

2012 Maricopa County Employment Cluster Analysis

Winter 2013 Prepared by the Maricopa Association of Governments (MAG)



Understanding the economic landscape is important to every region. The types of industries, occupations and markets that are attracted to a region impact that area's economic competitiveness, growth, and character. With economic recovery from the Great Recession underway, now is an ideal time to assess Maricopa County's economy in order to build on the region's

strengths and seek out opportunities for growth. *What does Maricopa County have that distinguishes it from other regions? Are there specialized or emerging industries within the region that can be prioritized for development?* In order to begin answering these questions, this report provides an overview and analysis of employment clusters within the region.



EMPLOYMENT CLUSTERS OVERVIEW

Maricopa County is home to a variety of specialty industries that set the region apart from other areas, providing a unique economy for nearly four million residents. Industry analysis is typically done with classifications within the North American Industry Classification System (NAICS). NAICS code classifications can vary in specificity from a general 2-digit level definition to a more detailed 6-digit level. At the general 2-digit level, there are 24 industries such as *Construction*, *Information*, and *Retail Trade*. These classifications are not always ideal for understanding and analyzing regional economic patterns. For example, there is no industry designation in NAICS for areas such as *High Tech Manufacturing and Development* or *Hospitality, Tourism and Recreation*, both of which are important industries within the MAG regional economy. Additionally, there is no single NAICS code that accounts for all of either the aerospace industry or the biotech industry, which are also important industries for the area. For this reason, MAG has compiled a set of 17 clusters and 29 subclusters based on NAICS code classifications. (See *Table 1, page 3.*)

The clusters and sub-clusters were defined and analyzed in multiple steps. First, clusters were defined based on the evaluation of existing published cluster datasets, such as the U.S. Cluster Data project led by the Harvard Business School (www.clustermapping.us). Next, cluster designations were refined by getting feedback from local professionals. Finally, clusters were analyzed at the regional level and compared to the United States to identify cluster specializations within Maricopa County. Each cluster and subcluster was derived from 6-digit NAICS codes and then grouped by similar characteristics and industries.

Each cluster is mutually exclusive, meaning that each employer is assigned only one cluster. Not all of the clusters have a subcluster, but for those that do, the subcluster designations are also mutually exclusive and, when combined, define the cluster as a whole. For example, the three subclusters of *Agriculture, Mining and Oil Extraction*, and *Utilities* together combine to form the *Resource-Dependent Activities* cluster.



Table 1: 2012 Employment Cluster Categories

CLUSTER	SUBCLUSTERS	CLUSTER DEFINITION	# of Firms*	# of Jobs*
Business Services	Advanced Business Services	Professional, scientific and technical services; administrative and business support services; and waste collection, treatment and disposal, which can serve businesses as well as residents.	6,560	163,600
	Business Support Services			
	Waste Management Services			
Construction	NA	Construction services, contracting, heavy and civil engineering and manufacturing of products to support construction activities.	5,210	131,470
Consumer Goods Manufacturing	Durable Consumer Goods Manufacturing	Manufacturing of any products to be sold to end consumers (except bikes and automobiles).	480	21,240
	Nondurable Consumer Goods Manufacturing			
Consumer Services	NA	Services geared primarily toward individual consumers, such as restaurants, bars, personal services and repair maintenance of personal property (except financial services).	6,560	140,550
Education	NA	Private or public primary, secondary, collegiate or specialty educational services or training services (except flight training) and research relating to education.	1,680	119,400
Finance, Insurance & Real Estate (FIRE)	Financial	Finance, insurance and real estate related services.	3,920	131,550
	Real Estate			
Government, Social & Advocacy Services	Government	Government, social, religious and advocacy services and administration.	3,360	121,320
	Social, Advocacy & Religious Services			
Health Care	NA	Medical services, nursing, medical laboratories, and retail and wholesale products related to health care, such as pharmacies, optical goods stores and health products distributors.	4,500	141,970
High Tech Manufacturing & Development	IT Manufacturing & Development	Manufacturing of computer and electronics, analytical instruments, electrical equipment, biotechnology products and including aerospace products and services (including flight training) as well as software development.	840	64,860
	Aerospace			
	Semiconductor Manufacturing			
	Analytical Instruments & Medical Devices			
	Bioindustry			
Electrical Equipment & Component Manufacturing				
Hospitality, Tourism & Recreation	NA	Tourism-related services, accommodation, attractions, and performing arts and spectator sports; does not include food services or retail.	1,310	58,510
Media, Publishing & Entertainment	NA	Publishing, studio recording, media production, theaters, broadcasting, libraries, media services and performing arts companies.	510	14,700
Metal Inputs & Transportation-Related Manufacturing	Primary Metal Manufacturing	Manufacturing of all metals, including primary metals, machinery, metalworking and transportation equipment, including bikes and automobiles (except for aerospace and consumer goods manufacturing).	680	23,000
	Metal Production Tech & Machinery Manufacturing			
	Metalworking Tech & Machine Shops			
	Automotive Manufacturing			
Non-Metallic Manufacturing	Paper, Packaging & Printing Manufacturing	Manufacturing of all non-metallic materials such as paper, chemicals and plastics (except for biotechnology products and consumer goods manufacturing).	600	17,390
	Plastics & Non-Metallic Manufacturing			
	Textile Manufacturing			
	Primary Chemical Manufacturing			
	Chemical Products Manufacturing			
Resource-Dependent Activities	Agriculture	Activities that depend on a region's natural resources, including energy, agriculture, forestry, mining and oil extraction.	380	18,320
	Mining & Oil Extraction			
	Utilities			
Retail	NA	Retail stores and other direct selling establishments, such as mail orders and online shopping (except pharmacies).	5,690	170,490
Telecommunications	NA	Telecommunications services and programming and manufacturing of equipment and products supporting these activities.	420	15,780
Transportation & Distribution	Transportation & Logistics	Transportation, warehousing and distribution of products and other supporting services (except health care distribution).	2,910	97,350
	Distribution			

Source: MAG Analysis of the 2012 MAG Employer Database (Employers with 5+ employees)

MARICOPA COUNTY CLUSTER TRENDS

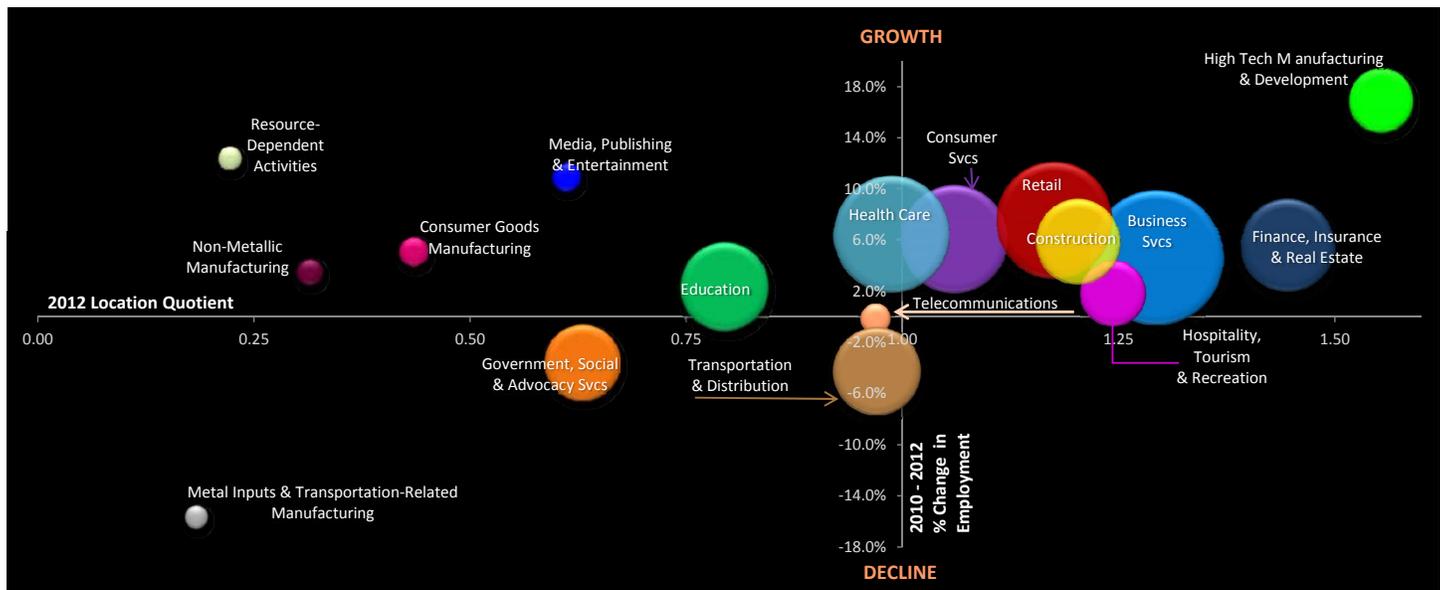
Employment cluster trends are best understood by comparing changes in clusters within the county to that of the nation. The U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW) dataset was used for conducting this analysis and calculating location quotients. A location quotient is determined by comparing the proportion of employment for each cluster within Maricopa County to the proportion of employment for the same cluster nationwide. Industries with a location quotient greater than one are considered to be a specialization industry for the county. The location quotient and employment growth have been charted in **Figure 1, page 5**. The X-axis indicates the region's specialization clusters to the right of the Y-axis line. The Y-axis indicates the percentage change in total employment from 2010 to 2012.

Specialization clusters for the region are concentrated in the upper right quadrant and include *High Tech Manufacturing and Development* and *Finance, Insurance and Real Estate*. In addition to the specialization clusters, **Figure 1** also provides an indication of the total employment for any given cluster by the size of the bubble. In terms of total employment in Maricopa County for 2012, *Business Services, Health Care, and Retail* are the largest clusters. *High Tech Manufacturing and Development* had the largest increase in employment and *Metal Inputs and Transportation-Related Manufacturing* had the largest decrease in employment from 2010 to 2012. Change in employment provides just one piece of the puzzle when it comes to analyzing economic growth. As noted earlier, the region and nation are still recovering from the Great Recession. Further analysis of the labor market, as well as population and housing characteristics, can provide a broader view on strengths and opportunities for the region.

Note that while QCEW is good for trend analysis, the MAG Employer Database is used for the remainder of this report due to its extensive review process and ability to analyze data at a lower geographic level. While they contain similar data, the two databases should not be compared as their methodologies and source data differ.



Figure 1: Regional Employment Clusters by Size, Growth and Share Compared to the U.S.



Cluster	2012 Maricopa County Total Jobs*	Maricopa County Location Quotient**	% Change in Jobs
Business Services	258,760	1.29	4.6%
Construction	103,310	1.20	5.8%
Consumer Goods Manufacturing	11,880	0.44	5.0%
Consumer Services	164,820	1.06	6.0%
Education	112,300	0.80	2.3%
Finance, Insurance & Real Estate (FIRE)	124,510	1.45	5.5%
Government, Social & Advocacy Services	83,900	0.63	-3.6%
Health Care	193,650	0.99	6.4%
High Tech Manufacturing & Development	58,850	1.55	16.8%
Hospitality, Tourism & Recreation	62,610	1.24	1.8%
Media, Publishing & Entertainment	11,510	0.61	10.8%
Metal Inputs & Transportation-Related Manufacturing	7,240	0.18	-15.7%
Non-Metallic Manufacturing	9,280	0.32	3.4%
Resource-Dependent Activities	7,990	0.22	12.3%
Retail	193,570	1.18	7.5%
Telecommunications	12,860	0.97	-0.2%
Transportation & Distribution	112,170	0.97	-4.3%
Total Jobs*	1,529,200	1.00	4.3%

Source: US Bureau of Labor Statistics Quarterly Census of Employment & Wages (QCEW) (2010, 2012)

*Jobs are rounded to the nearest 10, total jobs reported from QCEW include all employers differing from the MAG Employer Database which tracks only employers with five or more employees

**Maricopa County Location Quotient = $\frac{\text{Maricopa County Cluster Employment}}{\text{Maricopa County Total Employment}} \div \frac{\text{U.S. Cluster Employment}}{\text{U.S. Total Employment}}$

Note: "Employees" and "jobs" are terminology that are used interchangeably in this analysis.

EMPLOYER DATA OVERVIEW

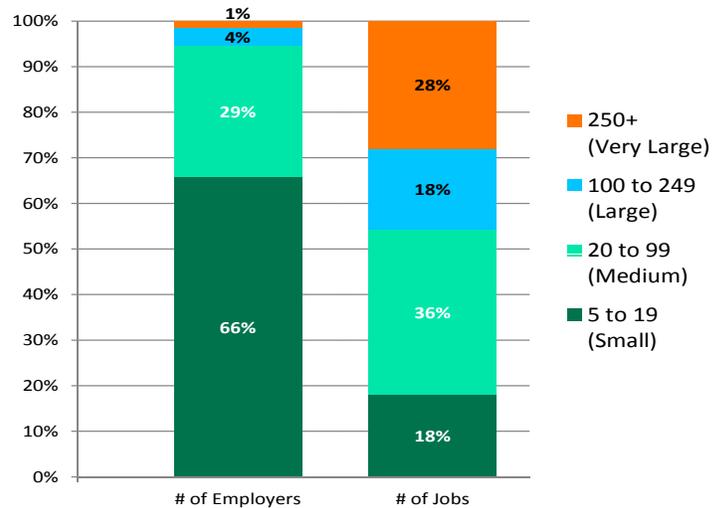
The MAG Employer Database is published annually by MAG and includes all employer locations in Maricopa County that have five or more employees. Each employer record in the database includes the business name, address, number of employees, and 6-digit North American Industry Classification System (NAICS) code.

The MAG Employer Database is constructed by integrating employer data from various sources including the Maricopa County Trip Reduction Survey, Dun & Bradstreet, and government employment data from MAG member agencies. Site-specific employer data is collected from each of these sources so that the data can be geographically mapped and analyzed.

While the MAG Employer Database is currently limited to Maricopa County, it is anticipated that Pinal County data will be added to the 2013 MAG Employer Database as a result of the recently expanded MAG regional planning area boundary. The database is made available to MAG member agencies and is used by MAG staff for employment projections and economic analyses.

According to the MAG Employer Database, in 2012 Maricopa County had 1.45 million jobs and 45,600 employers with at least five employees. Most of the employers (66%) were small businesses employing between five and 19 employees, as shown in **Figure 2**. However, this accounts for only 18%

Figure 2: 2012 Jobs and Employers by Employer Size

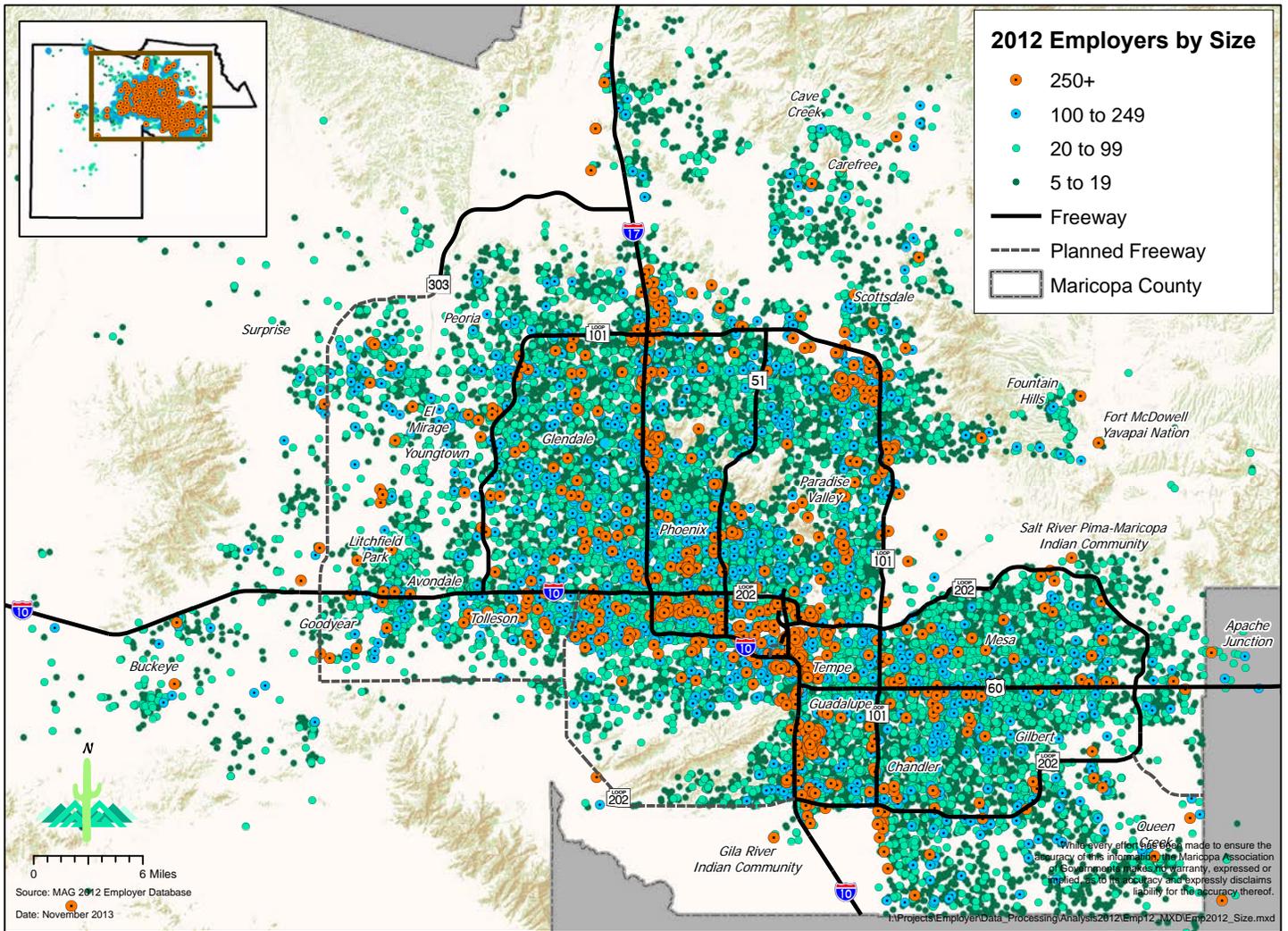


Source: 2012 MAG Employer Database (Employers with 5+ employees)

of jobs within the county. Conversely, only 1% of employers were classified as very large (250 or more employees) yet they accounted for 28% of jobs in the county. The largest percentage of jobs came from medium-sized employers (20 to 99 employees) accounting for approximately 525,600 jobs (36%). More than one quarter of these jobs were in the *Retail* and *Consumer Services* industries. As shown in **Figure 3**, employers are well dispersed throughout the region. Even large employers with more than 250 employees are spread out among many areas within the region.



Figure 3: 2012 Employers by Size



MARICOPA COUNTY EMPLOYMENT CLUSTER DATA

Service-oriented clusters constitute the majority of employment in Maricopa County, according to the 2012 MAG Employer Database. In 2012, *Retail*, *Business Services*, and *Health Care* were the largest clusters in the region, as shown in **Figure 4**. Together these three clusters make up one third of the 1.45 million jobs in Maricopa County. *Retail* can include strip malls, plazas, or large shopping centers such as Tempe Marketplace or Arrowhead Mall. As online shopping continues to grow, large distribution centers in southwest Phoenix, such as Amazon.com, also strengthen this cluster.

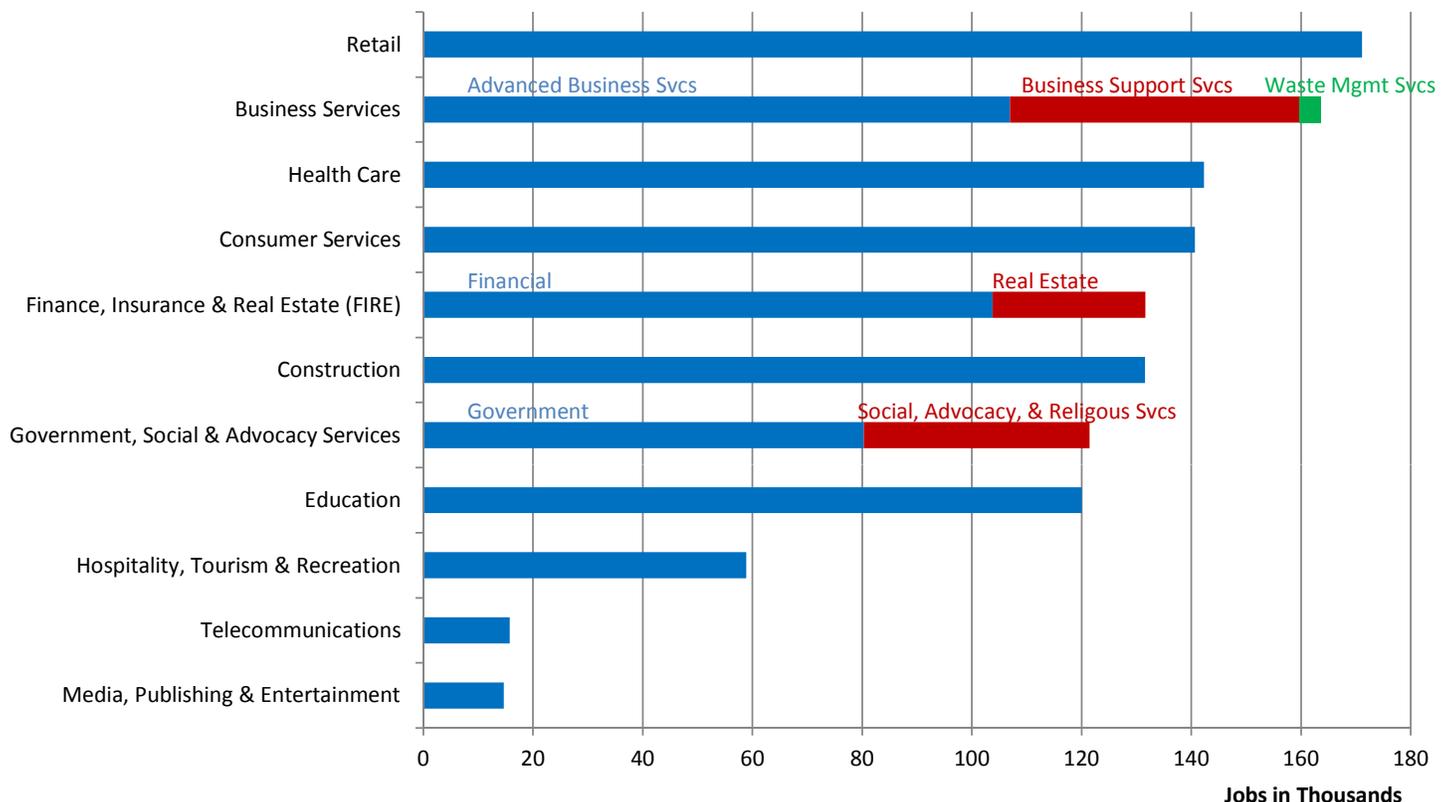
The *Advanced Business Services* subcluster makes up 65% of the Business Services cluster. Jobs in this subcluster include many of the professional occupations such as business managers, lawyers, scientists, and technicians.

Health Care is the third largest cluster. Maricopa County is known for its excellent hospitals, which have been ranked

highly by U.S. News & World Report for specialties such as cardiology, diabetes, geriatrics, neurology, and kidney disorders. Banner Health is the single largest private employer in the valley, with nearly 22,420 employees in 2012, up from 18,160 in 2010.

Production-oriented clusters accounted for 242,150 jobs in 2012. They encompass a variety of subclusters as shown in **Figure 5**. These subclusters contribute to some of the more specialized industries that are unique to Maricopa County. *High Tech Manufacturing and Development* is one of these specialties, constituting 4.5% of regional employment. It primarily comprises the following subclusters: *IT Manufacturing and Development*, *Aerospace*, and *Semiconductor Manufacturing*. Smaller subclusters such as *Bio-Industry* and *Analytical Instruments and Medical Devices* are emerging markets within the region. *Transportation and Distribution* is the largest production-oriented cluster in Maricopa County accounting for 6.7% of total employment. This cluster supports the movement of products and includes large

Figure 4: Service-Oriented Job Clusters in Maricopa County, 2012



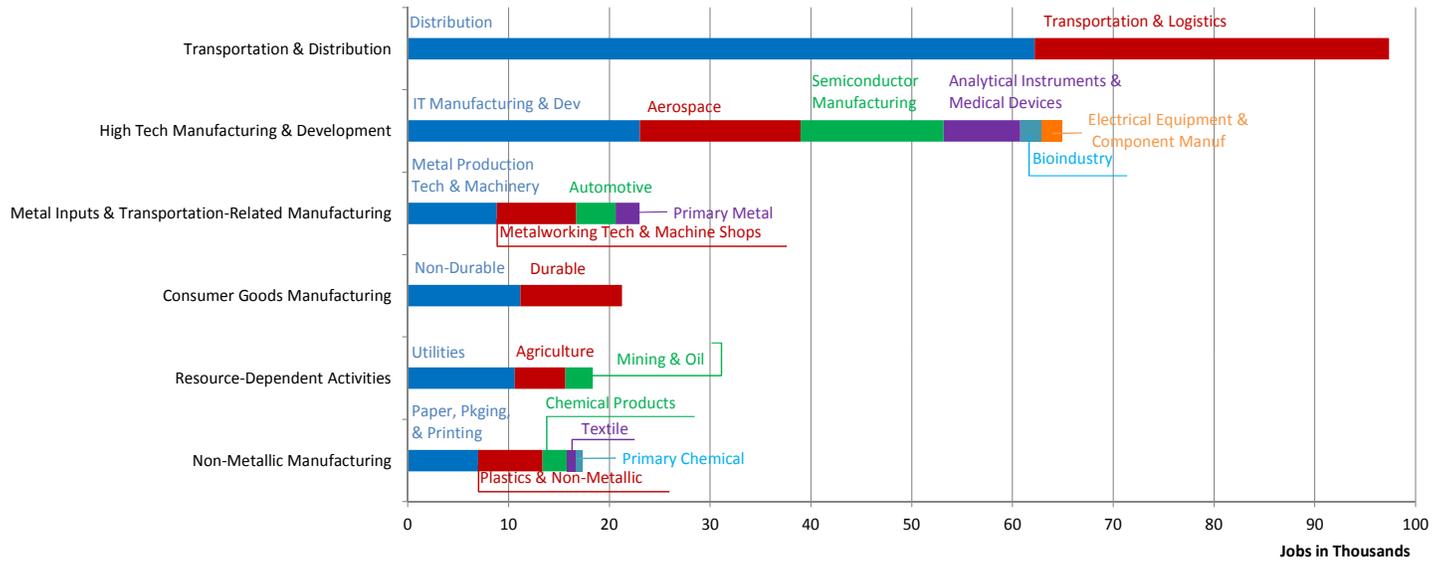
Source: 2012 MAG Employer Database (Employers with 5+ employees)

employers such as U-Haul, ConocoPhillips, US Airways and Swift Transportation.

The remaining production-oriented clusters cover a variety of areas from primary chemical manufacturing to metal

processing to producing high end packaging. In addition, Maricopa County is home to nearly 500 consumer goods manufacturing firms including Coca Cola Bottling Company (soft drinks), Ping Inc. (golf clubs), Henkel Corp. (soap) and Sub-Zero Freezer Co. (refrigerators).

Figure 5: Production-Oriented Job Clusters in Maricopa County, 2012



Source: 2012 MAG Employer Database (Employers with 5+ employees)



EMPLOYMENT CLUSTER SPATIAL PATTERNS

While most of the employment clusters are well dispersed throughout the region, there are a few clusters that show definitive spatial concentrations. As depicted in **Figure 6**, *High Tech Manufacturing and Development* shows distinct spatial concentrations, particularly in the southeast part of the region. Large employers such as Intel Corporation, Orbital Sciences, and Microchip Technology are located here. Other spatial concentrations can be seen north along I-17, northeast on the Loop 101 corridor, and centrally where the I-10 and SR-202 converge.

Other types of manufacturing such as *Metal Inputs and Transportation-Related Manufacturing*, *Consumer Goods Manufacturing*, and *Non-Metallic Manufacturing*, show a different spatial pattern. **Figure 7** illustrates how these three clusters tend to concentrate in the west part of the county, particularly along I-10. There is also a consistent concentration of manufacturing plants along US-60 (Grand Avenue). *Metal Inputs and Transportation-Related Manufacturing* is the largest of these three clusters, with nearly 23,000 jobs and

Figure 6: High Tech Manufacturing and Development Employers by Size

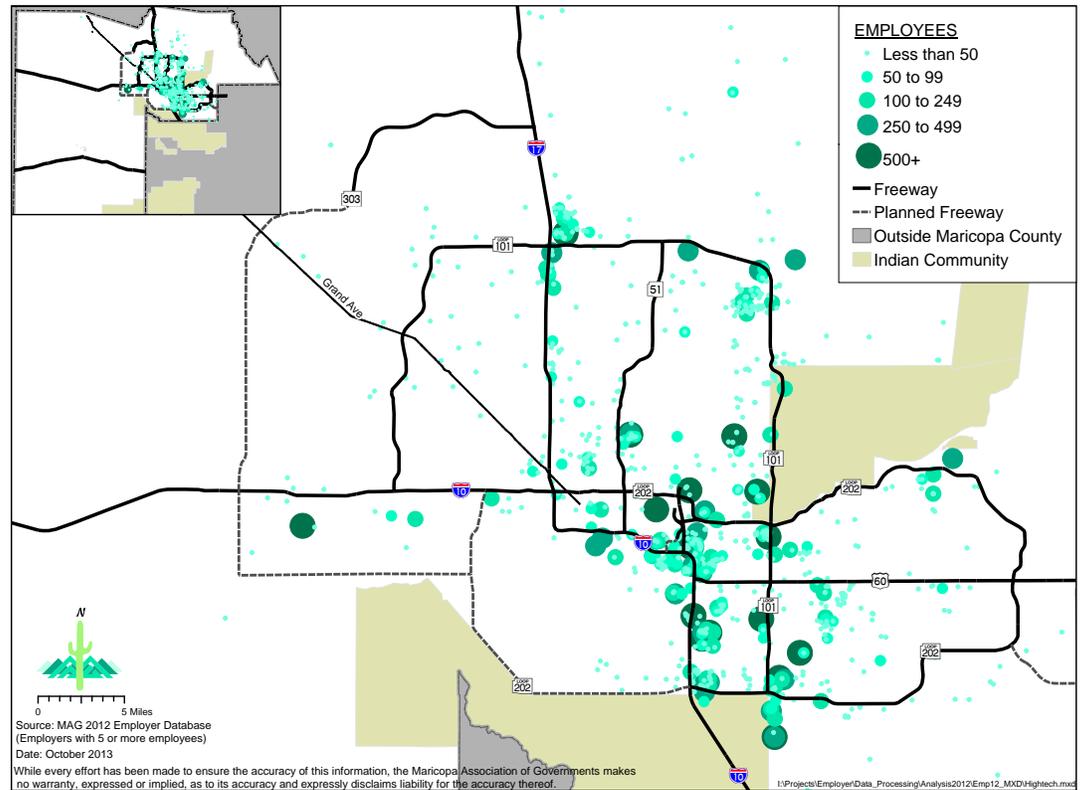
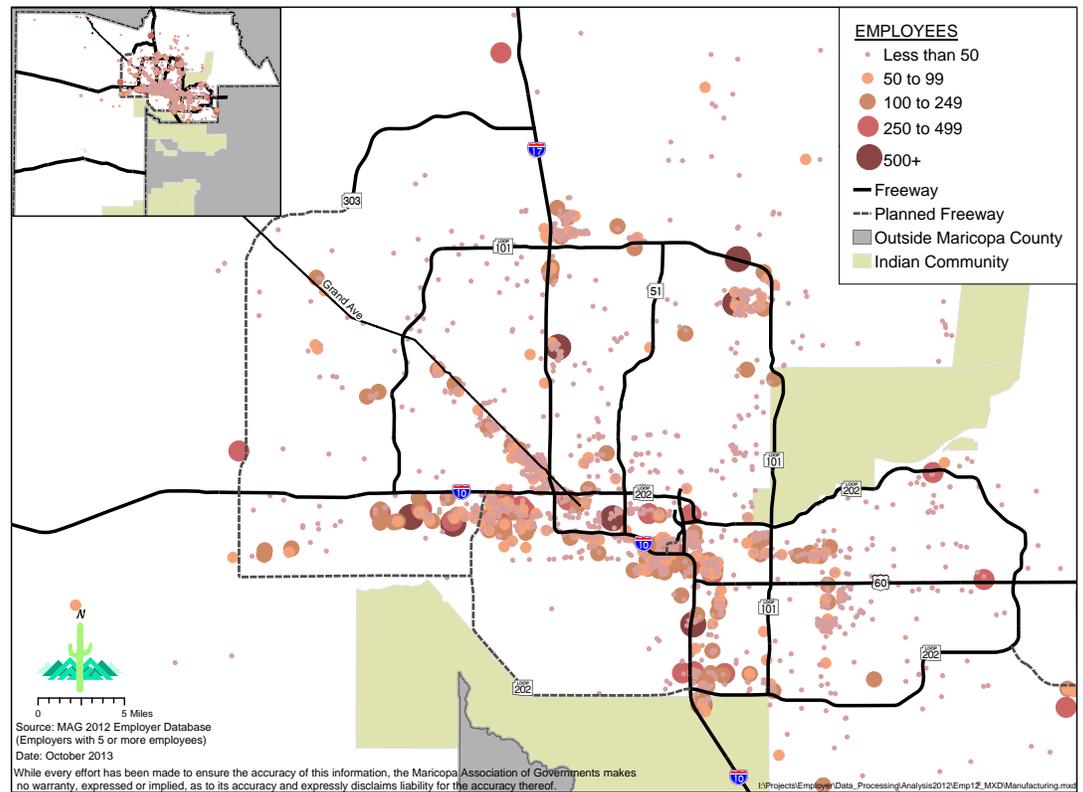


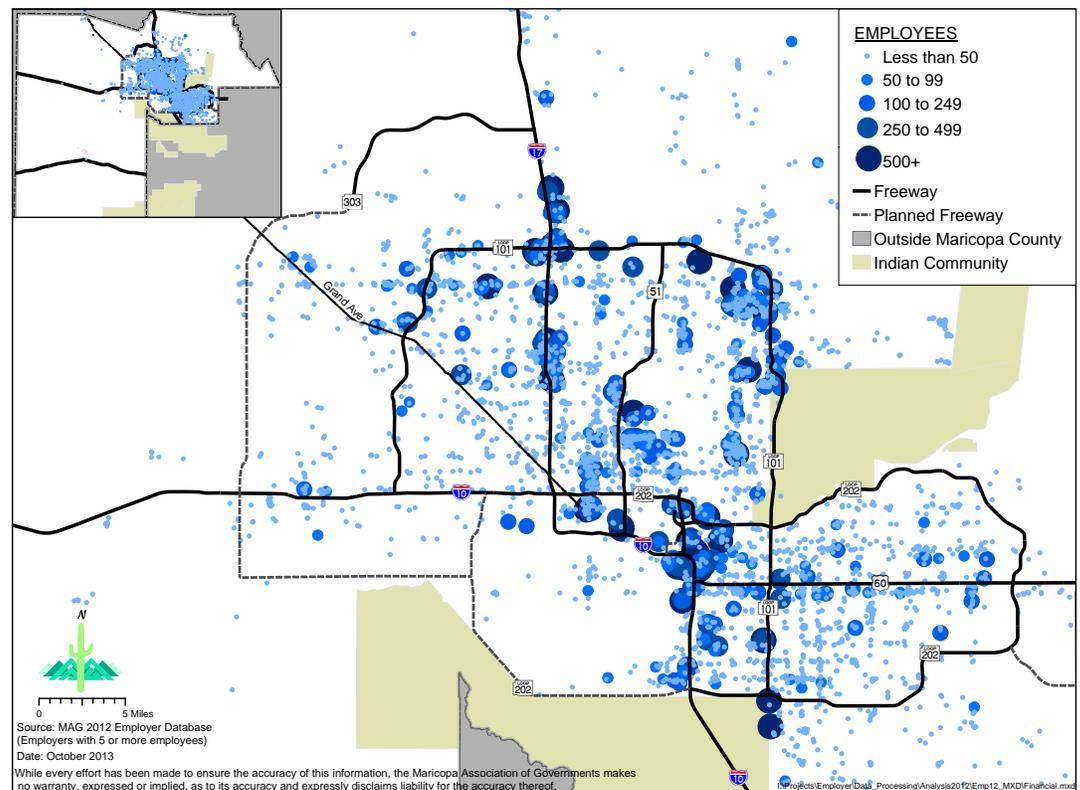
Figure 7: Consumer Goods, Metal Inputs and Transportation Related, and Non-Metallic Manufacturing Employers by Size



employment spread among small and medium-sized manufacturing plants. Just over one third of employment among these three clusters comes from *Consumer Goods Manufacturing*. *Non-Metallic Manufacturing* is the smallest of these three manufacturing clusters, with just under 600 employers that account for 17,400 jobs.

Another cluster that has a unique spatial distribution is *Finance, Insurance and Real Estate (FIRE)* as shown in **Figure 8**. This is the fifth largest cluster in the county. Large banks, such as Wells Fargo, JPMorgan Chase and Bank of America, contribute considerably to the 131,550 jobs in *FIRE*. Credit card companies with sizable back office operations in the county, such as Discover Financial Services

Figure 8: Finance, Insurance, and Real Estate Employers by Size



Source for Figures 6, 7 and 8: 2012 MAG Employer Database (Employers with 5+ employees)

and American Express, also make this a large and spatially concentrated cluster.



CONCLUSION AND FUTURE ANALYSIS

This paper presents a regional perspective of employment clusters. Developing a set of clusters and subclusters relevant to Maricopa County offers a new way of analyzing, categorizing, and comparing employment data for the region. This allows for the analysis of employment by industry specializations that are difficult to categorize simply by choosing categories from the North American Industry Classification System (NAICS). That said, the NAICS 6-digit level codes are the basis for the cluster designations, and represent the common classification used by the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW). Using the QCEW dataset allows for data comparisons to the nation and other metropolitan areas outside of Arizona.

The goal of MAG is to develop ongoing reports and analysis such as this one that provide information and trends on the regional economy. MAG plans to conduct a regional employment analysis each year to share with its member agencies. This analysis will use data from the MAG Employer Database which is updated annually with detailed, employer-level information. Given that each employer location in the database is geocoded to its physical location, analysis can be conducted at any geography within the region including jurisdictions, job centers, and corridors.

In addition to the MAG Employer Database, MAG maintains a variety of datasets relevant to economic analysis for

the region. Regional analysis can be conducted using data on existing and future land use, built space, where employees are working and living, and socioeconomic projections for population and employment. MAG also manages a Building and Landmark Inventory (BLI) geodatabase that contains detailed information on everything from schools to civic buildings to stadiums to police stations. Analysis using any of these datasets can be conducted on an as-needed basis. Member agencies are encouraged to contact MAG with ideas for future projects or analytical assistance to support local business needs.

ONLINE RESOURCES

For ease of analysis and immediate access to important datasets, MAG maintains a variety of publicly available online data viewers. Users can extract population, employment, and land use data at specific geographies within the region. The Building and Landmark Inventory point dataset is available as a viewer as is the Socioeconomic Projections dataset, which projects population, employment and dwelling units through 2040. All of these data viewers can be found at www.azmag.gov. In addition, MAG partnered with the Greater Phoenix Economic Council (GPEC) to create the Greater Phoenix Rising website (www.GreaterPhoenixRising.com). This website displays a broad set of high level information about the region specifically targeted to businesses interested in locating or expanding within the area.



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