MAKE IT MIAMI

Report on South Florida's Manufacturing Sector

2019

FIU Business
Florida International University

This report is a collaboration between the Florida International University Metropolitan Center and the Florida SBDC at FIU.

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The **Florida International University Jorge M. Pérez Metropolitan Center** is Florida's leading urban policy think tank and solutions center. Established in 1997, the Center provides economic development, strategic planning, community revitalization, and performance improvement services to public, private and non-profit organizations in South Florida. Its staff and senior researchers are leaders in their respective fields, and bring extensive research, practical, and professional experience to each project. The Center's research has catalyzed major policy initiatives and projects in housing, economic redevelopment, transportation, social services, and health services throughout South Florida.

The **Florida SBDC at FIU** is the small-business development center within the FIU College of Business. The center provides one-on-one business advisory annually to more than 900 entrepreneurs and small business owners in Miami-Dade and Monroe counties. Consulting is provided in areas such as access to capital, financial management, strategic marketing, government contracting, international trade and more. Since its launch in 2014, the Florida SBDC at FIU has helped local small-business owners access more than $121.3 million in capital, create additional sales of $1.335 billion, and launch 147 businesses.

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Executive **Summary**

When Miami's story is told, the warm weather, sandy beaches and Miami's reputation as a tourist destination are typically the centerpiece of any conversation. While the area's hospitality and tourism industry is well established and extensively covered, other sectors receive less notice, even though they contribute to Miami's economy by connecting it to national and international markets, bring export revenues, and have a significant impact on the area's economy.

This report puts the spotlight on one industry sector that has not received sufficient attention: manufacturing. While Miami's manufacturing sector is not among the top employers, it is a major contributor to Miami-Dade's economy in terms of output. The sector's output or value of production, is $17.6 billion, or almost 7% of the total output of Miami-Dade's economy. The leading output sectors are Information ($35.5B), Finance and Insurance ($32.3B), Retail trade ($30B) and wholesale trade ($21B). The manufacturing sector generated $269 million in taxes on production and imports in 2017. (IMPLAN 2017)

The sector also deserves attention as a sector that contributes to the diversity of the local economy and that can create high paying, high-skill jobs. In the context of Miami, diversity, upskilling and the supply of high earning jobs are critical for bolstering the local economy, and strengthening the region's competitiveness and economic resilience.

Employment in Miami's manufacturing sector in 2018 had dwindled to about a quarter of the 1980s workforce in the sector. Only 4.1% of the private workers in the county are employed in manufacturing. Despite the decline of the sector, it is a major contributor to the county's economy by connecting with many other sectors throughout the economy. Its output stimulates more economic activity across society than any other sector - a result expressed by the sector's multiplier effect. A multiplier is a way of measuring how important one industry is to other industries in the region. Manufacturing links to economic sectors that provide the materials needed for the industry's output, and to the economic sectors where the industry's workers spend their income.

Manufacturing industry multipliers are larger than service industry multipliers. For example, the multiplier for cement manufacturing is 3.48, while the multiplier for the full-service restaurant subsector is 1.28. The larger the multiplier, the more significant the "ripple" effect of the sector is (IMPLAN 2017).

Most manufacturing employees earn above the median earnings for the county overall. More importantly, one-third of Miami's manufacturing firms are in the advanced industries sector, characterized by its deep involvement with technology research and development (R&D) and STEM (science, technology, engineering, and math) workers. More than 13,000 workers in that sector earn on average over $57,000.

The advanced industries also have a larger multiplier effect. For example, the employment multiplier for pharmaceutical preparation manufacturing is 5.79, compared to 1.50 for sign manufacturing. This means that for every job in pharmaceutical manufacturing, almost five are generated by the circulation of employee earnings in the economy. Some of the firms in this sector manufacture medical equipment and supplies, aerospace products and parts, navigational and electro- medical instruments, pharmaceuticals, industrial machinery and many others.

Average wages in many of these subsectors exceed the county average for private employees. For example, the average wage in the pharmaceutical and medicine manufacturing subsector is over $92,000. However, there are other subsectors in which wages are significantly lower, for example, ship and boat

Executive **Summary** continued

building ($47,742), audio and video equipment ($40,352), and semiconductor and other electronic component manufacturing ($33,692).

The report also presents the results of a manufacturing survey showing that while Miami's manufacturers have a positive outlook about their future, they also face some challenges. Access to international markets and quality of life were consistently marked as benefits of their Miami-Dade location. However, the majority of businesses perceive the cost of commercial and industrial sites, poor transportation infrastructure, the lack of an adequately educated workforce and lack of business incentives, as negative factors. Only a small majority are committed to staying in Miami-Dade, while 46.1% have considered relocating.

The analytics presented in the report are intended to serve as a baseline for understanding the past and present of the manufacturing sector, and inform decision-makers about the opportunities to support and expand this sector as a way to achieve diversity and competitiveness of the local economy, and prosperity for Miami residents. The recommendations of the report are based on the observation that while manufacturing may not generate a large quantity of jobs, it can produce quality jobs with a level of earnings and security that develop and retain local talent. The report is the initial step in recognizing the presence and importance of the sector, essential in promoting awareness and allowing for the creation of additional resources.

The revival of manufacturing in Miami-Dade in recent years creates an opportunity for local government to incentivize the sector, and especially advanced industry manufacturers. Local education providers and workforce development agencies also need to address the perception for the lack of a skilled workforce in the sector. But most importantly, governmental, business, educational and even nonprofit community-based organizations need to work collaboratively in developing programs that build on and expand the sector's presence in South Florida. The final section of the report presents some of the efforts and resources other communities across the United States have deployed to attract, retain and expand their manufacturing industries.

Miami's Economy at a Glance

2017

96,750	Private establishments
985,879	Private workers
$51,806	Average annual pay
$35,416	Median earnings

Manufacturing at a Glance

2017

2,847	Establishments
40,893	Workers
4.1%	Percent of Private Workforce in Manufacturing
$47,815	Average annual pay
$36,201	Median earnings
$17.6B	Value of production (annual revenues plus net inventory change)

Top 5 Manufacturing Subsectors by Number of Establishments

Printing and Related Activities: 318

Bakeries and Tortilla Manufacturers: 216

Household and Institutional Furniture and Kitchen: 174

Miscellaneous: 153

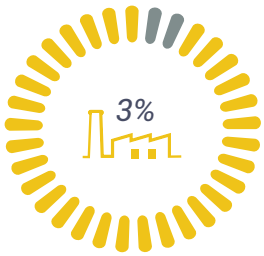
Medical Equipment and Supplies: 142

Advanced Manufacturing

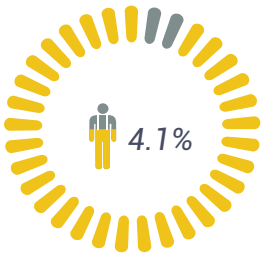
There are 927 manufacturing firms in the advanced industry sector with over 13,000 workers. The average wage in advanced manufacturing is 10.6% higher than the $51,806 average wage in the county.

Make it Miami: Manufacturing Report Key Findings

Miami-Dade County's manufacturing sector has been shrinking for decades as a percentage of the overall local economy.



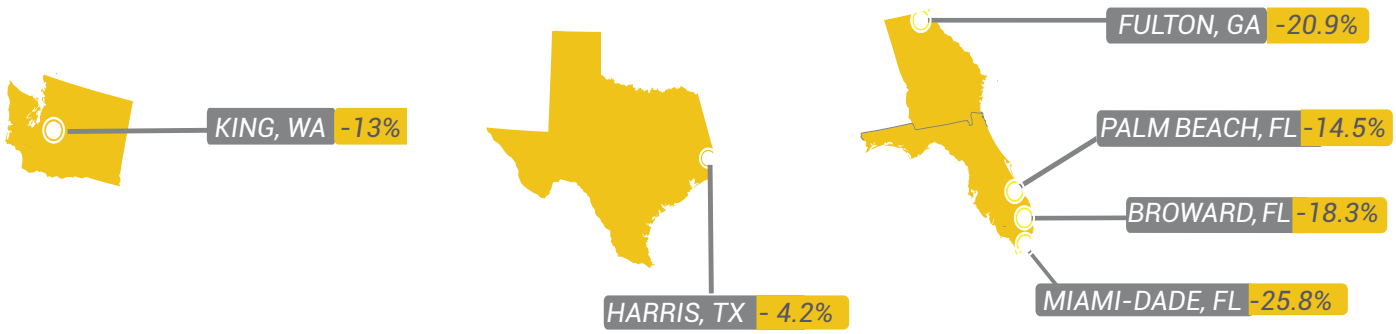
Of the county's **96,740** *private establishments,* 2,847 *are manufacturing businesses.*



Of the county's **985,879** *private sector workers,* 40,893 *are in manufacturing.*

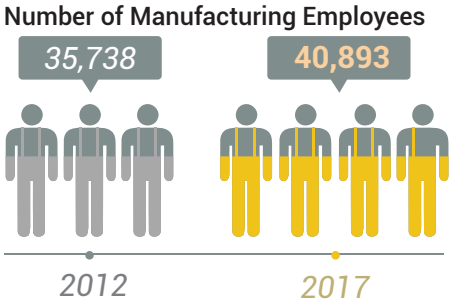
Manufacturing Employment Decline from 2002 to 2017

In comparison to five other benchmark counties, Miami-Dade experienced the largest decline in manufacturing employment.



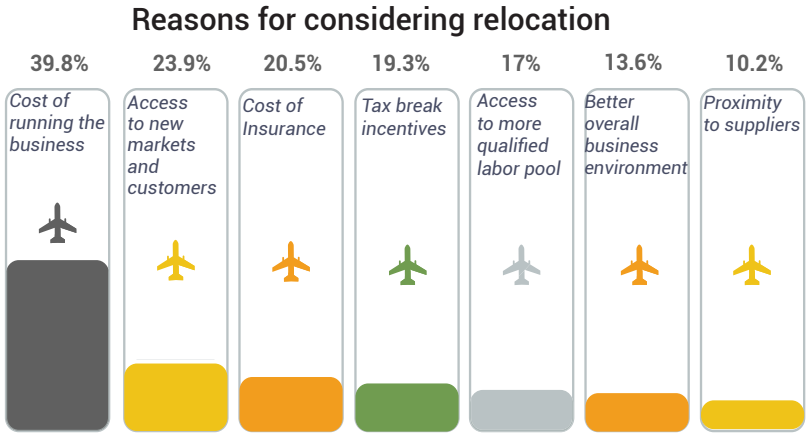
However, there are signs of a trend reversal.

Manufacturing employment increased by 14.5% from 2012 to 2017.



Many Miami-Dade manufacturers have considered relocating out of the county.

Most of the businesses surveyed (53.9%) are committed to staying in Miami-Dade. However, almost one third of businesses have considered relocating, although they have not made concrete plans. Additionally, almost one in six businesses have already made plans to relocate.



Advanced Manufacturing

Use of innovative technologies to create existing products and the creation of new products. Advanced manufacturing can include production activities that depend on information, automation, computation, software, sensing, and networking.[1]

Advanced manufacturing plays a key role in creating higher-wage jobs. Average wage in advanced manufacturing is $57,275, 10.6% higher than the average wage of all businesses in the county - $51,806.

Advanced manufacturing firms in the county number 927, accounting for about a third (32.5%) of all manufacturing firms.

Almost a third (32.7%) of all manufacturing employment in the county is in the advanced sector.

[1] *Advanced Manufacturing National Program Office. Manufacturing.gov. [Online] https://www.manufacturing.gov/.*

Recommendations

Urban manufacturing matters to the production and job creation in cities that lack economic opportunity. Manufacturing also has a multiplier that far exceeds that of service jobs: for every job gained or lost, 2–3 supporting jobs are similarly affected. While manufacturing is not among the top employment sectors in Miami-Dade, its value added is significant, as it generates high wage jobs. To stem the further decline of Miami-Dade's manufacturing sector, and acknowledging the significant impact that technology is having on the sector, the FIU Metropolitan Center and the SBDC at FIU recommend several general strategies. These strategies, which take into account that most manufacturers are small businesses, encourage the growth of advanced manufacturing businesses in Miami-Dade County in order to help diversify the local economy and create the higher-wage jobs that come from advanced manufacturing.

Recommended Actions:

- Promote existing resources for manufacturers and enable creation of additional resources
    - Create Miami-Dade Manufacturer's Resource Guide;
    - Collaborate with Beacon Council to encourage local public officials to explore incentives specific to advanced manufacturing
- Raise awareness about the presence of local clusters, especially in advanced industries
    - Organize events for advanced manufacturing industries;
    - Develop and execute information and communications campaign within the sector

- Address talent/skills challenge for 50+ employers
    - Tap into local and regional educators, as well as national training providers, to help assess the current competency level of the workforce and determine training needs.
    - Create training programs for workers/executives in advanced manufacturing industries;
    - Develop industry-talent connections through apprenticeships
    - Align vocational training in high schools and colleges with the needs of the manufacturing sector
- Partner with South Florida Manufacturer's Association to strengthen organization's presence in Miami-Dade and collaborate on above efforts
- Preserve the inventory of industrial land and maintain the availability of suitable urban land for the kind of buildings and operations-intensive activities that characterize manufacturing. As demand for industrial space increases, planners and policy-makers will need to consider infill sites whenever possible.
- Develop and evaluate continuously the performance of any initiatives aimed at supporting and expanding manufacturing opportunities by measuring impact through sales/revenue generation, employment and wage growth.

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History of Manufacturing
in Miami-Dade County

The Miami metropolitan area has been a dynamic and changing urban region since World War II. It began as a tourist and retirement haven and developed a more diversified economy in the post-war years with small-scale and specialized manufacturing spreading during and after the 1950s. Although heavily dependent upon tourism and tourist-related activities, the Miami economy developed an increasingly important manufacturing sector since World War II. Miami was the least industrialized metropolitan area in the United States in 1940 with 3,600 workers or about 3.3 percent of the labor force holding factory jobs. By 1950, manufacturing employment had risen to 14,600 or 9.4 percent of workers. At the end of the fifties, factory work had expanded further, employing about 38,000 people which was about 13 percent of the labor force.[1]

Manufacturing employment continued to rise steadily after 1960: reaching about 75,000 in 1970; about 92,500 in 1974; and an estimated 118,000 in 1980. [2] In the 1940s and 1950s, Miami's manufacturing was characterized by relatively small plants and centered on consumers goods such as food products, bread baking, meat packing, bottled beverages, home furnishings, fishing and sports equipment, and clothing. In addition, local factories provided other products for local needs: concrete and lumber products, fabricated metal and aluminum goods, printing and publishing, and boat building. By the 1970s, Miami manufacturers were expanding beyond local and regional markets and beginning to tap national and international markets. New industries included plastics, electronic equipment, aircraft parts, and medical technology.[3] An extensive garment industry emerged, often using refugees and illegal alien workers who labored under conditions reminiscent of old-time sweatshops.[4] Most of the area's 4,700 manufacturing firms in 1980 were small, but taken together helped to create a more balanced economy, no longer exclusively dominated by tourism.[5]

[1] Mohl, Raymond A. 1982. Changing Economic Patterns in the Miami Metropolitan Area, 1940-1948. Tequesta 42: 63-74.

[2] Wolff, Miami, 154; "Growth of Manufacturing in Metropolitan Dade County," Miami Economic Research, 12 (October 1959), 2; Urban Development Services, Metropolitan Miami (Miami, 1962), 31; Robert Johnson, "Recession Sick Southeast Seeks New Medicine," Florida Trend, 18 (April 1976), 67; "Region's Focus Turns Toward Development," Miami Magazine (September 1977), 33.

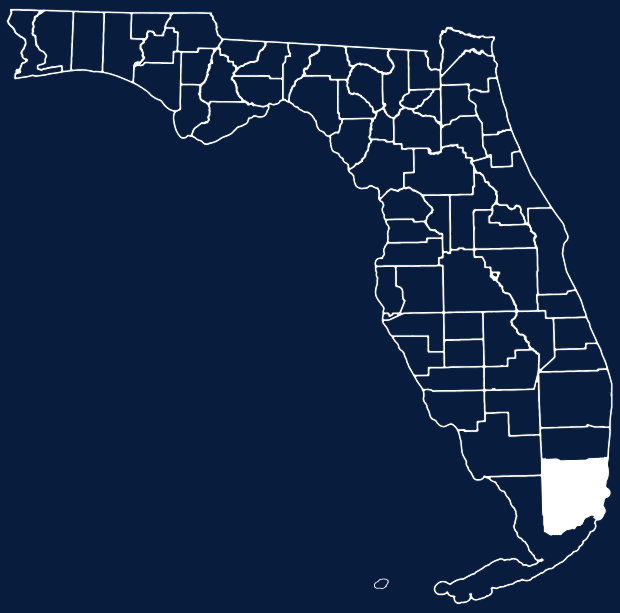
[3] Wolff, Miami, 85-94; Wolff, Miami Metro, 13-15, Jenna, Metropolitan Miami, 43-51; Gene Burnett, "Medical Technology Quietly Becomes a South Florida Growth Industry," Florida Trend, 19 (April 1977), 149-158; Michael Silver, "Electronics: The Circuits Connect Here," Miami Herald, Business Monday, August 11, 1980; Robert Dodge, "Health Industry Matures, Suffers Growing Pains," Miami Herald, Business Monday, September 29, 1980.

[4] Barry J. Hersker, "Women's Apparel Manufacturing in Florida," Business and Economic Dimensions, 1 (November 1965), 1-4, 18-21; James Risen, "Sweatshops Pervasive in Miami," Miami Herald, Business Monday, May 18, 1981; Bernard Swartz, "Sweatshops in Fashion," Miami Magazine, 32 (August 1981), 40-43, 92; Miami News, May 21, 22, 23, 28, 1981; Miami Herald, May 25, 1981.

[5] "Region's Focus Turns Toward Development," Miami Magazine, (September 1977), 33.

Over the course of the post-war era, the location of manufacturing in the county shifted. At first, most manufacturing was located in the City of Miami, either in the Central Business District or along a north-south strip running parallel to the two rail lines entering the city, including the Wynwood area. By the 1950s, many industries had relocated to Hialeah, North Miami, and the unincorporated areas in the northwest. More space, cheaper land, lower taxes, availability of a working-class population, and other inducements drew new industry to Hialeah and the northwest area. County zoning policies contributed to the deconcentration of industry as well. Designation of large sections in the western unincorporated area for industrial development, as well as the growth of industrial parks near Miami International Airport and major expressways, has tended to decentralize Dade County manufacturing. Following the dispersal of population, industrial activity extended far beyond the boundaries of the central city.

The Current State of Manufacturing in Miami-Dade County and South Florida



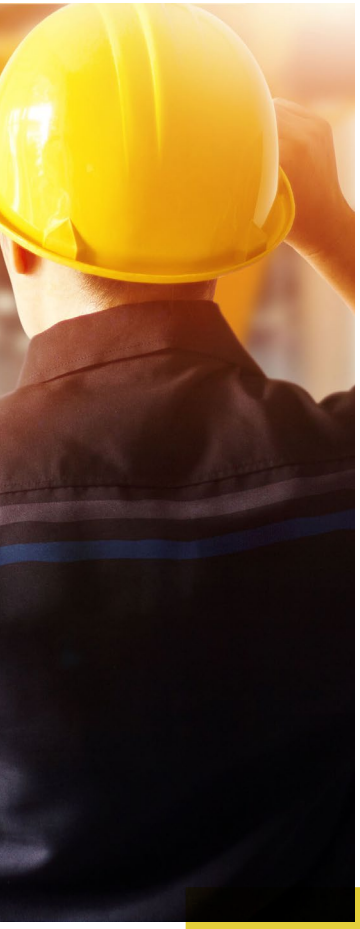
Make it Miami

The manufacturing sector typically has been considered one of the most important sectors in the United States, providing stable jobs with earnings above the average overall per capita earnings. Manufacturing jobs in the United States have declined considerably over the past several decades, peaking in 1979 at 19.4 million. In less than a decade, by 1987 manufacturing jobs decreased to 17.6 million. From nearly a third (32.1%) of the country's total employment in 1953, manufacturing employment has fallen to about 12% today. Today, the manufacturing sector is the fifth largest employer, after health care and social assistance, retail trade, accommodation and food services, and administrative, support, waste management and remediation services.[6]

[6] U.S. Census Bureau, 2018. Measuring America: Manufacturing in America. https://www.census.gov/library/visualizations/2018/comm/manufacturing-america-2018.html

The decline in manufacturing jobs is the product of various dynamics, most dominant of which are offshoring and automation. While offshoring has played a significant role, it is important to note that the U.S. manufacturing output, which is the value of goods and products manufactured in the U.S., has grown strongly. Manufacturing has historically experienced rapidly rising productivity growth and declining employment. The debate on the reasons for the decline of employment in the sector continues, with one camp blaming foreign competition, and the other side pointing to the role of automation as a job-killer.

However, the manufacturing sector has a very low unemployment rate, possibly related to the high demand for workers with specialized skills in the industry. In 2017, the unemployment rate for manufacturing workers was 3.3%, the lowest since 2000. The highest unemployment rate was in 2009 -11.9%. Preliminary data for October 2018 shows 522,000 job openings in the sector, the highest of any month over the last two decades (U.S. Bureau of Labor Statistics).



The business and employment trends of the manufacturing sector in Miami-Dade mirror some of the national trends in both number of establishments and workforce. Table 1 shows that nationally, the number of manufacturing firms and employment in the sector decreased over the last 15 years. While the recession decline affected all sectors, the manufacturing decline had started prior to 2007. From 2002 to 2006, the number of U.S. establishments decreased by 6.2% continuing the trend from the 1980s and 1990s (U.S. Bureau of Labor Statistics). In the last two decades, the smallest number of manufacturing establishments in the U.S. economy was in 2012-2013 when there were 335,000 firms in the sector.

Similarly, in Miami-Dade, the sector had been in decline for decades. It shrank in the recession but recovered in 2017, when there were a total of 2,847 establishments. Manufacturing in Miami has undergone a quiet revival as the number of firms in 2017 is only slightly below the high of 2,932 in the last 15 years. While the number of firms grows, the total number of employees in them has shrunk.

Table 1: U.S. Manufacturing Profile, 2002-2017

Year	Firms	Total Employment	Avg. Wages
2002	383,863	15,209,192	$44,097
2007	361,419	13,833,022	$53,489
2012	334,800	11,904,945	$60,496
2017	346,723	12,406,757	$66,840

Table 2: Miami-Dade Manufacturing Profile, 2002-2017

Year	Firms	Total Employment	Avg. Wages
2002	2,932	55,083	$31,878
2007	2,591	46,742	$39,716
2012	2,636	35,738	$44,006
2017	2,847	40,893	$47,815

Source: Quarterly Census of Employment and Wages (QCEW), U.S. Bureau of Labor Statistics.

Another notable fact is the growth of the sector in the last five years. From 2012 to 2017, the number of manufacturing firms increased by 3.6% and the sector's workforce grew by 4.2%. In fact, the Miami-Miami Beach-Kendall metro area placed fourth among the 71 largest metros (those with more than 450,000 nonfarm jobs) with 22.6% growth in industrial jobs, while West Palm Beach-Boca Raton-Delray Beach placed fifth with 27.3% job growth since 2012.

The creation of new manufacturing jobs has not been accompanied by a significant upward push in wages. Manufacturing wages in Miami-Dade continue to lag behind the wages of workers in the United States overall. In fact, the gap has increased. Manufacturing workers were paid 35% less in 2007 and 40% less in 2017, in comparison to national wage levels for the sector.

One possible explanation for the lower manufacturing wages overall is the underrepresentation of manufacturing establishments in the advanced industries sector. The advanced industries distinction was developed by the Brookings Institution after the 2008 recession, as a tool to explain the role of specific industries that inordinately drive regional and national prosperity. Beginning with the 2015 report "America's Advanced Industries: What They Are, Where They Are, and Why They Matter," Brookings formally defined and began to track the growth of the sector. Despite the decline of the sector in terms of overall employment, it remains a vital source of innovation and competitiveness, making outsized contributions to research and development, exports, and productivity growth. Within the sector, there are 35 manufacturing industries — aerospace, automotive, and medical devices among them – which rely on high-value innovation and technology.

The most recent data reported by manufacturing sector establishments in Miami-Dade is from the second quarter of 2018, provided by the Florida Department of Economic Opportunity. It shows that the manufacturing sector in Miami is primarily comprised of establishments that fall in the light industry category, meaning that they produce small goods that will be sold to household consumers rather than to another manufacturer (Figures 1- 2).

Of the 2,847 manufacturing establishments reported by the Florida Department of Economic Opportunity, only 927 are classified in the advanced industry sector. The average wage in these establishments is $57,275, 10.6% higher than the average wage of $51,806 in the county. The manufacturing firms in the advanced industry sector employ over 13,000 workers, approximately one-third of the manufacturing workforce.

As already noted, the average manufacturing firm size in the sector in Miami-Dade is 14. Of the top three sub-sectors with large employment, architectural and structural metals manufacturing firms have average employment of 22. Firms in the printing and related support activities subsector have 9 employees on average. Bakeries and tortilla manufacturing firms average 13 employees. The median manufacturing firm size overall in Miami-Dade is 12 employees.

Figure 1: Top 10 Manufacturing Industries in Miami-Dade County by Number of Establishments

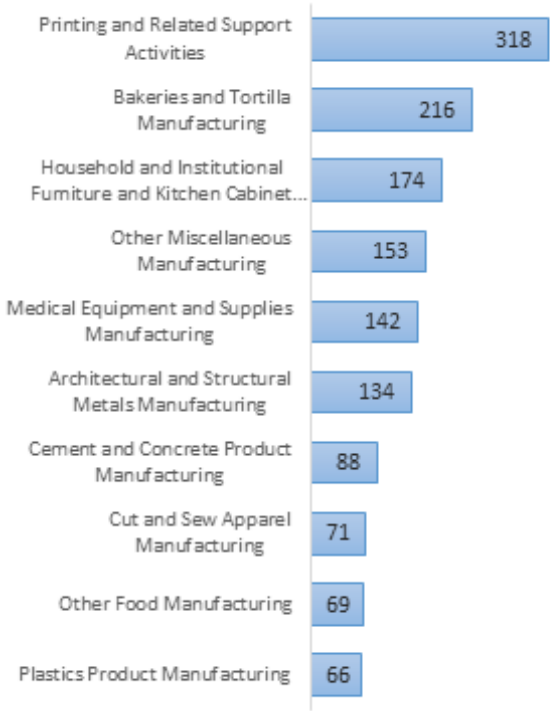
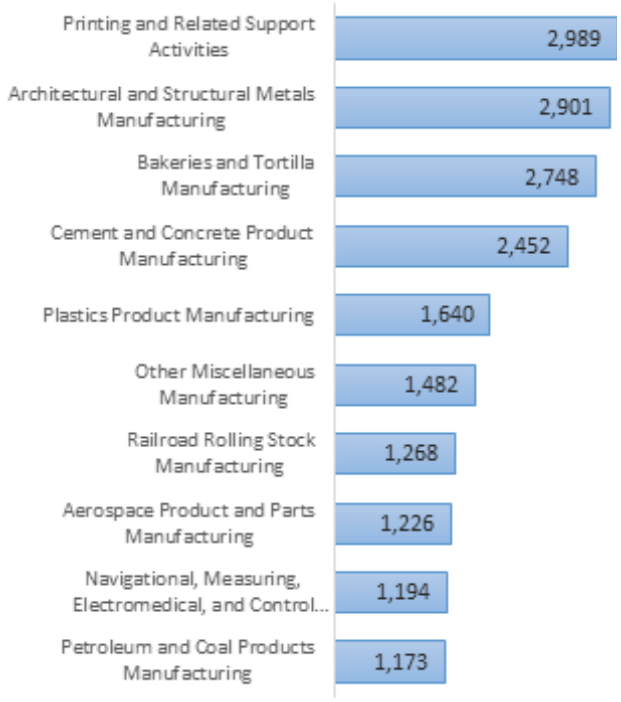


Figure 2: Top 10 Manufacturing Industries in Miami-Dade County by Number of Employees



Source: Quarterly Census of Employment and Wages (QCEW), U.S. Bureau of Labor Statistics.

Trend data from the U.S. Bureau of Labor Statistics shows that over the last 10 years, the number of manufacturing firms in Miami-Dade increased by 9.9%, which was lower than the 13.1% increase of firms in the county overall. Figures 3 and 4 show that the recovery of the manufacturing sector lagged. The number of businesses in the county began increasing in 2010, while in manufacturing the first increase was in 2011. However, the number of manufacturing firms still has not reached its 2002 level of 2,932.

Figure 3: Number of Business Establishments in Miami-Dade County, 2002-2017

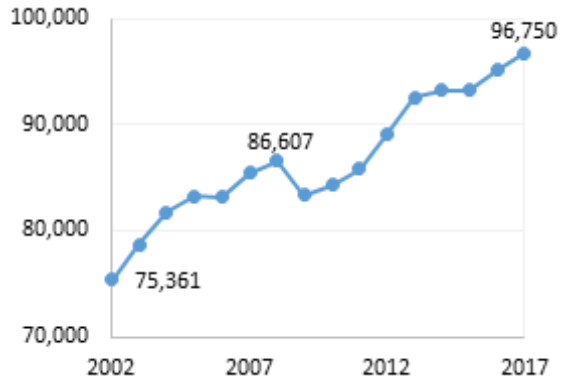
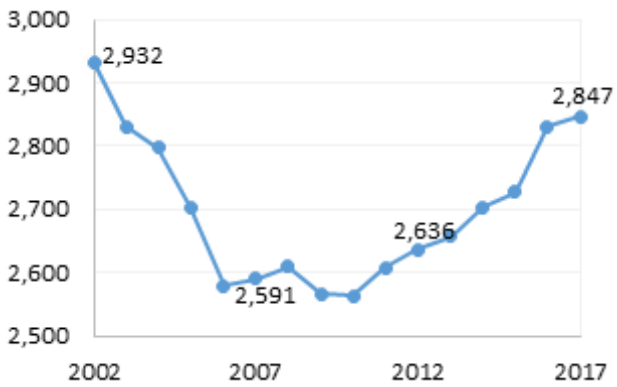


Figure 4: Number of Manufacturing Establishments in Miami-Dade County, 2002-2017



The increase of the workforce employed in private firms in Miami-Dade mirrored the increase in establishments. From 2007 to 2017, there was a 13.9% increase of private employment overall. However, employment in the manufacturing sector declined in that period. Figure 6 shows that a gradual increase of employment in the sector commenced in 2011. but the 2017 employment levels are well below the over 55,000 employees reported in 2002.

Figure 5: Number of Private Establishment Employees in Miami-Dade Businesses, 2002-2017

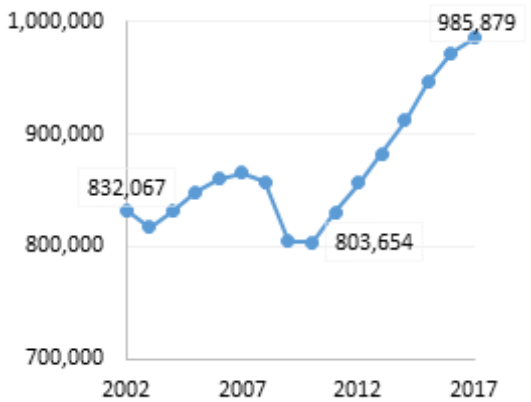
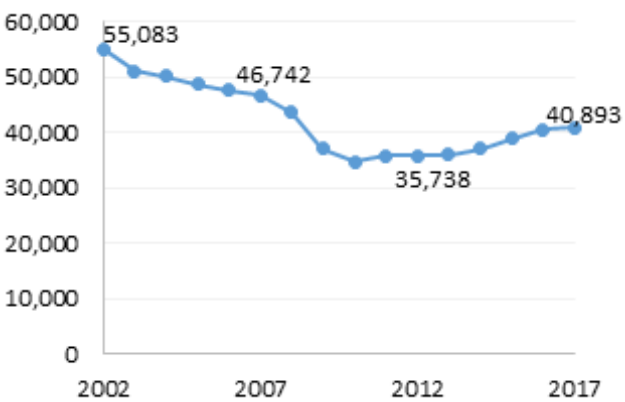
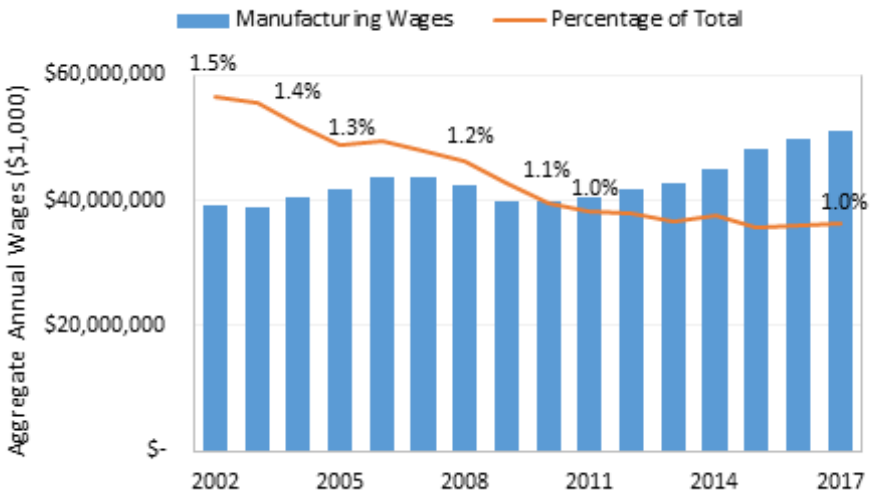


Figure 6: Number of Employees in Manufacturing Businesses in Miami-Dade, 2002-2017



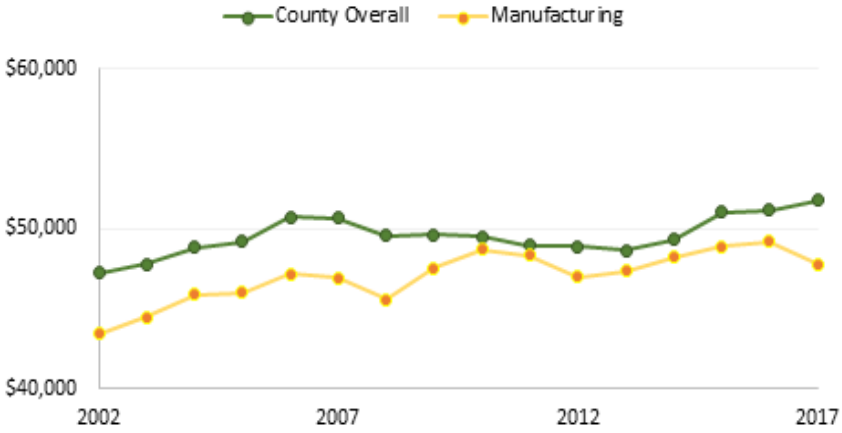
The manufacturing sector is not performing as well as the overall economy in terms of wages. Total wages for all private workers in Miami-Dade (adjusted for inflation) increased by 16.4% since 2007. Total wages paid increased from an estimated $44 billion to $50 billion in 2017, however declined by 12% in the manufacturing sector with total wages paid decreasing from an estimate of $561 million to $493 million in 2017. The decline is even more significant since 2002 – 17%. As shown in Figure 7, Manufacturing wages represent only 1% of total wages paid by private employers in the county.

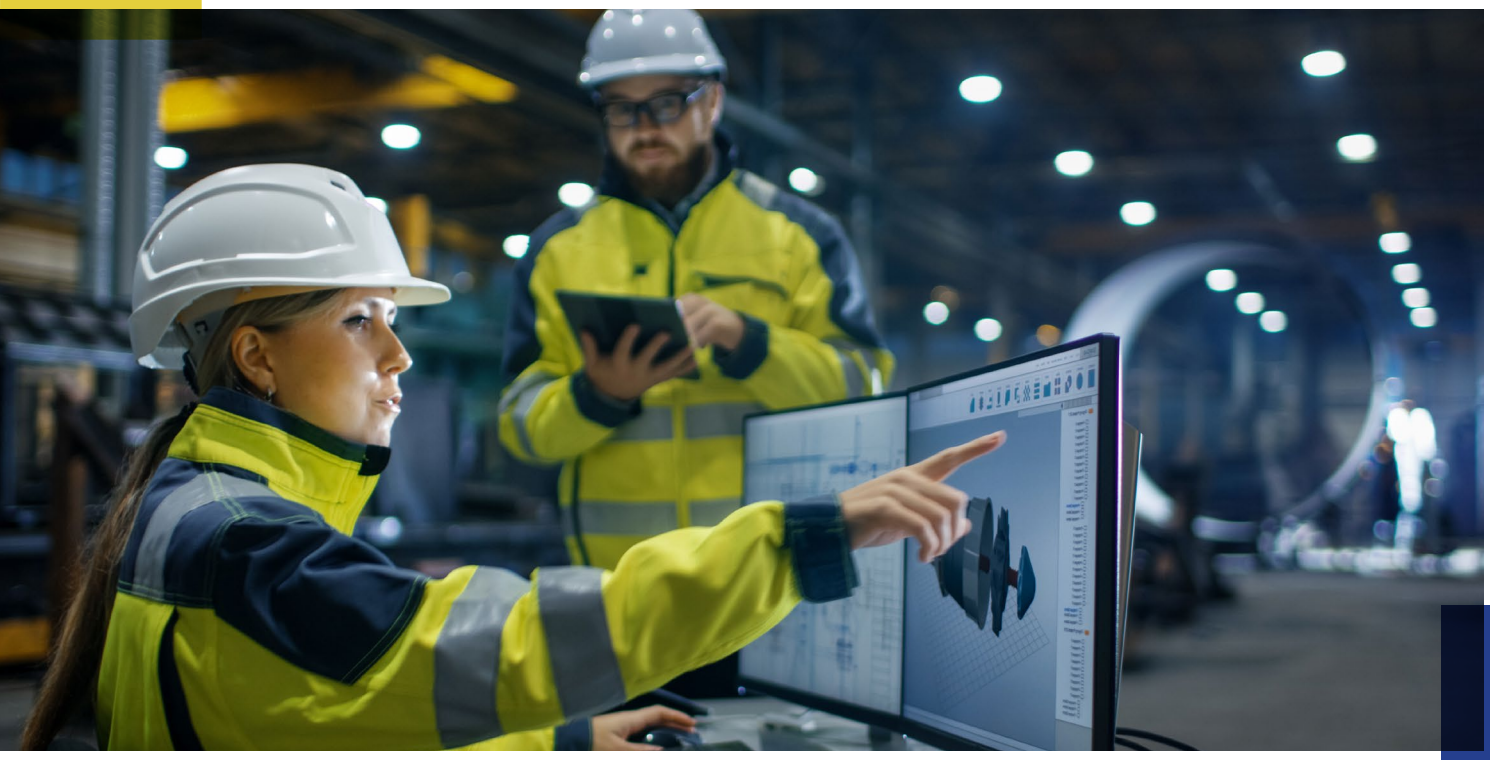
Figure 7: Aggregate Manufacturing Wages, 2002-2017



When adjusted for inflation, average wages for workers in all sectors increased only nominally, by 2.2% since 2007 for the county overall, and 1.8% in the manufacturing sector. Despite the upward trend, the average wages in the manufacturing sector trailed wages overall in the county (Bureau of Labor Statistics, Figure 8). In fact, while wages in the county overall continued to increase, there was a 2.8% decrease in average manufacturing sector wages from 2016 to 2017. Averages are affected by very high and very low wage earners who can skew the figure in a particular direction. Median earnings are not available from the Bureau of Labor Statistics but the most recent U.S. Census estimates for 2017 show that the earnings for full-time employees in the manufacturing sector was $36,201, 2.2% higher than the overall earnings in the county of $35,416. The higher median earnings in manufacturing indicate a higher proportion of better paid jobs in that sector.

Figure 8: Average Annual Wages in Miami-Dade Overall and for Manufacturing Businesses, 2002-2017





Manufacturing Occupations and Wages
in Miami-Dade County

The 2012 report, The Benefits of Manufacturing Jobs, concluded, "The compensation premium [for manufacturing jobs] has risen over the past decade across all levels of educational attainment. In sum, manufacturing jobs provide benefits to workers with higher overall compensation than other sectors, and to the economy through innovation that boosts our nation's standard of living."*

The "compensation premium" the authors refer to is the greater wages and benefits that manufacturing workers earn relative to comparably skilled workers in other sectors. This compensation premium is one of the reasons why manufacturing jobs are described as high quality jobs. The sector has historically offered opportunities for workers without college degrees to gain technical skills and climb the economic ladder.

The relatively low manufacturing wages reported in the previous section are the product of the types of manufacturing sectors represented in Miami-Dade County. The 2017 average manufacturing wage in Miami-Dade was $47,815, 28% lower than the average manufacturing wage nationally. Only one of the top ten employment manufacturing subsectors in Miami-Dade is

*Langdon, David, and Rebecca Lehrman. 2012. The Benefits of Manufacturing Jobs. ESA Issue Brief no. 01-12, Economics and Statistics Administration, U.S. Department of Commerce.

also in the top high-wage manufacturing sectors - petroleum and coal products manufacturing, which has fewer than 1,200 employees. The other subsectors with high employment in Miami-Dade have relatively low average wages. In 2017, the printing and related support activities sector had average wages of $39,888. Architectural and structural metals manufacturers paid on average $39,487. Wages in bakeries and tortilla manufacturers were $31,629 on average. Collectively, these sectors employ almost 9,000 workers.

There are significant variations in wages across the occupational categories of sectors. Table 3 shows that average salaries in manufacturing range from over $131,000 for management occupations, to just under $31,000 for transportation and material moving occupations. Production occupations, which are the majority of jobs in the sector, pay about $32,000.

The occupations with the highest salaries require university degrees. According to the Florida Department of Economic Opportunity, a Bachelor's degree is required for sales representatives of wholesale and manufacturing, technical and scientific products. However, some of the well-paid occupations, such as technicians or first-line supervisors of production and operating workers, only require college credit certificate or Associate's degree. The average salary of mechanical engineering technicians is $46,090. The average salary of first-line supervisors is almost $56,000.

The same occupational categories have different wages across various industry sectors. For example, in the accommodations and food services sector, management occupations pay only $90,375, while sales occupations pay only $26,066 on average. The same occupations generally have the highest wages in the information, healthcare, and the professional, scientific and technical services sectors. The manufacturing sector pays better wages across most occupations than accommodation and food services, retail and the arts entertainment and recreation sectors.

Table 3: Manufacturing Occupations Employment and Salary, Miami-Dade County

Occupation Category	Employment	Average Salary	Median Salary
Management	1,690	$131,764	$113,112
Architecture and engineering	1,540	$62,030	$58,091
Business and financial operations	1,020	$61,646	$54,995
Sales and related	1,510	$60,087	$46,860
Installation, maintenance and repair	1,610	$44,068	$40,622
Construction and extraction	1,140	$38,956	$35,692
Office and administrative support	4,760	$36,301	$32,787
Production	23,160	$31,938	$28,372
Transportation and material moving	3,580	$30,638	$28,637

Source: Florida Department of Economic Opportunity, Labor Market Statistics

COMPARISON OF MIAMI-DADE'S MANUFACTURING BUSINESSES WITH BENCHMARK COUNTIES

Make it Miami

This section compares Miami-Dade County's businesses and manufacturing sector with counties across South Florida and benchmark counties across the nation. The section puts in perspective the current employees, wages paid, and average wages in all sectors of business and the manufacturing sector.

Over the 2002-2017 period, Miami experienced a robust growth in new businesses, with an increase of over 20,000 private establishments (28.4%). Table 4 shows that this growth was present in the other large counties in the region. Although it trails Miami in number of establishments overall, the number of firms in Palm Beach increased by 39.4%, to over 55,000. Of the three benchmark counties, only Harris County (TX) in which Houston is located, had growth larger than Miami-Dade.

Table 4: Number of Business Establishments in South Florida & Benchmark Counties, 2002-2017

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2002	75,361	53,221	39,713	36,172	87,792	83,907
2007	85,477	64,317	49,641	39,104	97,838	75,651
2012	89,039	63,133	49,444	40,830	103,359	82,290
2017	96,750	68,271	55,372	42,325	114,580	86,931
Change ('02-'17)	28.4%	28.3%	39.4%	17.0%	30.5%	3.6%

As previously noted, the manufacturing sector in Miami-Dade resisted the trend, and shrunk in terms of firms by 2.9% since 2002. Table 5 shows that Broward and Palm Beach had a growth in manufacturing establishments, although smaller than their overall firm increases. Manufacturing also shrank in Seattle (King County, WA) and Houston (Harris County, TX).

Table 5: Number of Manufacturing Establishments in South Florida & Benchmark Counties, 2002-2017

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2002	2,932	1,929	1,165	954	4,897	2,886
2007	2,591	1,871	1,154	904	4,716	2,467
2012	2,636	1,846	1,191	876	4,554	2,225
2017	2,847	1,990	1,355	963	4,802	2,519
Change ('02-'17)	-2.9%	3.2%	16.3%	0.9%	-1.6%	-12.7%

The comparison of employment growth in the overall economy and in the manufacturing sector also shows reverse tendencies. Overall private employment in Miami-Dade increased by 18.5%, which suggests the economy has recovered from the recession (Table 6). However, within the same period, manufacturing employment in Miami-Dade decreased by 25.8%. One positive development is the 14.4% increase over the last five years, in which manufacturing businesses added about 5,000 jobs. Table 7 shows that the manufacturing employment decline in Miami-Dade was the largest of all comparison counties.

Table 6: Number of Employees in Businesses across South Florida & Benchmark Counties, 2002-2017

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2002	832,067	580,148	444,988	639,042	1,614,890	950,885
2007	865,334	648,099	495,042	564,785	1,767,447	1,020,173
2012	856,865	604,893	446,592	630,380	1,860,385	1,007,018
2017	985,879	694,315	535,850	753,469	1,997,358	1,187,306
Change ('02-'17)	18.5%	19.7%	20.4%	17.9%	23.7%	24.9%

Table 7: Number of Employees in Manufacturing across South Florida & Benchmark Counties, 2002-2017

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2002	55,083	33,084	22,977	37,839	176,535	117,068
2007	46,742	30,819	18,823	33,711	180,761	111,894
2012	35,738	25,271	15,246	26,344	188,516	102,536
2017	40,893	27,016	19,642	29,945	169,198	101,825
Change ('02-'17)	-25.8%	-18.3%	-14.5%	-20.9%	-4.2%	-13.0%

The following figures 9 and 10 show the total wages of private establishments overall and for the manufacturing sector. While Miami-Dade leads in payroll among the South Florida counties at about $51 billion in 2017, the other three comparison counties outside of South Florida all have higher payroll figures that range from about $57 billion to about $139 billion within the same year (See Figure 9). Manufacturing payroll in Miami-Dade is approximately 1% of total payroll at about $493 million in 2017 (See Figure 10). In Broward, manufacturing accounts for 4.3% of payroll with total wages paid at about $1.5 billion and in Palm Beach, it is 4.9% with total wages paid at about $1.4 billion (2017).

Figure 9: Total Wages Paid in Businesses (in $1,000)

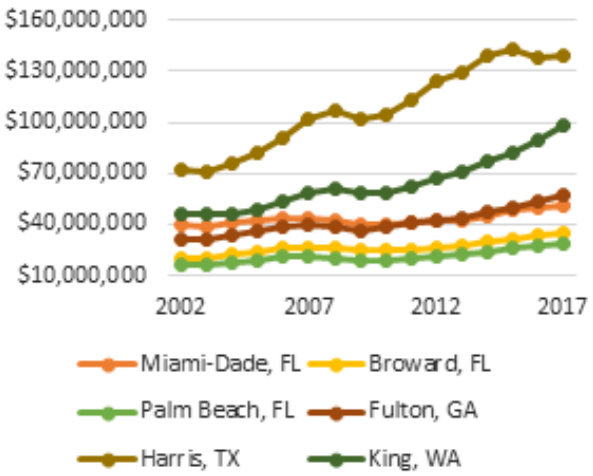
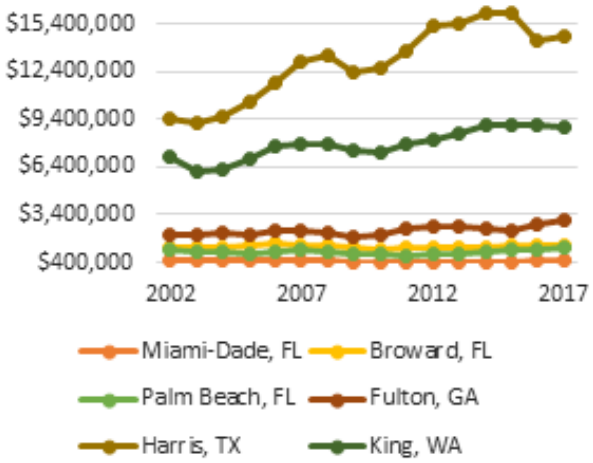
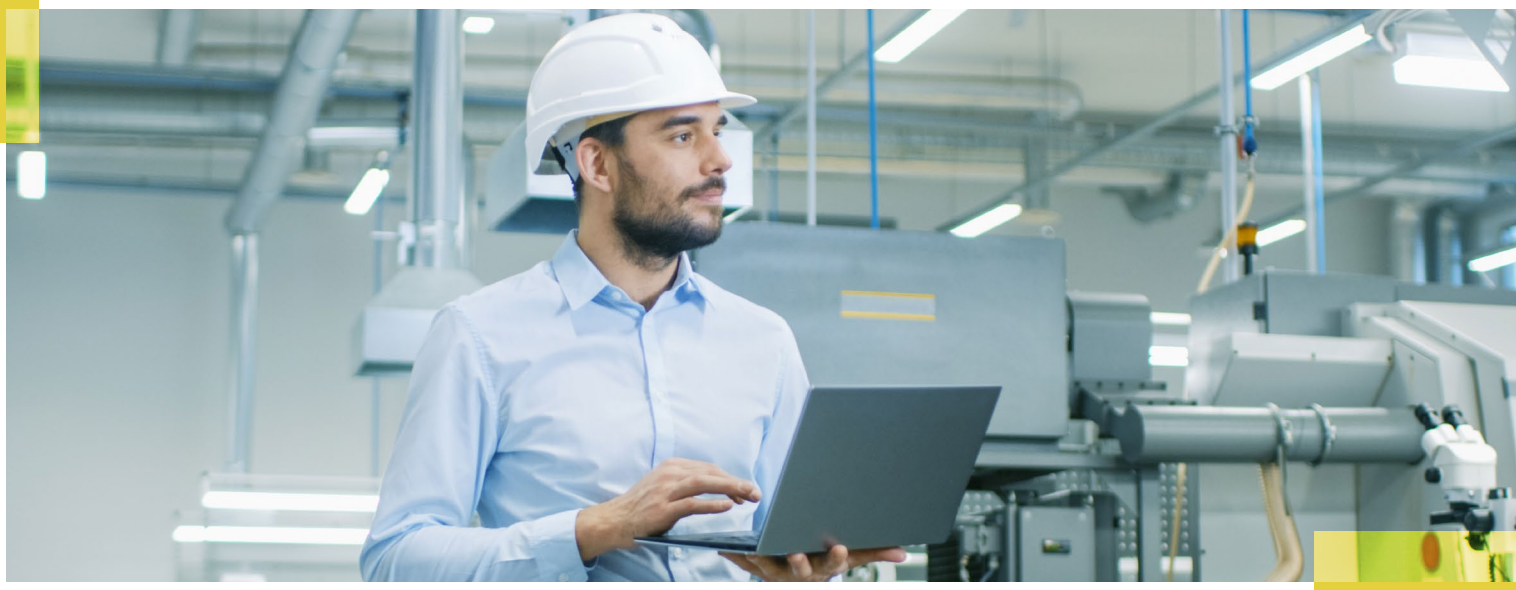


Figure 10: Total Wages Paid in Manufacturing (in $1,000)





Overall, wages in Miami-Dade County are lower than in the five comparison counties, as shown in Table 8. Among the three South Florida counties, average wages were highest in Palm Beach, followed by Miami-Dade. However, workers in Miami-Dade earn $18,000 less than private employees in Harris County, almost $25,000 less than employees in Fulton County, and over $31,000 less than those in King County.

Table 9 shows that the gaps are even larger in the manufacturing sector. In the three South Florida counties, manufacturing employees get paid the least in Miami-Dade. Miami-Dade manufacturing employees earn 35% less than those in Harris County, 47% less than Fulton County, and 60% than King County.

Table 8: Average Wages Paid in Business across South Florida & Benchmark Counties, 2002-2017

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2002	$34,676	$33,618	$36,384	$49,486	$44,499	$48,676
2007	$42,885	$41,068	$43,423	$61,021	$57,402	$56,812
2012	$45,803	$43,895	$47,076	$67,145	$66,486	$66,694
2017	$51,806	$50,355	$52,745	$76,034	$69,787	$83,050

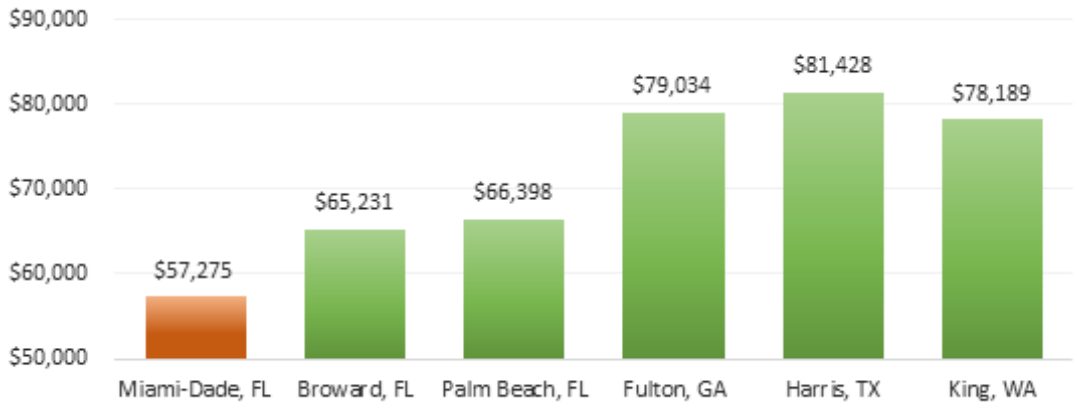
Table 9: Average Wages Paid in Manufacturing across South Florida & Benchmark Counties, 2002-2017

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2002	$31,878	$41,991	$50,289	$56,969	$53,540	$60,124
2007	$39,716	$48,783	$61,604	$70,230	$72,221	$69,728
2012	$44,006	$53,239	$60,983	$100,634	$80,805	$79,058
2017	$47,815	$55,361	$69,852	$100,341	$86,448	$88,142

The trend is the same in Miami-Dade County when it concerns average wages paid in manufacturing and average wages paid in advanced manufacturing industries. Average wages in Miami-Dade are lower than the five comparison counties. Across the South Florida counties, average wages paid in advanced manufacturing industries were still the highest in Palm Beach and lowest in Miami-Dade.

Figure 12 shows that workers in Miami-Dade's advanced manufacturing industries on average earn about $24,000 less than private employees in King County, about $25,000 less than private employees in Fulton County, and almost $28,000 less than the workers in Harris County.

Figure 11: Average Wages Paid in Advanced Manufacturing across South Florida & Benchmark Counties, 2017



THE CHARACTERISTICS OF NONEMPLOYER MANUFACTURING BUSINESSES IN MIAMI-DADE COUNTY

A nonemployer business is one that has no paid employees, has annual business receipts of $1,000 or more, and is subject to federal income taxes. (U.S. Census)

Make it Miami

U.S. Census analysis for the change in nonemployer establishments nationally shows a significant increase in their number. However, the economic impact, as measured by the share of nonemployer establishment revenues in total revenues, has not increased in roughly 20 years. Nonemployer establishments grew by 2.0 percent from 2015 to 2016 but their real revenues grew by just 0.2 percent, evidence of a very small economic impact. In fact, over the medium term there has been a slight decline in the nonemployer establishment share of all revenue between 2007 and 2016, from 3.3 to 3.1 percent of all revenue.

This section presents the characteristics of nonemployer manufacturing businesses in Miami-Dade County, including the number of establishments, receipts, and average receipts in all sectors of business and the manufacturing sector. The most current data available released by the U.S. Census is for 2016.

Miami-Dade County had an increase in establishments for all sectors of business every year from 2005 to 2016; with an overall 59% increase from 2005 to 2016 (See Figure 12). Miami-Dade County had an increase in nonemployer manufacturing establishments every year from 2005 to 2016, except for 2007 to 2008; with an overall 39% increase from 2005 to 2016 (See Figure 13).

Figure 12: Number of Non-Employer Business Establishments in Miami-Dade, Year-Over-Year

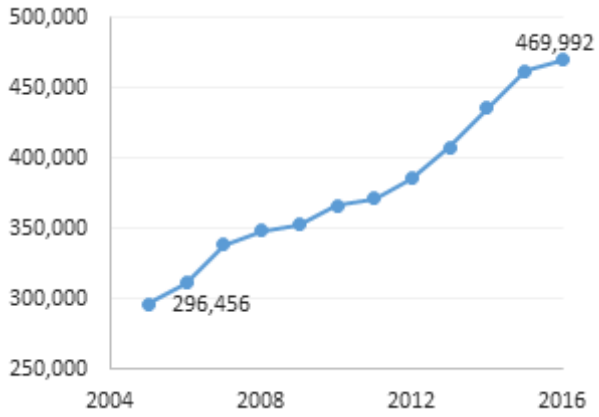
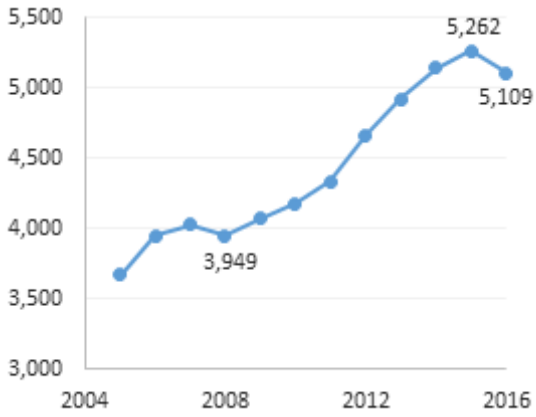


Figure 13: Number of Non-Employer Manufacturing Establishments in Miami-Dade, Year-Over-Year



Miami-Dade County had an increase in receipts for all sectors of business every year from 2005 to 2016, except for 2007 to 2009 and 2015 to 2016; with an overall 23% increase from 2005 to 2016 after adjusting for inflation (See Figure 14). Miami-Dade County has had an increase in receipts for the manufacturing sector every year from 2005 to 2016, except for 2007 to 2009 and 2015 to 2016; with an overall 10% increase from 2005 to 2016 after adjusting for inflation (See Figure 15).

Figure 14: Non-Employer Business Receipts in Miami-Dade, Year-Over-Year

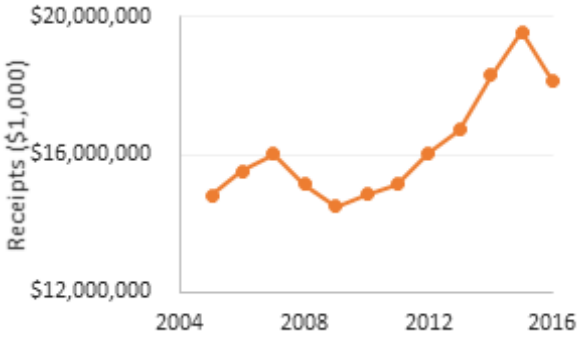
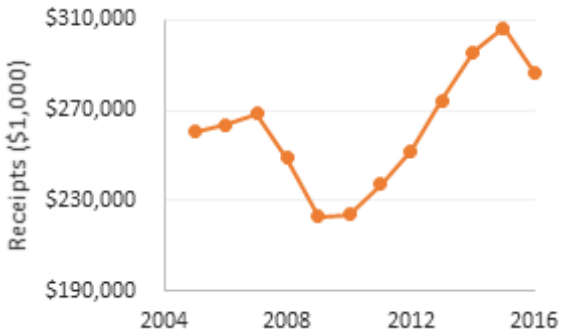


Figure 15: Non-Employer Manufacturing Receipts in Miami-Dade, Year-Over-Year



Miami-Dade County had a decrease in average receipts for all sectors of business every year from 2005 to 2016, except for 2010 to 2012 and 2013 to 2015; with an overall 23% decrease from 2005 to 2016 after adjusting for inflation (See Figure 16). Miami-Dade County had a decrease in average receipts in the manufacturing sector every year from 2005 to 2016, except for 2010 to 2011 and 2012 to 2015; with an overall 21% decrease from 2005 to 2016 after adjusting for inflation (See Figure 17).

Figure 16: Average Non-Employer Business Receipts in Miami-Dade, Year-Over-Year

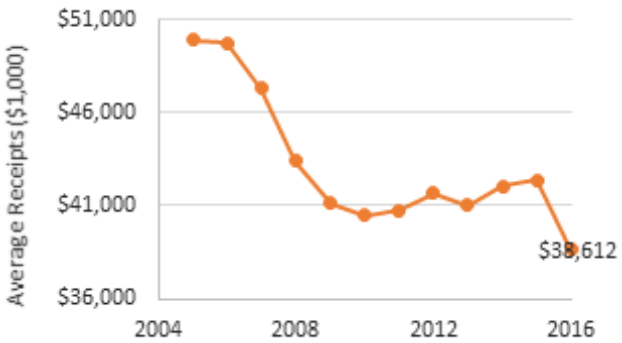
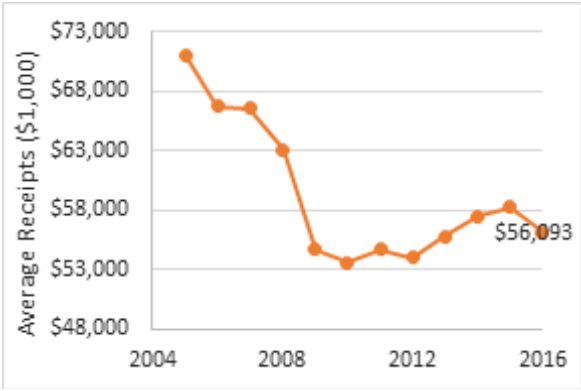


Figure 17: Average Non-Employer Manufacturing Receipts in Miami-Dade, Year-Over-Year



COMPARISON OF MIAMI-DADE'S NONEMPLOYER MANUFACTURING BUSINESSES WITH BENCHMARK COUNTIES

Make it Miami

This section focuses on comparing Miami-Dade County's nonemployer businesses and manufacturing sector with counties across South Florida and benchmark counties across the nation when it relates to the number of nonemployer establishments, receipts, and average receipts in all sectors of business and the manufacturing sector.

Miami-Dade County had the highest percentage increase of nonemployer establishments in all sectors of business across South Florida; and the highest compared to benchmark counties from 2005-2016 (See Table 10). Miami-Dade County had the second highest percentage increase of nonemployer establishments after Broward County in the manufacturing sector across South Florida; and third highest compared to benchmark counties from 2005-2016 (See Table 11).

Table 10: Nonemployer Business Establishments in South Florida & Benchmark Counties, 2005-2016

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2005	296,456	171,068	119,436	74,848	289,919	135,558
2010	366,408	205,621	138,633	93,752	348,876	145,650
2016	469,992	252,396	170,587	107,036	390,881	172,297
Changes ('05-'16)	58.5%	47.5%	42.8%	43.0%	34.8%	27.1%

Table 11: Nonemployer Manufacturing Establishments in South Florida & Benchmark Counties, 2005-2016

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2005	3,669	1,791	1,221	621	3,865	2,288
2010	4,178	2,095	1,327	873	4,842	2,443
2016	5,109	2,544	1,591	924	5,460	2,442
Changes ('05-'16)	39.3%	42.0%	30.3%	48.8%	41.3%	6.7%

Miami-Dade County had the highest percentage increase of nonemployer receipts in all sectors of business across South Florida, and compared to benchmark counties from 2005-2016 after adjusting for inflation (See Table 12). Miami-Dade County had the highest percentage increase of nonemployer receipts in the manufacturing sector of business across South Florida, and is second compared to benchmark counties from 2005-2016 after adjusting for inflation (See Table 13).

Table 12: Nonemployer Business Receipts in South Florida & Benchmark Counties, 2005-2016 (in $1,000)

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2005	$14,801,281	$9,852,880	$8,222,623	$5,413,018	$18,738,632	$8,612,041
2010	$14,831,149	$8,822,735	$7,316,309	$4,906,030	$17,744,769	$8,219,903
2016	$18,147,264	$10,014,692	$8,106,760	$5,393,424	$17,812,970	$9,588,366
Changes ('05-'16)	22.6%	1.6%	-1.4%	-0.4%	-4.9%	11.3%

Table 13: Nonemployer Manufacturing Receipts in South Florida & Benchmark Counties, 2005-2016 (in $1,000)

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2005	$260,620	$145,556	$91,037	$42,224	$289,085	$118,555
2010	$223,848	$137,286	$73,051	$39,703	$272,620	$108,393
2016	$286,581	$138,614	$87,506	$51,485	$284,033	$113,701
Changes ('05-'16)	10.0%	-4.8%	-3.9%	21.9%	-1.8%	-4.1%

Miami-Dade County has the smallest percentage decrease of nonemployer average receipts in all sectors of business across South Florida, and second smallest percentage decrease compared to benchmark counties from 2005-2016, after adjusting for inflation (See Table 14). Miami-Dade County has the smallest percentage decrease of nonemployer average receipts in the manufacturing sector of business across South Florida, and third smallest percentage decrease compared to counties across the nation from 2005-2016, after adjusting for inflation (See Table 15).

Table 14: Average Nonemployer Business Receipts in South Florida & Benchmark Counties, 2005-2016

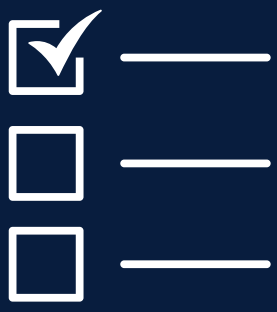
Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2005	$49,927	$57,596	$68,845	$72,320	$64,634	$63,530
2010	$40,477	$42,908	$52,775	$52,330	$50,863	$56,436
2016	$38,612	$39,678	$47,523	$50,389	$45,571	$55,650
Changes ('05-'16)	-22.7%	-31.1%	-31.0%	-30.3%	-29.5%	-12.4%

Of note is Miami's higher average nonemployer manufacturing receipts in 2016 in comparison to all benchmark counties (Table 15). While manufacturing receipts in Broward decreased and remained unchanged in Palm Beach, Miami's receipts also increased from 2010 to 2016.

Table 15: Average Nonemployer Manufacturing Receipts in South Florida & National Counties, 2005-2016

Year	Miami-Dade, FL	Broward, FL	Palm Beach, FL	Fulton, GA	Harris, TX	King, WA
2005	$71,033	$81,271	$74,584	$67,994	$74,796	$51,816
2010	$53,578	$65,530	$55,050	$45,479	$56,303	$44,369
2016	$56,093	$54,487	$55,001	$55,720	$52,021	$46,561
Changes ('05-'16)	-21.0%	-33.0%	-26.3%	-18.1%	-30.5%	-10.1%

Manufacturing Business Survey



Make it Miami

Summary

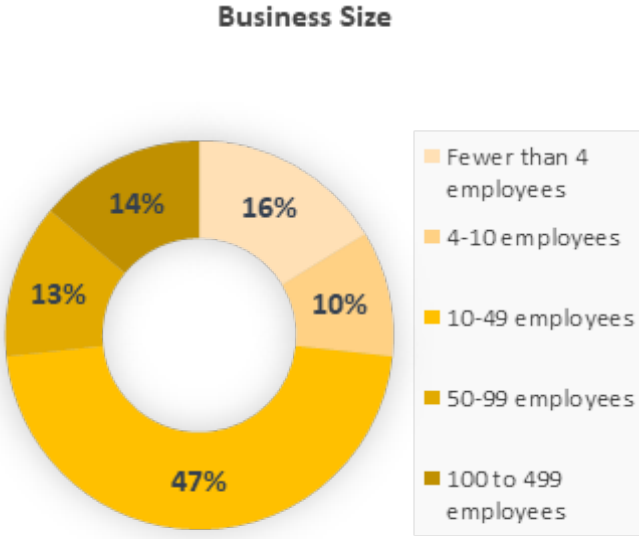
From August through November 2018, the FIU Metropolitan Center administered an online and phone survey with manufacturers in Miami-Dade County. The survey gauged the outlook for manufacturing, the challenges firms in the sector face and general perceptions of the business environment in Miami-Dade that affect the sector, both in positive and negative ways. Data was first collected online, by requesting participation from a representative list of businesses in the area. Follow-up phone surveys were completed to improve the response rate. A total of 98 manufacturing companies participated. The following section presents the results overall and with distinctions by the size of business where the differences in responses were significant.

There were no large companies, employing 500 or more workers represented among the survey respondents. There are only two manufacturing companies of that size located in Miami-Dade.

The largest group of respondents was firms which employ between 10 and 49 employees. There are over 600 companies in that group.

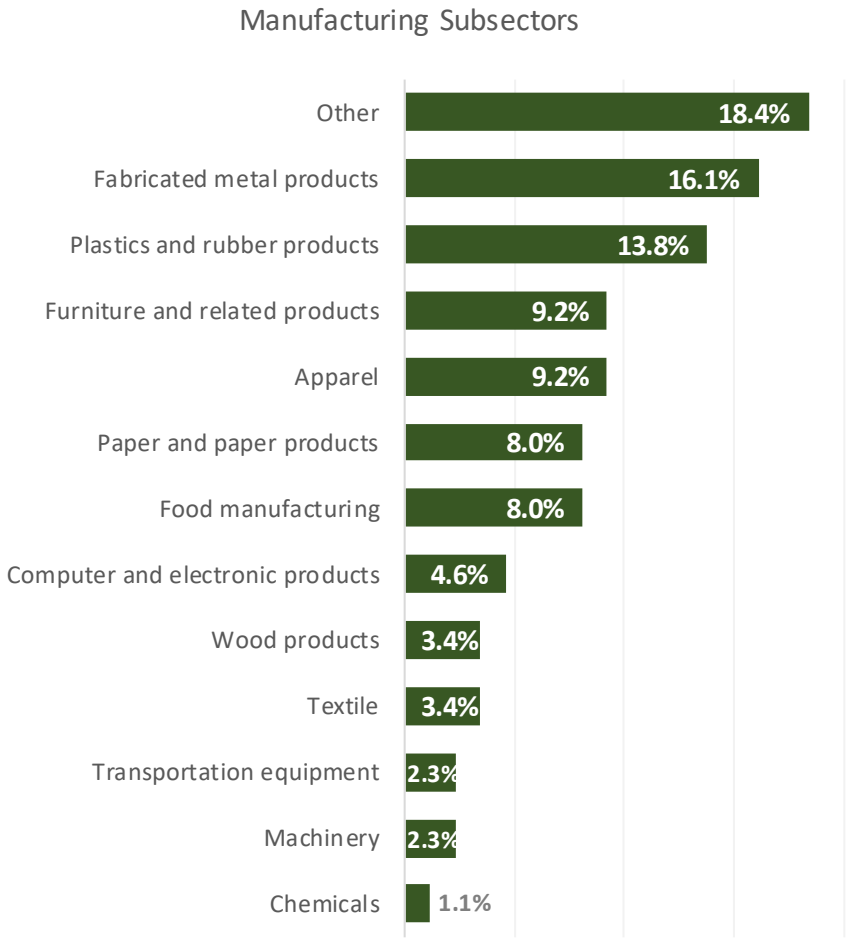
The majority of manufacturing companies are micro-enterprises, much like the businesses overall in the area. Out of the 2,847 manufacturing businesses, 72.3% or 2,036 employ fewer than 10 workers.

Most of the companies responding to the survey (93%) are well-established, operating for 10 or more years. The survey underrepresented younger companies. According to the Quarterly Census of Employment and Wages, 987 manufacturing companies were established prior to 2007.



The survey also received responses from a wide range of companies in terms of manufacturing activities. The "Other" category includes firms manufacturing barricades and cones; billboards, signs etc.; gear; graphic design and vinyl graphics; industrial purification equipment and analytical services; and operable partitions - specialty architectural building products.

For comparison, Appendix B shows the distribution of manufacturing companies in Miami-Dade, with the top three employment sectors of printing and related support activities; bakeries and tortilla manufacturing; and household and institutional furniture and kitchen cabinet manufacturing.

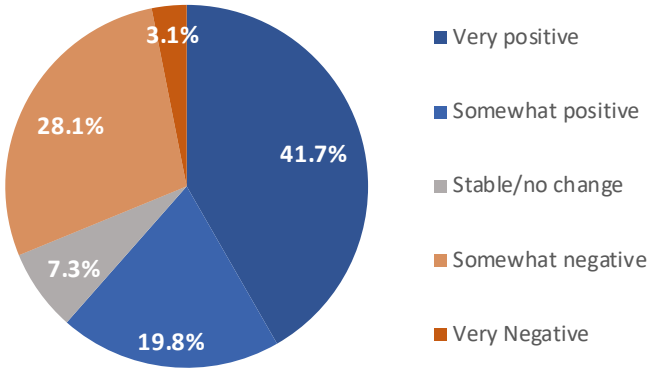


General Outlook

Most manufacturing businesses are optimistic about their future, with 61.5% expressing somewhat or very positive feelings about their business outlook.

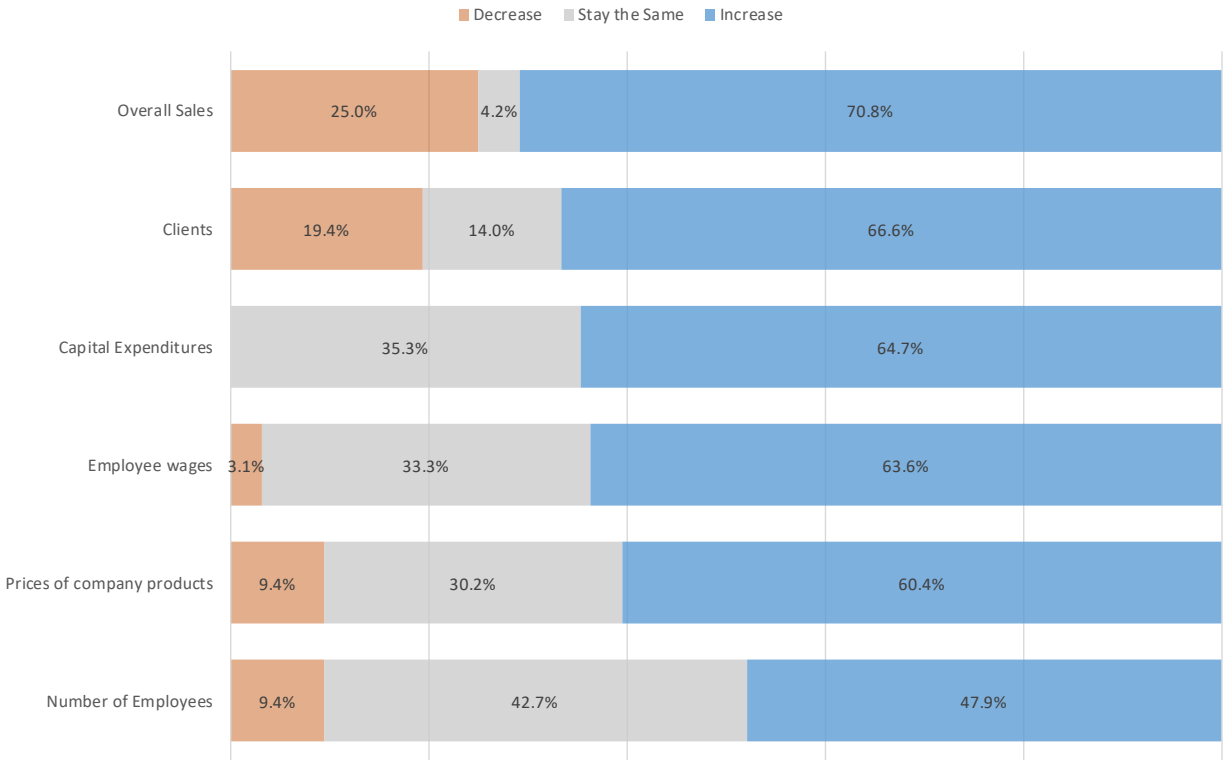
Micro-businesses and businesses of 50+ employees have a more positive view of their future. While 85.8% of micro-businesses and 82.6% of 50+ employee firms characterized their firm's business outlook as positive, only 42.5% of establishments with 10-49 employee selected that response.

How would you characterize the business outlook for your firm right now?

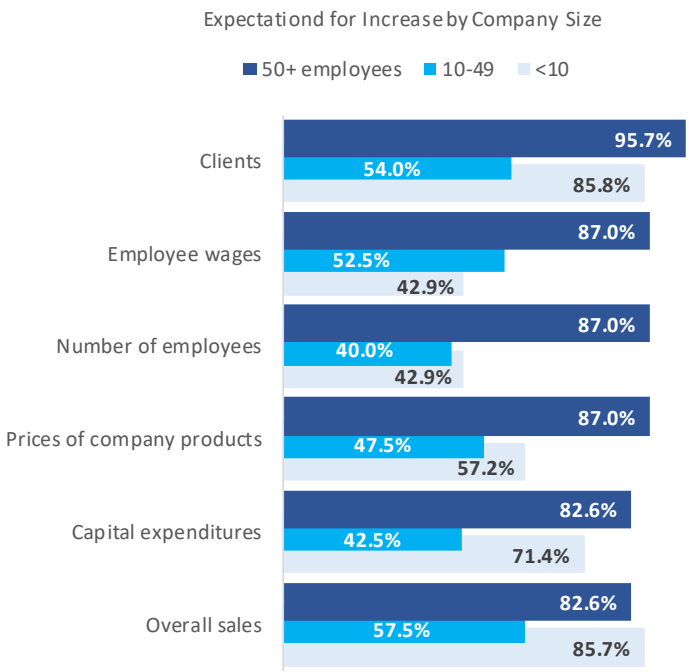


Consistent with the overall positive outlook is the businesses having positive expectations across most business activities. Approximately two-thirds of businesses anticipate a growth in sales and clients. Slightly less than two-thirds also expect increases in capital expenditures, wages and price of products. Interestingly, the manufacturing businesses are divided in terms of employment growth. Less than half project increasing their workforce, while 42.7% do not plan on expanding.

What are your expectations for the listed general business activities in the following year?

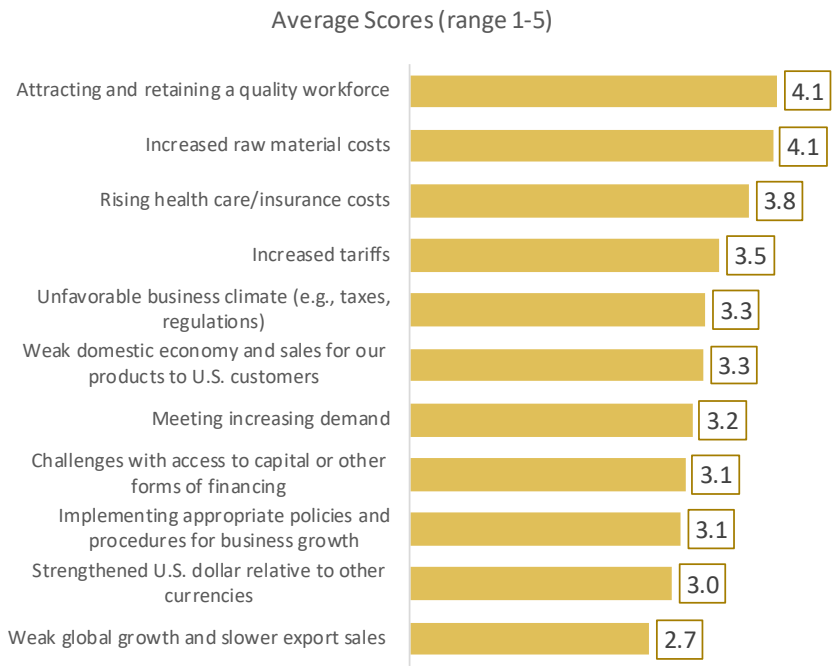


There are some important variations in expectation depending on business size. The following chart shows an interesting dynamic in which the largest and smallest businesses show similar optimistic views in some aspects of their business. Large majorities of micro-businesses and those employing 50+ workers expect increases in clients, sales, and capital expenditures. Businesses of 50+ employees have a very positive outlook, with majorities expecting increases across all business activities. Businesses employing 10-49 workers have more tempered views, with only small majorities indicating they anticipate increases in clients, sales and wages. Conversely, 42.5% of businesses with 10-49 workers expect a decrease in sales, 37.8% anticipate a drop in clients, and 15.0% expect a decrease in prices of their products and in the number of employees



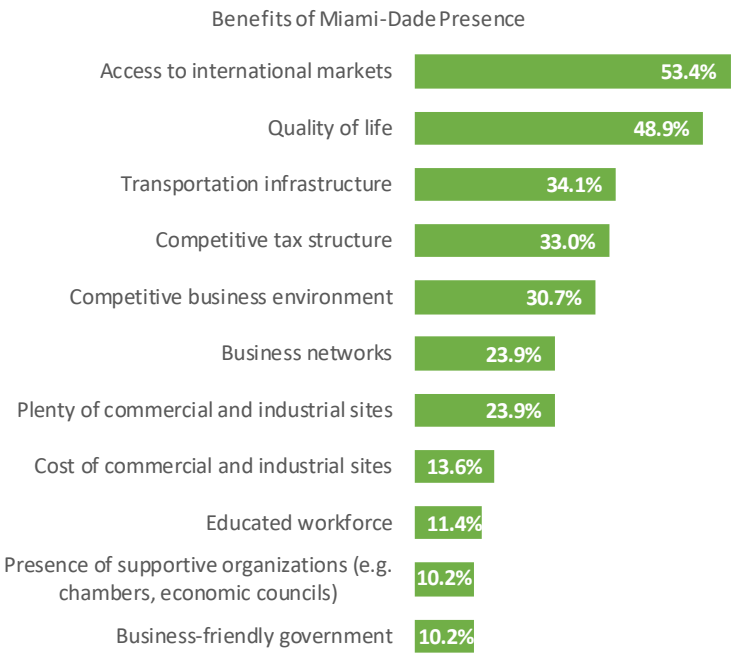
In a series of statements, respondents were asked about the significance of various challenges for their business. Based on the scale in which a response of 1 indicated 'no significance' and 5 meant 'very significant', raw material costs and considerations for recruitment and retention of quality workforce received the highest average score. Most respondents (80.0%) consider attracting and retaining a quality workforce a significant challenge. Three out of four businesses (75.5%) indicated raw material cost were a significant challenge (scores of 4 and 5).

Conversely, the lowest average scores were in responses related to exports. Only about one-third consider a weak global growth and slower export sales a significant challenge for their business. A strengthened U.S. dollar relative to other currencies is a significant concern for 39.2%. Domestic considerations are of greater concern, which may indicate that the manufacturing establishments in Miami-Dade are focused primarily on satisfying local demands. However, firms with 50+ employees showed greater concern for international factors.



Perceptions of the **Miami-Dade Business Environment**

The survey posed a series of questions on the benefits and drawbacks of various conditions of the local, Miami-Dade environment. As indicated above, domestic considerations seem to be of primary concern for manufacturing businesses, but the majority consider access to international markets to be a benefit to being in Miami-Dade County.



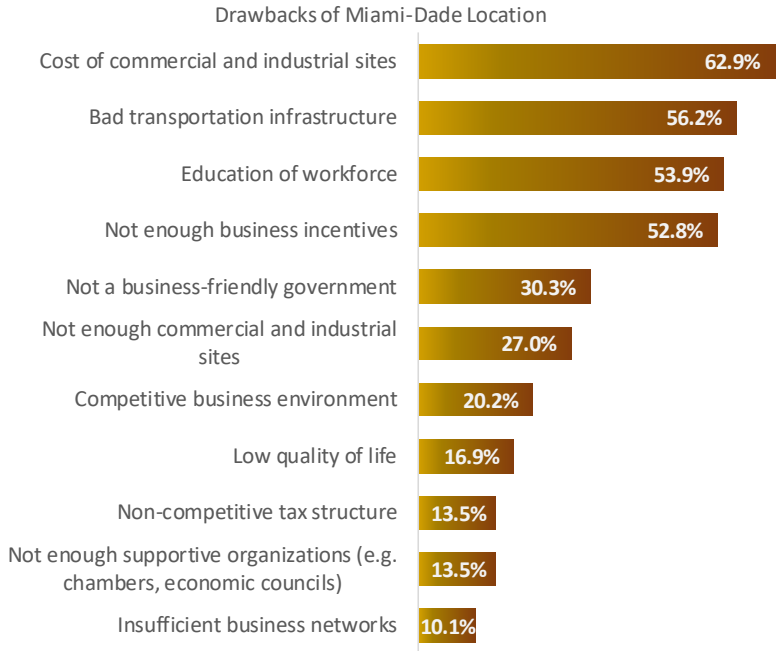
Access to international markets and quality of life were consistently marked as benefits of their Miami-Dade location by manufacturers of various sizes. Interestingly, no respondent chose business incentives as a benefit, and very few view their local government as business-friendly.

Some of the important variations by business size include:

- Businesses with fewer than 50 workers are more likely to consider business networks, and cost of commercial and industrial sites as benefits
- Businesses with 50+ employees are more likely to consider the competitive tax structure and educated workforce as benefits

There were four negative factors selected by most businesses in relation to their Miami-Dade location. The answers closely mirror the findings in the previous statements. Lack of access to international markets was not selected as a negative by any business. The important differences based on business size include:

- Businesses with fewer than 50 employees overwhelmingly selected the cost of commercial and industrial sites, the lack of business incentives, and bad transportation infrastructure as negative factors
- The negative factor selected by the majority of 50+ employee firms was the lack of an educated workforce

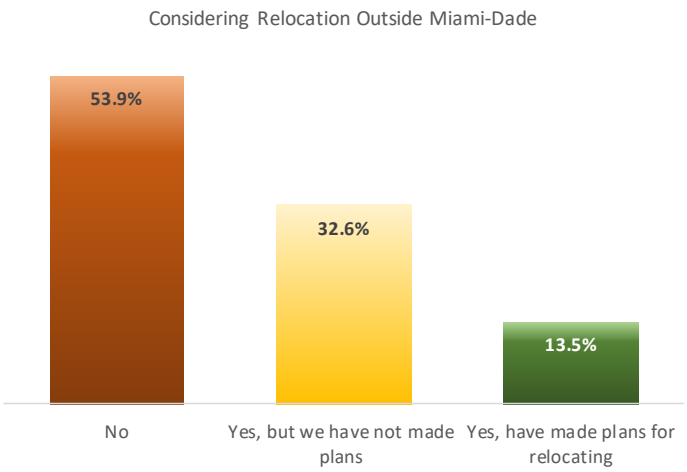


The assessment that Miami-Dade lacks an adequately educated workforce is also related to the businesses not recruiting at any of the area's colleges or universities (Florida International, Florida Atlantic, Broward College. Miami-College, Barry, St. Thomas, other). Only one in nine businesses consider the education of their workforce in Miami-Dade as a benefit. Conversely, 53.9% consider the workforce education as inadequate. These results are consistent with other surveys which show manufacturers' concerns. The "Industry Pulse: 2018 Manufacturing Workforce Report" found that a great majority of manufacturers say they will face significant challenges developing a skilled workforce in the next three years: finding experienced new hires (99 percent); upskilling the incumbent workforce (92 percent); and onboarding new employees (84 percent).

Miami-Dade's manufacturing businesses rely on a variety of incentives to attract and retain employees. Most businesses (53.4%) reported they pay wages above average for the industry. Over a third (37.5%) offer 401(k) or other retirement plan to employees, and 27.3% have health insurance for their workers.

Another notable finding is that only 10.2% of businesses selected as a positive aspect of their Miami location the presence of supportive organizations such as chambers, economic councils or other business development agencies. Yet, only 13.5% consider the lack of such organizations to be a negative factor. It seems that businesses do not attribute positive or negative value to these organizations and only 33.7% have consulted with organizations such as the Small Business Development Center or the U.S. Small Business Administration on how to expand their business. Most businesses (84.3%) also indicated that their bank or primary financial institution does not provide guidance on how to expand their business.

Despite the challenges manufacturing businesses face, most of them (53.9%) are committed to staying in Miami-Dade. However, almost one third of businesses have considered relocating, although they have not made concrete plans. Additionally, almost one in six businesses has already made plans to relocate. The most frequently indicated factors related to relocation plans were linked to costs or new business opportunities. For more than a third of the businesses that have considered relocating, the cost of running a business in Miami-Dade is a factor. One in four businesses would relocate to access new markets and customers. One in five is basing their plans on the cost of insurance.



Reasons for Considering Relocation:

- Cost of running the business: 39.8%
- Access to new markets and customers: 23.9%
- Cost of insurance: 20.5%
- Tax breaks or incentives: 19.3%
- Access to more qualified labor pool: 17.0%
- Better overall business environment: 13.6
- Proximity to suppliers: 10.2%

Cost of **Commercial Industrial Sites**

Since almost two-thirds of survey respondents identified the cost of commercial and industrial sites as a drawback of their presence in Miami-Dade, this section examines the state of the industrial market. There are supply and demand factors which impact the inventory and cost of space.

In the last three years, the U.S. industrial market has experienced a slowly increasing inventory, rising lease rates and high absorption rates. E-commerce is driving significant change within the industrial property sector, along with changes in the supply chains, new technologies, and automation. In their 2019 North American Industrial Outlook, Cushman and Wakefield project that "economic growth and the continued buildout of eCommerce fulfillment networks will buttress demand for industrial real estate."* In the manufacturing sector specifically, "employing more adaptive manufacturing methods like 3-D printing could create leaner supply chains and lead to the proliferation of smaller manufacturing facilities closer to major population centers."**

The national industrial space trends are characteristics of Miami as well. Total rentable industrial building area in Miami increased by 9% since 2009. Industrial space vacancy decreased from 9.8% in 2009 to 4.5% in the beginning of 2019. Cost of industrial space per sq. ft. increased by 47% (CoStar).

In relation to supply, manufacturing space has increased in recent years. In the first quarter of 2019, there were 354 manufacturing buildings with a total of over 19.1 million square feet of space.(Cushman and Wakefield, Miami-Dade Industrial Marketbeat Q1 2019) However, in mid-2013, Miami-Dade had almost 21.9 million square feet of manufacturing space, with a 4.0% vacancy and average rent of $5.20.

Manufacturing Space Characteristics

4Q 2017	1Q 2019
Inventory: 18.2 sq. ft.	Inventory: 19.1 sq. ft.
Vacancy: 2.1%	Vacancy: 2.7%
Lease rate: $6.43	Lease rate: $7.91

**Cushman and Wakefield, 2019 North American Industrial Outlook. http://www.cushmanwakefield.us/en/research-and-insight/2019/northamerican-industrialoutlook*

*** Alhburn, Aaron. Industrial Real Estate 2018: Disruptions and Structural Shifts. Commercial Real Estate Development Association (NAIOP) Magazine. https://www.naiop.org/Magazine/2018/Spring-2018/Business-Trends/Industrial-Real-Estate-2018-Disruptions-and-Structural-Shifts*

The 2.7% manufacturing vacancy in early 2019 was lower than the 4.8% rate of warehousing/ distribution space or the 5.0% vacancy of office space. Manufacturing tenants are different from other businesses because they typically require more space. The average rental building area for manufacturing establishments in Miami is 41,815 sq.ft. In 2019, there are only 151 spaces for tenants requiring 10-20K sq.ft., 299 spaces with $20-50K sq.ft. and 353 spaces with over 50K sq. ft. (CoStar).

Technology is reducing the space needs of manufacturers, and impacting supply chains and location choices, empowering the return of manufacturing to urban areas, known as the industrial urbanism movement. Industrial urbanism aims to "redefine the role of industry in the city, making it as much a part of the urban fabric as housing or commerce."* Manufacturing processes are lower impact and cleaner than ever before which reduces the need to isolate them in industrial zoning. The trend is toward smaller manufacturing facilities in major population centers. Thus, manufacturing is becoming less concentrated in industrial zones, and more dispersed throughout metropolitan areas. The maps on pages 58-60 depict that dispersion in the advanced manufacturing industries.

Shared space is happening in manufacturing in many cities, including Miami, with the maker spaces. Some of the Miami examples include EcoTech Visions, a green incubator and makerspace, and MakeMIA, a combination of makerspace and machine shop. Urban shared industrial space is helpful to small manufacturers because shared space addresses both affordability and availability. Shared facilities combine coworking office space, meeting and class rooms, light manufacturing facilities, prototyping labs and other custom facilities.

**Hatuka, Tali. (2017). Industrial Urbanism: Typologies, Concepts and Prospects. Built Environment. 43. 1-24. 10.2148/ benv.63.3.10. Industrial-Real-Estate-2018-Disruptions-and-Structural-Shifts*

GateArms:
Overcoming Barriers to Growth

Jonathan Brinkman was running his software development company, BlackSky Technologies, when he noticed a recurring problem at the sites of his Home Owner Association customers: drivers entering the communities kept hitting the barrier gate arms with their cars.

"We saw cars and trucks crashing into expensive gates and doors with no apparent solution," says Brinkman, who has a background as financial analyst, tech educator, IT executive and software engineer.

To improve safety at community gates, Brinkman formed the manufacturing company GateArms.com, which produces LED lighting for barrier arms and swing gates. The success with LED lights on gate arms led to other new safety lighting products, including industrial light kits for commercial garage doors and warehouse loading docks.

He recognized there was an opportunity to expand the product line and bring a higher level of safety awareness to industries fraught with work-related accidents and injuries. In the process, he has grown the company from two employees to 12 today.

However, growth has not been without challenges. He faces many of the same obstacles many growing businesses face – the need to understand his markets; finding reliable suppliers; keeping good inventory levels; shipping on a timely fashion; creating a good management system; and dealing with unexpected tariffs on international imports.

While finding personnel is a concern reported by many South Florida manufacturers, Brinkman has been able to overcome obstacles by focusing more on the soft skills of new hires and teaching them the hard skills.

In the beginning, the company's production staff mainly consisted of unskilled labor. Then the company trained them, teaching them how to be skilled specialists who are comfortable working with metal working equipment, he says.

"Different company roles require different skill sets," he says. "Our production employees must be reliable, hard-working, physically strong, able to work in heat and cold, organized, and possess good judgment. Our sales employees must have passion, integrity, be hard working and have a strong desire to succeed. Our management employees must be experienced, level-headed and cool under pressure; firm but kind. It has not been overly difficult to find good employees. South Florida is full of qualified applicants."

He realizes, however, that the need for highly skilled specialists will only grow as the company continues to expand. The company is shifting to high-tech machining and design, he says: "So we will require CNC [computer numerical control] and CAD [computer aided design] subject experts who can run mills and lathes."

Moving forward, he says other key challenges will include ensuring good cash flow to fuel growth, finding reasonably priced production space in which to expand, and discovering ways to engage new customers.

GovComm:
Navigating the Road to Success

The next time you see a sign alerting you of an emergency ahead while driving, it may be because of GovComm.

A maker of quality weatherproof cameras and microwave sensors, GovComm's equipment and software enables real-time communication from the roads to transportation management centers. States regulate the use of such equipment by local transportation departments by certifying which equipment may be used. GovComm is one of a few qualified intelligent transportation system manufacturers certified in Florida.

Getting into a market with few competitors was a shrewd business decision by GovComm founder Craig Waltzer, a former certified public accountant by trade who says he "got bit by the technology bug" after working with a former client.

Well versed in the difficulties of growing a business even before he launched GovComm in 2012, Waltzer already had taken a previous technology business public before exiting it.

Despite the experience, the road has not been smooth. The competition, he says, includes longer-established companies that like to squeeze the newcomers out of the market.

There also are the issues particular to manufacturing. Just being identified as a manufacturer is tricky, he says, especially for those in advanced manufacturing: "Most technology components are manufactured overseas with a vast majority in Asia. In today's climate of trade wars, tariffs and prohibited manufacturers, it is difficult to determine the true manufacturer of record -- Is it the designer? The company who assembles? The owner of the MAC address, UL and FCC certifications? The author of the firmware?"

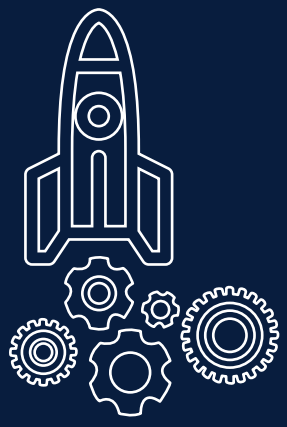
Finding personnel to grow also has been a challenge, he says. The company launched with its two business partners. Today it includes technicians, administrative staff and developers. "Due to the sophisticated nature of our customers," he says, "we do not have the need to maintain a large staff to 'spoon-feed,' as is the case in a consumer market."

In addition to individuals with technical skills, the company seeks people with communication skills. "We have had some difficulty finding people that are both technical and personal," Waltzer says.

"We've found that the most important skills are understanding the most fundamental concepts," he adds. "It is incredible that to find that highly accredited graduate students do not understand basic concepts."

While Waltzer is optimistic about the future, he is concerned about the current political environment of trade wars and government bureaucracy: "I see government prohibitions and controls as the major impediment to growing our manufacturing business," he says.

The Future of Manufacturing in Miami-Dade County



Make it Miami

Overview of **Advanced Industries**

This section outlines major trends in the United States, and provides an overview of South Florida's growth in advanced industries.

Summary

The Brookings Institution has detailed extensively the importance of the "advanced industries" sector for America's future. The report defines advanced industries as those that both conduct large amounts of R&D and employ a disproportionate share of STEM workers. More precisely, Brookings defines advanced industries as those in which R&D spending per worker reaches the top 20 percent of all industries and the share of workers with significant STEM knowledge exceeds the national average. The advanced industries sector characterizes by having deep involvement with technology research and development (R&D) and STEM (science, technology, engineering, and math) workers. The sector encompasses 50 industries ranging from manufacturing industries such as automaking and aerospace; to energy industries such as oil and gas extraction; and high-tech services such as computer software and computer system design, including for health applications. Advanced industries encompass the nation's "tech" sector at its broadest and most consequential. The dynamism ithis sector represents going to be a central component of any future revitalized U.S. economy. These industries encompass the country's best shot at supporting innovative, inclusive, and sustainable growth.

Major Trends **in the United States:**

- U.S. advanced industries generate a large and rising share of the nation's GDP and, after years of decline, have led the post-recession employment recovery.
- The advanced industry sector's post-recession employment surge has been broad-based but led by services.
- Services now account for a larger share of advanced industry employment than manufacturing.
- Since 1975, average earnings in advanced industries have increased almost five times as fast as those in the overall economy.
- Advanced industries offer a significant wage premium at every level of education.
- Powerful multiplier effects mean every new advanced industry job supports more than two others.
- The advanced industries sector is highly metropolitan and varies considerably in its composition across regions.
- Advanced industries' share of total employment varies significantly across major metropolitan areas.
- Each major metropolitan area has its own constellation of advanced industry activity but falls into one of four general types: Manufacturing-Oriented Advanced Industry Base; Services-Oriented Advanced Industry Base; Diversified Advanced Industry Base; and Not Specialized in Either Advanced Industry Sub-Sector.
- Dense concentrations of advanced industry activity can be found in every region of the country.
- The United States is losing ground to other countries in advanced industry competitiveness and now runs a large trade deficit even in some advanced services.
- The U.S. advanced industries sector sustains fast productivity growth even with output per worker that is already well above average.
- U.S. employment in advanced industries is low by international standards and falling rapidly.
- With few exceptions, the United States runs a significant trade deficit in advanced industries.

- Advanced industries are the focal point of innovative activities such as R&D and patenting, but the U.S. advantage on these fronts is slipping.
- Advanced industries have been responsible for an explosion in patenting during the past two decades.
- Prices of advanced industry goods and services have fallen relative to the products of other sectors.
- The United States trails many of its key competitors on patent awards and applications per capita.
- Jobs in advanced industries are available at all levels of education, but the education and training pipeline that channels workers into the sector is narrow.
- Declining employment in advanced industries has come at the expense of the least, but not the middle, skilled.
- The United States lags behind most competitors and peers in graduating a STEM workforce.

Growth in **South Florida**

According to Brookings mapping from Moody's Analytics on advanced industries in 2013 from a scale of 1 to 100, with 1 implying the largest value, South Florida (Miami, Fort Lauderdale, and West Palm Beach) ranked 19th in number of jobs (130,840); 23rd in output ($21.4 Billion); 39th in average annual earnings of workers ($83,680); 84th in share of all jobs (5.5%); and 92nd in share of total output (8.9%). However, in 2010, South Florida ranked 18th in number of jobs (122,160) and 22nd in output ($20.6 Billion) in advanced industries. Whereas, in 1980, South Florida ranked 24th in number of jobs (94,320) and 21st in output ($6.8 Billion).*

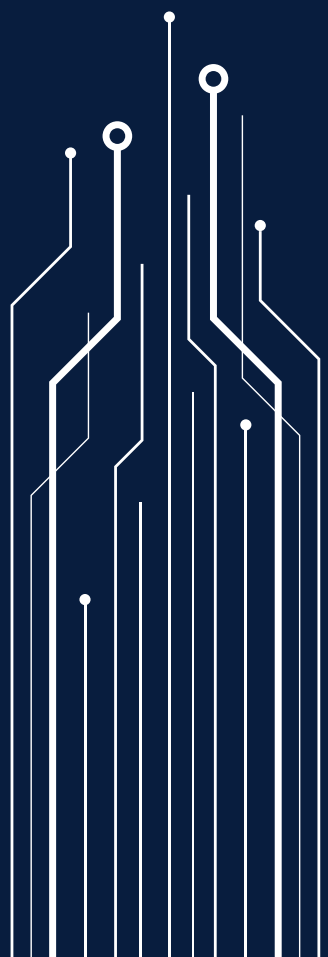
From 2010 to 2013, advanced industries employment in South Florida had a 2.3% increase with a 54th ranking; and output had a 1.2% increase with a 73rd ranking. Advanced industries employment in South Florida from 1980 to 2013 had a 1.0% increase with a 42nd ranking; and in relation to output, the sector had a 3.5% increase with a 55th ranking. Within the metropolitan areas of comparison, advanced industries experienced the following changes from 2010 to 2013:

- Fulton County, Georgia - employment had a 2.5% increase with a 16th ranking and output had a 5.5% increase with a 17th ranking;
- Harris County, Texas - employment had a 1.1% increase with a 41st ranking and output had a 3.3% increase with a 60th ranking;
- and King County, Washington - employment had a 2% increase with a 21st ranking and output had a 4.4% increase with a 36th ranking.

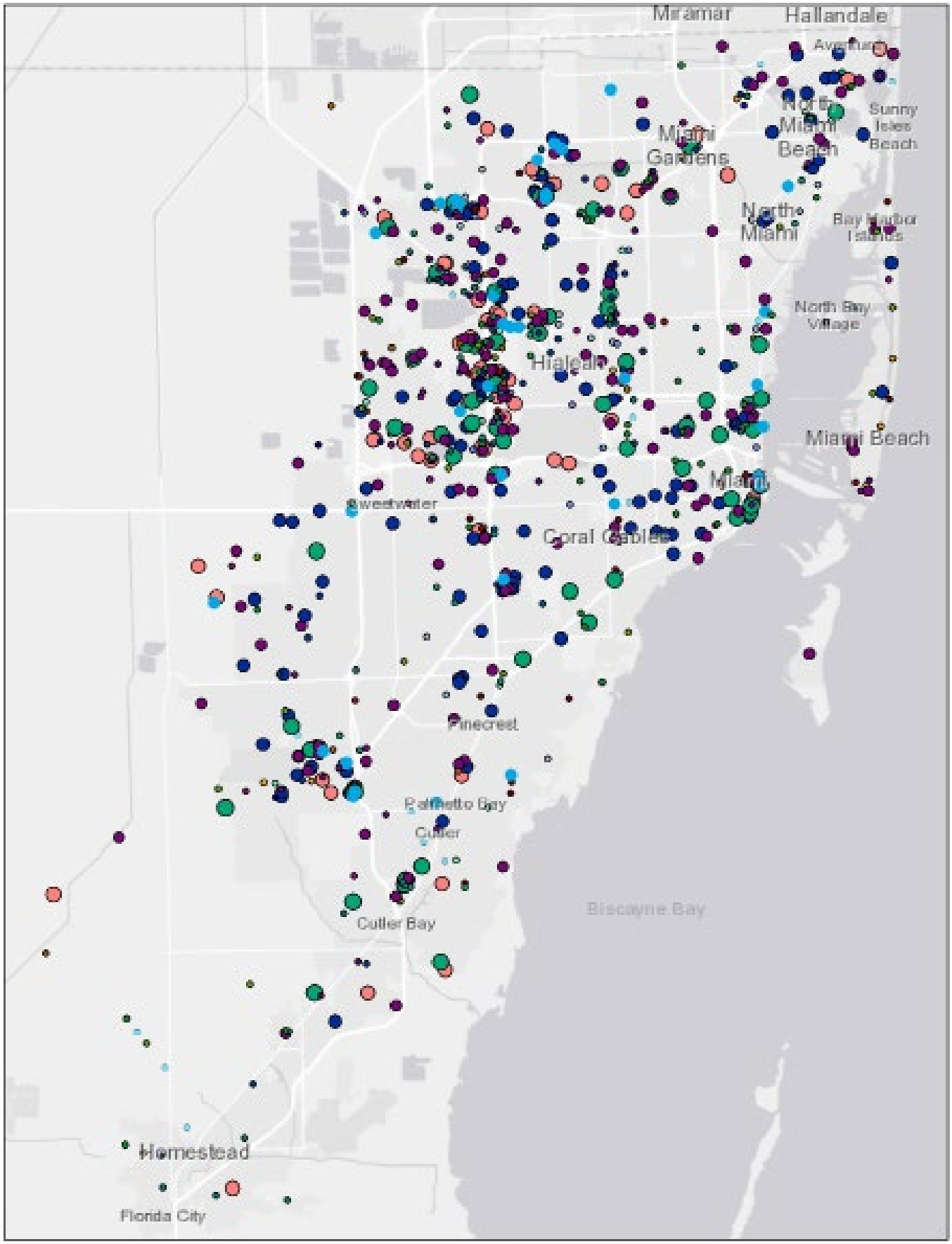
In summary, this shows that South Florida has had modest growth along with benchmark areas in employment and output in advanced industries from 1980 to 2013.

**America's Advanced Industries: What They Are, Where They Are, And Why They Matter. February 2015. Report. https://www.brookings.edu/wp-content/uploads/2015/02/AdvancedIndustry_FinalFeb2lores-1.pdf*

ADVANCED INDUSTRIES IN MIAMI-DADE COUNTY



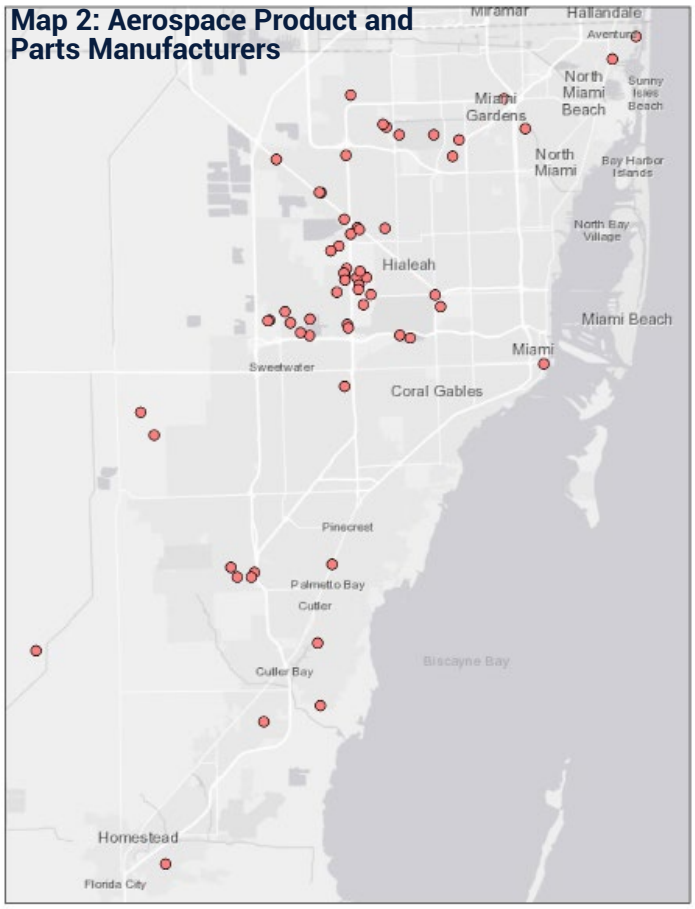
Map 1: Location of Advanced Manufacturing Firms



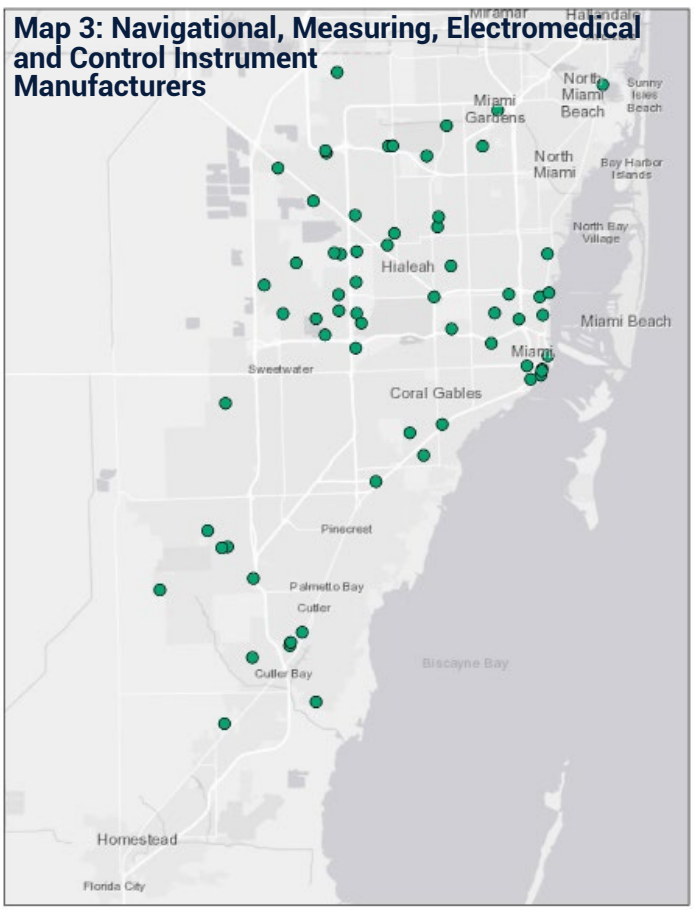
Legend: Sectors and North American Industry Classification (NAICS) Codes

- Ship and Boat Building 3369
- Semiconductor and Other Electronic Component Manufacturing 3344
- Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing 3252
- Railroad Rolling Stock Manufacturing 3366
- Pharmaceutical and Medicine Manufacturing 3254
- Petroleum and Coal Products Manufacturing 3241
- Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing 3253
- Other Nonmetallic Mineral Product Manufacturing 3279
- Other Miscellaneous Manufacturing 3399
- Other General Purpose Machinery Manufacturing 3339
- Other Electrical Equipment and Component Manufacturing 3359
- Other Chemical Product and Preparation Manufacturing 3259
- Navigational, Measuring, Electromedical, and Control Instruments Manufacturing 3345
- Motor Vehicle Parts Manufacturing 3363
- Motor Vehicle Manufacturing 3361
- Motor Vehicle Body and Trailer Manufacturing 3362
- Medical Equipment and Supplies Manufacturing 3391
- Manufacturing and Reproducing Magnetic and Optical Media 3346
- Iron and Steel Mills and Ferroalloy Manufacturing 3311
- Industrial Machinery Manufacturing 3332
- Household Appliance Manufacturing 3352
- Foundries 3315
- Engine, Turbine, and Power Transmission Equipment Manufacturing 3336
- Electrical Equipment Manufacturing 3353
- Electric Lighting Equipment Manufacturing 3351
- Computer and Peripheral Equipment Manufacturing 3341
- Communications Equipment Manufacturing 3342
- Commercial and Service Industry Machinery Manufacturing 3333
- Clay Product and Refractory Manufacturing 3271
- Basic Chemical Manufacturing 3251
- Audio and Video Equipment Manufacturing 3343
- Alumina and Aluminum Production and Processing 3313
- Agriculture, Construction, and Mining 3331
- Aerospace Product and Parts Manufacturing 3364

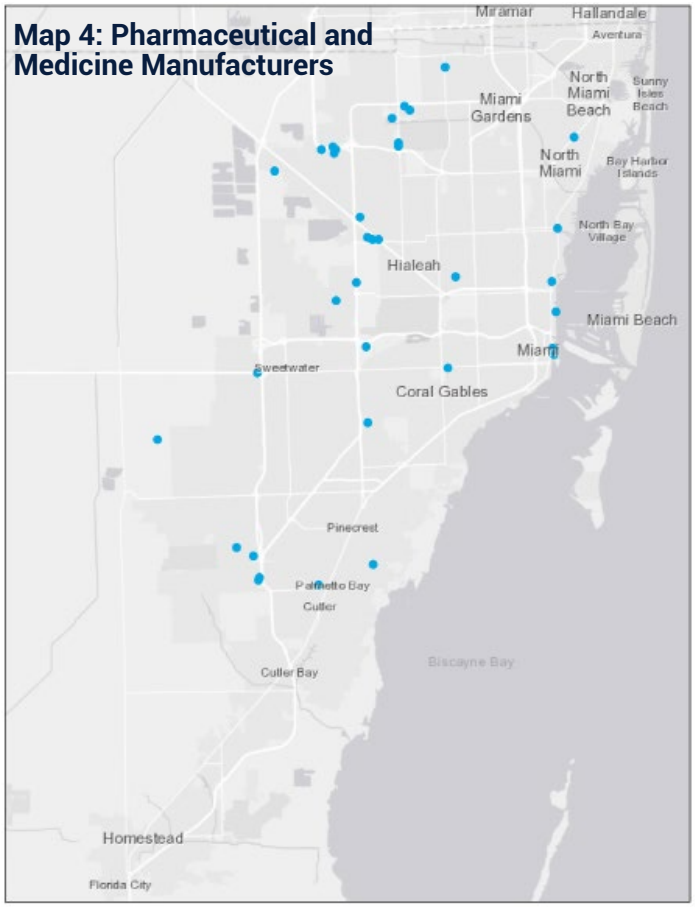
Map 2: Aerospace Product and Parts Manufacturers



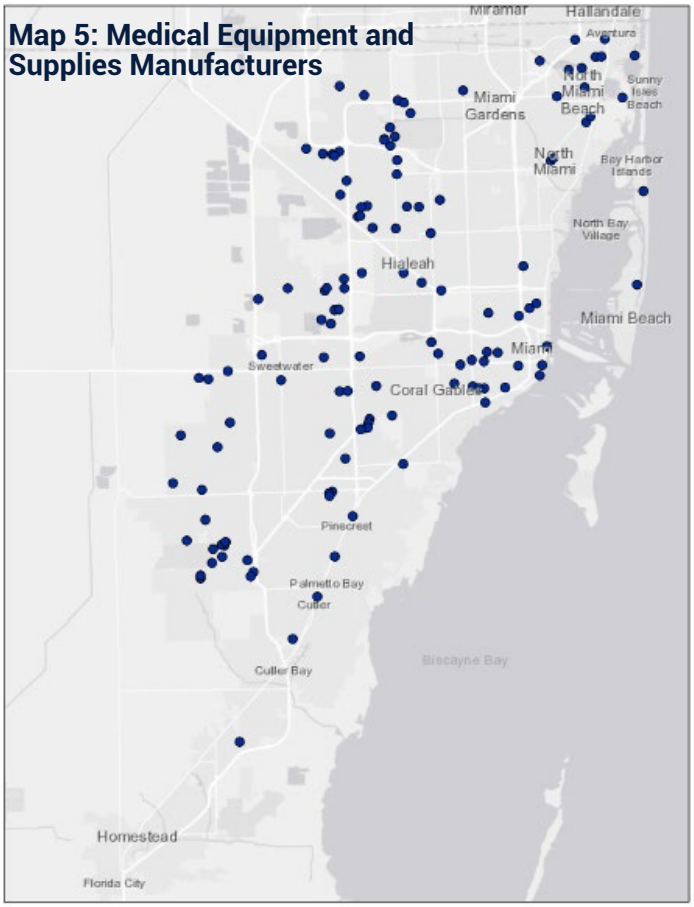
Map 3: Navigational, Measuring, Electromedical and Control Instrument Manufacturers



Map 4: Pharmaceutical and Medicine Manufacturers



Map 5: Medical Equipment and Supplies Manufacturers



This section focuses on the characteristics of the advanced industry sector in Miami-Dade County as they relate to the number of establishments, number of employees, wages, average wages and median wages in the manufacturing sector.

Miami-Dade has 927 advanced manufacturing firms, representing about a third (32.5%) of all manufacturing firms in the county. Advanced manufacturers employ a third of the manufacturing labor force. Almost a third (32.7%) of all manufacturing employment in the county is in the advanced sector.

Companies in this industry specialize in everything from ship and boat building, to audio and video equipment, to chemical and pharmaceutical production. Manufacturing firms have on average 14 employees with a wide range of firm sizes. For example, the average size of firms in the petroleum and coal products manufacturing subsector is 90 employees, while audio and video equipment manufacturers average 3 employees.

The maps in the previous pages show the locations of all advanced manufacturers (Map 1) and the firms in selected subsectors (Maps 2-5). Advanced manufacturing firms are dispersed throughout the county with some clustering around in the area close to Miami International Airport (Medley, Doral, Hialeah, Hialeah Gardens).

In addition to higher productivity than the rest of manufacturing, advanced manufacturing employees receive a wage premium for advanced manufacturing employees. Advanced manufacturing employees make over $9,000 more than the manufacturing workforce overall. The average advanced manufacturing wages is almost 11% higher than the average wages for the county's labor force.

Despite their small number and workforce, the advanced manufacturing firms have significant contributions to the local economy as their output induces more production—both directly and indirectly—from other sectors. The "ripple" effect of the manufacturing subsectors is measured through multipliers, and the largest multipliers are concentrated in the advanced sector. For example, Figure 18 shows there are 142 medical equipment and supplies manufacturers and 63 aerospace product and parts firms in Miami-Dade. Their employment multipliers are 2.9 and 2.2 respectively.

The top three advanced manufacturing industries in Miami-Dade County with the highest number of establishments are: other miscellaneous manufacturing with 153 establishments; medical equipment and supplies manufacturing with 142 establishments; and aerospace products and parts manufacturing with 63 establishments. The other miscellaneous manufacturing category includes a wide range of products, such as jewelry, toys, signs, musical instruments and others. The following figure shows the subsectors with 10 or more establishments. Some of the sectors with fewer than 10 firms include alumina and aluminum production and processing, foundries, basic chemical manufacturing and household appliance manufacturing.

Figure 18: Number of Establishments in Miami-Dade Manufacturing Advanced Industries 2018

The top three advanced manufacturing industries in Miami-Dade County with the highest number of employees are other miscellaneous manufacturing with 1,482 employees; railroad rolling stock manufacturing with 1,268 employees; and aerospace products and parts manufacturing with 1,226 employees. The following figure shows all sectors with over 50 employees. Some of the sectors not displayed include household appliance (15 employees), clay product and refractory manufacturing (26 employees), and iron and steel mills and ferroalloy manufacturing (42 workers).

Figure 19: Number of Employees in Miami-Dade Manufacturing Advanced Industries 2018

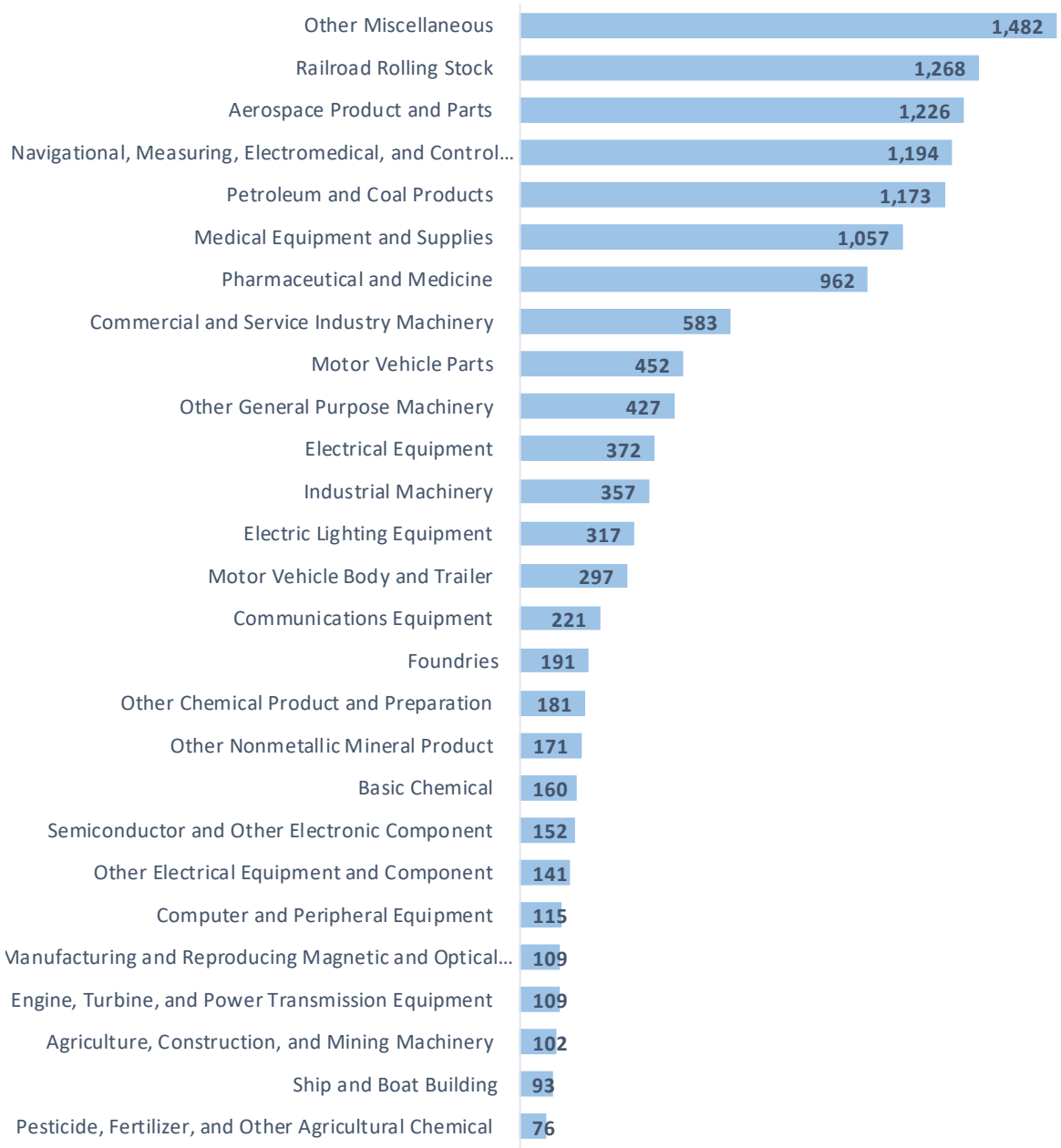
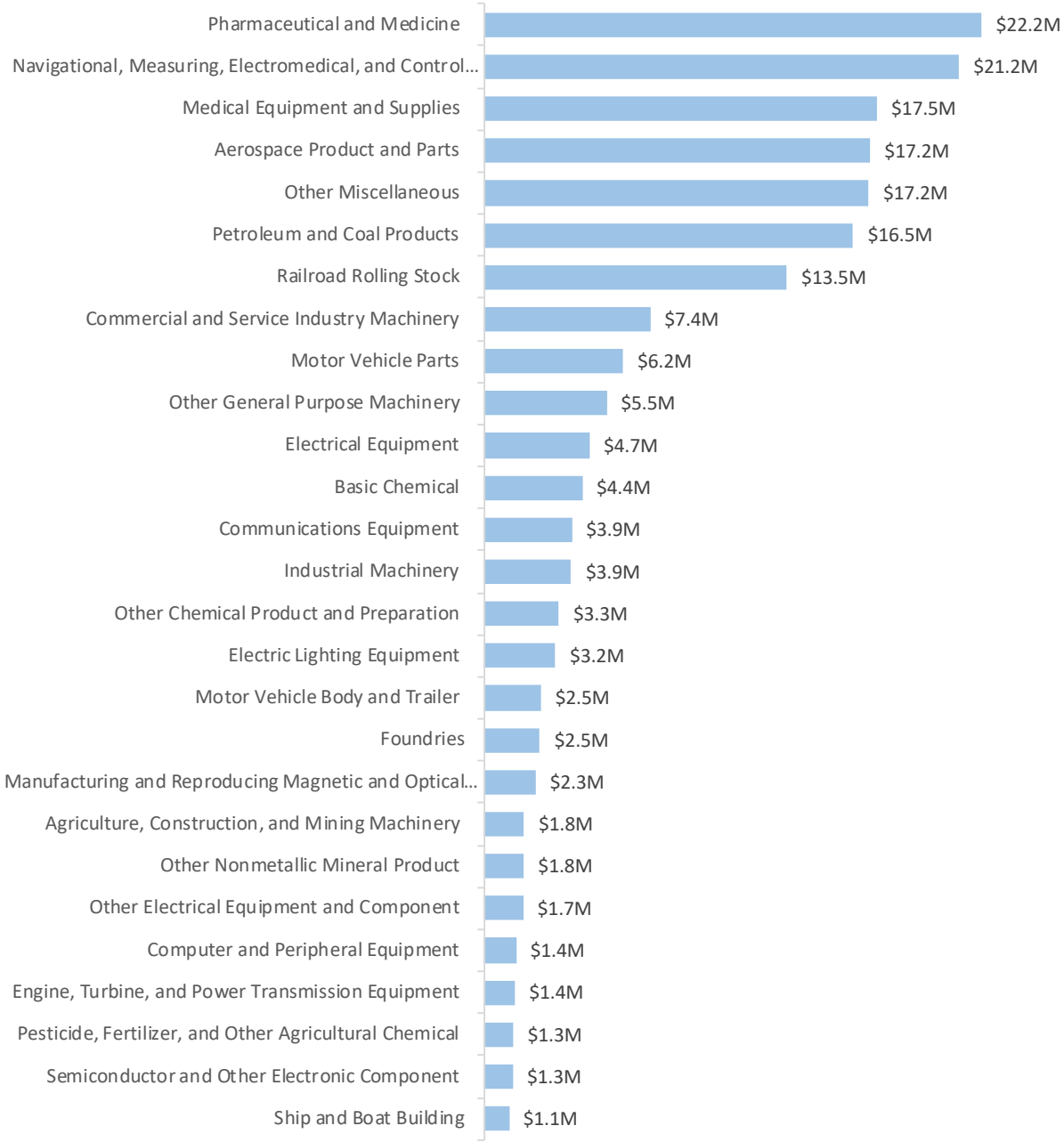


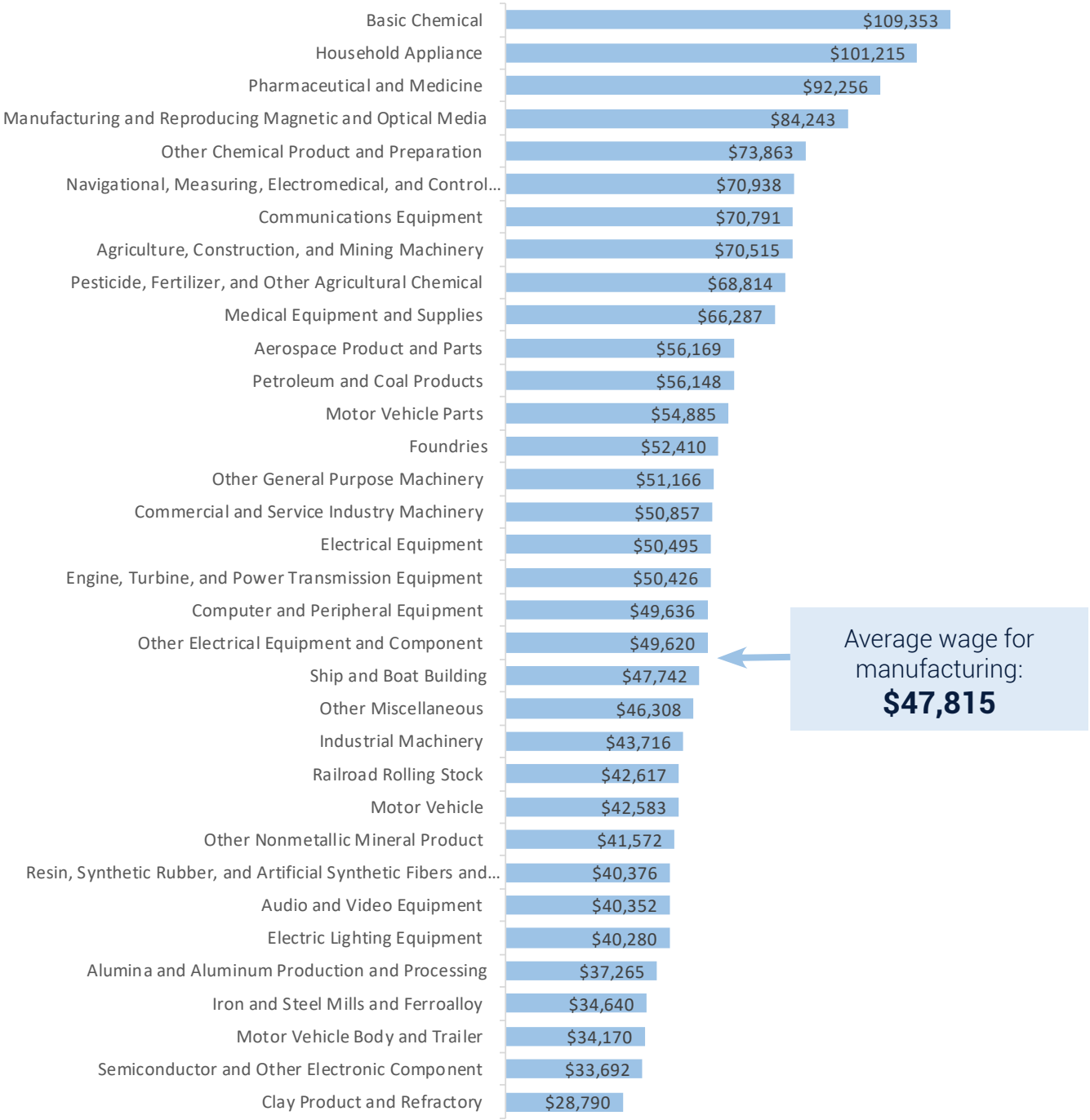
Figure 20 presents the output of the high-value advanced industries with the highest wages. The comparison with the previous figures shows that the high-value sectors do not necessarily have many firms with a large number of employees, but pay higher wages. The top three manufacturing advanced industries in Miami-Dade County with the highest total wages are pharmaceutical and medicine manufacturing ($22,187,627); navigational, measuring, electro medical, and control instruments manufacturing ($21,175,095); and medical equipment and supplies manufacturing ($17,516,241).

Figure 20: Total Wages in Miami-Dade Manufacturing Advanced Industries 2018



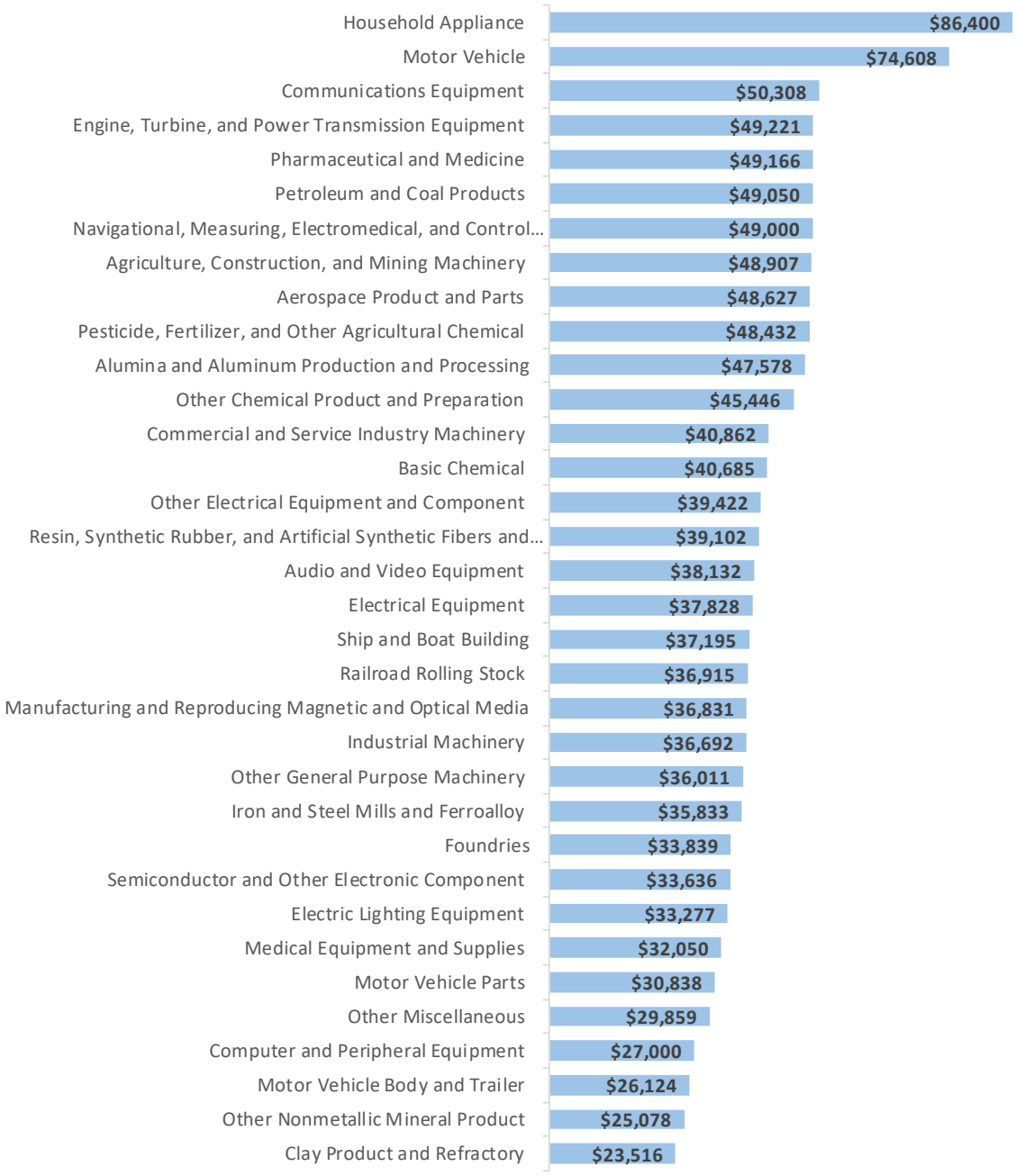
The top three advanced manufacturing industries in Miami-Dade County with the highest average wages are basic chemical manufacturing ($109,353); household appliance manufacturing ($101,215); and pharmaceutical and medicine manufacturing ($92,256). Average wages were calculated by dividing the total wages in each size category by the total number of employees in these establishments. The averages wages in 20 of the advanced subsectors are higher than the average wage for the manufacturing sector overall.

Figure 21: Average Wages in Miami-Dade Manufacturing Advanced Industries, 2018



The top three advanced manufacturing industries in Miami-Dade County with the highest average median wages are household appliance manufacturing ($86,400); motor vehicle manufacturing ($74,608); and communications equipment manufacturing ($50,308). The aggregate median value is simply the middle value in the sorted list of average wages for each establishment in that subsector. In other words, this is the median of average values rather than a median based on employee-level data. For example, the aggregate median for establishments in the household appliance manufacturing subsector is $86,400, which means that half of the establishments in that class pay an average wage lower than that figure, and half have average wages above it.

Figure 22: Median Average Wages in Miami-Dade Manufacturing Advanced Industries, 2018



Examples of Place-Based Manufacturing Initiatives

SF Made, https://sfmade.org/

Established in 2010, this San Francisco-based non-profit focuses on strengthening the local economy by building the local manufacturing sector. The organization offers sector-specific training programs and networking events, including factory tours. It also maintains a job board, a catalog of locally manufactured products, and provides sourcing services by connecting businesses to local manufacturers. In 2017, SFMade reports the following impacts: 12% new manufacturing job growth, 4,500 jobs sustained, and $791 million generated.

Manufacturer's EDGE, https://www.manufacturersedge.com/

An alliance of industry and government, this Denver-based organization provides training and networking events, as well as consulting services as part of a partnership with the Colorado SBDC. Since its launch in 2012, the partnership has helped small- to mid-size manufacturers increase or retain $1.04 billion. Manufacturer's Edge assistance to manufacturers prompted $325.4 million in plant and IT investment and workforce development, $191.5 million in new product and process investments, and led directly to 4,291 Colorado jobs being created and saved.

Urban Manufacturing Alliance, https://www.urbanmfg.org/

Although a national organization, UMA fosters programs for manufacturing in urban areas by providing platforms (live events and online) that connect manufacturing initiatives around the country. Through its partnerships with local organizations, and with its research and intelligence gatherings, UMA strives to shape national policy, as well as to inform the public and leaders about the status of manufacturing in cities.

Manufacturing Renaissance, https://www.mfgren.org/

This 26-year-old Chicago-based non-profit is creating a new program to address a trend in which family owned manufacturers are being acquired by larger companies or private equity. Among other things, it has a program – the Ownership Conversion Project -- that matches retiring manufacturers with entrepreneurs who are interested in keeping the companies local and viable.

North American Advanced Manufacturing Research & Education Initiative (NAAMREI),

http://www.naamrei.org/

NAAMREI has more than 60 partners in business, education, economic development, industry, finance and government developing a world-class advanced manufacturing industry in the Rio South Texas Region. Some of the assistance provided includes entrepreneurship support (business planning services, economic incentive packages, educational programs and workshops, entrepreneurial education, grant development assistance), incubation resources, and workforce development assistance.

Appendix A: Methodology

Make it Miami

This report on manufacturing in Miami-Dade County relies on a number of data sources that produce statistics on Miami-Dade businesses and the manufacturing sector. According to the North American Industry Classification system:

- The manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. Establishments in the manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing.

Sections of the report also discuss the advanced industry sector which includes many of the manufacturing subsectors. According to the Brookings Institution the advanced industries sector includes

- a set of industries employing specialized labor who draw on scientific and technical knowledge, on the one hand, and deploy that knowledge to research and develop new products and processes, on the other. industries are advanced if a greater share of their workforce is STEM oriented than the U.S. average (21 percent) and their R&D spending is at least $450 per worker, which is the 78th percentile of spending per worker. This identifies 50 advanced industries out of the 287 four-digit industries with comparable data. (America's Advanced Industries: What They Are, Where They Are, And Why They Matter. February 2015. Report.)

Some of the sources used in the report provide publicly accessible data sets, including:

- U.S. Census: American Community Survey, Business Dynamics statistics, Survey of Business Owners, County Business Patterns, Nonemployer Statistics, Exports from Manufacturing, and others, various years

The report also relies on the Quarterly Census of Employment and Wages (QCEW) collected by the Florida Department of Economic Opportunity. The raw data supplied the statistics for employment and wages by business and manufacturing size and sector. Since the database contains information allowing the business and manufacturing sector to be identified, it has aggregation and confidentiality restrictions.

Where data is available, the report also makes comparisons between Miami-Dade County and two other counties in the South Florida metropolitan area: Broward County and Palm Beach County. In addition, comparisons between Miami-Dade County and three benchmark counties across the nation: Fulton (Atlanta, GA), Harris (Houston, TX), and King (Seattle, WA). These counties are also benchmarks in other prominent report, for example the Miami-Dade Beacon Council's One Community, One Goal report and the Small Business. Big Impact. report on Small Businesses in Miami-Dade County.

Notes on **Data Sources:**

The Quarterly Census of Employment and Wages program (QCEW) available from the U.S. Bureau of Labor Statistics originated in the 1930s, and was known as the ES-202 program until 2003, when the current QCEW name was adopted. The primary economic product is the tabulation of employment and wages of establishments, which report to the Unemployment Insurance (UI) programs of the United States. Employment covered by these UI programs represents about 97% of all wage and salary civilian employment in the country.

County Business Patterns (U.S. Census): The series covers more than 6 million single-unit establishments and 1.8 million multi-unit establishments. An establishment is a single physical location at which business is conducted or services or industrial operations are performed. An establishment is not necessarily equivalent to a company or enterprise, which may consist of one or more establishments. A single-unit company owns or operates only one establishment. A multi-unit company owns or operates two or more establishments. The series excludes data on self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees.

Nonemployer Statistics - NES (U.S. Census): is an annual series that provides subnational economic data for businesses that have no paid employees and are subject to federal income tax. The data consist of the number of businesses and total receipts by industry. Most nonemployers are self-employed individuals operating unincorporated businesses (known as sole proprietorships), which may or may not be the owner's principal source of income. Statistics are available on businesses that have no paid employment or payroll, are subject to federal income taxes, and have receipts of $1,000 or more ($1 or more for the Construction sector). The data are available for approximately 450 NAICS industries at the national, state, county, metropolitan statistical area, and combined statistical area geography levels. Data are also presented by Legal Form of Organization (LFO) as filed with the Internal Revenue Service (IRS). The majority of NAICS industries are included with some exceptions as follows: crop and animal production; investment funds, trusts, and other financial vehicles; management of companies and enterprises; and public administration. NES data originate from statistical information obtained through business income tax records that the Internal Revenue Service (IRS) provides to the Census Bureau. The data are processed through various automated and analytical review to eliminate employers from the tabulation, correct and complete data items, remove anomalies, and validate geography coding and industry classification. Prior to publication, the noise infusion method is applied to protect individual businesses from disclosure.

Appendix B: Miami-Dade County Manufacturing Sub-Sectors

Make it Miami

NAICS4	2012 NAICS Code	Count
3111	Animal Food Manufacturing	6
3112	Grain and Oilseed Milling	5
3113	Sugar and Confectionery Product Manufacturing	13
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	24
3115	Dairy Product Manufacturing	37
3116	Animal Slaughtering and Processing	18
3117	Seafood Product Preparation and Packaging	5
3118	Bakeries and Tortilla Manufacturing	216
3119	Other Food Manufacturing	69
3121	Beverage Manufacturing	30
3122	Tobacco Manufacturing	11
3131	Fiber, Yarn, and Thread Mills	2
3132	Fabric Mills	9
3133	Textile and Fabric Finishing and Fabric Coating Mills	15
3141	Textile Furnishings Mills	22
3149	Other Textile Product Mills	38
3152	Cut and Sew Apparel Manufacturing	71
3159	Apparel Accessories and Other Apparel Manufacturing	12
3162	Footwear Manufacturing	3
3169	Other Leather and Allied Product Manufacturing	5
3211	Sawmills and Wood Preservation	1
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	9
3219	Other Wood Product Manufacturing	60
3221	Pulp, Paper, and Paperboard Mills	5
3222	Converted Paper Product Manufacturing	42
3231	Printing and Related Support Activities	318
3241	Petroleum and Coal Products Manufacturing	13
3251	Basic Chemical Manufacturing	6
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Mfg	6
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	10
3254	Pharmaceutical and Medicine Manufacturing	43
3255	Paint, Coating, and Adhesive Manufacturing	12
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	42
3259	Other Chemical Product and Preparation Manufacturing	24
3261	Plastics Product Manufacturing	66
3262	Rubber Product Manufacturing	14
3271	Clay Product and Refractory Manufacturing	8
3272	Glass and Glass Product Manufacturing	27
3273	Cement and Concrete Product Manufacturing	88
3274	Lime and Gypsum Product Manufacturing	1
3279	Other Nonmetallic Mineral Product Manufacturing	26
3311	Iron and Steel Mills and Ferroalloy Manufacturing	6
3312	Steel Product Manufacturing from Purchased Steel	6

NAICS4	2012 NAICS Code	Count
3313	Alumina and Aluminum Production and Processing	7
3314	Nonferrous Metal (except Aluminum) Production and Processing	5
3315	Foundries	6
3321	Forging and Stamping	6
3322	Cutlery and Handtool Manufacturing	4
3323	Architectural and Structural Metals Manufacturing	134
3324	Boiler, Tank, and Shipping Container Manufacturing	6
3325	Hardware Manufacturing	4
3326	Spring and Wire Product Manufacturing	8
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	55
3328	Coating, Engraving, Heat Treating, and Allied Activities	26
3329	Other Fabricated Metal Product Manufacturing	36
3331	Agriculture, Construction, and Mining Machinery Manufacturing	17
3332	Industrial Machinery Manufacturing	27
3333	Commercial and Service Industry Machinery Manufacturing	14
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment	40
3335	Metalworking Machinery Manufacturing	19
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	5
3339	Other General Purpose Machinery Manufacturing	43
3341	Computer and Peripheral Equipment Manufacturing	11
3342	Communications Equipment Manufacturing	23
3343	Audio and Video Equipment Manufacturing	10
3344	Semiconductor and Other Electronic Component Manufacturing	12
3345	Navigational, Measuring, Electromedical, and Control Instruments	47
3346	Manufacturing and Reproducing Magnetic and Optical Media	24
3351	Electric Lighting Equipment Manufacturing	27
3352	Household Appliance Manufacturing	3
3353	Electrical Equipment Manufacturing	11
3359	Other Electrical Equipment and Component Manufacturing	27
3361	Motor Vehicle Manufacturing	5
3362	Motor Vehicle Body and Trailer Manufacturing	16
3363	Motor Vehicle Parts Manufacturing	26
3364	Aerospace Product and Parts Manufacturing	63
3366	Railroad Rolling Stock Manufacturing	52
3369	Ship and Boat Building	14
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	174
3372	Office Furniture (including Fixtures) Manufacturing	37
3379	Other Furniture Related Product Manufacturing	34
3391	Medical Equipment and Supplies Manufacturing	142
3399	Other Miscellaneous Manufacturing	153
		2,817

Appendix C: Miami-Dade County Advanced Industries in Manufacturing

Make it Miami

Petroleum and Coal Products Manufacturing
Basic Chemical Manufacturing
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing
Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing
Pharmaceutical and Medicine Manufacturing
Other Chemical Product and Preparation Manufacturing
Clay Product and Refractory Manufacturing
Other Nonmetallic Mineral Product Manufacturing
Iron and Steel Mills and Ferroalloy Manufacturing
Alumina and Aluminum Production and Processing Foundries
Agriculture, Construction, and Mining Machinery Manufacturing
Industrial Machinery Manufacturing
Commercial and Service Industry Machinery Manufacturing
Engine, Turbine, and Power Transmission Equipment Manufacturing
Other General Purpose Machinery Manufacturing
Computer and Peripheral Equipment Manufacturing
Communications Equipment Manufacturing
Audio and Video Equipment Manufacturing
Semiconductor and Other Electronic Component Manufacturing
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
Manufacturing and Reproducing Magnetic and Optical Media
Electric Lighting Equipment Manufacturing
Household Appliance Manufacturing
Electrical Equipment Manufacturing
Other Electrical Equipment and Component Manufacturing
Motor Vehicle Manufacturing
Motor Vehicle Body and Trailer Manufacturing
Motor Vehicle Parts Manufacturing
Aerospace Product and Parts Manufacturing
Railroad Rolling Stock Manufacturing
Ship and Boat Building
Medical Equipment and Supplies Manufacturing
Other Miscellaneous Manufacturing

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2019

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