Focus
A Roadmap for Transforming the Metro Memphis Economy

Strategic Overview
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901-341-2100
www.METROMEMPHISPLAN.com
INTRODUCTION

As the place where the Blues gave birth to Rock 'n Roll and where FedEx launched a Mid-Southern city into a global logistics giant, Metro Memphis’s economy transformed from one fueled by production and agriculture to one driven almost exclusively by logistics and local consumption.

The Metro Memphis region is the 41st largest metropolitan statistical area in the United States, with 1.3 million residents. It employs more than 600,000 and generated economic output of almost $67 billion in 2012, making it the nation’s 46th largest metropolitan economy. Shelby County occupies the center, with 71 percent of the region’s population, 81 percent of its job base, and 86 percent of its economic output, giving it an outsized impact on the overall region.

Despite historic business success and recent economic developments, the trajectory of the Memphis metro area is far from safe. Key economic trends indicate that it will take a much more calculated and focused effort to ensure future prosperity for area citizens, confidence for area businesses and sustainability for area governments.

Growth, productivity, household incomes, and wages in Metro Memphis all lag substantially behind the national average and comparable regions across the country. Metro Memphis has the highest poverty rate among metros with over one million people and its population has stagnated in the face of limited economic opportunities.

To shape the region’s future and the path to attain it, Metro Memphis must forge new, crosscutting growth strategies and a shared, long-term agenda that addresses weaknesses and unites behind strategic action to foster a more sustainable and inclusive economy. Leaders from the City of Memphis and Shelby County have come together to envision a new framework for growth that builds on Metro Memphis’s assets and heritage while catalyzing new strengths and advantages for the 21st century.

Focus: A Roadmap for Transforming the Metro Memphis Economy represents a major milestone. It is the result of a profound conviction that communities across the region share a common economic destiny. Metro Memphis’s long-term success depends on the choices made now. Strategic alignment of interests and objectives is the first move toward transformation to a competitive 21st century economy.

For more than two years, leaders from across public and private sectors have worked to assess the strengths and weaknesses of the Metro Memphis regional economy, its trajectory, challenges, and opportunities. Working in partnership with The Brookings Institution Metropolitan Policy Program and RW Ventures of Chicago, more than 150 leaders from business, government, universities, and non-profits have developed this roadmap for change.

Metropolitan regions, not individual cities, are the engines of economic growth. What benefits Germantown also benefits Collierville and what improves Bartlett will be a boon to Arlington. Knitting the interests of the region into a shared vision is needed in order for Metro Memphis to prosper.

Focus: A Roadmap for Transforming the Metro Memphis Economy represents only the first step in ongoing work, anchoring planning in rigorous analysis of the region’s assets, understanding the market dynamics that shape its economy, and designing strategies that will improve economic performance. This is a long-term course that will generate greater opportunity for more people and communities throughout Metro Memphis.
When the region unites behind a singular vision for growth, it will gather the momentum, resources, and talent required to move forward. Acting on that vision and sustaining it will require leadership and steadfast commitment from the entire community working together.

Metro Memphis has a lot to build on. Global logistics and multi-modal transportation assets that, while maturing as a sector, continue to offer an unparalleled platform for growth for firms that depend on rapid turnaround and just-in-time delivery.

Beginning in the late 19th and into the early 20th century, the Greater Memphis economy was centered on the efficient movement and processing of raw agricultural products and farm equipment. Located on bluffs overlooking the Mississippi River between the farms of the mid-south and the production economies to the north and east, Memphis became a major distribution point and transportation hub. This formed the basis for higher value added activities including trading, finance, and manufacturing.

As it grew, Memphis developed other economic specializations as well. In the mid-20th Century it had a vibrant music industry that transformed over time into a distinguished tourism draw for visitors from around the world. Today, Metro Memphis has a strong base of assets, the headquarters of seven Fortune 1000 companies including three Fortune 500 companies and St. Jude Children’s Research Hospital.

Metro Memphis is served by the world’s second largest cargo airport, the country’s fourth largest inland river port and three major U.S. highways. The market is also served by five Class 1 railroads. More than $500 million in recent railroad upgrades have improved multi-modal access to ports serving Asia, Europe and South America. Metro Memphis’s standing as a global logistics and transportation center has fostered the growth of a diverse set of highly specialized service and support functions.

The region maintains a smaller manufacturing base but with some specialized functions. In 2013, new manufacturing plants opened generating 2,000 new jobs, however. The presence of production operations at companies such as Electrolux and Mitsubishi Electric, potentially initiate a new chapter for rebuilding the region’s manufacturing base.

Healthcare remains one of the region’s largest employment sectors, and technology industries serving healthcare markets, including precision medical devices and diagnostics, represent the region’s most advanced technology sectors. Hospitality and entertainment, in the form of gaming, also have become large-scale employers.

Overall, however, the region has struggled to keep up with global shifts from industrial to knowledge based economies. While logistics alone was driving the region’s competitiveness, its growth was accompanied by decline in the region’s overall industrial diversity. Since 1980, total employment has become nearly twice as concentrated in only a few industries, inextricably tying the region’s economic fate to that singular sector and the extensive network of firms and activities that grew up around it.

Persistently low levels of educational attainment pose formidable barriers to the regional economy’s potential to grow and diversify. Metro Memphis confronts an urgent challenge to raise the skills of its workforce. This reality undermines the ability of the region’s industries to innovate and expand while limiting many workers to low-skill, low-wage positions. With African-Americans comprising more than half the population of Shelby County, closing the racial gap in education attainment and skills is imperative to the region’s future prospects.
The region needs to enhance and better coordinate its efforts to nurture the innovation that drives economic growth in the new economy and support regional entrepreneurs. Academic research funding, industrial commercialization and the creation of new firms all lag behind national averages. In a market with limited resources, targeting efforts and coordinating programs to leverage the impact of the region’s efforts is critical.

On another front, the dominant land development pattern in Metro Memphis hinders innovation and access to opportunity. Employment and residential patterns in the region are highly decentralized. Two thirds of recent job growth has occurred outside of Shelby County. This growth pattern, coupled with the region’s limited public transportation system, leaves large areas disconnected from jobs in an era when industry decisions are being made based on proximity and accessibility.

Under the leadership of FedEx Executive Vice President Christine P. Richards, Shelby County Mayor Mark H. Luttrell, Jr. and Memphis Mayor A C Wharton, Jr., and in partnership with more than a hundred regional leaders, a new course has been charted to ensure Metro Memphis will be a global leader in the development, production and distribution of high-value goods and services and a model of broad-based cooperation and inclusive growth.

Four aspirational goals have been set.

**Goals for the Memphis & Shelby County Regional Economic Development Plan**

- Solidify the Metro Memphis region as the preeminent center for multi-modal movement of goods, specializing in solutions for high-value, just-in-time products.
- Establish the region as a hub for innovation, production, and exports in targeted sectors, including notably strong areas such as diagnostic services and medical devices.
- Create opportunity by improving workforce skills and access to career jobs, benefiting both businesses and residents throughout the region.
- Become a model for regional collaboration, building ongoing capacity for leaders to assess the region’s standing in the global marketplace and shape continuing strategic development and implementation.

Initial work toward realizing this vision and goals is underway, beginning with a major regional initiative to tackle the difficult challenge of growing skills, developing a stronger workforce, and connecting more people to good jobs.

The Greater Memphis Alliance for a Competitive Workforce will leverage new state programs expanding access to community colleges and training with much stronger alignment to employers and real-world skill requirements. It will target specific growth sectors, engaging employers to create a pipeline for workers to gain skills and credentials for specific career pathways into better jobs. Its business plan, already under development, calls for significant new resources to enhance workforce development in the region substantially improving performance at every level.

In other early stage implementation, the region is developing a comprehensive approach to increasing exports and global trade by leveraging its world-class logistics hub as the gateway to new markets for regional firms.
Further, Metro Memphis is exploring the establishment of an Innovation District tailored to next economy firms and workers in the area of the downtown medical center. Early stage work is also underway focused on biologistics, pursuing development of higher-value supply chains in medical sectors.

*Focus: A Roadmap for Transforming the Metro Memphis Economy* calls on everyone throughout the entire region to become pragmatic idealists, facing facts, building on strengths, and addressing challenges that hold the region back. It calls on regional leaders to undertake the challenge of repositioning Metro Memphis for a new economic era. Its success will touch the lives of more than a million people, creating better jobs, a higher standard of living, and a more prosperous economy.
A NEW APPROACH TO ECONOMIC DEVELOPMENT

The global economy is undergoing a fundamental transformation. Recent disruptive changes do not reflect downturns in a business cycle that will soon return to “normal.” Rather, a knowledge and technology-based restructuring has changed the dynamics of productivity and economic growth, and increased the importance of metropolitan regions. This new environment requires an entirely new approach to economic growth planning, focused on where particular regions are in the process of transformation and on five market levers that drive transformation and lead to inclusive prosperity in metropolitan regions.

Characteristics of the New Global Economy

The New Economy is Knowledge-based, Innovation-driven, Dynamic and Global
Economic growth increasingly relies on knowledge embedded in people and advanced technologies. Knowledge-based service sectors such as Scientific and Technical Services, Finance, Professional and Business Services now make up nearly 75 percent of economic output in developed economies. Knowledge-based products and processes are proliferating across all industries, and entirely new sectors are emerging.

This shift to a knowledge and advanced technology-based economy, in turn, engenders more continuous innovation in products, processes, business models and markets. Firms and industries emerge, develop, and redefine themselves based on changing market conditions at much faster speeds than in the past.

As a result, the economy is more dynamic. Flexible production and fluid institutional networks enable rapid redeployment of assets to new products and markets and increased customization. Further, in terms of both demand and supply, the new marketplace is global.

Metropolitan Regions Drive the Global Economy
The new economy’s premium on dynamic interactions among knowledge assets particularly favors metropolitan regions. Worldwide, economic assets are concentrated in metropolitan areas where their geographic proximity reduces transaction costs and increases innovation-producing interactions. This makes metropolitan economies disproportionately productive, and, as a result, metropolitan regions are now the global economy’s primary competitive units.

Each region has its own unique combination of assets, market dynamics, and institutional environments that shape its economic performance. These interactions create a “whole greater than the sum of the parts” – each of the key dimensions (for example, industry concentrations, workforce characteristics, infrastructure) succeeds or fails in the context of the whole. Strategies to impact the performance of the whole must be highly tailored to the individual region and mutually reinforcing. There are no “one-size-fits-all” solutions for promoting economic growth.

Population and economic growth are diverging as well. As the drivers of productivity shift toward technology and innovation, regions do not need to grow big to grow wealthy. Population growth does not necessarily lead to prosperity; indeed, it’s more likely the other way around.

Inclusiveness is Good for Business
All areas of a region – its neighborhoods and its populations – are inextricably linked. Regions that develop and deploy more of their human, real estate, and business assets do better in the long run because they waste fewer
assets and reduce the costs of poverty. Long term, economic growth – across all market levers – must be inclusive to be sustainable.\textsuperscript{xI}

**A New Approach to Economic Growth**

The transformative nature of the new economy has major implications for the practice of regional economic development. Traditional strategies are no longer enough to move the needle on growth. Regions must take a new approach, moving away from consumption-driven growth (e.g., retail, housing), and from deal-by-deal firm attraction based primarily on low costs.\textsuperscript{xII}

Instead, the focus must shift to the creation of production-driven economies that compete by adding value, building on specialized assets and unique strengths and opportunities. To make this shift, regions must concentrate on increasing the \textit{productivity} of their people and assets. They must develop and implement comprehensive, integrated and inclusive strategies across five market levers that determine productivity.

This new approach requires creating new institutional capacity that works across the public, private, and civic sectors and across political boundaries. These cross-sector institutions must discard conventional wisdom when it no longer fits market realities, deeply understand the unique assets and dynamics of a region, and deliberately create linked enterprises to transform those dynamics and foster the rich, transparent and dynamic networks that drive innovation and growth. Then they must continually monitor and adjust their action plans based on objective metrics of market performance and impact.

In short, regions must deliberately make transformative investments tailored to move them forward on their unique path to prosperity, outside of its conventional parameters.
METROPOLITAN BUSINESS PLANNING

Successful regions identify their unique assets and enhance their productivity. The global economy is undergoing a dramatic transformation that favors metropolitan regions, where assets concentrate and their dynamic interactions enable greater efficiency and productivity. Regions that identify their path to successfully participate in that transformation, intentionally building on their unique assets, are forging ahead.

Metropolitan Business Planning addresses this need by adapting the discipline of private-sector business planning to the task of regional economic growth. It provides a framework through which regional business, civic and government stakeholders can objectively analyze the assets, challenges and competitive position of their region, identify mutually reinforcing strategies to capitalize on growth opportunities, and launch catalytic enterprises to implement the strategies to change the region’s economic trajectory.

To achieve these results, the Metropolitan Business Planning (MBP) approach differs from traditional economic development planning in several critical respects:

- It is fact-based and market-disciplined. Rigorous market analysis leads to strategies tailored to the specific assets and opportunities in the region. The plan reflects extensive and vigorous economic analysis about what will work, not as a matter of opinion but as an empirical question that will lead to the right answers for the region.

- It is inclusive, collaborative and transparent. A diverse set of informed leaders and economic development experts come together to create and implement the plan.

- It produces a shared roadmap for the region, aligning existing and new initiatives around a collective vision. By bringing coherence to fragmented programming across multiple dimensions of the economy, it creates common understanding and strategic direction.

- It creates a new institutional infrastructure for economic growth, comprising a network of stakeholders committed to acting collaboratively to transform the economy.

- It represents an ongoing enterprise, geared to action. More than a strategic plan, the MBP creates a portfolio of actionable strategies with a first wave of initiatives ready for implementation.

The Metropolitan Business Plan creates a North Star for the region, around which strategies and initiatives align for implementation. This report represents only the initial groundwork for what will become a continuous process of analysis, strategic revision, initiative design, adjustment and adaptation to new economic conditions. It establishes a new way of doing business in regional economic development geared to meeting the heightened demands of global competition in the new economy.

Market Levers to Enhance Growth

Metropolitan economies grow, by definition, by increasing the total value of goods and services produced by firms in the region. Firm creation, growth, and location dynamics arise from regional characteristics that determine the efficiency and productivity of firms and markets. In the new global economy, five market levers account for the efficiency and productivity of regional economies. These provide the framework for understanding a region’s
economic assets, challenges and opportunities for the market analysis that follows. They are briefly summarized here and further described in each section.

- **Enhance industry clusters and concentrations.** Firms are more productive when interacting in “clusters” of related firms, business functions, and institutions.

- **Develop and deploy human capital aligned with jobs.** The knowledge economy places a premium on higher levels of human capital and on labor markets that enable more continuous, targeted and efficient training, retraining, and deployment of workers whose skills align with changing job requirements.

- **Foster innovation and entrepreneurship.** Deliberate and continuous innovation is the core driver of increasing economic productivity.

- **Improve spatial efficiency.** The economic benefits of concentrating assets in regions – such as reduced transportation costs for goods, people and ideas, shared labor pools, and the spillover of knowledge across firms and talent pools – flow most easily from dense, mixed use and well-connected concentrations of businesses, suppliers, workers and consumers.

- **Create effective public and civic institutions.** Government shapes and enables market activity; provides critical public goods that enhance firms’ productivity and efficiency; and, along with civic, private sector and cross-sector institutions, creates the networks and environments that support dynamic and flexible economies.

In addition, Metro Memphis has chosen to put particular emphasis on the importance of global trade and international markets to enhance the growth of its industries and business concentrations.
Focus: A Roadmap for Transforming the Metro Memphis Economy

METRO MEMPHIS MARKET ANALYSIS

Top-Line Economic Performance

Metro Memphis underpins the economic health of the entire Mid-South with economic output that the Bureau of Economic Analysis totaled at $66.8 billion in 2012 and a job base that exceeds 600,000.

In light of current circumstances and historic trends, Metro Memphis faces significant challenges as it charts a successful transition to the next economy. The region ranks in the bottom half of the nation’s largest metropolitan regions on most measures of economic growth and prosperity.

Since 1980, economic output growth has significantly trailed regions like Atlanta, Charlotte and Dallas but also lags behind other peer regions like Nashville, Indianapolis, Little Rock and Knoxville. Both employment and productivity (output per worker) growth have averaged 4 percent a year. The rate of wage growth has been less than 1 percent annually.

While unemployment has dropped below 9 percent in 2014, the Bureau of Labor Statistics ranked Metro Memphis 339th worst of the 372 United States’ metropolitan statistical areas and 48th out the 49 largest metropolitan areas.

The region has the 10th highest overall poverty rate among metropolitan regions in the country. Furthermore, Metro Memphis has the fifth highest share among the largest hundred metros of concentrations of poor population living in high poverty or distressed neighborhoods.

With the notable exception of exporting, Metro Memphis continues to trail the nation in most categories as the region emerges from the Great Recession. The job base is significantly below pre-recession highs and 3 percent lower than the beginning of the last decade. Economic output has not yet fully rebounded and the gap in productivity per worker has widened between the Metro Memphis and US Averages.

Per capita personal income grew between 2009 and 2012, reaching $40,288 compared to the United States metropolitan area average of $45,188. However, this regional growth is not enough to surmount the 16 percent median household income decline since 1999 which was 5 percentage points more than the national decline.
Between 2010 and 2013, almost 14,000 residents relocated away from Metro Memphis to other parts of the United States. Almost 5,000 residents entered Metro Memphis from outside the United States. The area continues to experience negative total net migration with slight overall population growth being driven almost entirely by births over deaths of existing residents.

A market bright spot exists in exporting. Both export job growth and export output growth in Metro-Memphis are outpacing the national averages. The Brookings Institution’s Export Nation found that Metro Memphis exporting grew by 6 percent a year from 2009 to 2012. Export related jobs topped 37,000 in 2012.

Source: Brookings Institution Analysis of Moody’s, BLS, BEA and Census Data

Source: OTTI, International Trade Administration, U.S. Department of Commerce
Regional Clusters and Concentrations

Firms become more productive by geographically “clustering” with related firms and institutions. This concentration of economic activity reduces transaction costs, enables sharing of specialized labor pools and other inputs, and facilitates innovation through knowledge and technology exchange.

A region’s most promising industry clusters have a strong local presence. They are more concentrated than in other regions, are growing locally and nationally and exhibit a degree of competitive advantage as they are highly productive or have the potential to be. Additionally, they have unique institutional and other assets that distinguish the region and make the cluster competitive.

To succeed in the new economy, firms and regions can no longer rely primarily on being low-cost, high-volume producers of commodity goods, competing on cost alone. They require strong networks and regional concentrations and specializations that foster innovation and the development of shared talent and capacity anchored in regional institutions, such as universities and research centers.

Across all clusters but particularly for manufacturing, continuous technology driven innovation, higher skills and levels of human capital, and increased focus on exports determine the region’s competitiveness in the new economy.

Today, Metro Memphis’s economy reflects the region’s historic economic specializations. Transportation and logistics have fostered the growth of a diverse set of highly specialized service and support functions for those industries. The region also boasts specializations in manufacturing segments involved in processing of raw materials, semi-finished goods and commodities. Healthcare in Metro Memphis, not unlike other U.S. regions, is one of the largest sectors and has been a consistent generator of jobs. Hospitality and entertainment, in the form of gaming, have become large-scale employers.
Though transportation and logistics represent the most prominent and dominant industry cluster in the region, most of Metro Memphis’s key industry clusters have sustained healthy growth rates, outpacing national growth for their sectors in many cases.

The region’s foothold in precision medical device manufacturing distinguishes it and offers potential avenues for new opportunity and growth. The specialized medicine sector in the region grew 238 percent from 1980-2011, outpacing the national growth rate for that area of medicine. The Metro Memphis medical technologies sector, which includes medical device manufacturing and research and development associated with such technologies, increased by 300 percent over the same period, compared to national growth rate of 32 percent.

Only the two manufacturing segments in which Metro Memphis has specialization actually shrunk, and only regional materials processing industries collectively underperformed their national counterparts.

Transportation and Logistics

Of its local industry clusters, Metro Memphis’s transportation and logistics cluster is the most defining and dynamic. Transportation, logistics, and related services comprise Metro Memphis’s largest cluster, providing roughly 127,000 jobs and generating $15.2 billion worth of economic output in 2011. As measured here, the cluster accounted for 20 percent of the region’s jobs and 28 percent of its economic output that year.

The size of the cluster, relative to the rest of the economy, makes Memphis one of the most specialized large logistics economies in the United States, with a concentration of employment nearly four times the national average. The cluster defines the local economy to such an extent that many other local industry clusters derive much of their competitive advantage from their ability to rapidly move goods from Metro Memphis to far flung places.

Transportation and material moving occupations account for 76,220 jobs in Metro Memphis. About half of these jobs are in the transportation and warehousing sector. However, other notable parts of the economy are also dependent on logistics advantages. For example, another 20 percent of transportation and material movers work in wholesale, 11 percent work in manufacturing, and 11 percent work in administrative and support services industries. The local healthcare sector has 35 percent more transportation workers than the national average.
Metro Memphis’s transportation and logistics cluster is complex, global, and highly service oriented. The operations of FedEx and its sizable investments in infrastructure have been a boon to the region, having directly created jobs over many years. The presence of FedEx also supports thousands of jobs in related industries. In the last thirty years, Metro Memphis has grown 12,000 new jobs in freight arrangement, transportation support services, and warehousing and has seen another 20,000 new jobs in support services such as real estate, facilities support, and repair and maintenance.

Metro Memphis’s transportation and logistics cluster employs a more specialized and higher skilled workforce in a more diverse set of occupations than those sectors represent in most regional economies across the country. The transportation and logistics sector in Metro Memphis employs 25 percent more managers than the national average for that sector, 56 percent more production workers, 66 percent more facilities management workers, 83 percent more security guards, two-and-a-half times as many business and financial professionals, and almost four times as many computer programmers.

These workers are employed at about 1,000 local establishments in the “transportation and warehousing” sector defined by the U.S. government, as well as in hundreds of other establishments included in the broader definition of the local cluster used in this analysis. The unique breadth and diversity of Metro Memphis’s transportation and logistics cluster is a reflection of its reach and complexity, as well as how integrated it is into the core of Metro Memphis’s economy.

Metro Memphis’s diverse transportation and logistics cluster can be broken out into four discrete but highly intertwined segments:

**Transportation**

Metro Memphis is a truly multimodal transportation hub. The local economy includes high employment concentrations in freight trucking, air, rail, and inland water transportation. The share of local jobs in the express delivery services industry is over 12 times the national average, primarily as a result of FedEx. In all, these industries provided 45,600 jobs in 2011, with express delivery services directly accounting for 26,000 and 72
percent of job growth in the region from 1980 to 2011. With the exception of specialized freight trucking and air
transportation, these industries add considerably more value per job in this region than the national average.

However, the region’s share of some national industries in these fields has been slipping, suggesting that the
region’s competitive advantages in some areas may be waning. Though rail transportation employment has
dropped nationwide over the last thirty years, it has declined faster in Metro Memphis than nationally. Inland
water and general freight trucking sectors in the region have added jobs slower than they have across the nation.

Output growth in all three of these industries, however, has outpaced growth in the national industries. The only
industry that grew less productive during the last thirty years is specialized freight trucking, which primarily
involves refrigerated trucking and local distribution.

Logistics
Since the arrival of FedEx, the region has grown a far larger and more diverse set of services to manage and
support the efficient movement of goods across different transportation modes. The first of these segments is
logistics, which deals with the operation of warehouses, freight terminals, customs brokers, intermodal freight
handling, and the arrangement of freight transportation between shippers and carriers.

Logistics is the smallest segment of the local transportation and logistics cluster, providing about 13,700 jobs in
2011. However, logistics is the second most specialized segment of the cluster, comprising local employment that
is more than three times the national average. The logistics segment has also been the fastest growing of the four
segments, having added 12,000 jobs since 1980 for a growth rate of 731 percent. This growth is nearly five times
the growth rate of the national logistics segment. Economic output in this segment has grown at three times the
national average.

The strength and competitiveness of this segment are related to the breadth of multi-modal transportation
options in the region and the presence of FedEx. While Metro Memphis specializes in air and water transportation
support services, these two industries account for only about 500 jobs. Air transportation support services have
grown slightly slower than the national average while water support services and port operations declined
considerably faster, in terms of employment.

Wholesale
Metro Memphis specializes in almost every type of durable and non-durable wholesale market measured by the
U.S. government. Together, wholesale industries in which the region has an employment concentration higher
than national averages amounted to 26,400 jobs in 2011 and generated nearly $3 billion in economic output. The
segment’s share of local employment is roughly 60 percent greater than the national average.

Metro Memphis specializes in the wholesale trade of pharmaceuticals and sundries, apparel, auto parts, furniture,
and food. Parts of the wholesale industry have declined modestly nationwide over the last thirty years. However,
some of these industries have declined faster in Metro Memphis, indicating waning competitiveness. Among these
are hardware and plumbing fixtures markets, lumber and construction materials, autos and auto parts, and farm
products and other raw commodities.

Though Metro Memphis specializes in chemical manufacturing and petroleum production, those are not wholesale
markets in which Metro Memphis participates to an especially great extent. Notably, nearly all of Metro
Memphis’s wholesale industries produce less output per job than national industry averages.
Support Services

Goods movement requires a great amount of land and buildings, equipment, and goods, like boxes and pallets. Logistics support services in Metro Memphis include real estate leasing and brokerage, facilities, support services, equipment repair and maintenance, paper production, and security services. This generates $15 billion worth of local value added in transportation and logistics services in a year.

While these sectors encompass many firms and activities performing routine operations that only serve local markets, they provided a total of 41,100 jobs and produced $7.6 billion in output in 2011. These segments of the local economy are 77 percent larger than they are in other metropolitan regions across the country in terms of employment and 79 percent larger in terms of economic output. Support services have added jobs and grown considerably faster than they have nationally, reflecting the interdependence on the region’s robust logistics and transportation cluster.

Many places in the U.S. now have an “aerotropolis” and highly efficient freight terminals and related support industries. Most do not have the multimodal capabilities of Memphis, however. Increasing the region’s infrastructure to improve the speed and productivity of intermodal freight where it is wise and economical may help protect the region’s logistical advantages into the future.

In the Metro Memphis economy, transportation and logistics play such an outsized and dominant role that it is difficult to gain an accurate picture of the relative importance of other sectors, including many that represent the most important new opportunities for growth and development for the region.

Manufacturing

The Metro Memphis manufacturing sector employed 44,600 workers in 2011 and produced $6.1 billion worth of economic output. As a share of the local economy, manufacturing has steadily declined over several decades. It accounts for about 14 percent fewer jobs relative to the national economy and 11 percent less output. However, if the share of jobs and output associated with logistics and transportation is removed from the calculations, the share of both that is based on manufacturing activities are slightly higher than the national average. Manufacturing, in this scenario, accounts for about 9 percent more of local non-logistics employment relative to the nation and 25 percent more of local output.

In addition, the region has experienced recent success in attracting three new manufacturing plants over the last two years. Electrolux, Mitsubishi Electric and KTG are now operational and hiring in Metro Memphis. Given the resurgence of manufacturing underway across the U.S., that trend could open additional opportunities for renewing and growing the region’s manufacturing base.

The skills and talent required by Metro Memphis’s manufacturers differ from national norms for manufacturing sectors. Across the United States, production workers account for about 42 percent of total manufacturing employment and engineers account for another 6 percent. In Metro Memphis, production workers’ share is less, at 37 percent, and engineers account for only 3 percent of all employment.

In contrast, manufacturing companies in Metro Memphis employ 23 percent more transportation workers and material movers, reflecting the predominance of logistics related functions. Manufacturers also employ 10
percent more managers in Metro Memphis, 29 percent more operations professionals, 39 percent more administrative staff, and 52 percent more sales staff.

Beyond access to transportation assets, manufacturing operations often depend on Metro Memphis’ underground aquifer system that provides over 200 million gallons of clean water a day.

The region specializes in a narrow range of manufacturing segments. The consulting firm McKinsey and Company identified five broad areas of manufacturing in 2012 that are key to competitiveness in the next economy. Metro Memphis exhibits some comparative strength in three of the five: global technologies, regional processing, and resource-intensive tradable commodities.

Resource intensive tradable commodities include the products and markets that Memphis has had historical trading and production advantages. Regional processing includes production of goods that must be produced close to their final market due to their difficulty or expense to transport. Global technologies include computers and precision equipment, including medical devices, in which Memphis has renowned advantages.

Medical technologies that comprise almost the entire global technologies segment in Metro Memphis are further described within the healthcare section that follows. Regional processing industries and resource intensive tradable commodities are described in greater detail here:

**Resource-Intensive Tradable Commodities**

Industries in this manufacturing segment together accounted for 8,900 jobs in 2011 and $1.6 billion worth of economic output. These industries can be highly capital intensive but are not always high-value added. Because most industries involve the processing of raw commodities that are sold on international markets, they can be volatile due to price fluctuations.

In Metro Memphis, three quarters of employment in this segment falls into two areas.

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Source: Bureau of Labor Statistics
The larger of the two is paper, pulp, and converted paper manufacturing, with 5,286 jobs in 2011. Metro Memphis has long been an intermediate trade point for lumber. This is also counted in the transportation and logistics cluster due to its relevance to packaging. The second of the two industries is grain and oilseed milling, another agricultural commodity that is processed in Metro Memphis, accounting for 1,400 jobs. Both of these industries are highly specialized in the region, providing an outsized portion of local employment and output relative to the nation.

Other sectors rounding out this segment are wood products manufacturing with 950 jobs and primary metals forging with about 500 jobs. Though these areas lost about 30 percent of their jobs since 1980, the decline has been slower than the national sector and has actually achieved real output growth of 164 percent, compared to 56 percent nationwide over the same period.

**Materials Processing**

Metro Memphis is a center for the manufacture of intermediate products for finished goods and some non-durable consumer items, such as food and beverages. Generally, the products belonging to this manufacturing segment tend to be produced close to the market they are serving because transporting the products long distances is not economical due to the product’s size, weight, or tendency to spoil in transit. In Metro Memphis, regional materials processing industries employed about 14,700 workers in 2011 and produced about $1.5 billion worth of output.

In an adjusted analysis of the size of these industries taken together, they appear to account for about 10 percent less of local employment than the national average but 14 percent more of local output. This suggests that Metro Memphis specializes in types of regional processing industries that are, on average, higher value-added and that some of the industries themselves may be more productive than their national counterparts. They include higher-value added industries such as beverage manufacturing and shipping container manufacturing.

The largest of these industries are those that involve fabricated metals production, specifically the manufacture of architectural and structural metals with 2,000 jobs, boilers and shipping container manufacturing at 640 jobs, and spring and wire manufacturing with 600 jobs. This segment and most of its component industries are substantially smaller than they were 30 years ago or even 10 years ago, reflecting the decline of manufacturing employment nationwide and also the apparent waning competitiveness of the region.

In addition, Metro Memphis boasts employment specializations in several chemical industries, including basic chemicals, pesticides, other chemicals, paints and coatings, and cleaning compounds, which together employ about 3,300 workers. Taken together, employment in these industries has declined faster than it has nationwide and output has grown much slower.

**Healthcare and Medical Technologies**

Like most large metropolitan economies, healthcare is one of Metro Memphis’s largest sectors, with 74,000 jobs in 2011. Most of the region’s healthcare sector is not especially unique as compared to other metropolitan economies and involves only the delivery of care to local populations. However, parts of the sector are distinctive and indicative of a special local cluster. There are also parts of the local health cluster not included in traditional measures of the healthcare sector, most notably medical devices.
In this analysis, a few notable industries within healthcare, professional services and manufacturing are set apart as being parts of a health cluster with two important segments. First is specialized medicine, which includes surgical hospitals, intellectual development institutions, psychiatric hospitals, outpatient care centers, and other ambulatory health services. Second, medical technologies, a segment of the cluster that has seen incredible growth as several medical device manufacturing companies have chosen to locate near local logistical assets and capabilities. This later segment includes medical equipment and supplies manufacturers, research and development services related to medical technology and life sciences, and medical diagnostic laboratories that may also take advantage of local logistics capabilities to do rapid testing of tissue samples from patients located far away, for instance.

Specialized medicine industries and medical technologies together provided 44,000 jobs in Metro Memphis in 2011 and produced $3.4 billion in output. Employment in these two areas grew by 248 percent between 1980 and 2011, compared to 88 percent nationwide.

Metro Memphis had concentrations in certain types of specialized medicine in 1980, with several key anchor institutions forming the foundation for growth in these areas. Over the last thirty years, Metro Memphis has increased its capabilities in a broader range of healthcare services. The medical technologies segment has grown from 2,000 jobs in 1980 to almost 8,000.

**Exports and International Business**

International trade, with emphasis on both goods and services exporting, is critical for economic growth. Given its unique infrastructure assets, history in commodities trading and recent exporting growth trends, Metro Memphis has an opportunity in expanded international business.

<table>
<thead>
<tr>
<th>METRO MEMPHIS EXPORTS IN BILLIONS, 2005</th>
<th>METRO MEMPHIS EXPORTS IN BILLIONS, 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6.3</td>
<td>$11.4</td>
</tr>
<tr>
<td>EXPORTS SHARE OF OUTPUT, 2005</td>
<td>EXPORTS SHARE OF OUTPUT, 2012</td>
</tr>
<tr>
<td>10.8%</td>
<td>17.1%</td>
</tr>
</tbody>
</table>

Source: U.S. Department of Commerce

Exports are defined as US manufactured goods or parts, US metro-based services purchased overseas or local expenditures by a foreign traveler, royalties paid by foreign companies for product licensing or franchising, and secondary inputs from companies in the supply-chain.

In its work with metropolitan regions focused on growing exports, The Brookings Institution Metropolitan Policy Program has identified three primary ways to define an “export” at the metropolitan or regional level:

1. The sale of goods or services produced in a metro area to a business or resident of a foreign country.
2. Shipments that travel from a broader geographic area through a port to a foreign destination.
3. Shipments that travel from a broader geographic area through a customs district on their way to a foreign destination.

What makes something a US (or metro) export is not where the transaction takes place, but whether or not the buyer is based outside the United States.
Under that definition, Metro Memphis ranked 28th among the hundred largest U.S. metropolitan areas for the growth of export related jobs at 32 percent between 2003 and 2010. Total export output growth over the same period was 50 percent compared to 44 percent for the hundred largest metros. This growth however, slowed to just 6 percent annually between 2009 and 2012.

**Products**

Large and growing regional export industries include: Machinery, Chemicals, Medical Equipment & Sporting Goods, Paper, Business Services, Travel & Tourism, Royalties and Food. Medical Equipment, Paper Products and HVAC Equipment are products with particularly robust growth.

Grain, fertilizer, petroleum products, dry bulk commodities including cement, sand, stone and steel products comprise the largest percentage of cargo handled at the Port of Memphis on the Mississippi River.

In 2012, services made up 31 percent of exports compared to the average of 29 percent for the United States. The strongest service industries in the Memphis export market are Freight and Port Services, Accommodation Services and Financial Services.
**Partners**

Metro Memphis’s largest trading destinations are Canada, Mexico, Japan, The United Kingdom, China and Germany. Over 50 percent of all exports from the area go to these countries. However, other destinations with high market potential are also importing U.S. products that could originate from the Metro Memphis area as seen in the following table.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>Machines, Engines, Pumps: $7.9 billion</td>
<td>Russia</td>
<td>Machines, Engines, Pumps: $2.2 billion</td>
</tr>
<tr>
<td></td>
<td>Electronic Equipment: $4.6 billion</td>
<td></td>
<td>Medical, Technical Equipment: $548.2 million</td>
</tr>
<tr>
<td></td>
<td>Medical, Technical Equipment: $2 billion</td>
<td></td>
<td>Electronic Equipment: $546 million</td>
</tr>
<tr>
<td></td>
<td>Organic Chemicals: $2 billion</td>
<td></td>
<td>Inorganic Chemicals: $179.6 million</td>
</tr>
<tr>
<td></td>
<td>Fertilizers: $1.2 billion</td>
<td></td>
<td>Other Chemical Goods: $136.5 million</td>
</tr>
<tr>
<td>China</td>
<td>Machines, Engines, Pumps: $15.6 billion</td>
<td>Saudi Arabia</td>
<td>Machines, Engines, Pumps: $3 billion</td>
</tr>
<tr>
<td></td>
<td>Electronic Equipment: $13.9 billion</td>
<td></td>
<td>Electronic Equipment: $949.8 million</td>
</tr>
<tr>
<td></td>
<td>Oil Seed: $12.8 billion</td>
<td></td>
<td>Medical, Technical Equipment: $589.5 million</td>
</tr>
<tr>
<td></td>
<td>Medical, Technical Equipment: $8.3 billion</td>
<td></td>
<td>Other Chemical Goods: $301.8 million</td>
</tr>
<tr>
<td></td>
<td>Woodpulp: $4.7 billion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>Machines, Engines, Pumps: $2.9 billion</td>
<td>Thailand</td>
<td>Electronic Equipment: $2.1 billion</td>
</tr>
<tr>
<td></td>
<td>Electronic Equipment: $1.5 billion</td>
<td></td>
<td>Machines, Engines, Pumps: $1.3 billion</td>
</tr>
<tr>
<td></td>
<td>Fertilizers: $1.2 billion</td>
<td></td>
<td>Medical, Technical Equipment: $569.1 million</td>
</tr>
<tr>
<td></td>
<td>Medical, Technical Equipment: $1.2 billion</td>
<td></td>
<td>Organic Chemicals: $330.6 billion</td>
</tr>
<tr>
<td></td>
<td>Organic Chemicals: $919.7 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Electronic Equipment: $32.3 billion</td>
<td>Turkey</td>
<td>Machines, Engines, Pumps: $952.5 million</td>
</tr>
<tr>
<td></td>
<td>Machines, Engines, Pumps: $31.2 billion</td>
<td></td>
<td>Electronic Equipment: $479.5 million</td>
</tr>
<tr>
<td></td>
<td>Organic Chemicals: $6.4 billion</td>
<td></td>
<td>Medical, Technical Equipment: $396.6 million</td>
</tr>
<tr>
<td></td>
<td>Medical, Technical Equipment: $4.8 billion</td>
<td></td>
<td>Organic Chemicals: $382.4 million</td>
</tr>
</tbody>
</table>

**Infrastructure**

The most obvious connection to foreign markets begins with Memphis International Airport. As the original hub for FedEx operations, Memphis International is the world’s second largest cargo airport with products delivered to and from more than 375 destinations daily. Although airfreight is maturing as an industry and facing increased fuel costs and other global economic factors, Memphis International continues to drive the regional economy.

Some airfreight lanes continue to grow in terms of US exports including.

<table>
<thead>
<tr>
<th>Bahrain</th>
<th>Kazakhstan</th>
<th>Qatar</th>
<th>UAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Oman</td>
<td>Russia</td>
<td>Uganda</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Paraguay</td>
<td>Saudi Arabia</td>
<td>Ukraine</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Peru</td>
<td>Tanzania</td>
<td>Vietnam</td>
</tr>
</tbody>
</table>

Beyond airfreight, access to foreign markets from Metro Memphis is achieved by reaching international ports through road, river and rail infrastructure. Three major highways (I-55, I-40 and US-78) serve the market and the future Interstate-69 from Canada to Mexico will run through Memphis. The Port of Memphis is the nation’s fourth-largest inland river-port with most traffic leading to and from the Port of New Orleans’ Gulf of Mexico exit point.

With service from five Class 1 railroads and more than $500 million in recent rail infrastructure upgrades, rail-driven multi-modal service presents a critical route for future connections to exit points to Asia (on U.S., Mexico and Canada West Coast/U.S. Gulf Coast), to Europe (on U.S. and Canada East Coast/U.S. Gulf Coast) and to South America (U.S. Gulf Coast).
Global developments such as the Panama Canal expansion are expected to have little effect on the Memphis region unless international exit points are improved, however. Gulf ports near the Memphis region lack sufficient intermodal infrastructure and capacity to grow substantially.

Inbound component shipping is supported by the U.S. Customs and Border Protection Memphis Service Port with a full range of cargo processing functions.

**Organization and Marketing**

Beyond regional manufacturing companies with specific exporting knowledge, much of the export activity is driven by wholesalers or exporting services. Private shipping firms and financial institutions also offer assistance.

Metro Memphis has fewer public export assistance representatives than competitor metros and national exporting centers. There is little definable external market promotion tied to international trade capabilities.

<table>
<thead>
<tr>
<th>2012 International Trade Specialists in Peer Cities &amp; 2012 Export Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST. LOUIS, MO</td>
</tr>
<tr>
<td>BALTIMORE, MD</td>
</tr>
<tr>
<td>CHARLOTTE, NC</td>
</tr>
<tr>
<td>PORTLAND, OR</td>
</tr>
<tr>
<td>INDIANAPOLIS, IN</td>
</tr>
<tr>
<td>CINCINNATI, OH</td>
</tr>
<tr>
<td>JACKSON, MS</td>
</tr>
<tr>
<td>LOUISVILLE, KY</td>
</tr>
</tbody>
</table>

While public assistance capacity is limited, Metro Memphis does recognize exporting as an opportunity. The Greater Memphis Chamber of Commerce’s International Business Council, State of Tennessee Department of Economic & Community Development and the Memphis U.S. Export Assistance Center conduct limited promotional trade missions. The State of Tennessee Office of Economic and Community Development recently re-launched an International Division with new Export Development Offices in Mexico, the United Kingdom, Germany and China, in addition to four development and assistance officers working across the entire state.

**Regional Clusters and Concentrations Assessment**

Transportation and logistics is the most dominant regional cluster. Business and administrative services is also large and growing, but possibly linked to logistics related industries. Healthcare employment is growing faster than the national average. Medical devices and surgical equipment is a strong and growing cluster, leads exports and has the most innovation and entrepreneurship activity in the market. While it has declined, manufacturing remains a sizeable sector employing 44,000.

Since 1980, local employment has become almost twice as concentrated in a small number of industries. Since the recession, jobs in the region’s traded sectors have declined or stagnated while consumption-oriented industries have driven employment growth. Innovation-intensive industries make up less than 3 percent of the Metro Memphis economy compared to more than 5 percent nationwide.

Metro Memphis’s transportation and logistics sector is large and highly specialized. It has exhibited exceptional job and output growth, largely thanks to FedEx, which has attracted and fostered growth of many other related industries that feed or support the core functions of the sector. This cluster has also made the region a much more
competitive place for industries not directly related to logistics but highly dependent upon logistics functions to move their products quickly and cheaply.

However, this extraordinary growth in Metro Memphis’s core logistics sectors has plateaued as related industries have matured. Alone, it cannot drive economic competitiveness and job growth at the same level into the future.

Metro Memphis retains many of its legacy manufacturing industries but their futures appear uncertain. The most notable manufacturing industries do not tend to produce complex finished goods. The majority of local manufacturing appears to involve processing intermediate goods.

The region has experienced recent success attracting new manufacturing related to electric power transmission, home appliances and food processing. All of which expand its position in traded sectors. Avenues for growth may also exist in business-to-business services.

It is difficult to assess how much the local specialized medicine institutions like St. Jude Children’s Research Hospital contributed to the growth and competitiveness of the medical technologies cluster. Anecdotal evidence suggests that local medical breakthroughs are actually developed for the market outside of the Metro Memphis economy.

High skilled healthcare workers, such as doctors and diagnosticians, account for twice as much local manufacturing employment as they do nationwide. This is a reflection of the large role medical device manufacturing plays in Metro Memphis’ manufacturing sector. However, it suggests that there are some latent abilities to translate medical knowledge and innovation for commercialization and production.

Finally, exporting output and exporting employment are growing faster in Metro Memphis than in many other metropolitan areas across the United States. Metro Memphis has extensive exporting infrastructure assets in road, river, rail and runway. These and other advantages as a global trade hub provide a platform upon which the region can build.

Exporting still lags as a percentage of the total local economy, however. The region has seen very slow export growth to high-growth economies such as BRICS nations. The Memphis area has very limited public sector export assistance resources and marketing capability. This leads to the conclusion that exporting is a growth opportunity for the region if properly supported.

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**Existing Regional Clusters and Concentrations Initiatives**

The Memphis Bioworks Foundation focuses on investments in bioscience and sustainability.

The Greater Memphis Chamber’s Regional Logistics Council serves as an alliance of companies in transportation and distribution.

The Greater Memphis Chamber’s Manufacturing Council is organized to provide insight into production industries.

The Greater Memphis Medical Device Council sponsored by the Bartlett Area Chamber of Commerce focuses on orthopedic implants and surgical equipment.

The West Tennessee District Exports Council and the Greater Memphis Chamber’s International Business Council are advocates and strategists for exporting and foreign direct investment.
Human Capital

The characteristics of the new economy increase the importance of the role that human capital plays in economic growth. They also alter the labor market dynamics that efficiently produce and match supply and demand for talent. Making the transformation to the new economy in a region requires attention to the characteristics and levels of its human capital, labor market dynamics and inclusiveness.

High Levels of Human Capital and Rich Job Pools

In the new economy, an increased emphasis on knowledge and application of technology drives demand for higher levels of talent across all sectors. In addition, the global nature of the labor market intensifies competition for top talent, compelling regions to emphasize the creation of the rich job pools that attract and retain the most highly skilled workers.

Metro Memphis’ supply of human capital is not meeting this demand.

Human Capital Supply

Metro-Memphis has a working age population of over 800,000 with a 1 percent annual growth rate that substantially trails labor force growth in other metro regions. With an employment base of just over 600,000, the region ranked 43rd out of the largest hundred metropolitan regions between 1980 and 2009 for growth, 65th for productivity based on output per employee and 52nd in productivity growth.

More than 24 percent of the regional population 25 years of age and older have some college but no degree compared to the average of 21 percent for the largest hundred metros. However, 14 percent of the regional working age population has less than a high school diploma.

The area lags the hundred largest metro average in Associate’s Degrees, Bachelor’s Degrees and Graduate or Professional Degrees. In Metro Memphis, 26 percent of residents hold a Bachelor’s Degree or higher, compared to 30 percent and higher in other, major metropolitan areas. Only 7 percent hold an Associate’s Degree.

Human Capital Demand

With an overall job base of more than 600,000, the top three Metro Memphis industries by employment levels are health care and social Assistance (82,785), administrative and waste services (76,593) and state and local
The top three occupational categories in the region are office and administrative support (101,402), transportation and material moving (73,854) and sales related occupations (59,786). Recent growth in occupational categories has come largely from locally serving positions such as teachers, food service workers, personal care aides and retail salespeople. However, as a percentage of growth some traded sector occupations such as electrical power production, machine operators and research analysts also show strength.

According to a 2012 analysis of occupations in the region, there were only 17,510 Metro Memphis jobs engaged in the types of research and development that drive innovation and the growth of advanced industries. Those jobs were distributed among the region’s most promising technology sectors. Nearly a third was involved in medical equipment manufacturing, 21 percent in scientific consulting and 12 percent in computer systems design. A 2012 Metro Memphis profile of occupations with the most job openings produced by the Conference Board’s Help Wanted Online Series reports similar findings.
The following tables estimate the top occupations overall and the top employment industries in select Metro Memphis sectors.

### Top Metro Memphis Occupations Through 2023

<table>
<thead>
<tr>
<th>Largest in 2013</th>
<th>Fastest Growing 2013-2023</th>
<th>Most Competitive in 2023</th>
<th>Most Specialized in 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office &amp; Admin. Support</td>
<td>Personal Care &amp; Service</td>
<td>Personal Care &amp; Service</td>
<td>Transportation &amp; Moving</td>
</tr>
<tr>
<td>Sales</td>
<td>Building &amp; Grounds Maint.</td>
<td>Building &amp; Grounds Maint.</td>
<td>Personal Care &amp; Service</td>
</tr>
<tr>
<td>Transportation &amp; Moving</td>
<td>Healthcare Practitioners &amp; Tech.</td>
<td>Community &amp; Social Service</td>
<td>Protective Service</td>
</tr>
<tr>
<td>Management</td>
<td>Healthcare Support</td>
<td>Education, Training &amp; Library</td>
<td>Installation, Maintenance, Repair</td>
</tr>
<tr>
<td>Healthcare Practitioners &amp; Tech.</td>
<td>Sales</td>
<td>Unclassified Occupation</td>
<td>Unclassified Occupation</td>
</tr>
<tr>
<td>Building &amp; Grounds Maint.</td>
<td>Food Prep &amp; Serving</td>
<td>Farming, Fishing, Forestry</td>
<td>Office &amp; Admin. Support</td>
</tr>
<tr>
<td>Production</td>
<td>Office &amp; Admin. Support</td>
<td>Life, Physical, Social Science</td>
<td>Production</td>
</tr>
<tr>
<td>Education, Training &amp; Library</td>
<td>Art, Design, Enter, Sports, Media</td>
<td>Military</td>
<td>Food Prep &amp; Serving</td>
</tr>
</tbody>
</table>

### Top Metro Memphis Transportation & Warehousing Industries Through 2023

<table>
<thead>
<tr>
<th>Largest in 2013</th>
<th>Fastest Growing 2013-2023</th>
<th>Most Competitive in 2023</th>
<th>Most Specialized in 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Couriers &amp; Express Delivery</td>
<td>General Warehouse &amp; Storage</td>
<td>Freight Transport Arrangement</td>
<td>Mixed Mode Transit Systems</td>
</tr>
<tr>
<td>General Warehouse &amp; Storage</td>
<td>Freight Transport Arrangement</td>
<td>General LD Trucking + Truckload</td>
<td>Couriers &amp; Express Delivery</td>
</tr>
<tr>
<td>General LD Trucking + Truckload</td>
<td>Specialized LD Trucking</td>
<td>Inland Water Freight Trans.</td>
<td>General LD Trucking + Truckload</td>
</tr>
<tr>
<td>General LD Trucking + Truckload</td>
<td>Specialized LD Trucking</td>
<td>General Warehouse &amp; Storage</td>
<td>Other Warehouse &amp; Storage</td>
</tr>
<tr>
<td>Freight Transport Arrangement</td>
<td>Other Support for Road Trans.</td>
<td>All Other Transit &amp; Ground Trans.</td>
<td>Packing &amp; Crating</td>
</tr>
<tr>
<td>Scheduled Passenger Air Trans.</td>
<td>Other Support for Road Trans.</td>
<td>General LD Trucking + Truckload</td>
<td>Motor Vehicle Towing</td>
</tr>
<tr>
<td>Local Freight Trucking</td>
<td>Motor Vehicle Towing</td>
<td>Mixed Mode Transit Systems</td>
<td>Other Warehouse &amp; Storage</td>
</tr>
<tr>
<td>Other Warehouse &amp; Storage</td>
<td>Local Freight Trucking</td>
<td>Motor Vehicle Towing</td>
<td>Other Warehouse &amp; Storage</td>
</tr>
<tr>
<td>Specialized LD Trucking</td>
<td>Inland Water Freight Trans.</td>
<td>Other Support for Air Trans.</td>
<td>General Warehouse &amp; Storage</td>
</tr>
<tr>
<td>Rail Transportation</td>
<td>Other Support for Air Trans.</td>
<td>Nonscheduled Chartered Air</td>
<td>Other Warehouse &amp; Storage</td>
</tr>
</tbody>
</table>

### Top Metro Memphis Wholesale Trade Industries Through 2023

<table>
<thead>
<tr>
<th>Largest in 2013</th>
<th>Fastest Growing 2013-2023</th>
<th>Most Competitive in 2023</th>
<th>Most Specialized in 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs and Drugists’ Sundries</td>
<td>General Line Grocery</td>
<td>General Line Grocery</td>
<td>Footwear</td>
</tr>
<tr>
<td>General Line Grocery</td>
<td>Trade Agents &amp; Brokers</td>
<td>Automobile &amp; Other Vehicle</td>
<td>Other Farm Products Raw Mat.</td>
</tr>
<tr>
<td>Trade Agents &amp; Brokers</td>
<td>Automobile &amp; Other Vehicle</td>
<td>Service Establishment Equip.</td>
<td>Refrigeration Equip. &amp; Supplies</td>
</tr>
<tr>
<td>Motor Vehicle Supplies &amp; Parts</td>
<td>Drugs and Drugists’ Sundries</td>
<td>Stationary &amp; Office Supplies</td>
<td>Drugs and Drugists’ Sundries</td>
</tr>
<tr>
<td>Footwear</td>
<td>Recyclable Material</td>
<td>Metal Service Centers</td>
<td>Service Establishment Equip.</td>
</tr>
<tr>
<td>Industrial Machinery &amp; Equip.</td>
<td>Service Establishment Equip.</td>
<td>Home Furnishing</td>
<td>General Line Grocery</td>
</tr>
<tr>
<td>Medical, Dental, Hosp. Equip.</td>
<td>Metal Service Centers</td>
<td>Recyclable Material</td>
<td>Stationary &amp; Office Supplies</td>
</tr>
<tr>
<td>Electrical Apparatus &amp; Wiring</td>
<td>Home Furnishing</td>
<td>Book, Periodical, Newspaper</td>
<td>Motor Vehicle Supplies &amp; Parts</td>
</tr>
<tr>
<td>Automobile &amp; Other Vehicle</td>
<td>Footwear</td>
<td>Brick &amp; Stone Construction Mat.</td>
<td>Home Furnishing</td>
</tr>
<tr>
<td>Farm Supplies</td>
<td>Stationary &amp; Office Supplies</td>
<td>Toy &amp; Hobby Goods</td>
<td>Tire &amp; Tube</td>
</tr>
</tbody>
</table>

### Top Metro Memphis Manufacturing Industries Through 2023

<table>
<thead>
<tr>
<th>Largest in 2013</th>
<th>Fastest Growing 2013-2023</th>
<th>Most Competitive in 2023</th>
<th>Most Specialized in 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical Appliance and Supplies</td>
<td>Surgical Appliance and Supplies</td>
<td>Surgical Appliance and Supplies</td>
<td>Heavy Gauge Springs</td>
</tr>
<tr>
<td>HVAC &amp; Comm. Refrigeration</td>
<td>Heavy Gauge Springs</td>
<td>Elevator &amp; Moving Stairways</td>
<td>Other Tobacco Products</td>
</tr>
<tr>
<td>Soft Drinks</td>
<td>Elevator &amp; Moving Stairways</td>
<td>Motor Vehicle Transmissions</td>
<td>Other Oilseed Processing</td>
</tr>
<tr>
<td>Comm. Electric Lighting Fixtures</td>
<td>Plastics Materials &amp; Resins</td>
<td>Automobiles</td>
<td>Surgical Appliance and Supplies</td>
</tr>
<tr>
<td>Other Engine Equipment</td>
<td>Motor Vehicle Transmissions</td>
<td>Metal Cans</td>
<td>Rice Milling</td>
</tr>
<tr>
<td>Comm. Lithograph Printing</td>
<td>Automobiles</td>
<td>Plastics Materials &amp; Resins</td>
<td>Paper Mills</td>
</tr>
<tr>
<td>Nonchocolate Confectionery</td>
<td>Other Tobacco Products</td>
<td>Ophthalmic Goods</td>
<td>Nonchocolate Confectionery</td>
</tr>
<tr>
<td>All Other Plastics Products</td>
<td>Ophthalmic Goods</td>
<td>Other Tobacco Products</td>
<td>Comm. Electric Lighting Fixtures</td>
</tr>
<tr>
<td>Plastics Materials &amp; Resins</td>
<td>Metal Cans</td>
<td>Asphalt Shingle &amp; Coating Mat.</td>
<td>Inorganic Dyes &amp; Pigments</td>
</tr>
</tbody>
</table>

### Top Metro Memphis Healthcare Industries Through 2023

<table>
<thead>
<tr>
<th>Largest in 2013</th>
<th>Fastest Growing 2013-2023</th>
<th>Most Competitive in 2023</th>
<th>Most Specialized in 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Hospitals (Private)</td>
<td>Child Day Care Services</td>
<td>Child Day Care Services</td>
<td>Mental Health &amp; Substance Ab.</td>
</tr>
<tr>
<td>Child Day Care Services</td>
<td>Home Health Care Services</td>
<td>Mental Health &amp; Substance Ab.</td>
<td>Other Ambulatory Health Care</td>
</tr>
<tr>
<td>Offices of Physicians</td>
<td>Mental Health &amp; Substance Ab.</td>
<td>Home Health Care Services</td>
<td>Family Planning Centers</td>
</tr>
<tr>
<td>Home Health Care Services</td>
<td>Offices of Physicians</td>
<td>Mental Retardation Facilities</td>
<td>Blood &amp; Organ Banks</td>
</tr>
<tr>
<td>Nursing Care Facilities</td>
<td>General Hospitals (Private)</td>
<td>Other Ambulatory Health Care</td>
<td>Outpatient Mental &amp; Substance</td>
</tr>
<tr>
<td>Services for Elderly &amp; Disabled</td>
<td>Services for Elderly &amp; Disabled</td>
<td>Ambulance Services</td>
<td>Medical Laboratories</td>
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<tr>
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<td>Mental Retardation Facilities</td>
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<td>Child Day Care Services</td>
</tr>
<tr>
<td>Mental Health &amp; Substance Ab.</td>
<td>Nursing Care Facilities</td>
<td>Child &amp; Youth Services</td>
<td>Kidney Dialysis</td>
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<tr>
<td>Mental Retardation Facilities</td>
<td>Offices of Dentists</td>
<td>Nursing Care Facilities</td>
<td>General Hospitals (Private)</td>
</tr>
<tr>
<td>Outpatient Mental &amp; Substance</td>
<td>Ambulance Services</td>
<td>Blood &amp; Organ Banks</td>
<td>Community Food Services</td>
</tr>
</tbody>
</table>

Source: EMSI Complete Employment
Job Matching and Worker Mobility

In a dynamic economy, workers change jobs more frequently. Job and skill requirements change at a more rapid pace. Targeted attention must be paid to particular segments of the labor market and jobs as skill mismatches and labor market disruption occur frequently, particularly during the early transition from the older economy to the new economy.

New labor market mechanisms are often needed to enable efficient movement of workers among occupations, firms, and industries. Workers need not only to upgrade their skills continually but also to be able to document their skills through recognized certifications, and also to find opportunities for deploying them. Employers need to be able to identify and assess candidates with the most relevant skills and experience efficiently, often on a short timeframe. Those changes in job markets require training and education systems to function at a new level of market focus and agility, modifying their programs to maintain alignment with market demand.

Surveys of Metro Memphis employers in target industries reveal that most desire basic and soft skills. Employers in advanced industries are seeking more specific skills related to production operations. Estimates of future job openings predict the need for higher skills and education levels. The surveys point out that training in the market is not linked to industries in need of talent today or in the future.

Economic Modeling Specialists International estimates that Healthcare and Social Assistance jobs will grow by 5,600 in Metro Memphis between 2014 and 2016. This growth will continue through 2023. The majority of the growth is expected to be in specialties that are locally serving. However, some partially traded sectors such as medical laboratories and blood & organ banks are expected to continue growing while also maintaining a level of specialization unique to the Metro Memphis market.

According to a 2014 jobs analysis performed by the Workforce Investment Network and Greater Memphis Chamber, Memphis area transportation, distribution and logistics companies will hire between 5,000 and 7,000 new employees through 2016.
While many of these positions will be temporary or part-time, 63 percent will be full-time. By 2023, hand laborers, heavy & tractor trailer truck drivers and sales representatives for wholesale & manufacturing could total more employees than they do today in Metro Memphis.

According to a 2013 jobs analysis performed by the Workforce Investment Network and Greater Memphis Chamber of Commerce, Metro Memphis manufacturers will hire more than 4,000 employees through 2016 including machinists, welders, assemblers, inspectors, technicians, and engineers.

Most manufacturing occupations are projected to continue on a path of decline. However, team assemblers and manufacturing inspectors could total more than they do today in Metro Memphis by 2023.
Metro Memphis’s most specialized advanced industries are overwhelmingly led by medical equipment manufacturing. Additionally, power transmission equipment and household appliance manufacturing have experienced regional growth that significantly outpaces the national average. Industries with similar profiles include HVAC equipment manufacturing, architectural and structural metals manufacturing, machine shops and plastics product manufacturing.

According to Economic Modeling Specialists International, occupations in the medical equipment manufacturing sector also cross over to support other significant regional industries such as HVAC equipment manufacturing, commercial lighting fixture manufacturing and motor vehicle transmission & parts manufacturing. This sector’s occupations also support occupations in paper mills, warehousing and testing laboratories.

**Matching Supply and Demand**

Many partners and institutions are focused on reducing industry skill disparities and raising educational attainment. The primary practitioners of current workforce development programs are:

- The University of Memphis
- Southwest Tennessee Community College
- Tennessee College of Applied Technology
- Mid-South Community College (Arkansas)
- Northwest Mississippi Community College (Mississippi)
- William R. Moore Technical College

The “Tennessee Promise” initiative will expand access to community college and training by providing full scholarships to every student enrolled. The state is also offering grants to regions to better align training with employers’ needs and skill requirements.

In July of 2014, 17 Metro Memphis medical device companies came together to form the Greater Memphis Medical Device Council. They are working together with almost two dozen other life sciences companies to address the lack of qualified workers in the marketplace. The council is helping local technical schools and community colleges improve their curricula and standard training programs, in addition to focusing on improved student recruiting.

Those efforts represent an unusual level of direct involvement and engagement by specific sectors in shaping workforce development and training geared to meet specific industry needs.
Industrial Readiness Training and Career Readiness Certification offered by the region’s community colleges aim to prepare lower-skilled and entry-level workers with a credential that will open doors to the labor market. However, while employers who have hired workers certified under the program see value in it, 95 percent of employers surveyed had never made a hiring decision involving the credential and more than half of prospective workers surveyed were not aware of the program.

In the Made in Memphis Manufacturing Industry Survey of 2013, few employers reported working with educational institutions to recruit employees, more often using online hiring assessments and extensive orientation programs and other approaches to screen applicants, select and train new hires. Workforce development professionals and educators also reported that students and prospective workers are often unaware of available career pathways and the value of education to job advancement.

In the Memphis Delivers Transportation, Distribution and Logistics Survey of 2014, respondents stated that the burden of training TDL employees in Memphis remains on the employers. Competitor companies heavily recruit trained employees from each other. While 8 percent responded that education partners have much to a great deal of involvement, 64 percent stated that education partners have very little to no involvement at all.

Surveys find that employees do not understand how their role fits into the mission of their companies or why issues such as absenteeism and tardiness negatively affect the ability to meet customer needs.

**Inclusiveness and Opportunity**

With rapidly changing demographics and given that inclusiveness is a driver of prosperity in the next economy, regions need to ensure that workers of all skill levels, socioeconomic groups, and geographic communities have opportunities to participate in and progress in the labor market. An inclusive economy exhibits numerous “on-ramps” for entering the workforce, accessible jobs and career ladders, and opportunities for continuous skill development and career change.

Metro Memphis ranked 85th for adults with a bachelor’s degree among the largest hundred MSAs in 2009 and has improved little since. Compounding this problem, surveys of workforce development professionals and educators find that employees are often unaware of available career pathways and the value of education to job advancement.

<table>
<thead>
<tr>
<th>Educational Attainment (Population 25+) by Race</th>
<th>2012</th>
<th>MSA</th>
<th>White</th>
<th>Black or AA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Estimate</strong></td>
<td>852,644</td>
<td>450,057</td>
<td>362,944</td>
<td></td>
</tr>
<tr>
<td><strong>Less than high school</strong></td>
<td>13.77%</td>
<td>8.93%</td>
<td>18.36%</td>
<td></td>
</tr>
<tr>
<td><strong>High school grad, GED or equiv.</strong></td>
<td>28.64%</td>
<td>25.82%</td>
<td>33.11%</td>
<td></td>
</tr>
<tr>
<td><strong>Some college, no degree</strong></td>
<td>24.36%</td>
<td>24.51%</td>
<td>25.00%</td>
<td></td>
</tr>
<tr>
<td><strong>Associate’s</strong></td>
<td>7.10%</td>
<td>7.41%</td>
<td>6.81%</td>
<td></td>
</tr>
<tr>
<td><strong>Bachelor’s</strong></td>
<td>16.92%</td>
<td>21.73%</td>
<td>11.01%</td>
<td></td>
</tr>
<tr>
<td><strong>Graduate degree</strong></td>
<td>9.21%</td>
<td>11.60%</td>
<td>5.71%</td>
<td></td>
</tr>
</tbody>
</table>

Source: American Community Survey

Gaps in educational attainment between white and black populations in the region remain significant. Only 17 percent of African-American adults in the region have earned a Bachelor’s Degree or higher, slightly less than half the attainment rate among whites. More than 51 percent of Metro Memphis African-Americans have only a high school education or less compared to less than 35 percent of whites.
Wages in the Memphis region are low and slow growing. As well income is distributed more unequally than other metros.

Prior to the end of the recession Metro Memphis ranked 49th of the top hundred metros for average wages, 68th for the ratio of high-to-low wages and 84th for distribution of wealth based on a Gini coefficient statistical measure. Metro Memphis wage growth ranked 72nd from 1980 to 2009. These regional trends have not reversed following 2009.

**Human Capital Assessment**

The human capital talent pool in Metro Memphis is growing slowly, predominantly lower-skilled, with low education attainment. Supply and demand for human capital in the region are not aligned. Employee opportunity and job access represent important challenges for the region.

The Metro Memphis region lags other metropolitan regions in terms of skilled human capital and the depth and breadth of job opportunities. The Metro Memphis economy has created more than 200,000 jobs since 1980, but the predominant areas of growth have occurred in lower-skilled functions related to logistics and in low-wage service occupations. A recent occupational analysis performed by The Brookings Institution found that more than two-thirds of jobs in Metro Memphis are in occupational categories that pay below the average wage.

Compounding the challenge, Metro Memphis suffered enormous job losses and a very slow recovery from the Great Recession. A Regional Workforce Analysis & Labor Market Assessment of the 54 counties surrounding Metro Memphis conducted by Younger Associates in 2010 identified a pool of 14,114 recent college graduates, 49,337 part-time workers who want full-time work, 92,132 underemployed workers, and another 230,548 residents who were not employed but wanted to work.

A result of those trends is that the region increasingly struggles to provide adequate opportunities for higher wages and career opportunities. Furthermore, industry has started to demand higher skills throughout the marketplace.
A 2012 study by The Brookings Institution found that almost 40 percent of jobs in Metro Memphis required a Bachelor’s Degree or higher, but only 26 percent of adults over age 25 in the region have that level of education. Another third of available jobs required some postsecondary training or an Associate’s Degree. In other words, nearly three-quarters of jobs in the region required some form of education or training beyond high school, but only about 60 percent of the adult population met that criterion. Almost 29 percent hold only a high school diploma or equivalent, and almost 14 percent have not earned even that basic credential.

The skills and expertise commonly demanded by some of Memphis’s most specialized advanced industries are in short supply locally. Some of these industries tend to require skills and expertise similar to those required by non-advanced industries in which Memphis may have advantages, creating an opportunity for new training programs that focus on career pathways across sectors with similar needs.

In addition to the struggle to raise skills and align workforce development with employer needs, Metro Memphis faces significant challenges related to wage growth and income inequality. Wages in the Memphis region are relatively low, slow growing, and distributed more unequally than in other metropolitan regions across the country, including regions with whom the region regularly competes for talent.

As the workforce becomes increasingly diverse, the need to close gaps in skills and access to opportunity becomes imperative to the region’s ability to compete and advance in the new economy. By necessity, it must ensure that workers of all skill levels, socioeconomic groups, and geographic communities have opportunities to participate in and progress in the labor market.

Metro Memphis’ competitive position in the area of human capital is stymied by a significant racial divide in education attainment. With minority populations making up a growing portion of the workforce and half of the regional population, closing the skills and education gap among racial groups becomes imperative.

Despite boasting many training and education resources in its workforce development system, the Memphis MSA ranked 86th out of the hundred largest metros on the Brookings Institution Education Gap Index. Community colleges and other key partners in workforce development are offering foundational skills and attempting to prepare new workers for the labor market. However, gaining acceptance for such credentials among both employers and workers has been slow and limited in its impact.

Some of the region’s most promising workforce development training programs operate at maximum capacity, although most are not accessed by most employers, creating a labor market that does not “clear” well, meaning that available positions go unfilled despite a large population of workers seeking work.

In Shelby County alone, almost 18,000 jobs went unfilled in 2013 while unemployment was more than 9 percent in both the county and MSA. In December of 2013, there were 2.77 unemployed workers for every job opening and positions were still not being filled due to the skills gap.

Moving forward, Metro Memphis will need to close the skills and education gap both with other regions and within racial groups in the region. It will need to create more “on-ramps” for entering the workforce, accessible jobs and career ladders, and opportunities for continuous skill development and career change.

Metro Memphis must prepare a new workforce whose skills align with industry needs in the region’s strongest economic concentrations in transportation and logistics, manufacturing and medical technology. The region must
remake its workforce development system into a more coherent, transparent, and credible source of qualified workers. Training must align with employer and industry needs, but also offer portable credentials that benefit workers over the course of their careers.

Existing Human Capital Initiatives

The Greater Memphis Medical Device Council has organized to work with technical schools and community colleges to develop curricula and standardized training programs.

The Greater Memphis Chamber of Commerce’s Chairman’s Circle has launched “Harvard Tech” to align education with Logistics and Manufacturing industries.

A regional consortium of Community Colleges and Training Centers have partnered to administer Trade Adjustment Assistance grants in the fields of advanced manufacturing, process control and logistics management.

Seeding Success is forming a program to improve outcomes around college and career readiness for high school students.

Memphis Fast Forward’s PeopleFirst Partnership offers the region a unifying strategy to increase access to postsecondary education, career pathways, workforce development and talent attraction, in addition to early childhood and youth programs.

Leadership Memphis coordinates the Memphis Talent Dividend to increase college graduation rates.

The City of Memphis has launched an Office of Talent and Human Capital focused on recruiting and developing a talented workforce, coordinating dialogue between area colleges and providing assistance to high-school graduates seeking post-secondary education.

The New Memphis Institute offers programming to recruit, relocate and retain professional talent.

The Shelby County Mayor’s Young Professionals Council organizes talent already committed to Shelby County.
Innovation and Entrepreneurship

The pace of change and heightened global competition that characterize the knowledge-based economy makes continuous innovation imperative.\textsuperscript{xxxvi}

The term “innovation” is defined here very broadly, encompassing new ideas, technologies, products, production processes, markets, and business models. This definition also spans all stages of the often-iterative innovation spectrum from basic research through concept testing, to business creation and firm growth and development.\textsuperscript{xxxvii}

Innovation occurs primarily through three overlapping mechanisms:

1. Commercialization of R&D
2. Cluster and firm-based innovation
3. Entrepreneurship

Research and Commercialization

On the surface, the Memphis region appears to lag the nation in basic research, commercialization, start-up activity and company growth. However there are notable assets and resources within specific sectors, institutions and a fledgling support infrastructure. The world renowned St. Jude Children’s Research Hospital focuses on research and treatment of catastrophic diseases. The market is also benefiting from medical device manufacturing, musculoskeletal developments and orthopedic research at Wright Medical, Smith & Nephew and Medtronic, in addition to smaller related biomedical firms.

In 2008, the region ranked 59\textsuperscript{th} among the hundred largest metros for academic research expenditures, which totaled $57 million. By 2011, this amount had more than doubled to $132 million according to the National Science Foundation. Between 2001 and 2010, Metro Memphis ranked 57\textsuperscript{th} among the hundred largest metros for patent applications per 1,000 workers\textsuperscript{xxxviii}. However, the patenting growth trend is also improving in Metro Memphis.

![Patenting Activity Change](image)

Other notable positive strides have continued. St. Jude, the University of Tennessee and the University of Memphis attracted a combined total of $453,000,000 of research funding in 2012. That year they produced 72 invention disclosures, licensed 36 technologies and earned $3,370,000 through intellectual property licenses.
The FedEx Institute of Technology’s Office of Technology Transfer at the University of Memphis is working on commercialization of inventions ranging from nanoparticle synthesis for medical diagnostics to wireless biosignal sensors for body function monitoring to advanced wound healing for medical implants.

The UT Research Foundation’s Technology Transfer and Licensing Office at the University of Tennessee Health Science Center is working with potential developments that tackle problems ranging from polymer based drug delivery to cancer therapeutics to genetic glaucoma-susceptibility identification.

And local venture firms including Innova, MB Ventures, SSM Partners and Pittco have demonstrated their willingness to invest in Metro Memphis companies.

Despite these positive trends, however, the region lacks critical commercialization infrastructure at all stages.

According to the National Venture Capital Association, deals across the entire United States between the first quarter of 2012 and mid-year 2014 totaled 10,093 for an investment total of almost $80 billion. The average per state deal-flow was 202 and $1.6 billion. Tennessee, Arkansas and Mississippi (all states that make up part of the Metro Memphis region) totaled only 122 and $332 million, combined.

Tech-transfer professionals, venture investors and incubator/accelerator program leaders in the region identify multiple commercialization bottlenecks in the process that lead from R&D conducted in the region to its translation into marketable products and services. Lagging quality of research facilities, equipment and infrastructure put universities at a disadvantage in competition for talent and funding. Universities and private firms lack sufficient mechanisms to leverage R&D for commercial purposes. Disconnection exists between corporate labs and independent entrepreneurs who may desire to license R&D. And, there is little formal or informal cross-fertilization to understand opportunities for translating new technologies across industries.

**Cluster and Firm-Based Innovation**

The firms and institutions that issued the largest number of patents in Metro Memphis in 2011 were Warsaw Orthopedic, Smith & Nephew, Thomas & Betts International, St. Jude Children’s Research Hospital, University of Tennessee and Schering-Plough Healthcare Products/Merck. Five of the top six were healthcare related with the top two focused specifically on orthopedics.

Agricenter International and the Memphis Bioworks Foundation have been coordinating advances in agriculture and bio-ag technologies. This includes crop research, treatment chemistries, improved farm equipment and conservation techniques. Private firms clustering at Agricenter include Bayer Cropscience, Case IH Agriculture and Helena Chemical.

While innovation-driven growth opportunities are under exploration in biomedical (bio-devices, orthopedics, pediatrics and diagnostics) and agriculture (petroleum substitutes, plastics and polymers), other opportunities likely exist in logistics technologies as this is by far the region’s largest economic driver. Opportunities could also exist in social sectors like learning technology where Metro Memphis has been a testing ground for interventions.

Regional partners state that growth of strong and emerging clusters is challenged by weak connections and resources. Insufficient cooperation exists between public/academic innovators and those based in private firms and institutions. Linkages between university research capabilities and the needs of private firms are considered
weak. Key cluster-based research facilities, such as the UT Health Science Center and Agricenter International, face ongoing equipment and resource challenges.

**Entrepreneurship**

Metro Memphis enjoys a history of notable entrepreneurship activity. Piggly Wiggly invented self-service grocery stores in Memphis. Sun Studios and STAX Records redefined musical genres. Holiday Inn pioneered the development of quality roadside motel chains. AutoZone is the leading global auto parts retailer. And, FedEx invented overnight shipping.

These marquee entrepreneurial successes are not indicative of a deeply rooted or pervasive entrepreneurial culture in the region, however. Talent gaps, outmigration and segregation constrain the area’s potential for growing and supporting entrepreneurial activity.

Low levels of production, attraction and retention of talent constrains business growth. There seems to be an outmigration of entrepreneurial talent coupled with a lack of technical talent like computer coders and associate-level engineers. Bio talent is tied up in corporations with non-compete contracts. The area has a large regional minority population but minority business represents only 1 percent of business revenues.

In past surveys, the Memphis region ranked 73rd in ratio of business births-to-deaths and 91st in high-tech employment among the largest US metros. This trend has not improved significantly. In 2011, less than 17 percent of Metro Memphis jobs could be considered in a STEM field. Since the end of the Great Recession, business startup trends and business expansion trends have not been any more promising (and often less promising) than the nation as a whole.

![Graph of Ratio of Business Startups to Closures](chart1)

![Graph of Ratio of Business Expansions to Contractions](chart2)

Business accelerator programs like Seed Hatchery and ZeroTo510 have demonstrated the potential for start-up creation in the region, securing capital investment and job growth through new firm creation. However, stakeholders in the emerging ecosystem of support for entrepreneurs describe it as fragmented with duplicative efforts, and overlapping resource needs. Few substantial networks of innovators or entrepreneurs exist within the region, limiting the ability for new firms and their leaders to connect with more experienced mentors and sources of support.

Interviews with accelerator and incubator program leaders reveal a lack of clarity in the market for differentiated needs of “start-ups”, “scale-ups” and “small business”. Existing incubator programs may be competing and uncoordinated as: no facilities are full, existing business models are largely unsustainable, there is a lack of
equipment/mentors/long-term operating funds, and there is an outsized emphasis on leasing real estate vs. actual programming and company building.

The Memphis Bioworks Foundation has created a model for connecting public, private and academic resources around bio-based endeavors. This is the only entity that has comprehensively attempted to link local industry and academic R&D with a long term sector specific strategy. And, while comprehensive and seemingly successful, this model lacks resources to fully realize its opportunity.

Emerge Memphis focuses on aiding startups with access to dynamic teams of professionals and efficient business models. As an incubator, Emerge’s strength has been related to its flexible office space solutions.

Start Co. is positioned as both an accelerator and venture development group. Providing access to mentors, investors and operating space, Start Co. has recently created specific focus areas on women founded businesses and businesses in logistics technology.

Efforts are underway to better coordinate entrepreneurial assistance in Metro Memphis. The Greater Memphis Chamber of Commerce, Memphis Bioworks Foundation, Start Co. and Emerge Memphis recently formed the EPIcenter (Memphis Entrepreneurship Powered Innovation Center), with a goal to support 1,000 entrepreneurs and launch 500 firms over the next ten years.

Innovation and Entrepreneurship Assessment

Levels of academic research and product commercialization are low in Metro Memphis. Capacity is limited within existing facilities, connections to industry innovation leaders are weak and available funding for stage-specific product launches is low. The region has an emerging network of incubator and accelerator programs that is hampered by lack of resources and coordinated efforts. Talent gaps, outmigration and segregation constrain entrepreneurial potential. A regional model for creating comprehensive linkages between industry sectors and academic R&D may exist in the bio-based market and is being tested more broadly.

Metro Memphis is home to world-class research assets including St. Jude Children’s Research Hospital and is growing capacity at institutions such as the University of Memphis. It also boasts notable firms involved in R&D for medical devices, musculoskeletal therapies and orthopedics, as well as smaller firms doing groundbreaking work in related industries.

In overall size and scale, however, the region’s innovation capacity is smaller than in other large metropolitan regions, and its research institutions and leading business sectors could be better aligned. Opportunities for innovation to drive growth likely exist in logistics technologies, as this is the overwhelming market strength.

Memphis Bioworks Foundation has pioneered a successful model for investment and strategic partnership with industry to pursue emerging opportunities in its target sectors. It fosters and invests in the exploration of opportunities in bio-devices and diagnostics as well as agricultural innovation in areas such as petroleum substitutes, plastics and polymers.

With respect to entrepreneurship, in 2012 the region’s growing network of incubators and accelerators screened more than 300 startups, provided 6,800 mentor hours, and worked with 30 new companies. Several key partners
have undertaken a broad collective initiative to increase their overall impact and begin directing efforts toward target clusters or populations.

Continued and improved cooperation between partners is imperative to develop a more entrepreneurial culture of greater risk taking in Metro Memphis. But, more immediately, the multi-disciplinary networks that support innovators within local industry need to be further defined and enhanced.

**Existing Innovation & Entrepreneurship Initiatives**

<table>
<thead>
<tr>
<th>Initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crews Venture Labs – The University of Memphis Incubator</td>
</tr>
<tr>
<td>EmergeMemphis – General Business &amp; Tech-Based Incubator</td>
</tr>
<tr>
<td>Memphis Bioworks Foundation – Incubator, Programming and Investing Services for Bio-Enterprises</td>
</tr>
<tr>
<td>MMBC Continuum – Minority Business Development</td>
</tr>
<tr>
<td>Memphis Research Consortium – Networking &amp; Advocacy</td>
</tr>
<tr>
<td>Start Co. (Formerly LaunchMemphis) – Programming for Early-Stage Entrepreneurs</td>
</tr>
<tr>
<td>The University of Memphis Tech-Transfer Offices – Research Commercialization</td>
</tr>
<tr>
<td>University of Tennessee Foundation Tech-Transfer Office – Research Commercialization</td>
</tr>
</tbody>
</table>
Regional Growth and Development Patterns

The features of the next economy call for a next generation of economic place making: smart, targeted investments that combine economic activity and built environments in more nuanced and specialized ways to drive long-term growth and reshape communities.

The region’s economy will be more spatially efficient and productive if firms, workers, consumers and relevant institutions are located in reasonable proximity to one another or are well connected. Dense, mixed-use communities with excellent transportation and virtual connections reduce transaction costs for employers, workers, and consumers. They also foster rich networks and economic interactions, and support the transition to a productive, sustainable and inclusive economy.

Achieving these outcomes entails:
- Aligning land use and economic regulation, incentives and activities to foster compact, well-connected urban forms.
- Reducing segregation and isolation of geographic areas or communities, including effectively connecting job and housing locations.
- Investing in next generation infrastructure for data, energy and a range of innovation districts.

Aligning Land Use with Economic Regulation and Incentives to Foster Compact, Well-Connected Urban Forms

Employment patterns in the region are highly decentralized, with only about one-quarter of jobs concentrated in identifiable employment centers. While 81 percent of regional jobs are located in Shelby County, two-thirds of recent regional growth has occurred in suburban counties.

Approximately 7 percent of employees are concentrated near the airport, 6 percent in the Southeast Memphis warehouse area, 4 percent in the Central Business District, 4 percent in the Downtown Medical Center and 3 percent in the East Memphis Medical District. Almost 2 percent of the region’s jobs are concentrated around Tunica County gaming facilities. More than three-quarters of employment is dispersed throughout the region with few definable job concentrations.

Source: Data FORline – The University of Memphis & Analysis of Census Block Groups
Regional growth patterns are complicating transportation access and the movement of people. Due to outmigration and annexation, the City of Memphis density has declined significantly from 7,780 people per square mile in 1950 to 1,915 today. Less than 76 percent of the regional population lives in areas characterized by what would be considered urban densities: a thousand people per square mile or more.

Minor tax advantages in northern Mississippi and aggressive incentive packages offered by both Tennessee and Mississippi also are driving the location of new job growth within the region.

Shelby County Population Distribution
627,019 in 1960 to 906,825 in 2008

Shelby County Population Distribution
627,019 in 1960 to 906,825 in 2008

1960

2008

Source: Dane Forline – The University of Memphis

Population Density

<table>
<thead>
<tr>
<th></th>
<th>MSA</th>
<th>Shelby County</th>
<th>Memphis</th>
<th>Inside I-240 Loop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>1,334,504</td>
<td>935,088</td>
<td>652,050</td>
<td>215,754</td>
</tr>
<tr>
<td>Land Area in Miles</td>
<td>5,110</td>
<td>784</td>
<td>341</td>
<td>65</td>
</tr>
<tr>
<td>Average Density PSM</td>
<td>261</td>
<td>1,193</td>
<td>1,915</td>
<td>3,345</td>
</tr>
</tbody>
</table>

Reducing Segregation and Isolation While Effectively Connecting Job and Housing Locations

Across U.S. metros, segregation lowers important measures of trust and social capital, which will tend to weaken economic performance. Academic literature suggests that segregation negatively affects metro area cohesion and cross-jurisdictional cooperation.

Metro Memphis is among the most racially segregated regions in the country, ranking among the top third on measures of segregation. In a list of peer metros, only Indianapolis and Cincinnati are more segregated, while indicators of racial segregation are lower in Tulsa, Omaha, Louisville, Jacksonville, Greensboro, Charlotte, Kansas City and Nashville.

Racial segregation, poverty, and geographic isolation that impact particular communities in Metro Memphis stymie the region’s overall competitiveness by creating barriers to full utilization of its land assets, human capital, and talent.

The minority population is often isolated from opportunities. Historic and emerging growth patterns preserve divisions and in many cases increase segregation, generating both social and economic costs by limiting access to jobs and opportunity as growth has shifted to outlying areas.

Those forces limit the benefits of diversity and sustain separations. The open exchange of ideas is hampered. Metro Memphis’ high concentration of poverty and predominantly lower-skilled workforce magnify those impacts and the barriers they present for individuals, for families, and entire communities.

On measures of housing affordability the Metro Memphis ranks in the middle among the largest metropolitan regions. But more than a third of the population spends more than 30 percent of household income on housing, according to the U.S. Census Bureau’s American Community Survey 2010 1-Year Estimates.
Transportation costs, however, add a significant barrier to accessing jobs and dramatically affect the region’s cost of living.

The region’s very low traffic congestion compared to other metros allows residents to travel farther in personal vehicles without additional loss of time. The INRIX National Traffic Scorecard rank is 68 out of 105 metros. However, there is a cost associated with this for commuters.

At $14,182, Memphis regional transportation costs are the 10th highest of all MSAs with a population over 1,000,000 people. When transportation costs are added, the H+T Housing Plus Transportation Index finds that almost 89 percent of the regional population spends over 45 percent of their income on housing and transportation.

With low coverage, frequency and access to jobs, transit is not a reasonable alternative. Region-wide, 5 percent of jobs are accessible by transit within 45 minutes, 10 percent within 60 minutes and 26 percent within 90 minutes. Access to low-skill jobs by transit ranks 73rd among the hundred largest metros.\textsuperscript{xlv}

\textbf{Investing in Next Generation Infrastructure}

Transportation investments are reinforcing a commitment to logistics. Over $500 million has been spent by the railroad industry on recent facility improvements. Construction is underway for an outer-loop highway (I-269) around Shelby County that will link to the I-69 Canada to Mexico corridor. Planning is underway for a third vehicular bridge over the Mississippi River. And, the Port of Memphis is planning a possible expansion at President’s Island that includes additional river and rail access.

The community is struggling to build an understanding of developable land assets and how they are organized in a predictable way in order to be attractive to traditional investors or for next-generation projects like innovation districts. Alignment of regional growth needs with proper land uses and industry sectors is unclear.

Site selectors most often request locations with 25 to 50 acres. There is a shortage of marketable 100, 200 or 500+ acre sites for catalytic development projects or large prospects. Some speculative industrial and warehouse developers are now seeking sites up to 2,000 acres.

The I-269 corridor is being positioned as a possible location for future development of green-field development sites. The corridor is capable of supporting up to 50,000 direct jobs with a timeline for needed infrastructure build-out ranging from approximately one year in Millington to over 25 years in Arlington.

Alternative sites for large-scale development with more readily accessible infrastructure exist in North Memphis, Bartlett and Collierville. Brownfield and redevelopment sites exist within multiple municipalities, near strategic assets like Memphis International Airport and in historic areas of the City of Memphis.

The Memphis Aerotropolis Plan envisions an extensive array of nodes and gateways throughout the 25 to 50 square mile “Airport City” area surrounding Memphis International. Its long-range goal is to create redevelopment projects through 2050, driving up to 46 million square feet of industrial property, 1.1 million of office space, 1.5 million of retail, 1,500 hotel rooms, and 2,000 residential units.

Building on the many successful anchor institutions in the Memphis Medical District, a broad group of stakeholders are also exploring establishment of an Innovation District tailored to next economy firms.
Metro Memphis is ranked low among its peers on the extension of data technology throughout the region and ranked 94th for residential high-speed internet access to the total population.\textsuperscript{xlv}

Regional Growth and Development Patterns Assessment

In its current form, Greater Memphis is designed more to move products than people and to foster the outward spread of growth and development rather than to nurture the proximity and connectivity that is the hallmark of the innovation economy.

At the intersection of Interstates 40 and 55, the region is well organized for the movement of goods. World-class freight infrastructure includes the world’s second busiest cargo airport, the fourth largest inland U.S. river port and is one of only five U.S. cities served by five Class-1 railroads. Infrastructure investments are focused on increasing distribution capabilities.

Cities across the nation are experiencing a resurgence of interest in urban neighborhoods, attracting young workers and knowledge-industry firms to older areas, particularly near and within downtowns. Those informal centers of urban activity are attracting new populations of younger workers, new firms and concentrations of knowledge industries, and generating vibrant local communities.

That trend is slowly emerging in Metro Memphis as well, although most of the region’s current plans for infrastructure investments and other forms of development continue to focus on the distribution of goods more than access to jobs and the connectivity of workers.

The region lacks density and well-connected nodes of activity. The jobs-housing mismatch hinders access to employment. Infrastructure maintenance and taxing structures are strained by geographic expansion outpacing economic growth. And, unpredictable spatial distribution and geographic growth patterns lessen the desirability of the area as an investment location.

However, there is little understanding across the region of spatial challenges and the resulting consequences of the predominant approach to infrastructure construction and real estate development.

Historically, regional road, sewer and other infrastructure decisions led to the migration of business and population around Shelby County, to the county’s edges and into the surrounding area. Today, tax advantages and aggressive incentive packages in northern Mississippi have accelerated those outward growth patterns, luring firms to relocate within the region, and increasing both segregation and disinvestment in older areas.

The disparate and widely dispersed location of jobs and residential neighborhoods limits access to employment for many communities throughout the region, particularly in older neighborhoods in the City of Memphis. The growth pattern, coupled with the region’s limited public transportation system, leaves large areas and particularly African-American communities in the city, without ready access to jobs in suburbs and surrounding counties.

At the same time, the costs of building and maintaining infrastructure to serve an expanding region are straining regional resources. And, as outlined above, this is occurring at a time when the opportunity to attract firms and talent to the region has been undermined by removing the ability to take advantage of the wave of market interest favoring locations in more densely populated urban areas.
Metro Memphis will have to take a serious approach to shaping a built environment that enables and facilitates the new-economy growth that prizes accessibility and proximity. This will involve purposeful, multi-jurisdictional planning, and land-use and transportation solutions to improve linkages across the region as opposed to further exacerbating disconnection.

### Existing Spatial Efficiency Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Mayor’s Innovation Delivery Team</td>
<td>Targeting commercial redevelopment in core city neighborhoods and coordinating research into critical issues such as regional tax-value vs. infrastructure maintenance costs.</td>
</tr>
<tr>
<td>The Memphis Area Transit Authority</td>
<td>Responsible for short-range and long-range regional transit planning.</td>
</tr>
<tr>
<td>The Memphis &amp; Shelby County Division of Planning &amp; Development</td>
<td>Driving efforts such as the Memphis Aerotropolis Plan and the newly adopted Unified Development Code.</td>
</tr>
<tr>
<td>The Memphis Urban Area Metropolitan Planning Organization</td>
<td>Maintains the 2040 Long Range Transportation Plan and the Transportation Improvement Program while coordinating new efforts such as the I-269 Corridor Study and Bike-Ped Plan.</td>
</tr>
<tr>
<td>The Shelby County Office of Sustainability</td>
<td>Responsible for implementing the Sustainable Shelby Plan and creation of the Memphis Regional Greenprint.</td>
</tr>
<tr>
<td>Both the Hyde Family Foundation and the City of Memphis Mayor’s office</td>
<td>Exploring establishing an Innovation District in the area of the downtown medical district.</td>
</tr>
</tbody>
</table>
Governance and Civic Institutions

Success in the new economy requires a new form of governance that fosters open, adaptive, flexible institutional networks across the public, private, and civic sectors. Those networks facilitate the ready entry of new people and firms and the development of relationships, deals and activities that drive economic progress.

Government needs to enable this and other economic activity through value-added public goods, efficient and streamlined processes and services, transparency and information sharing, and broad engagement of citizens, businesses and the civic sector.

Economic success in this new environment also requires a different institutional capacity that is deliberate in developing targeted economic growth strategies, and engages leaders and stakeholders across the public, private and civic sectors to execute them.

Examining these issues falls into broad categories of government fragmentation, tax-value proposition and alignment of governance to support economic development initiatives.

In comparison to many other regions, local Metro Memphis governments are not overly fragmented or complicated with an abundance of special districts. In some cases, the City of Memphis and Shelby County share local decision making authority and leadership responsibility. The MSA ranked 35th in terms of special district government proliferation and 52nd in terms of local government fragmentation.

The region is a relatively low-cost business location compared to the nation. Tennessee, Mississippi and Arkansas are ranked 15th, 17th and 33rd respectively on the Tax Foundation’s 2013 Best State Business Climates list.

However, the location of Metro Memphis in at the intersection of three different state boundaries presents complex challenges for decision making, unity and collaboration across the region. For instance, there are multiple community college systems, multiple state administered business recruiting programs and multi-jurisdiction infrastructure needs.

There are many different agencies representing segments of the economy, either geographically or by market lever, creating a complex network of decision making that is difficult to navigate. Significant levels of competition between counties and across state borders also fuel divisions within the region and drive business location decisions, including many that are counter-productive to the region as a whole.

Intra-regional competition pits one area of Metro Memphis against another with offers of property tax abatements, income tax rebates and other financial incentives designed to lure firms to new locations within the region. Expenditures of public resources in those forms of competition reduce resources for the region to compete outside its own borders.

Excluding agencies charged with specific pieces of the region’s economic development agenda (such as the Workforce Investment Network or the US Export Assistance Center), civic/nonprofit agencies and hyper-local task forces, area economic development partners include but are not limited to the following.
Governance and Civic Institution Assessment

Intra-regional competition within the tri-state area represents a significant challenge to overcome as Metro Memphis reorients its focus to the demands of global competition for economic growth and prosperity. Even when agreement on regional goals exists, implementation is often fragmented and thwarted by the challenge of broad-based and sustained commitment.

On a practical level, capacity to undertake sophisticated and comprehensive economic development planning work is emerging as a serious constraint that impacts all parts of Metro Memphis across all market levers.

Governance is defined as the act of determining expectations, granting power and verifying performance within an organization or system in order to create a desired result and establish confidence. A primary element is organized capacity to understand the market by gathering, analyzing and disseminating data in a timely fashion. Despite literally dozens of organizations working in some segment of economic development, the Metro Memphis region lacks the basic capacity to fully understand and explain the market conditions that shape and constrain it.

This lack of research capacity combined with competing applications for funding generates frustration among corporate and philanthropic leaders, who wrestle regularly with the challenge of organizing consensus and sustained commitment for long-term action.

A strong history and desire to provide continued support for economic and community development initiatives represents an important asset for the region, as does expressed interest in investments in Metro Memphis from both local philanthropic resources and others outside the region.

However, overcoming the region’s habitual fragmentation and inability to prioritize represents a major barrier to maximizing opportunities. And the capacity to make and track a strong factual case to guide decisions and measure progress is critical to the region’s future.
FOCUS: A ROADMAP FOR TRANSFORMING THE METRO MEMPHIS ECONOMY

This Memphis & Shelby County Regional Economic Development Plan offers the region a shared vision for its future and the opportunity to set a new course. This plan is a guide for organizing a new level of partnership and collaboration across the region.

The first challenge was to compile knowledge about the Metro Memphis economy. This Strategic Overview assesses the regional market position and will lay out in the pages ahead strategies to improve performance.

The next step will be to unite behind a solid game plan to reinvigorate the economy, aligning work already underway and bringing sustained focus to all of those efforts. It requires creating new capacity and a new governance structure to guide implementation and establish this plan as new way of doing the business of economic development.

Memphis & Shelby County Regional Economic Development Plan Process

As initiatives are launched, the plan will coordinate action with key partners to ensure alignment. The plan co-chairs and advisory committee will establish performance metrics, track progress, and hold partners accountable as implementation moves forward. It also will build ongoing capacity for market analysis, identifying opportunities and prioritizing next steps.

The plan’s goals and strategies have been further refined since originally conceived above. The following pages examine how Metro Memphis will guide economic development decisions moving forward.
Vision and Goals

Metro Memphis will be a global leader in the development, production and distribution of high-value goods and services and a model of broad-based cooperation and inclusive growth.

- Metro Memphis will solidify its position as the preeminent center for multi-modal movement of goods, specializing in solutions for high-value, just-in-time products.
- Metro Memphis will be an established hub for innovation, production, and exports in targeted sectors including notably strong areas such as medical devices and diagnostic services.
- Metro Memphis will create opportunity by raising skills and improving access to jobs, benefiting both businesses and residents throughout the region.
- Metro Memphis will become a model for regional collaboration, building ongoing capacity for leaders to assess the region’s standing in the global marketplace and shape ongoing strategy development and implementation.

Strategies for Transforming the Metro Memphis Economy

Responding to regional challenges and opportunities, *Focus: A Roadmap for Transforming the Metro Memphis Economy* calls upon partners from throughout the region to pursue a new course, implementing seven strategies that, working together, will build synergy and momentum toward a next economy in the region.

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<th>Metro Memphis Guiding Economic Development Strategies</th>
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<td>Diversify the Economy Beyond Logistics</td>
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<td>Focus on Exports and International Trade</td>
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**Strategy 1: Secure the Global Logistics Brand**

Metro Memphis will solidify its position as a leader in global logistics by building on its core strengths and extensive air, rail and river connections.

This will involve taking greater advantage of the region’s existing strengths as a leader in couriers & delivery occupations, freight arrangement, inland water transportation and warehousing. It will demand an increased focus on Metro Memphis’s unique ability to support time-to-market-critical and high-value product shipping better than any other region. It will also require ramping up to serve emerging industries such as personalized medicine and diagnostic testing laboratories.

Additional research may be needed to fully understand the depth and breadth of industries dependent on or most benefited by the Metro Memphis logistics infrastructure. More importantly, production and value added operations that most benefit from these transportation and distribution advantages must be continuously
identified. Gaps in the delivery system enabling improved linkages to infrastructure assets must be continuously filled.

Metro Memphis also has the opportunity to expand beyond seeing logistics as an industry alone or a support tool for existing businesses. With a maturing transportation, distribution and logistics base, Metro Memphis can become a global player in logistics technologies and shipping methods.

**Strategy 2: Diversify the Economy Beyond Logistics**

Metro Memphis will leverage its strengths in logistics to diversify the economy, targeting sectors in which it has a foothold for the production of higher-value products that gain competitive advantage from rapid turnaround and delivery.

This will involve exploring opportunities beyond low-skill jobs in support or administrative services. Growing and competitive industries, such as electronics assembly and repair, are logistics dependent but offer higher skill and higher wage positions.

The strategy, over time, must be to diversify beyond logistics dependent industries into clusters of activity that find additional Metro Memphis advantages. This could include continued growth in medical devices, surgical instruments and medical supplies. Manufacturing processes dependent on an abundance of accessible, clean water will find advantages here. Emerging chemical, fuel and polymer products have access to an abundance of source ingredients in farmland surrounding Metro Memphis.

**Strategy 3: Focus on Exports and International Trade**

With the region’s strong infrastructure for international trade, a new focus on growing exports represents a growth opportunity for the region and for firms of all sizes.

This must begin by helping existing manufacturers and shippers reach additional markets to build exporting into a significant source of revenue. To do this, Metro Memphis will need an appropriately staffed and supported export industry association. The region’s professional export assistance team will have to be expanded. Training, marketing, business counseling and strategic trade missions must all be coordinated at an elite level.

The long range plan will include marketing Metro Memphis assets externally to companies that can benefit from the area’s exporting infrastructure. Industry sectors with the highest exporting potential must be targeted. Destination markets must be identified that demonstrate the greatest and growing potential demand for local products.

**Strategy 4: Build a Next Economy Workforce**

Growth in the next economy requires higher skills and the creation of a more effective opportunity pipeline tailored to new growth sectors and driven by employers to secure better jobs and opportunities for more workers.

An aggressive approach is needed to coordinate, inspire and demand systemic change from everyone in the training pipeline. The business community expects an integrated one-stop facility or program that provides qualified employees. To deliver this, a career pathways system of sequenced coursework and credentials will have to be developed. This will involve everything from general education and basic skills testing to industry specific pre-employment training and apprenticeship opportunities.
Metro Memphis will be able to connect industry to educators and training facilities in order to drive programming based on employer demand. Industry knowledge of and participation in existing, successful training programs must be expanded.

**Strategy 5: Organize for Innovation and Entrepreneurial Growth**

Better coordination will enhance the burgeoning system of support for entrepreneurs in Metro Memphis and strengthen its capacity for innovation.

This will be accomplished by creating direct and mutually beneficial connections between private R&D, local entrepreneurs and potential external investors. Metro Memphis leadership must understand corporate development, licensing and spin-out activities of regional companies. New concepts of creating entrepreneurial programs for researchers within strategic regional companies should be explored. A mechanism to capture talent when it wants or needs to leave companies or institutions may need to be launched.

The Metro Memphis incubator/accelerator system requires further coordination or reorganization. This will allow dedicated funding for programs to be supplied, additional mentoring capacity to be tapped, meaningful entrepreneur networks to be established and additional geographies and industries to be served.

Growth enabling mechanisms need to be identified such as increased stage-appropriate funding, research support, and entrepreneurial talent attraction, improvement and retention.

**Strategy 6: Create New Approaches to Development Designed for the New Economy**

New forms of mixed-use development to foster concentrations and connections will support the growth of new regional clusters and specializations.

Modern or innovative land-use planning models will be required that are linked to market demand. These must facilitate complementary mixes of uses. As important, new planning models in a time of limited resources must connect economic development planning to intensified use of existing assets and infrastructure.

Strategic redevelopment must occur in key locations. This development will need to be large and catalytic, without being impossible to realize. It must respect mixed-use, mixed-income principles needed for successful urban revitalization projects.

Target industry sites must be prioritized. These sites need to be linked to other employment or employee concentrations. Development of these sites must be driven by industry demand, cost to access and cost to serve.

**Strategy 7: Develop New Capacity and Governance for Regional Development**

New institutional capacity and governance will improve the region’s ability to perform ongoing market analysis, reduce competition within the region and guide implementation of the new approach to economic development found here in *Focus: A Roadmap for transforming the Metro Memphis Economy*.

In partnership with EDGE, Memphis Tomorrow, The Greater Memphis Chamber of Commerce and other regional partners, the co-chairs who have guided development of the Memphis & Shelby County Regional Economic Development Plan will re-establish its advisory committee under the umbrella of Memphis Fast Forward, boosting industry leaders and representation from diverse stakeholders to guide implementation.
Lead Initiatives and Implementation

**Focus: A Roadmap for Transforming the Metro Memphis Economy** is the platform for moving beyond market research and strategic thinking. It offers the region a shared vision for its future and the opportunity to set a new course. Metropolitan Business Planning was chosen as the guiding model chiefly because it leads to actionable initiative development.

This is a call to action, a process for launching important programs and a guide for organizing a new level of industry-driven collaboration across the region.

In the first wave of implementation, Metro Memphis will strengthen its workforce development system to prepare more workers for next economy jobs and leverage its world-class logistics hub to increase exports. The next phase of initiatives will explore the establishment of an Innovation District tailored to next economy firms and workers, focus on biologistics to pursue development of higher-value supply chains and unite entrepreneurship programs to focus on regional strengths.

**Lead Initiatives**

**Establish the Greater Memphis Alliance for a Competitive Workforce**
Regional employers should have the talent they need to compete, and job seekers should have the skills they need to get good jobs. The Greater Memphis Alliance for a Competitive Workforce will align training and education programs with employers’ skill requirements, connect employers to cost-effective training and hiring support, and drive coordination and improved outcomes among providers serving job candidates.

Because there is currently no person or organization responsible for system-level outcomes, and there is no impetus for the system to self-correct, a highly qualified leader will be empowered and equipped by top government, business and education leaders to take bold action on a strong organizational mission of driving systems change to solve the skills gap. The GMACW will serve as the State of Tennessee “Drive to 55 Alignment Group”.

**Improve Export Assistance and Adopt an International Business Plan**
Regional manufacturers have an opportunity to increase output by maximizing their access to the existing global logistics infrastructure. However, there are fewer public export assistance representatives here than competitor metros and national exporting centers. An export assistance and marketing team will be formed followed by creation, then implementation of a Regional Export Plan.

**Additional Initiatives**

**Organize the Biologistics Execution Team**
Memphis’ strong logistics capabilities should be tapped for shipping of high-value and time-to-market-critical medical products. The first phase goal is to establish a go-to team dedicated to identifying and engaging potential biologistics customers, determining their space needs and other specific solutions while organizing development of facilities or programs to provide solutions.

**Explore Creation of an Innovation District**
Through the award of the Daniel Rose fellowship to Mayor A C Wharton Jr., a team is studying the area between Downtown and the Medical Center for potential development as a highly livable, walkable, adaptable, and sustainable urban research community. Innovation districts spatially organize academic institutions, public
resources and private companies in a connected, mixed-use setting instead of in isolated business parks or campuses.

**Unite Innovation & Entrepreneurship Programs to Focus on Regional Strengths**

The Greater Memphis Chamber, Memphis Bioworks Foundation, Start Co. and Emerge Memphis are creating the Memphis Entrepreneurship Powered Innovation Center (EPIcenter). The goal is to create 1,000 entrepreneurs and 500 companies in 10 years. This is an attempt to organize the many innovation & entrepreneurship players around sector specific activities.

These initiatives and others that will follow require a high level of commitment and alignment of vision, resources, talent, and infrastructure across the region. They will require vigilance and dedication to stay the course toward this new vision for Metro Memphis and a new position in the global economy.

**Implementation**

The co-chairs who led development of *Focus: A Roadmap for Transforming the Metro Memphis Economy*, FedEx Executive Vice President and General Counsel Christine P. Richards, Shelby County Mayor Mark H. Luttrell, Jr. and City of Memphis Mayor A C Wharton, Jr. will steer the plan’s direction, support initiative development and advocate for strategic economic transformation throughout Metro Memphis. Together with business and civic leaders from throughout the region, they will steer its course, establish partnerships, secure the necessary resources and ensure the design of powerful initiatives to achieve its goals.

Current plan leadership and relationships are in place but will be improved to ensure sustainability.
The plan’s advisory committee will expand to include greater industry connection. The Greater Memphis Chamber President, President of Memphis Tomorrow and Director of the Suburban Chambers Alliance will be added. EDGE, the Economic Development Growth Engine for Memphis & Shelby County will provide funding, administration and staff support for continued planning. Memphis Fast Forward will provide periodic CEO level guidance and initiative advocacy assistance.

### Conclusion

The Memphis & Shelby County Regional Economic Development Plan calls for focus on strategies that will transform the economy. Metro Memphis must become a region of pragmatic idealists, facing facts, building on truly unique strengths, and addressing challenges that hold the region back.

It calls on regional leaders to undertake the challenge of repositioning Metro Memphis for a new economic era. Its success will touch the lives of more than a million people in the metro area, creating better jobs, a higher standard of living, and a more prosperous region.
ACKNOWLEDGEMENTS

Memphis & Shelby County Economic Development Plan Co-Chairs
Christine P. Richards, Executive VP, General Counsel & Secretary, FedEx
Mark H. Luttrell, Jr., Mayor of Shelby County
A C Wharton, Jr., Mayor of the City of Memphis

Steering Committee Members
Darrell Cobbins, President, Universal Commercial Real Estate
Edward Dobbs, CEO, Dobbs Management Services
Nathan Essex, President, Southwest Tennessee Community College
Dr. William Evans, Director & CEO, St. Jude Children’s Research Hospital
Robert Fockler, CEO, Community Foundation of Greater Memphis
Carolyn Hardy, President, Chism Hardy Enterprises
Montgomery Martin, President, Montgomery Martin Contractors
Dr. M. David Rudd, President, University of Memphis
Gary Shorb, CEO, Methodist LeBonheur Healthcare
Derwin Sisnett, CEO, Gestalt Community Schools
Blair Taylor, Memphis Fast Forward Liaison
Floyd Tyler, President, Preserver Partners

Project Management
EDGE – Economic Development Growth Engine for Memphis & Shelby County
Reid Dulberger, Memphis & Shelby County Chief Economic Development Officer
John Lawrence, Manager of Strategic Economic Development Planning

Strategic Partners
Memphis Fast Forward Initiatives
Memphis & Shelby County Growth Alliance
PeopleFirst Partnership

The University of Memphis
Dr. Charles Santo, Director, Graduate Program in City & Regional Planning
Kevin Boggs, Assistant Vice President Tech Transfer

Clusters & Concentrations Workgroup
Steve Bares, President & CEO, Memphis Bioworks Foundation
Allan Bowden, UWT Logistics (First Vice President, World Trade Club)
Bill Bullock, Manager of Economic Development, Memphis Light Gas & Water
Elizabeth Cawein, CEO, Signal Flow PR
Jim Crone, Trane
Janie Day, Executive Director, Germantown Chamber of Commerce
Keith Dillihunt, Economic Development Specialist, EDGE
Michelle East, Germantown 365
Meka Egwuekwe, Sr. Architect/Co-Director of Development, Lokion
Charles Gulotta, President, Millington Chamber of Commerce
Mark Herbison, Senior Vice President, Economic Development, Greater Memphis Chamber of Commerce
Dr. Bruce Kirksey, Director of Research, AgriCenter International
Dr. Balaji Krishnan, Director of International MBA Program/Professor Marketing & Supply Chain, U of M
Mark Lange, President/CEO, National Cotton Council of America
Eric Matthews, Start Co.
Jim McDougal, Program Director, Memphis Area Association of Governments
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exports & international business workgroup
Leslee T. Alexander, Tennessee Trade Director, State of Tennessee ECD
Oscar Atkinson, CEO, Silicone Arts
Robby Beau, Managing Director, FedEx Express
Devin Buford, International Portfolio Manager, First Tennessee
Ordis Copeland, Business Development Consultant, State of Tennessee ECD
Michael Drury, Chief Economist, McVean Trading & Investments
Gwyn Fisher, Regional Director, State of Tennessee ECD
Michael John Florio, Senior VP, American Marsh Pumps
Phil Johnson, Director of Economic Development, Bartlett Area Chamber of Commerce
Anna Kelly, Chairperson, Memphis Hispanic Chamber of Commerce
Dr. David Kemme, Chair of Excellence in International Economics, U of M (Executive Director, Economic Club)
Kevin Kern, Director of Public Relations, Elvis Presley Enterprises
Ken Lipkowski, Lakeland Chamber
Mike Mitchell, Technical Advisor, FedEx Services
Betsy Olim, Olim International
Iddo Patt, Director & Executive Producer, Modern Production Concepts
David Radiloff, VP, Mueller Industries
Andy Randle, VP Sales & Marketing, Ace Pump Corporation
Chris Schnee, General Manager/VP Sales & Marketing, Christie Medical
Sarah Sieloff, White House Council on Strong Cities Strong Communities
Leigh Shockey, CEO, Drexel Chemical (Chair Tennessee District Export Council)
David Spann, U.S. Department of Commerce
Earnest Strickland, Director of Economic Development, Greater Memphis Chamber of Commerce
Rory Thomas, Executive Director, Tennessee SBDC

human capital workgroup
Carolyn Hardy, President, Chism Hardy
Steve Bares, Present/Executive Director, Memphis Bioworks Foundation
Mike Carpenter, Legislative Affairs, City of Memphis
David Cox, Assistant to the President, University of Memphis
John Churchill, Southwest Tennessee Community College
Jon Crisp, Suburban Chambers Alliance
Reid Dulberger, EDGE
Eugene Eckstein, University of Memphis
Desi Franklin, Senior VP and Assistant General Counsel, First Horizon
Nathan Garrett, Tennessee College of Applied Technology
Lee Grehan, Assistant Director, Sparks Bureau of Economic Research
Kim Hackney, Director of Legislative Affairs, Shelby County
Laura Hine, Workforce Investment Network
Russell Ingram, President, Tennessee Data Commons
Phil Johnson, Director of Economic Development, Bartlett Area Chamber of Commerce
Martha Mooneyhan, Concorde Career College
Gibson Sunny Morris, Consultant
Barbara Prescott, Executive Director, PeopleFirst Partnership
Roland Rayner, President, Tennessee College of Applied Technology
Skip Redmond, William R. Moore College of Technology
Douglas Scarboro, Chief Learning Officer, Office of Talent Development

Anthony Milton, Owner, Synergy Technologies Group
Joann Massey, Business Development Consultant, Tennessee Dept. of Economic & Community Development
John Threadgill, President, Bartlett Area Chamber of Commerce
Focus: A Roadmap for Transforming the Metro Memphis Economy

Willie Slate, Memphis City Schools/Shelby County Schools
Maura Sullivan, Deputy CAO, City of Memphis
Blair Taylor, President, Memphis Tomorrow
John Threadgill, President, Bartlett Area Chamber of Commerce
Ted Townsend, Assistant Commissioner of Strategy, State of Tennessee ECD
Pauline Vernon, Memphis Bioworks Foundation
Melanie Winfield, Workforce Investment Network
Diana Wilkerson, Tennessee College of Applied Technology
David Williams, President, Leadership Memphis
Delories Williams, Greater Memphis Chamber

Innovation & Entrepreneurship Workgroup
Steve Bares, President/CEO, Memphis Bioworks Foundation
Kevin Boggs, Vice President Tech Transfer, FedEx Institute of Technology at U of M
Jan Bouten, Partner, Innova
Marie Burgess, Planner, City of Germantown
Jonathan Cross, President, Jonathan Cross Ventures & Holdings
Alandas Dobbins, Director, Mayor’s Office of Resources & Enterprise
Christine Donhardt, Planner, Shelby County Office of Sustainability
Leigh Anne Downes, Director of Economic Development, Greater Memphis Chamber of Commerce
Tal Frankfurt, CEO, Cloud for Good
Andre Fowlkes, Start Co.
Richard Magid, Vice President, UT Research Foundation
Melinda McNeely, Smith & Nephew
Tommy Pacello, Mayor’s Innovation Delivery Team
Fran Persechini, President/CEO, Collierville Chamber of Commerce
Natalie Robinson, Memphis Minority Business Council
Gary Stevenson, Partner, MB Ventures
David Waddell, President/Chief Investment Strategist, Waddell & Associates (Treasurer, Economic Club)
Chris West, Need Registry/Formerly with GTX
Laura Whitsitt, Senior VP Research & Emerging Technologies, Smith & Nephew
Ted Townsend, Assistant Commissioner of Strategy, State of Tennessee ECD

Spatial Efficiency Workgroup
Laura Adams, Executive Director, Shelby Farms Park Conservancy
Mairi Albertson, Administrator, Housing & Community Development
Les Binkley, Vice President, Boyle Investments
Steve Berger, Principal, BR3GS Architects
Marie Burgess, Planner, City of Germantown
John Cameron, City Engineer, City of Memphis
Jaime Groce, Town Planner, Town of Collierville
Steve Guinn, Vice President, Highwoods Properties
Andy Kitsinger, VP Planning & Development, Downtown Memphis Commission (Midtown Dev. Board)
Heather Baugus Koury, Executive Director, AIA Memphis
John Lancaster, Planner, MATA
Benny Lendermon, President/CEO, Riverfront Development Corporation
Steven Levy, Levy Commercial Realty
Pamela Marshall, Executive Director, Memphis Area Association of Governments
Doug McGowen, Director, Mayor’s Innovation Delivery Team
Dexter Muller, Senior Vice President, Community Development, Greater Memphis Chamber of Commerce
Dan Poag, Chairman, Poag & McEwen Lifestyle Centers
Clayton Poff, Bartlett Area Chamber of Commerce
Focus: A Roadmap for Transforming the Metro Memphis Economy

Andy Pouncey, Economic & Development Services Director, City of Germantown
Melissa Cox-Rayner, Business Development Consultant, State of Tennessee ECD
Eric Robertson, President, Community Lift
Joe Royer, Co-Owner, Outdoors Inc.
Charlie Santo, Interim Director, U of M Graduate Program in City & Regional Planning
John Paul Shaffer, Transportation Planner, Memphis Urban Area Metropolitan Planning Organization
David Slott, President/COO, ARS Investment Holdings
Emily Trenholm, Director, Community Development Council of Greater Memphis
Gina Tynan, Program Developer/Historic Preservation, Memphis Area Association of Governments
Paul Young, Director, Shelby County Office of Sustainability
Alonzo Weaver, VP of Engineering, Memphis Light Gas & Water
Jason Wexler, President, Henry Turley Company
Josh Whitehead, Director, Office of Planning & Development for Memphis & Shelby County
Archie Willis, President, Community Capital

Governance & Civic Institutions Workgroup
Mark Brown, CAO, Town of Bartlett
Brian Collins, CFO, City of Memphis/President Kiwanis Club of Memphis
Jerry Collins, President & CEO, Memphis Light Gas & Water
Rick Copeland, Director, Division of Planning & Development for Memphis & Shelby County
Dr. Joy Clay, Associate Dean for Interdisciplinary Studies, U of M - Public & Nonprofit Administration
Jon Crisp, Suburban Chambers Alliance
Reid Dulberger, President/CEDO, EDGE
Tom Fox, Assistant General Manager, MATA
Bryce Haugsdahl, Director, United Way of the Mid-South
Cato Johnson, Senior VP of Corporate Affairs, Methodist LeBonheur
Robert Lipscomb, Director, Housing & Community Development/MHA
Pamela Marshall, Executive Director, Memphis Area Association of Governments
Scott McCormick, Executive Director, Plough Foundation/Past Memphis City Councilman
John Moore, President/CEO, Greater Memphis Chamber
Paul Morris, President, Downtown Memphis Commission (Business Improvement District)
Hank Mullany, CEO, ServiceMaster
Susan Shadt, President/CEO, ArtsMemphis
Teresa Sloyan, Executive Director, Hyde Family Foundations
Pragati Srivistava, Administrator, Memphis Urban Area MPO
Mark Wender, Soulsville Foundation

Assistance Provided By:
Parker Nelson
Chris Przybyszewski
Rocketfuel
Southern Growth Studios
Shundrekia Smith

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Focus: A Roadmap for Transforming the Metro Memphis Economy

Rather, in economic terms, this is Schumpeter’s “creative destruction” applied to regional economies – it is highly disruptive, but necessary, and leads to redeployment of assets into more productive activities. But it also means that a region cannot return to business as usual, and the conventional wisdom about what drives economic growth is not right any more.

These changes are often collectively referred to as the “knowledge economy,” which encompasses the increasing importance of information and knowledge resources (a) as inputs to production, (b) in the production and market process, and (c) as products and services. See discussion in Robert Weissbourd and Christopher Berry, The Changing Dynamics of Urban America (Chicago: CEOs for Cities, 2004), 254-287; Matthew Drennan, The Information Economy and American Cities (Baltimore: Johns Hopkins University Press, 2002); and J. Houghton and P. Sheehan, A Primer on the Knowledge Economy (Melbourne City, Australia: Center for Strategic Economic Studies, Victoria University, 2000).


Consider, for example, that the companies that made up the S&P in 1920s would remain on the list for an average of 65 years; by the late 1990s, the average firm spent only 10 years on the S&P 500. Manyka, Lund, and Augustine, “From the Ashes: The Most Dynamic Economies Rely on Creative Destruction to Grow” Newsweek (August 16, 2010). In addition, the places that dynamically redeploy their assets, as measured by business churn (generally, the combination of firm births and deaths per total number of firms), are more productive. See, e.g., Lucia Foster, John C. Haltiwanger, and C. J. Krizan, “Aggregate Productivity Growth: Lessons from Microeconomic Evidence,” New Developments in Productivity Analysis, (NBER Books, 2001): 503-72; and Yeonwoo Lee and Donald Hicks, “Schumpeterian Churn Dynamics and Regional Productivity Performance,” International Business and Economics Research Journal (Littleton, CO: Western Academic Press 2.1, 2003): 83-98.

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From an economist’s point of view, the reason for the very existence of cities, and their surrounding economic regions, is to reduce the transportation costs of goods, people and ideas. See Edward L. Glaeser, “Are Cities Dying?” Journal of Economic Perspectives 12 (Spring 1998): 146. Skilled people and firms located in metropolitan areas have higher productivity and outputs than their peers located outside them. See Christopher Wheeler, “Cities and the Growth of Wages Among Young Workers: Evidence from the NLSY” (Working Paper 2005-055A, Federal Reserve Bank of St. Louis, 2005).


In their book Cities, Regions, and Economic Integration in North America, Manuel Pastor and Pierre-Paul Proulx note that “there is a new, more sophisticated way of thinking about the relationship between cities and regions that has developed in recent years.” (p. 10). This new perspective emphasizes the importance of regional economic development strategies and the role of cities in driving economic growth. The authors argue that cities and regions are interconnected and that policies that support economic growth in one tend to benefit the other.


Deliberate, tailored strategies are particularly important in the knowledge economy because the growth trajectories of regional economies are diverging. In the past, underperforming regions tended to “catch up” with their higher-performing peers over time. In the new global economy, this dynamic has changed. Concentrated knowledge assets drive a self-reinforcing growth cycle, and as a result, high-performing regions tend to pull further ahead of their competitors. Small changes in direction can make a big difference. New growth theory, in particular, holds that concentrations of knowledge factors – such as high human capital, information technologies and information sector firms – build upon themselves. This process results in increasing rather than diminishing returns, so that the places that get ahead tend to keep getting further ahead. See generally Joseph Cortright, “New Growth Theory, Technology and Learning: A Practitioner’s Guide,” Reviews of Economic Development Literature and Practice 4 (2001), especially 10-12; and Weissbourd and Berry 2004.


Development of this Plan was undertaken with the Brooksins Institution Metropolitan Policy Program and RW Ventures, LLC as part of a national pilot project on Metropolitan Business Planning. See, Mark Muro and Robert Weissbourd, “Metropolitan Business Plans: A New Approach to Economic Growth” (Brookings Institution, 2011). Chapter II provides further background.

See note for sources providing detailed literature review, derivation and explanation of these market levers.


Bureau of Economic Analysis


Brookings Institution Analysis

Brookings Institution Analysis

Brookings Institution Analysis

Brookings Institution Analysis

Brookings Institution, Export Nation 2012 Database


Younger & Associates, The Economic Impact of the Port of Memphis on the Memphis & Shelby County Economy, June 2011

While a linear model of the innovation process offers conceptual clarity, there is evidence that it is more iterative and open in practice. For example, multiple new product and/or process ideas might be generated during the invention stage, leading to separate innovation paths for each; unsuccessful proof-of-concept testing may send innovators back to the idea-generation stage; or market introduction might bring to light a shortcoming of the technology that returns innovators back to the applied R&D stage for additional development. See, for example, Between invention and Innovation: An Analysis of Funding for Early-Stage Technology Development (Gaithersburg, MD: Economic Assessment Office, Advanced Technology Program, National Institute of Standards and Technology, November 2002); and Philip Cook and Olga Memedovic, Strategies for Regional Innovation Systems: Learning Transfer and Applications (Vienna: United Nations Industrial Development Organization, 2003).

The U.S. Patent and Trademark Office courtesy of the Strumsky Patent Database, University of North Carolina at Charlotte, 2001-2010

The U.S. Census Bureau, 2007 Survey of Business Owners

Small Business Administration 2007

Brookings analysis of Moody’s Analytics data and BLS Occupational Employment Statistics, 2009

Brookings analysis of data from DOL-O-Net program, BLS and ACS


Brookings Institution Analysis

