTIA, namely Lauderdale and Tipton counties.

Lauderdale Chamber/ECD

The Lauderdale Chamber / Economic & Community Development (501(c)6) works collaboratively on efforts to enhance the county's education, economic development, community improvement, tourism, and quality of life. The Chamber of Commerce merged with the Lauderdale County Economic and Community Development Board in 2005 to form the Lauderdale Chamber/ECD. The County is working to attract broadband Internet vendors to supply access to rural areas.

HTL Advantage

HTL Advantage is an economic development coalition oriented to business recruitment for three counties: Haywood, Tipton, and Lauderdale. The organization implies that it also works on issues relating to education and workforce development, leadership, and "sustainable resource utilization." HTL Advantage does provide site information, demographic data, and other information resources. In addition to the three counties, partners in the organization include Ripley Power & Light, the cities of Covington and Ripley, the Southwest Tennessee Electric Memphis Cooperative, and others. The 4,100-acre, state-designated Memphis Regional Megasite is located on I-40 in this Tri-County region in Haywood County, adjoining Tipton County (with a small portion in Fayette County). This site, along with industrial parks in the three counties, has been designated as part of Foreign Trade Zone #283.

Memphis Convention and Visitors Bureau (CVB)

The Memphis CVB is the destination marketing organization for Memphis and Shelby County. In addition to advertising, marketing, and media relations, the CVB works with the Memphis Cook Convention Center, hotels, meeting planners and travel professionals to provide information and assist with the logistics supply chain. The CVB also works closely with the Cannon Center to integrate performing arts programming. The affiliated **Memphis Sports Council** works to maximize available resources to leverage the hosting of sporting events that bring visitors to the region. The CVB also directs the **Memphis Tourism Education Foundation**, which "leads workforce development for the hospitality industry and contributes to the intellectual capital about civic issues."

Covington-Tipton Chamber of Commerce

Among other things, the Covington-Tipton Chamber of Commerce sponsors programs to stimulate business and industrial growth yielding "full development and employment of (the county's) human and economic resources."

The Chamber's Industrial Development division focuses on providing information on buildings and land, training resources, industrial parks, taxes and incentives, and marketing for business recruitment. The Chamber promotes the county's high quality of life (Downtown, Ruffin Theater, youth sports, Scenic Hatchie River, Mississippi River, various parks, etc) and access to Memphis and other large cities.

Greater Memphis Alliance for a Competitive Workforce (GMACW)

GMACW is an employer partnership in an eight-county Memphis region to "build career pathways between the unemployed and the area's open high-skilled positions." The recently-formed partnership is aimed at eliminating the skills gap in the region's workforce, and includes direct interaction with the region's educational and training institutions to help match workforce skills with the demand for labor.

Memphis Tomorrow

Memphis Tomorrow is an association of the chief operating officers of Memphis's largest companies. The purpose of this group is to "engage the highest-ranking officers, and the resources of their companies, in fostering prosperity and quality of life for all who live in our community." Memphis Tomorrow forms part of the broader MFFI. Initiatives include education and workforce development, economic development, public safety, and efficient and effective government. The organization's members each participates on a task force in one of their focus areas; and work to build "diverse coalitions" to work with "partner organizations and plan and implement solutions." This work is accomplished through financial support, advocacy for a "joint agenda," strategic support.

New Memphis Institute and IMPACT Memphis

There is a need for attracting and retaining talent to help the Memphis regional economy grow. These organizations are geared to attracting, developing, activating, and retaining talent or young professionals through events (targeted to newcomers, students and interns), leadership development ("EMBARK"), mid-career and executive professional development, ambassador programs, and other activities.

Emerge Memphis

This non-profit organization is oriented to growing and sustaining the "innovation economy" in Memphis. The organization assists start-up companies and entrepreneurs with strategic planning, mentoring, affordable/shared office space, and other services. The focus is on "nurture, develop, connect and grow." They work with companies to encourage an entrepreneurial culture, provide

technical assistance and training, introduce entrepreneurs to networks to develop replicable and scalable business models, and provide a work environment and growth space for startups.

Accelerators: EPICenter, StartCo, etc.

The Entrepreneurship-Powered Innovation Center coordinates resources from accelerators, incubators, mentors, investors, networking programs, and technical assistance programs to help entrepreneurs launch and grow businesses in the Memphis region. The center, working with Launch Tennessee, offers programs in mentorship, access to capital, office space, networking, workshops, entrepreneurial events, cohort-based acceleration, and rolling acceleration. EPICenter target industries include Healthcare & Related IT, Information Technology, Logistics, Medical Devices, and B2B. StartCo accomplishes similar work for startups, providing expertise and assistance specifically with geomapping solutions, network data, Internet of Things (IOT), and access to developers and data scientists. StartCo also operates an accelerator for IT solutions in the “K-12 space.” StartCo Upstart is a women-led IT accelerator.

Industry Groups

There are a number of organizations and associations representing employers in various industry sectors in the Memphis region. Among these are the Greater Memphis Medical Devices Council, Memphis Association of Equipment Distributors, AgriCenter International, the Greater Memphis Information Technology Council, Greater Memphis Chamber Manufacturing Council, National Cotton Council, Greater Memphis Chamber Regional Logistics Council, the Memphis Restaurant Association, Memphis Bioworks Foundation, and many others. These organizations are mostly oriented to representing their members at State and local government, but also in providing training and professional development resources, business development assistance, and representation in national organizations. Memphis Bioworks Foundation, which is at the forefront of innovation in support of the region’s emerging bioscience industries, operates its own incubator for small and emerging businesses in the sector. Several government commissions promote culture and industry in the region, including the Memphis and Shelby County Film and Television Commission, along with the Memphis Music Foundation.

Memphis Light, Gas & Water

This Memphis-area utility has an Economic Development division is housed at the Greater Memphis Chamber and works “side-by-side” with the Chamber to promote existing business retention and expansion, business recruitment and research. MLGW assists businesses with a one-stop shop for information on business and fire codes, taxes, utility services, and training

assistance. The Valley Investment Initiative (VII) is an incentive offered jointly by TVA and MLGW.

Leadership Memphis

Leadership Memphis is a community-based leadership development organization that utilizes networking and educational programming (e.g., Leadership Academy) to “enhance our city economically and socially” by creating new leaders at all levels and increasing adult education levels.

West Memphis Chamber of Commerce

The West Memphis Chamber aims to “improve the economic wellbeing” of West Memphians and preserve and improve their quality of life. The City of West Memphis and the Chamber promote the IDI Interstate Commerce Industrial Park, which has status as Foreign Trade Zone #273.

Fayette County Chamber of Commerce

The Fayette County Chamber emphasizes its “county-wide and regional perspective” on economic, workforce, and industrial development and job creation. The Chamber works with new and existing small businesses, agribusiness, tourism, and other components of the community’s development.

Other Industrial Development Boards

In addition to Memphis-Shelby County, other cities and counties in the region offer capacity through their industrial development boards (IDBs), including Fayette County, the City of Bartlett, City of Germantown, City of Millington, Town of Collierville, City of Piperton, City of Arlington, City of Lakeland, and others.

Northern Mississippi Alliance and Chambers

The four-county North Mississippi Alliance includes DeSoto County Economic Development and focuses on regional planning and economic development issues. The region also benefits from funding generated by the Delta Regional Authority. There is also a Northern Mississippi Foreign Trade Zone. A number of chambers represent business in DeSoto County and north Mississippi, including the Southaven Chamber, Olive Branch Chamber, Horn Lake Chamber, Hernando Main Street/Chamber, etc. The DeSoto County Convention and Visitors Bureau promotes tourism in the county.

Other Organizations Impacting on Economic Development

There are a number of locally- and nationally-based organizations engaged directly or peripherally in economic development in this region. For example, the following organizations are among those geared toward impacting on economic development in the region:

- CEOs for Cities has a Memphis chapter that brings cross-sector “changemakers” together with ideas and practices for city and regional economic growth. The organization plugs into benchmarking, networking/clusters, and various approaches to leverage cities for regional economic development.
- Hyde Family Foundations funds programs and projects geared to “transforming education, positioning Memphis’ authentic assets, and livable communities.”
- Advance Memphis was founded in 1999 to “bring about economic revitalization in Memphis, Tennessee.” This faith-based non-profit focuses on bringing “hope, knowledge, resources, and skills to South Memphis; specifically zip code 38126, which contains a large number of public housing units. Advance Memphis builds entrepreneurship, develops start-ups and focuses on training and readiness.
- Other chambers of commerce (Germantown Area Chamber, Millington Chamber, Collierville Chamber, Bartlett Area Chamber, etc) represent business in the region. Local economic development departments in many of these cities provide direct services.
- Many organizations are targeted to specific populations includes Diversity Memphis, Memphis Urban League Young Professionals, and others.
- The Memphis Research Consortium promotes collaboration among the region’s institutions and industry on R&D. Key players include UT and UT Health Science Center, St. Jude Children’s Research Hospital, various hospitals in the Medical District and beyond, and the region’s medical device industry.

Section 4. TARGET INDUSTRY ANALYSIS

A target industrial analysis was conducted to collate information on the region's industrial marketing and identify gaps and opportunities for more regional coordination on target marketing. Niches were also identified where certain counties or locations have competitive advantages and where intra-regional competition can be reduced. The target industry analysis is based in part on an analysis of clusters and concentrations as evidenced through a Location Quotients assessment, on input from the region's businesses, industry growth projections, and other factors.

Existing Target Industries & Initiatives

There has already been a lot of work completed on assessing, designating, and marketing target industries and cluster development initiatives for the Memphis region. Some of these marketing and cluster development initiatives originated in the findings of *The Memphis & Shelby County Regional Economic Development Plan*, or other studies including the *Memphis Freight Transportation Plan*. Others have been generated through marketing efforts by individual organizations and county economic development offices. Interestingly, the various chambers and agencies in Memphis and Shelby County tend to include somewhat different lists of targets in their marketing efforts. Suburban and rural counties in the region share some of the same recruitment targets, but have also targeted their own market opportunities. Rather than "reinventing the wheel," the region's existing targets and cluster initiatives were examined and refined, based on further analysis.

Transportation & Logistics (Distribution) Cluster

There is widespread agreement that Memphis has established itself as a premier, global center for transportation and logistics. The region has long marketed itself as "America's Distribution Center." Economic development strategies have recommended the region focus on strengthening and developing this brand, which is internationally recognized. Key sectors in this cluster include Transportation, Logistics, Wholesale Trade, and Support Services. The *Memphis & Shelby County Regional Economic Development Plan* also identified this as a key cluster (which incorporates a combination of economic sectors and individual industries that together form a synergistic relationship within the region). The Greater Memphis Chamber has established a Regional Logistics Council to bring the Logistics and Distribution cluster's various players together to promote these synergies. Shelby County and the City of Memphis cite logistics as a key target for business recruitment and development. HTL Advantage, a tri-county economic development coalition formed by Tipton, Lauderdale, and Haywood counties, has also listed Logistics as a prime target industry for that region.

Industry-specific associations related to this cluster include the Memphis Association of Equipment Distributors and other wholesale trade groups.

The *Memphis Freight Transportation Plan*, prepared for the Greater Memphis Chamber in 2009 by HIS Global Insight, indicated that Memphis was well-positioned for container distribution from imports, once the global economy bounced back from recession.

In terms of specific industries, the largest industry concentration within this cluster is in Couriers and Express Delivery Services, anchored by FedEx, the world's largest courier and delivery service with home offices and major global distribution operations based in Memphis. Second-largest in this cluster is Other Farm Product Raw Material Merchant. Clearly, Cotton still plays an important role in Memphis' economy, more than 150 years after the "fall" of King Cotton as the region's most important export. Other key industries in this cluster include Warehousing and Storage, along with merchant wholesalers and transportation services (water, truck, and support activities).

Aerotropolis Initiative. The Greater Memphis Chamber had prioritized this initiative to grow the airport as a key asset and expand its spin-off impacts in terms of the surrounding business and industrial complex. As part of this initiative, the Memphis City Council approved \$1.6 million to improve Plough Boulevard (gateway to Memphis International Airport). The City contributed road and landscape improvements, and the State provided a \$45,000 forestry grant).³ While the City's involvement slowed for several years, recent activities include private efforts to promote development. The Aero City Alliance received \$300,000 from Memphis City Council in 2016 to help pursue implementation of the 2014 federally-funded Master Plan completed for the initiative.

Manufacturing Sector

The *Memphis & Shelby County Regional Economic Development Plan* identified manufacturing as an important target sector for the region. Manufacturing of course includes a variety of specific industries. Existing concentrations in the Memphis region include the following:

- Starch and Vegetable Oil Manufacturing (LQ 6.5),
- Medical Equipment and Supplies (4.1),
- HVAC and Commercial Refrigeration (4.0),
- Metal Can, Box, and other Containers (2.9),
- Spring and Wire Products (2.8),
- Paint and Coating Manufacturing (2.7),
- Toilet Preparation Manufacturing (2.6),
- Turbine and Power Transmission (2.4),
- Soft Drink and Ice Manufacturing (2.3),

³ *Airways/I-240/Plough Boulevard Master Plan (2009) and City of Memphis Plough Boulevard LIP (2009).*
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- Resin and Synthetic Rubber Manufacturing (2.2),
- Wood Container and Pallet Manufacturing (2.0),
- Material Handling Equipment (2.0),
- Paper Bag and Coated & Treated Paper (2.0), and others

The Plan identified Resource-Intensive Tradable Commodities as a primary cluster. These industries include paper, pulp and converted paper product manufacturing; lumber transit; and grain and oilseed milling, wood products manufacturing and primary metals forging. *The Plan* also identified industries engaged in Materials Processing, especially food and beverages.

The Greater Memphis Chamber of Commerce has established a Manufacturing Council to engage in ongoing efforts to promote the region's manufacturing companies and their products, to support and grow the manufacturing labor force, and enhance training and education resources. There are also industry councils and associations organized around specific industries.

Shelby County has identified Electronics (assembly, repair, and manufacturing) as part of the targeted manufacturing initiatives, but little information is available on how this industry is being recruited or promoted in the region outside of the broader manufacturing initiatives.

Exports and International Business. While not an "industry," per se, the *Memphis & Shelby County Regional Economic Development Plan* focused on the region's strategic advantages and opportunities for growing its manufactured exports and international business connections. The Greater Memphis Chamber has established an International Business Council to focus on developing these opportunities.

Healthcare, Bioscience, and Medical Technologies Cluster

Like many large metropolitan areas, the Memphis region has a large employment base in health care services. But in addition to the various hospitals and other service providers, many of which are geographically clustered in the Memphis Medical District, the region has particular strengths in specialized medicine, medical equipment manufacturing, bioscience R&D, and associated technologies. Among the region's research strengths, as highlighted by the Memphis Research Consortium (MRC), are genomics and infomatics, population science; and bio-devices, bio-materials, and bio-logics. Research in these areas yields potential for commercialization through product development, manufacturing, and distribution. Shelby County Government lists Biomedical Research and Manufacturing as a key targeted cluster, but also includes Information Technology is a separate target for business retention and recruitment.

Memphis has a unique and valuable asset for Specialized Medicine in the St. Jude Children's Research Hospital, anchoring the Medical District and medical R&D in the region. In addition to St. Jude, Memphis is home to the Southern College of Optometry and the University of Tennessee Health Science Center (UTHSC). The latter offers specialized medical research and care including the Hamilton Eye Institute, UT College of Dentistry; pediatric specialists; and graduate programs in Medicine, Nursing, Pharmacy.

Medical Equipment and Supplies are among the region's most significant manufacturing concentrations, with a Location Quotient of more than 4.0. The Greater Memphis Medical Devices Council represents and supports the region's producers in this industry, while the Greater Memphis Information Technology Council supports a broad range of tech-driven businesses in the region. Specific attention has been paid to the region's strengths and concentration in research, development, manufacturing, and services associated with orthopedics and related medical devices. Smith & Nephew, Wright Medical Technologies, Medtronic, and Microport Orthopedics are among the leaders in this cluster.

The U.S. Economic Development Administration (EDA) has initiated a program known as the Investing in Manufacturing Communities Partnership (IMCP) to leverage economic development funding as a tool for investment in the manufacturing sector. The *Made in the Mid-South Manufacturing Alliance* (MMMA) is one of 12 such IMCPs that have been designated to-date. MMMA was selected in part because of the Memphis region's competitive strengths in medical equipment and supplies manufacturing. Each IMCP has submitted a plan to strengthen, retain and attract investment in the manufacturing sector and associated suppliers. According to its plan, the MMMA has identified 52 medical device businesses employing more than 6,200 people, with an average salary of nearly \$82,900 per year. The plans address workforce development, the supply chain, R&D and innovation, infrastructure and sites, trade and investment, "operational improvement" and access to capital. Based on the plan, the EDA will coordinate and target grant funding from a variety of federal agencies.

Bioscience and Biotechnology is another component of this cluster, with the Memphis Bioworks Foundation and its Bioworks Incubator helping to focus and lead efforts to enhance the region's entrepreneurial efforts. The 2009 *Regional Strategy for Bio-Based Products* prepared for the Memphis Bioworks Foundation has identified specific opportunities for further commercialization and business development in the region. Bio-agriculture is also mentioned either as part of the broader bioscience discussion or as part of agribusiness. Information technologies relating to the biosciences and healthcare are also a targeted element of the broader spectrum of industries in this cluster.

Corporate Office

The Greater Memphis Chamber has targeted recruitment of corporate headquarters, home offices, and call centers based in part on the region's existing base of six Fortune 1000 headquarters and recent relocations and expansions. FedEx, Servicemaster, Evergreen Packaging, Orgill, AutoZone, International Paper and others are examples of recognized brands associated with Memphis. Corporate and home offices form part of the Management Services sector, while call centers normally relate to Administrative Services. While related, these are technically separate economic sectors and activities, labor force, location decisions, and wages are quite different between the two sectors.

Tourism Industry Cluster

The tourism industries are well-established, well-represented, and well-organized in the region, led by the Memphis Convention and Visitors Bureau. The CVB is active in marketing and promoting not only Memphis but the broader region, for tourism. That being said, most will agree that Memphis and its major visitor assets (Graceland, National Civil Rights Museum, Beale Street, Sun Studio and Stax Museum, etc) is the anchor for regional tourism. Tourism is also a cluster that benefits from the region's central location and exceptional transportation and logistics assets. While the airport's role as a passenger airline hub has been withdrawn, passenger numbers are increasing thanks largely to aggressive efforts to expand air service to the region.

Film/Music/Entertainment. While the film, music, and entertainment industries are strong employment drivers in their own right, they are often consolidated under the tourism banner for destination marketing for the region. Shelby County Government lists "Logistics, Music, Film, and Tourism" together as a target industry, for example.

Targets for Other Municipalities in Shelby County

Several Shelby County municipalities besides Memphis have developed their own targets for industrial recruitment and development, as discussed below.

Bartlett & Northeast Shelby County. The Bartlett Area Chamber of Commerce (BACC) has established target industries for Northeast Shelby County, based on the community's *Vision 20/20: A Clear Vision for the Future*, released in 2010, a "comprehensive economic development strategy" for Bartlett and the Northeast Corridor of Shelby County. Other elements of the 20/20 Plan related to workforce development, existing business and retention, community development and revitalization. The BACC has also assisted in creating a "Team Green Zone" approach to encouraging better and more efficient energy use and

enhanced sustainability. The tilt toward “Green Industries” has been expressed throughout the region, but not typically as a recruitment target. Targets were identified as follows:

Agribusiness. Bartlett recognizes that northeast Shelby County has a number of food production companies and businesses making “renewable” commodities. The *Vision 20/20* Plan established an objective of recruiting 30 agribusinesses to the corridor by 2020. The inclusion of food production suggests some synergies with the broader efforts for materials processing business recruitment in Shelby County. Agricenter International, the National Cotton Council and others are important assets for the region in promoting agriculture-related investment and development.

Life Sciences. The *Vision 20/20 Strategy* suggests that the Bartlett area has become “Tennessee’s Life Sciences Corridor and one of America’s leading centers for innovation in medical device technology.” It is also claimed that “most” of the region’s 45 life sciences companies are located in the Northeast Corridor. The *Vision 20/20 Strategy* established a goal of achieving 60 life sciences companies by 2020. Promotion of the area for attracting more life sciences companies is consistent with the broader goals for Memphis and Shelby County to build on the area’s strengths in the biosciences.

Retail and Hospitality. The *20/20 Strategy* sees the Northeast Corridor as the region’s “premier shopping and hospitality center.” Projected population growth would in theory support the market for retail, restaurants, and entertainment venues. Selection of this target is clearly based on the area’s existing retail and hotel inventory, along with expected demographic growth. The hospitality component is broadly supportive of the aims of strengthening the region’s tourism industry.

“Growth Companies.” *Vision 20/20* observes that the Bartlett area has a cadre of home-grown companies that have experienced rapid growth, so the concept is to nurture further development of high-growth businesses. This approach is not tied to any one target industry or sector, but to creating an environment for growth.

Tipton & Lauderdale Targets

Tipton and Lauderdale counties are partners with Haywood County in the HTL Advantage, a tri-county economic development coalition. This entity has designated targets for industrial recruitment and development specific to these three counties, as described below.

Logistics. As with Memphis and Shelby County, the tri-county region of Haywood, Tipton, and Lauderdale counties has determined that transportation and logistics is a primary economic engine for growth and development. The

region derives much of its strength for this cluster because of its proximity to the Memphis distribution hub.

Auto Parts Manufacturing & Assembly. A base of fabricated metals and machinery manufacturers, trained labor force, large sites, transportation access, and sufficient utilities are cited as advantages for attracting automotive manufacturers.

Solar Energy Product Manufacturing, Technology & Research. A base of skilled green tech professionals, workforce, and large sites are cited among the reasons for targeting solar industries along with the number of solar and clean energy businesses that already exist in Tennessee. Among these businesses are Sharp (Memphis), Shoals Technologies Group (Gallatin), AGC Flat Glass (Kingsport), SAIG Aersyn (wind tower manufacturer in Chattanooga), and Alstom Power (supplier to clean energy manufacturers). While none of these companies is located in the tri-county region, the West Tennessee Solar Farm is located in that region (in Stanton, Haywood County).

Food Processing. HTL Advantage is also marketing the tri-county area for food processing activities. Transportation and workforce are cited as advantages for attracting this industry, along with the observation that Tennessee had 337 food manufacturing companies in 2009.

West Memphis

The Economic Development Department of the City of West Memphis has in the past identified target industries including Logistics, Biosciences, Manufacturing, and Green Industries that are consistent with the Shelby County targets.

DeSoto County

While target industries have not been identified for DeSoto County, per se, the Mississippi Development Authority is promoting the area for Distribution and Warehousing based, in large measure, on the county's proximity to Memphis and its national access and transportation hub. Helen of Troy and other major warehouse and distribution projects have found a home in DeSoto County and north Mississippi. Tourism relating to both Memphis and the Mississippi Delta Region are also important targets for driving development in DeSoto County.

Location Quotients: Clusters and Concentrations

As noted above, some analysis of location quotients (LQ) has already been conducted on the region, specifically Memphis and Shelby County, to identify industry clusters and concentrations. Location quotients are basically the portion of employment and business establishments in each industry in the local

market as compared with that same ratio regionally or nationally. LQs provide an indication of concentrations which, in turn, help identify local competitive advantages for certain industries and clusters of industries.

Identification of such concentrations provided indicators of Memphis' and Shelby County's competitive advantages for certain industries and clusters of industries. Analysis of surrounding counties in the region has been less comprehensive, and identification of business recruitment targets appears to be less analytically-based. An updated location quotients analysis was conducted for this study to test and update these findings, but more importantly to assess the relative competitiveness and concentrations of industries in counties within the broader MAAG and CEDS regions.

Concentrations of Establishments & Employment

An overall analysis of industry concentrations focused on those industries for which the region has concentrations in both the number of businesses and the number of employees. This Location Quotient (LQ) analysis provides an indication of the agglomeration of businesses and their overall weight in the local economy. In general, a region is determined to have a concentration within a particular industry if the LQ for that industry is greater than 1.3. The Memphis region has 379 sub-sectors and industries (or 26% of the total) for which it has an LQ of 1.3 or more in terms of the number of establishments or the number of employees in that industry.

For the purposes of this analysis, only those industries with an LQ of more than 2.0 (each for establishments *and* employment), indicating a higher level of agglomeration and concentration, were highlighted. To identify "mega" concentrations, the separate location quotients for establishments and employment were added together to provide some indication of the magnitude of the overall concentration. In other words, an industry like non-scheduled chartered freight transportation (NAICS 481212) has an LQ of 3.70 based on the number of establishments and 5.66 based on the number of employees in the MAAG region. These two LQs were added together to provide a broader sense of both agglomeration (the number of establishments) and scale (in terms of employment), for a total "score" of 9.36. Retail trade and personal services were excluded from this analysis because such businesses are typically dependent on local trade area demand, so having a high concentration relates more to local demographic characteristics like population than to some competitive advantage associated with the location.

Major Sectors. In general, the Memphis region has high concentrations of industries in the manufacturing sector (32 highly-concentrated industries) and in transportation (16), with fewer in administrative services (4), wholesale trade (3), and just one each in information services, finance, real estate/leasing, and health care. The region does not have mega-concentrations (in terms of both

employment and establishments taken together) for other sectors like professional & technical services, arts & recreation, agriculture, construction, management services, education, etc.

Specific Industry Concentrations. Among the approximately 60 specific industries and sub-sectors that meet the standards set above. Key concentrations are described below.

By far the most significant of the concentrations is in **mixed-mode transportation systems** (NAICS 485111), with an overall LQ of 132.50, meaning that the Memphis area has 1,325 times the average concentration of this industry relative to the rest of the country. More specifically, the region has an LQ of 13.34 for the number of establishments and 119.16 for employment, an extremely high number. J.B. Hunt is among the large companies within this industry operating facilities in this market.

With a much lower but nonetheless highly significant LQ is couriers & messengers (NAICS 492) more specifically **couriers & express delivery services** (NAICS 4921), with an LQ of 28.92 (12.46 for establishments and 16.46 for employment). Clearly, this industry is driven locally by FedEx, which has its home office as well as global operations hub, in Memphis. With 32,000 employees in the Memphis area, it is not surprising that express delivery services are found to be highly-concentrated in this region. There are several manufacturing industries for which the Memphis region has significant concentrations (combined LQ above 10.0). Among them are:

- Household appliances and, in particular, household cooking appliances (335221), with a total LQ of 15.32.
- Grain and oilseed milling (NAICS 3112), which includes rice milling (311212) and breakfast cereals (31123), but with especially high concentrations in starch and vegetable fats & oils (NAICS 31122, LQ 14.07) – wet corn milling, soybean, fats, & oils refining, blending
- Ice cream and frozen desserts (NAICS 31152, LQ 12.92), e.g., Blue Bell
- Pesticides & other agricultural chemicals (NAICS 32532, LQ 12.17)
- Plumbing fixtures & trim (NAICS 332913, LQ 10.29)
- Surgical appliances & supplies (NAICS 339113, LQ 10.04). Relating to this concentration is a strong focus in manufacture of ophthalmic goods.

Other significant concentrations (combined LQ>10.0) in the region include:

- Farm product material wholesale trade (NAICS 42459, LQ 10.07)
- Farm product warehouse & storage (NAICS 49313, LQ 11.49)
- Other warehouse & storage (NAICS 49319, LQ 10.45)
- Repossession services (NAICS 561491, LQ 10.26)

Below is the list of all industries with individual LQs for both establishments and employment of more than 2.0 in the Memphis (MAAG) region, qualified here as “mega-concentrations.”

Randall Gross / Development Economics

Table. INDUSTRY MEGA-CONCENTRATIONS, MAAG REGION, 2014				
NAICS	Industry	Estab LQ	Job LQ	TOTAL
3112	Grain and oilseed milling	3.00	5.32	8.32
311212	Rice milling	4.10	4.06	8.16
31122	Starch/vegetable fats & oils	5.52	8.55	14.07
311221	Wet corn milling	4.78	9.12	13.90
311224	Soybean/oilseed processing	4.21	7.82	12.03
311225	Fats & oils refining/blending	7.45	4.61	12.05
31123	Breakfast cereals	3.90	3.41	7.31
31152	Ice cream/frozen desserts	2.15	10.77	12.92
3122	Tobacco manufacturing	2.15	2.86	5.01
32212	Paper mills	2.78	2.07	4.86
322291	Sanitary paper products	4.51	2.25	6.76
32412	Asphalt & saturated material	2.28	2.60	4.88
324121	Asphalt paving mix, block	2.16	2.52	4.69
324122	Asphalt shingle coat materials	2.98	4.48	7.46
3251	Basic chemical manufacturing	2.12	2.16	4.28
325199	Other basic organic chemicals	2.79	2.16	4.95
32532	Pesticide, other ag chemicals	10.72	1.45	12.17
3255	Paint, coating, and adhesives	2.10	2.02	4.12
3256	Soap, cleaning compounds, etc	2.04	2.86	4.91
326112	Plastics packaging film, sheet	4.09	2.88	6.98
327992	Ground/treated mineral, earth	2.60	6.47	9.07
33121	Iron and steel pipe and tubes	2.66	2.03	4.69
331221	Rolled steel shape mfg	3.68	5.35	9.03
332431	Metal can manufacturing	3.68	3.29	6.97
332913	Plumbing fixture fitting, trim	5.00	5.29	10.29
3334	Vent, heat, air-con, refrigeration equip	2.32	4.62	6.95
333618	Other engine equipment	3.00	2.37	5.37
335122	Comm, industrial, inst electric lighting	2.25	5.80	8.05
3352	Household appliances	2.22	3.01	5.22
335221	Household cooking appliance	3.64	11.69	15.32
339113	Surgical appliances, supplies	2.02	8.02	10.04
339115	Ophthalmic goods manufacturing	2.91	4.16	7.06
42313	Tire and tube merchant wholesale	2.38	3.20	5.58
42412	Stationery, office supplies wholesale	2.23	2.60	4.84
42459	Other farm prod raw matl wholesale	3.67	6.40	10.07
481112	Scheduled freight air transport	2.15	3.99	6.14
481212	Nonscheduled charter freight air trans	3.70	5.66	9.36
483111	Deep sea freight transportation	2.89	2.17	5.06
483211	Inland water freight trans	2.72	4.62	7.34
485111	Mixed mode transit systems	13.34	119.16	132.50
48811	Airport operations	2.27	2.11	4.38
488111	Air traffic control	3.33	3.38	6.71
488119	Other airport operations	2.16	2.09	4.26
4882	Support activities for rail trans	2.24	2.25	4.50
48831	Port and harbor operations	2.74	2.10	4.83
4885	Freight transport arrangement	2.22	2.86	5.08
492	Couriers and messengers	8.59	15.37	23.96
4921	Couriers/express delivery services	12.45	16.46	28.92
493	Warehousing and storage	3.64	3.63	7.27
49313	Farm prod warehouse, storage	7.07	4.42	11.49
49319	Other warehouse, storage	2.24	8.21	10.45
511191	Greeting card publishers	3.23	5.55	8.78
52314	Commodity contracts brokerage	2.94	2.06	5.01
53221	Electronics, appliance rental	2.62	2.13	4.75
56149	Other business support services	2.68	5.16	7.84
561491	Repossession services	2.66	7.61	10.26
561612	Security guards, patrol services	2.06	2.24	4.30
56191	Packaging and labeling services	3.26	5.07	8.33
6223	Specialty (exc psych) hospitals	2.70	3.89	6.59
Note	LQ = Location Quotient on national scale. Excludes retail, P Svcs			
Sources:	U.S. Bureau of the Census and Randall Gross / Development Economics.			

High Establishment LQ. There are a number of industries with relatively large concentrations (LQ greater than 2.0) of businesses or establishments in the Memphis region that do not constitute large “mega-concentrations” because of less-concentrated employment. Again, most of these are in manufacturing, with a few in wholesale trade, health care, finance, administrative services and management services. The region has a relatively large concentration of corporate, subsidiary, and regional management offices (establishment LQ of 3.24, employment LQ of 1.90). Having a branch of the Federal Reserve Bank generates an LQ of 5.52 in the Memphis region for central bank monetary authorities. Still, most of the significant concentrations of businesses are in manufacturing: rope and cordage (LQ 4.67), cotton ginning (4.21), pulp mills (7.11), scales and balances (4.05), etc., as shown below.

- Rope, cordage, twine, tire fabric mills (NAICS 314994, LQ 4.67)
- Wood container and pallets (32192, LQ 2.31)
- Currogated and solid fiber boxes (322211, 2.78)
- Folding paperboard boxes (322212, 2.95)
- Adhesives (32552, 3.62)
- Printing ink (32591, 2.42)
- Laminate plastics plate and sheet (32613, 2.56)
- Plastic bottles (32616, 2.15)
- Scales and balances (333997, 4.05)
- Cotton ginning (NAICS 15111, LQ 4.21)
- Pulp mills (32211, LQ 7.11)
- Book printing (323117, 3.58)
- Industrial gases (32512, 2.14)
- Synthetic dyes and pigments (32513, 2.05)
- Cyclic crude, intermediate, gum and wood chemicals (325194, 3.77)
- Artificial and synthetic fibers and filaments (32522, 2.46)
- Polish, other sanitation goods (325612, 2.56)
- Mineral wools (327993, 3.41)
- Small arms ammunition (332992, 2.29)
- Commercial/industrial fans & blowers (333413, 3.94)
- Fluid power pumps and motors (333996, 2.21)
- Small electrical appliances (33521, 2.27)
- Switchgear, switchboards, (335313, 2.41)
- Office furniture (337214, 2.62)
- Blinds and shades (33792, 2.78)
- Wholesalers of other commercial equipment (42344, 2.19)
- Wholesalers of warm air heating & a/c equipment (42373, 2.13)
- Wholesalers of poultry (42444, 2.67)
- Other sound recording industries (51229, 2.14)
- Monetary authorities central bank (521, 5.52)
- Other activities related to credit intermediation (52239, 3.05)
- Commodities contracts dealing (52313, 2.37)
- Truck, utility trailer, RV rental & leasing (53212, 2.11)
- Management of companies & enterprises (55111, 2.94)
- Corporate, subsidiary, regional managing offices (5511114, 3.24)
- Credit bureaus (56145, 2.94)
- Armored car services (561613, 2.15)
- Kidney dialysis centers (621492, 2.76)
- Freestanding ambulatory centers (621493, 2.18)
- Blood & organ banks (621991, 4.47)

While retail and personal services were not included in the location quotient analysis per se, it is interesting to note that there are comparatively large concentrations of certain types of retail businesses including boat dealers (LQ of 13.41), window treatment stores (25.17), confectionary & nut stores (15.92), food supplement stores (12.72), all other health & personal care stores (12.19), gas stations without convenience stores (11.91), luggage & leather goods stores (42.30), book stores (11.39), news dealers (22.83), department stores (19.53), warehouse clubs and supercenters (11.04), mobile home dealers (11.61), and electronic auctions (22.28).

High Employment LQ. A similar analysis was conducted to identify those industries with high location quotients for employment (but that do not qualify as “mega” concentrations due to lower LQs for number of businesses). In some cases, there could be only one or a handful of businesses within a specific industry generating significant, concentrated employment. Among the highest concentrations, in terms of employment only, are in non-chocolate confectionaries (LQ of 7.75), scheduled air passenger service (19.22), sightseeing transport (7.19), support activities for road transport (8.45), footwear wholesaling (15.30), and other direct insurance (8.71).

- Sugar and confectionary products (NAICS 3113, employment LQ 2.38)
- Non-chocolate confectionaries (31134, LQ 7.75)
- Frozen specialty foods (311412, 2.36)
- Dried, dehydrated foods (311423, 2.64)
- Soft drinks (31211, 2.76)
- Curtain and linen mills (31412, 3.90)
- Wood windows and doors (321911, 2.18)
- Other millwork (321918, 2.45)
- Misc wood products (321999, 2.08)
- Petroleum lubricating oil and grease (324191, 3.57)
- Other basic inorganic chemicals (325180, 4.04)
- Toilet preparations (32562, 3.56)
- Other misc chemical products (325998, 2.20)
- Tire retreading (326212, 2.59)
- Steel products (3312, 2.08)
- Spring and wire products (3326, 2.19)
- Other fabricated wire products (332618, 3.70)
- Other metal valves & pipe fittings (332919, 2.78)
- Heating equipment (333414, 5.42)
- Printed circuit assembly (334418, 2.36)
- Electric lighting (3351, 3.18)
- Motor vehicle transmission & power train parts (33635, 2.03)
- Sporting & athletic goods (3392, 3.21)
- Toys, dolls and games (33993, 2.28)
- Wholesale of: motor vehicle supplies & new parts (423120, 3.19), medical & dental supplies (42345, 3.19), hardware (42371, 2.63), and transport equipment & supplies (42386, 2.41)
- Wholesale of: stationary/office supplies (42412, 2.60), men's/women's clothing (43432/3, 2.36/2.20), footwear (42434, 15.30), general groceries (42441, 2.36), and meat products (42459, 6.40)
- Scheduled passenger air service (481111, 19.22)
- Sightseeing transportation (4872, 7.19)
- Navigation services to shipping (48833, 3.43)
- Other support activities for road transportation (48849, 8.45)
- Packing and crating (488991, 3.00)
- Record production (51221, 2.45)
- Music publishing (51223, 2.74)
- Other direct insurance (524128, 8.71)
- Formal wear and costume rental (53222, 2.15)
- Lessors of nonfinancial tangible assets (533, 2.70)

- Process, distribution and logistics consultants (541614, 2.37)
- Executive & temporary help services (561312/320, 2.98/2.01)
- Investigative guard and armored car (56161, 2.13)
- Materials recovery facilities (56292, 2.42)
- Other technical & trade schools (611519, 2.13)
- Sports & recreation instruction (61162, 3.78)
- Medical laboratories (621511, 2.17)
- Substance abuse facilities (62322, 3.89)
- Spectator teams and clubs (711211, 2.92)
- Museums (71211, 2.29)
- Zoos (71213, 2.60)
- Auto exhaust system and transmission repair (811112/3, 2.92/2.34)

Clusters

Based on this analysis and on information gleaned from other sources, several key clusters emerge as important drivers in the Memphis area economy. Several of these clusters have been identified previously and are being targeted by economic development agencies in the region. Others have not.

Transportation & Logistics Cluster. Clearly, the Memphis region benefits from the full range of businesses, activities, and services oriented to supporting the distribution of goods and delivery of packages worldwide. Memphis is home to FedEx and a large cadre of related suppliers, and the region marketed for decades as “America’s Distribution Hub.” Key industry concentrations relevant to the supply chain in this cluster are outlined below.

- Scheduled freight air transportation (NAICS 481112)
- Non-scheduled charter freight air transport (481212)
- Deep sea freight transportation (483111)
- Inland water freight transportation (483211)
- Mixed-mode transit systems (485111)
- Airport operations (48811)
- Support activities for trail transportation (4882)
- Port and harbor operations (48831)
- Freight transportation arrangement (4885)
- Couriers & messengers (492) (express delivery services, 4921)
- Warehousing and storage (493) (Farm products (49313) and other warehousing & storage (49319))
- Commodity contracts dealing (52313)
- Commodity contracts brokerage (52314)
- Security guards, patrol services (561612)
- Armored car services (561613)
- Packaging & labeling services (56191)
- Truck, utility trailer, RV rental and leasing (53212)
- Petroleum lubricating oil and grease (324191)
- Tire retreading (326212)
- Motor vehicle transmission & power train parts (33635)
- Process, distribution and logistics consultants (541614)
- Investigative guard and armored car (56161)
- Other technical & trade schools (611519)
- Wholesale of: motor vehicle supplies & new parts (423120), medical & dental supplies (42345), hardware (42371), and transport equipment & supplies (42386)
- Wholesale of: stationary/office supplies (42412), men’s/women’s clothing (43432/3), footwear (42434), general groceries (42441), and meat products (42459)
- Scheduled passenger air service (481111)
- Sightseeing transportation (4872)
- Navigation services to shipping (48833)
- Other support activities for road transportation (48849)
- Auto exhaust system and transmission repair (811112/3)

Packaging Cluster. Directly associated with (or subsidiary to) the transportation and distribution cluster is packaging. The packaging and labeling services industry (NAICS 56191, combined LQ 8.33) leads this cluster. Industries in this subsidiary cluster include:

- Rope, cordage, twine, tire fabric mills (314994)
- Wood containers and pallets (32192)
- Corrugated boxes and solid fiber boxes (322211)
- Folding paperboard boxes (322212)
- Adhesives (32552)
- Printing ink (32591)
- Laminate plastics plate and sheet (32613)
- Plastic bottles (32616)
- Scales and balances (333997)
- Packaging and labeling services (56191)
- Packing and crating (488991)

Bulk Goods Cluster. If there is a common traditional thread among some of these industries it is their associations with agriculture, rail and river transportation. Many of the region's highly-concentrated industries improve, trade and distribute farm commodities and products: protected through pesticides; milled, refined and blended; stored; traded by wholesalers; or beneficiated into food products for distribution.

Vegetable oils, along with grains, asphalt, paint, iron pipes and rolled steel, large equipment, cleaning compounds and other chemicals, and other bulk material generated in the Memphis region are typically shipped by rail and/or water transport. Being a major inland river port and rail hub for more than a century, Memphis still retains a large concentration of these industries. In some ways, Memphis shares this agricultural commodity milling (cereal), refining (vegetable oils), storage, and distribution focus with other Mississippi River metros like Minneapolis-St. Paul (home to General Mills) and St. Louis (home to Post Cereals). Bulk goods concentrations in the Memphis area include:

- Milled rice (NAICS 311212)
- Vegetable fats & oils (31122)
- Wet corn milling (311221)
- Soybean & oilseed processing (311224)
- Fats & oils refining and blending (311225)
- Tobacco (3122)
- Asphalt paving mix, block (324121)
- Asphalt shingle coat materials (324122)
- Basic chemicals (3251) & organic chemicals (325199)
- Pesticide and other agricultural chemicals (32532)
- Paint, coating and adhesives (3255)
- Soap, cleaning compounds, etc (3256)
- Plastics packaging film, sheets (326112)
- Ground/treated minerals or earth (327992)
- Iron and steel pipe and tubes (33121)
- Rolled steel shapes (331221)
- Metal cans (332431)
- Plumbing fixtures, fitting and trim (332913)
- Ventilation, heating, air-con and refrigeration equipment (3334)
- Other engine equipment (333618)
- Household cooking appliances (335221)

- Other farm products raw materials, wholesale (42459)
- Adhesives (32552)
- Laminate plastics and sheet (32613)
- Cotton ginning (15111)
- Pulp mills (32211)
- Industrial gases (32512)
- Synthetic dyes and pigments (32513)
- Cyclic crude, intermediate, gum and wood chemicals (325194)
- Polish, other sanitation goods (325612)
- Fluid power pumps and motors (335313)
- Commodities contracts dealing (52313)
- Sugar and confectionary products (3113)
- Petroleum lubricating oil and grease (324191)
- Other basic inorganic chemicals (325180)
- Toilet preparations (32562)
- Other misc chemical products (325998)
- Steel products (3312)
- Spring and wire products (3326)
- Other fabricated wire products (332618)
- Other metal valves and pipe fittings (332919)
- Heating equipment (333414)
- Materials recovery facilities (56292)

Air Freight Products Cluster. To a lesser extent, Memphis's role as an air freight hub also helps strengthen the region's position for just-in-time shipments of relatively light-weight but high-value manufactured goods like surgical appliances, surgical and medical instruments (339112), and ophthalmic goods. Memphis may also have a similar competitive advantage for air freight distribution of perishable foods. FedEx is an important distributor of both high-value and perishable goods. While the region has a very large concentration of ice cream and frozen dessert production, it is assumed that some or most of this freight is shipped by truck rather than air because of weight. Key concentrations in this cluster include:

- Surgical and medical instruments (NAICS 339112)
- Surgical appliances (339113)
- Ophthalmic goods (339115)
- Frozen specialty foods (311412)
- Ice cream and frozen desserts (31152)
- Printed circuit assembly (334418, like Jabil Global Services)
- Switchgear, switchboards (electrical equipment) (335313)

Health Care/R&D and Medical Equipment. As noted elsewhere in this report, the region has a wealth of resources oriented to medical care, research, and equipment manufacturing. Manufacture of surgical and medical instruments (339112), surgical appliances (339113), and ophthalmic goods (339115) (along with a high density of dental equipment manufacturers) is a growing component of this cluster. The region also has a high location quotient for medical laboratories (621511), and St. Jude Children's Research Hospital, UT Health Sciences Center, and other institutions generate significant research in medicine and health care. In terms of health services, the region also has high concentrations in dialysis centers (621492), blood & organ banks (621991), specialty hospitals (622310), resident mental health facilities (62322), and freestanding outpatient surgical and emergency centers (621493).

Growth Assessment

Further analysis was conducted to assess growth trends as well as growth prospects among the area's industry clusters and concentrations. The analysis also identified industries that are underrepresented in the region but represent opportunities to fill gaps in key clusters and concentrations. Export potential was another factor taken into consideration.

Competitive Advantages

Based on part on the output of the economic base and target industry analyses; business surveys, focus groups, steering committee visioning, and other stakeholder engagement, several of the region's and local counties' competitive advantages have been identified as an input to broader recommendations for business targeting and development.

- **Location & Transportation Accessibility.** Clearly Memphis became what it is today because of its strategic location near the center of the country, with superior transportation access built on inland water, rail, road, and air. It is this access that has helped make Memphis "America's Distribution Hub," home to the world's largest express delivery company, Class 1 railroads, major inland waterway port, and nation's busiest cargo airport. Having the FedEx hub in Memphis also provides rapid, overnight access to global markets, clients, and networks for information and product distribution. [infrastructure analysis inserted here]
- **Affordability.** Memphis is a relatively affordable location for business and residency. Lower utility costs, real estate, wages, and overhead costs help make Memphis competitive for a variety of industries. Tennessee also lacks an income tax, which is an attractive draw for some companies. Within the region, Memphis is becoming increasingly attractive in comparison with booming Nashville, where businesses and residents are seeing costs escalate at a rapid clip. The low cost of workforce housing and overall lower cost of living in Memphis is especially attractive in comparison with other metropolitan areas. [cost of business analysis inserted here]. Surprisingly, surveyed businesses only ranked "lower transportation costs" as the 10th (out of 13) most important competitive advantage for the region. Given the scale and role of transportation in the region's economy, one would assume that lower transportation costs are an outcome but this is not necessarily the case.
- **Available Labor Force.** In an increasingly tight labor market nationwide, the Memphis region is attractive because of the availability of labor and the lack of direct competition within the labor market except within several

specific industries. Access to experienced, industry-specific talent is more challenging, however.

- **Culture and Identity.** Memphis has cultivated an image and brand that is unique yet truly American to its core. Building on music (Rock 'n Roll and the Blues, especially) as well as the Civil Rights movement, Memphis has become an international destination for tourists, which potentially helps to raise its profile for business. While the region has lost its airport hub status, the airport and business community have worked aggressively to infill the gap left by Northwest/Delta. The region is also culturally and ethnically diverse, an important facet of employee recruitment increasingly important to business.

Refinements in Targeted Industries

The Memphis-Shelby County Chamber and various other entities have been organizing and implementing marketing and business recruitment efforts around various target industries and key clusters. The recommendations in this CEDS are not meant to circumvent or override those existing processes, but rather to provide guidance on refining or adding to the target opportunities that have already been identified.

Regional Industries

Within existing targets and clusters, there are opportunities to fill gaps and strengthen their overall functionality. Several key recommendations are provided below based on the target industry assessment but also on discussions with industry and on an understanding of the area's competitive strengths and weaknesses.

Air Freight Products. The Memphis region has a strategic advantage in its cargo-dominated airport but has not fully realized the opportunity for production of high-value and perishable goods for distribution through that airport. Air freight growth is forecasted at 2.8% per year over the next ten years, and there are opportunities for the Memphis region to capture more of that growth. A list of products oriented to air freight and manufactured in the area could be expanded. Among the opportunities are the following:

- High-value goods
 - Prototyping, samples
 - Product patterns, designs, technical drawings
 - JIT business-to-consumer (B2C) deliveries. Amazon is becoming a major player in this market, how will FedEx and UPS capture their "fair" share?
 - Electronics
 - Apparel (i.e., seasonal lines)

- Pharmaceuticals
- Perishables
 - Cut flowers
 - Vegetables
 - Electronics
 - Fresh Fish (e.g., Catfish or farmed fish, in the Memphis region)

Medical/Bioscience/R&D. Memphis has all of the “bones” for establishing a medical R&D hub: major research institutions, medical instrument manufacturing, large health care base, good accessibility, and other factors. Memphis is a center for chemicals production, with a potential natural outgrowth being pharmaceuticals and botanicals. St. Jude Children’s Research Hospital is a national leader in clinical research. University of Tennessee Health Sciences Center produces basic and applied research in a variety of fields in medicine. The Southern College of Optometry and other area institutions are engaged in research. The University of Mississippi in nearby Oxford has a national focus in the development of botanicals. Key opportunities to build on the existing regional base include:

- Pharmaceuticals and botanicals
- R&D anchor institutions
- Emerging information technologies
- Software applications
- Entrepreneurial cluster
- Dental laboratories

Transportation & Logistics. There is no question that the Memphis area will and should retain its preeminent role as a distribution hub. To help strengthen and diversify this cluster, there are approaches to engage with emerging technologies and new markets:

- 3-D printing and associated applications
- Autonomous vehicles
- Transportation corporate offices
- Transportation R&D
- Smart roads/infrastructure

Electrical Equipment. Shelby County has identified electronics as a target industry, but it is unclear where the region has focused efforts in this arena. The target industry analysis supports the concept of targeting *electrical equipment* instead because of the region’s competitive advantages for air cargo and distribution, core skills base, potential client base (e.g., appliance, small equipment and machinery, medical equipment, and other producers), and relative affordability. Computer equipment and electronics would require more intensive investment.

- Electro-medical and electro-therapeutic apparatus (334510)
- Automatic environmental control manufacturing (334512)
- Irradiation apparatus manufacturing (334517)
- Electrical equipment, devices and components (335)

Food and Agricultural Products. The region has long sustained a base for production of certain food products like cereals, starches and oils. Blue Bell ice cream is packaged for a regional market. The river has provided the highway for moving bulk product. But there is the need to move beyond the traditional food products and diversity the market base for Made-in-the-Memphis-Region products. Memphis is ripe for promoting growth of its emerging artisanal brands and entering new product lines. How is the region exporting its bar-b-que, catfish, and other home-grown products?

- Seafood (Catfish) preparation and packaging (3117)
- Dairy product manufacturing (3115)
- Confectionary manufacturing (311352)
- Soybean product manufacturing (311224)
- Animal food manufacturing (3111)

Tourism. The region is very successful in growing its tourism base despite setbacks like the closure of the Northwest/Delta hub. Inherent strengths in Memphis and the Delta's cultural identity help sustain a base for growth. The region has the opportunity in particular to grow its international tourism base, in tandem with sister cities in the region like New Orleans (which has just gained international air service) and Nashville (which is pursuing it aggressively). Ultimately, the exposure and positive experience gained through tourism can lead to increased business connections and relationship development.

County-by-County Assessment

A more detailed analysis was conducted to examine the specific niches within each county as input to strategic recommendations on target marketing and business recruitment. The findings from this analysis are incorporated into the strategic planning component in Part 2 of this Comprehensive Economic Development Strategy (CEDS).