

# GREATER PHOENIX REGIONAL CONCENTRATIONS

## CONCENTRATIONS

The region's industrial concentrations are 51 industries  
 These industries account for 430,900 jobs, or 30% of total jobs  
 Only 20, out of 51, concentrated industries are in tradable sectors, which are export-oriented

## TRADABLE – EXPORT ORIENTED – CONCENTRATIONS

Arizona exports totaled \$10.9 billion in 2011 - 37% growth since 2009  
 Total export-oriented industries account for 147,000 jobs, or 10% of total jobs  
**1** Service export-oriented industries grew 6% (CAGR) and has exceeded industries exporting real goods  
 The top two regional exports are Computer Electronics (19.6%) and Transportation Equipment (13.8%). The combined value of exports is \$5.53 billion.

## GOOD MANUFACTURING

**2** The outputs produced by 19 of the region's good manufacturing industries are forecasted to grow at a pace equal or faster than the nation (indicated in color). These include industries in the supply chain of the region's three manufacturing drivers:

- Semiconductor and Other Electronics Manufacturing, (LQ: 4.15).
- Aerospace Products and Parts Manufacturing (LQ: 2.18)
- Navigational, Measuring, Electro medical, and Control Instruments Manufacturing (LQ: 2.05)

The median output growth across these 19 industries is forecasted to be 44.8%. Computer and Peripheral Equipment Manufacturing, and Communications Equipment Manufacturing are expected to grow by 38.4% and 20.8% in output, respectively.

Output in Semiconductor and other Electronics is forecasted to grow by 29.3%

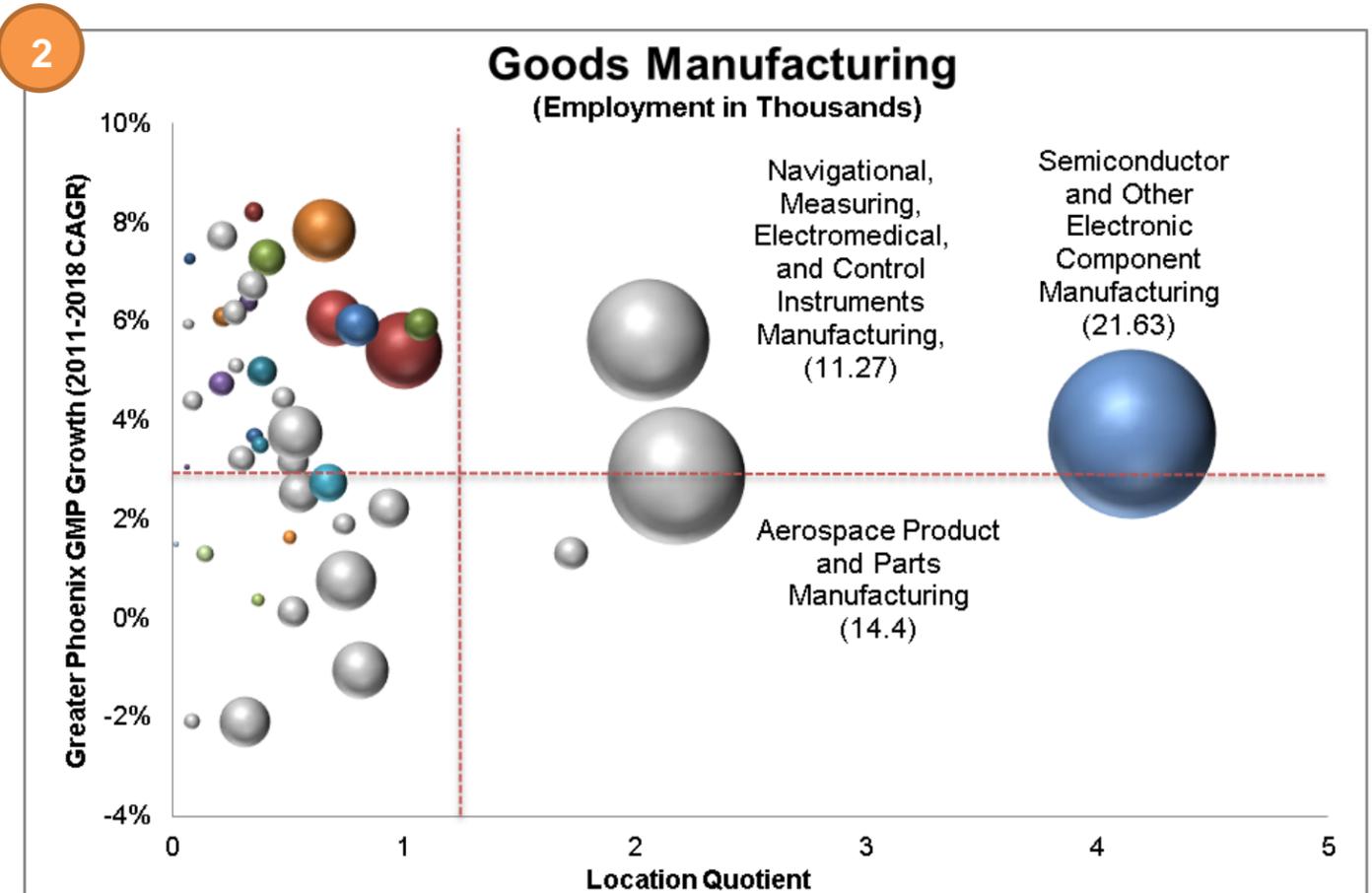
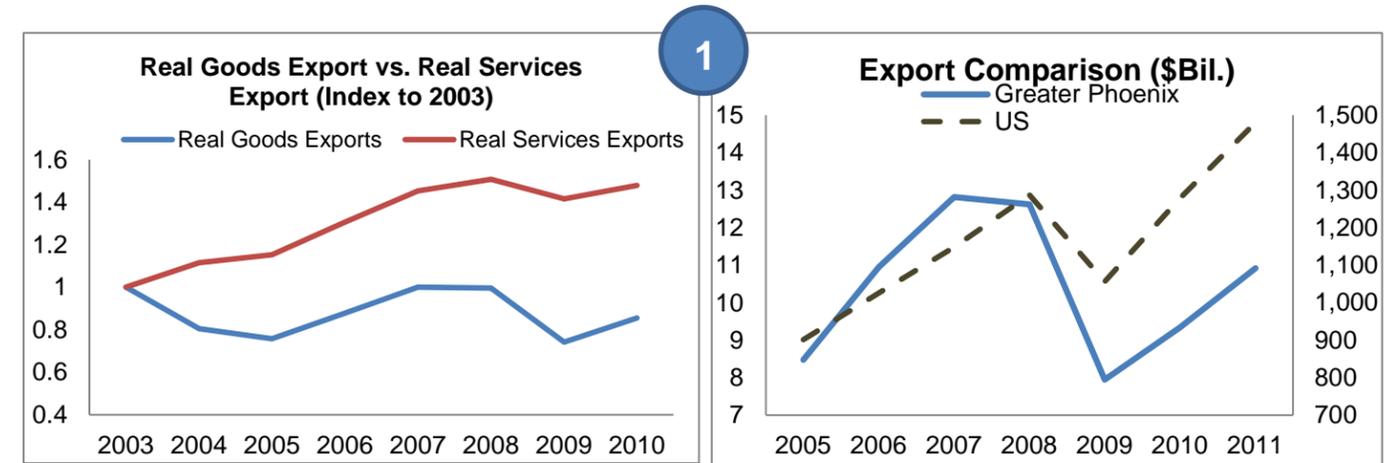
Employment is projected to grow in 13 of the 19 manufacturing industries.

Employment in the electronics supply chain is expected to decline:

- Manufacturing and Reproducing Magnetic and Optical Media (-25%)
- Computer and Peripheral Equipment Manufacturing (-20.0%)
- Communications Equipment Manufacturing (-7.6%)

Jobs in Semiconductor and Other Electronics industry have declined nationally by 41% since 2001 and by 74.5% or 16,000 jobs in the region.

Jobs in Aerospace Products and Parts Manufacturing industry have declined nationally by 5% and by 12.4% or 1,790 jobs in the region.



## GOOD MANUFACTURING (Cont.,)

### Aerospace & Defense Industry

Industrial composition: guided missiles and subsystems, space systems, rotary and fixed wing aircraft parts manufacturing, and other engineering and technical services.

There are about 891 aerospace related companies in the region. They account for 42,687 direct jobs. The average annual wage in the industry is about \$83,673. The industry account for \$15 billion in economic activity in 2010, 5.9 percent of the state's GDP.

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Military UAV market: \$86.5 billion revenue over 2013-2018, with a CAGR of 12%. Large potential for commercial uses

### Semiconductor Industry

Employment declined, but output of the industry grew 87% - from \$2.8 billion in 2001 to \$5.3 billion in 2011.

Intel's Arizona site – with about 11,000 employees – is the company's second largest site in the U.S. Intel has invested more than \$20 billion to build high-tech manufacturing capacity in Chandler. Each year, the company also spends more than \$450 million in research and development in the state. Intel's average annual economic impact in Arizona tops \$2.4 billion, including more than 20,000 non-Intel jobs resulting from the company's supply chain in the state.

## INFORMATION TECHNOLOGY

The output from most of these industries is forecasted to grow a pace equal or faster than the nation. (indicated in color). The median GDP growth is 53.2% for this industry. The median job growth is 21%, with the exception of Wired Telecommunications Carriers and Other Telecommunication, which are projected to decline 2.3% and 17.2%, respectively.

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High level of concentrations are in Wireless (LQ: 1.55) and Satellite Telecommunication (LQ:2.29). Combined they employ 3,780 workers.

Three of the 10 largest employers - GoDaddy, Avnet and JDA Software - are headquartered in the region.

Software and IT services are projected to grow 44% and 23%, respectively (2010-20)

Regional specialization and growth forecasts in education, healthcare, defense, and cleantech represent market opportunities.

## HEALTH CARE – Cancer Research and Personalized Medicine

Healthcare is the largest industry, employing over 171,000 in 7,968 establishments in the region.

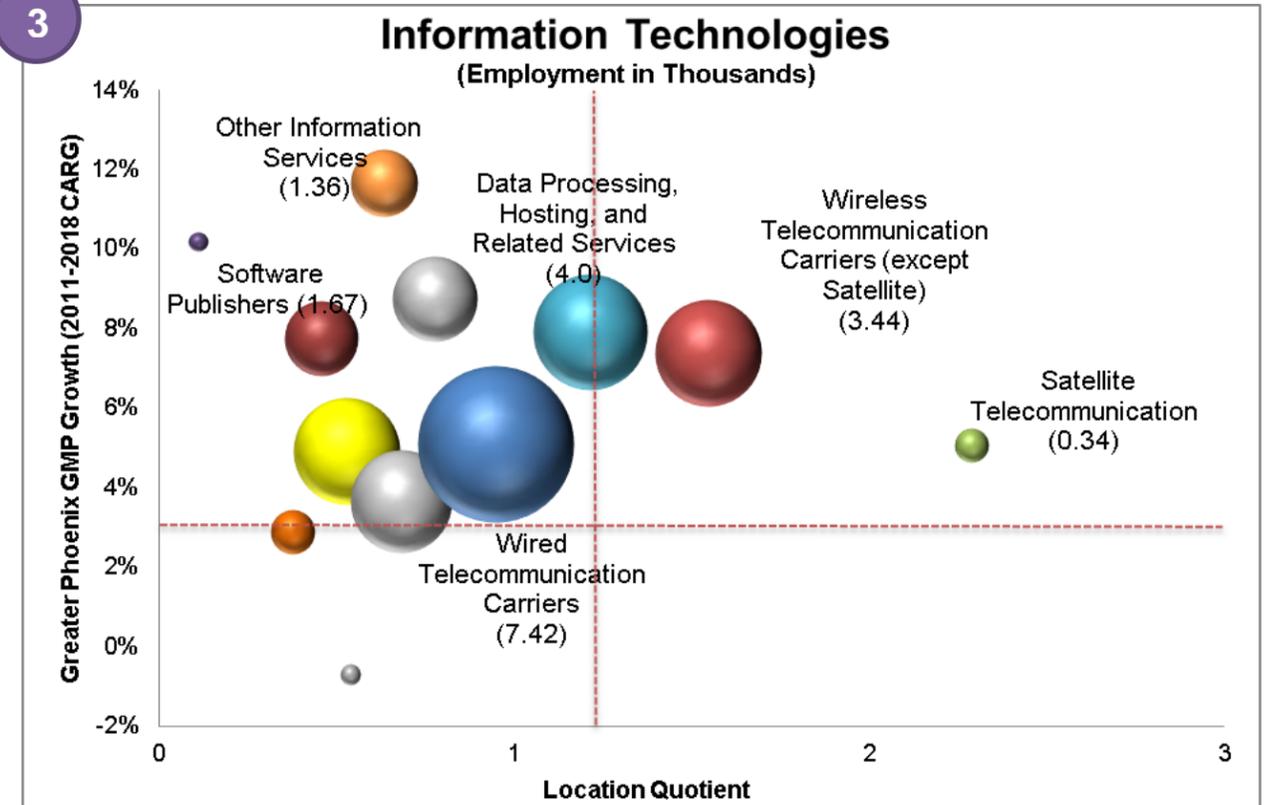
Much of this employment is attributed to service delivery.

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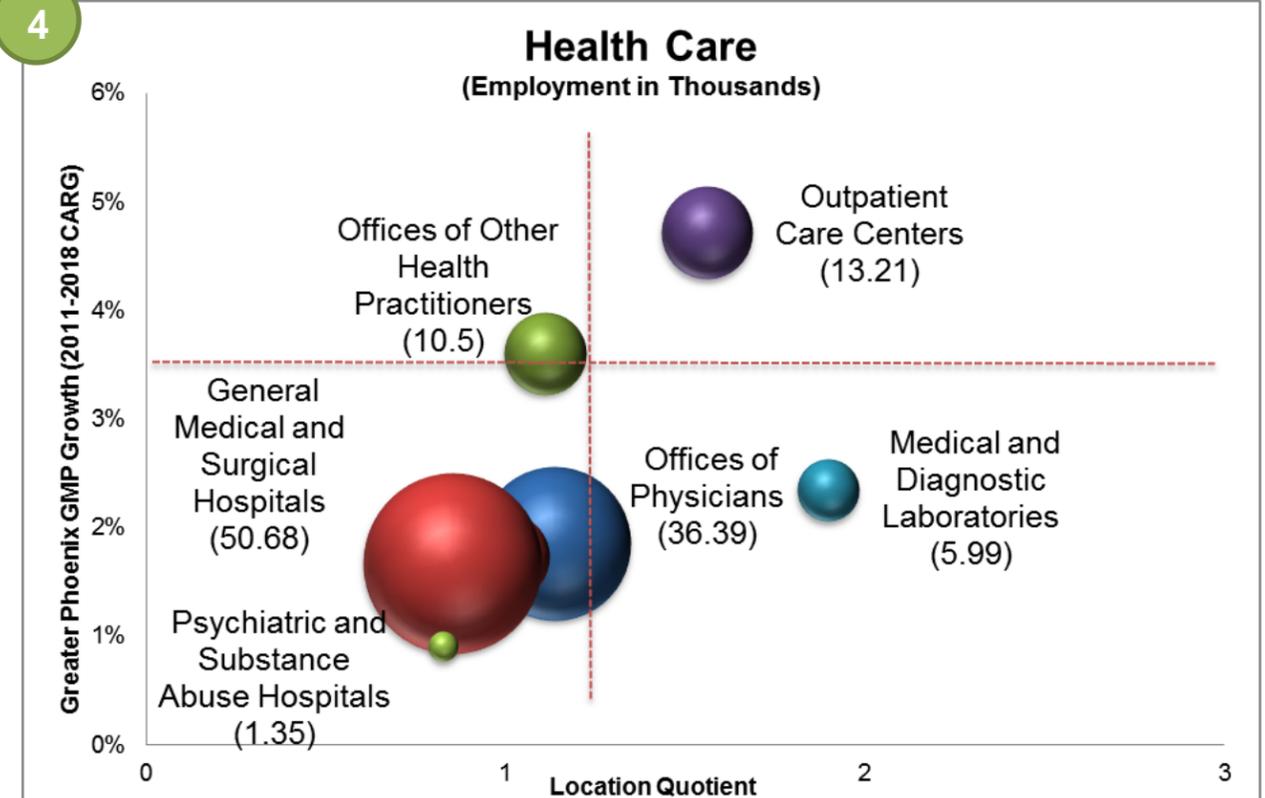
However, there are emerging biomedical research assets.

The industry accounts for over \$9 billion in payroll.

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The average wage in healthcare is more than \$57,000 and the wages are significantly higher in research and specialized fields.

This industry has added almost 80,000 jobs since 2001 and accounts for nearly 14 percent of total local employment. It is the only sector that expanded during the recession

There are centers of excellence embedded in hospitals (Barrow's Neurological Center) and universities (ASU BioDesign, UA Cancer Center) as well as publicly supported research centers (TGen).

Between 2005 and 2016, 2.6 million square feet of new biomedical research infrastructure worth 1.3 billion have been finished or planned. The City of Phoenix invested nearly \$250 million plus a 13.4-acre parcel to create a downtown Phoenix biomedical and educational cluster to house Translational Genomics Research (TGen), VisionGate and others

NIH funding in 2011 reached more than \$183 million. However, Arizona saw decrease in NIH funding by 36% between 2002 and 2011, a disproportionate share when compared to 18% decline in NIH funding overall. In 2011, ASU received \$48 million and UA received \$103 million. Banner, St. Joseph's, Phoenix Children, and Mayo Clinic received a total of \$16.1 million.

TGen currently employs 737 - more than tripled from 220 employees in 2006. It is expected to reach 3,700 employees by 2025.

### **Personalized Medicine Growth Forecast**

Healthcare is projected to grow 11% annually, nearly doubling in size by 2015 to over \$450 billion.

The core diagnostic and therapeutic segment of the market—comprised primarily of pharmaceutical, medical device and diagnostics companies—is estimated at \$24 billion, and is expected to grow by 10% annually, reaching \$42 billion by 2015.

The personalized medical care portion of the market—including telemedicine, health information technology, and disease management services—is estimated at \$4-12 billion and it could grow tenfold to over \$100 billion by 2015.

## **RENEWABLE ENERGY**

### **Solar Renewable Energy**

Industry leaders: SunTech, FirstSolar, Kyocera, Abengoa.

Direct solar jobs: 9,128 direct. Economic impact of \$2 billion per year.

The industry is consolidating due to the rapid expansion, falling panels and cells prices and competition from cheap natural gas.

The annual growth rate for global PV cell production was 111% from 2009 to 2010, with 88% growth in the U.S. Global revenue from global cell and module production over this period increased by 85% from \$16.8 billion in 2009 to \$31.1 billion.

U.S. revenue from PV cells and modules reached \$1,876 million in 2010, up 99% from \$941 million in 2009. From 2005 to 2010, global cell and module revenues increased by a CAGR of 45%.

Federal renewable energy grants and tax credits that provide price stability and a lower cost of capital are expiring or in danger of being eliminated.

Arizona has one of the highest solar thermal capacities in the country. Arizona total installation of 3,386 MW (1587MW in Greater Phoenix) trails only California.

Research is conducted at ASU's Engineering Research Center and Photovoltaic Testing Lab, the latter in partnership with TÜV Rhineland.

### **Algae Biomass**

The U.S. Department of Energy recently selected Arizona State University for a \$15M award to lead the Algae Testbed Public-Private Partnership (ATP3). The DOE's investment from its Biomass Program in ATP3 means companies and research institutes will now have access to facilities and data from long-term algal cultivation trials to use in establishing a realistic and coherent state of technology for algal biofuels.

Sources: GPEC analysis of Moody's Analytics Employment and Gross Domestic Product data, International Trade Administration Export from U.S Metropolitan Area; Book of List 2012; The Arizona Manufacturing Extension Partnership (Arizona MEP) and Arizona State University in 2011; National Institute of Health; USAspending.gov; Elliot Pollack Renewable Energy Study; US Department of Energy Solar Technologies Report (2010); PriceWaterCooper, The New Science of Personalized Medicine (2010); Arizona University Press Release, Sept. 12, 2012.

