

Locating Chicago Manufacturing:

The Geography of Production in
Metropolitan Chicago

Howard Wial

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MANUFACTURING CHICAGO'S FUTURE

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The Geography of Production in Metropolitan Chicago

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Summary

- **The Chicago metropolitan area is one of the nation's major manufacturing centers, and manufacturing has become a more important specialization of the area over the last decade despite large manufacturing job losses.** In 2011, the Chicago metropolitan area had about 411,000 manufacturing jobs, second only to metropolitan Los Angeles. Manufacturing's percentage of all metropolitan Chicago jobs rose from 1.08 times the national percentage in 2001 to 1.11 times that percentage in 2011.
- **The Chicago metropolitan area specializes strongly in 11 manufacturing industries, with moderately high technology industries more important in the region than very high technology industries.** In 2011, moderately high technology industries in the Chicago area accounted for 1.21 times their percentage of all jobs nationwide, while very high technology industries in the metropolitan area made up less than their national average percentage of all jobs.
- **Almost half of all manufacturing jobs in the Chicago metropolitan area are in Cook County.** About 47 percent of the metropolitan area's manufacturing jobs are located in Cook County: 16 percent in the city of Chicago and 31 percent in suburban Cook.
- **In metropolitan Chicago, manufacturing offers higher wages than other industries.** In 2011, the average annual earnings in metropolitan Chicago manufacturing jobs were \$67,168, about 16 percent above average annual earnings for all jobs in the metropolitan area.
- **During the last two years, metropolitan Chicago gained manufacturing jobs more rapidly than the nation as a whole.** From the first quarter of 2010, when manufacturing employment hit its low point in both the metropolitan area and the nation as a whole,

through the third quarter of 2012, the number of manufacturing jobs increased by 5 percent in the Chicago area and 4 percent in the entire United States.

- **Current enthusiasm for local and regional policies to strengthen manufacturing in metropolitan Chicago is well founded.** Policy efforts should focus on industries in which the area already specializes, on new industries that can be developed from them, on other industries that share a skill or technology base with them, and on promoting high-wage, high-skill production regardless of industry.

Introduction

Recent small gains in manufacturing employment nationwide have led to a resurgence of interest in public policies to strengthen America's manufacturing base. In his 2013 State of The Union Address, for example, President Obama pledged to create three new Manufacturing Innovation Institutes to complement the one that currently exists in Youngstown, Ohio, and urged Congress to fund a network of 15 such institutes.² At the metropolitan level, Chicago is a leader in developing creative manufacturing policies and policy proposals. The city's Austin Polytechnical Academy, founded in 2007 by the Chicago Manufacturing Renaissance Council, is among the nation's leading public high schools focused on manufacturing and engineering.³ The Chicago Manufacturing Renaissance Council itself is a unique public-private partnership that has had considerable influence in shaping city policy on manufacturing and in initiating key reforms in secondary and postsecondary education for manufacturing.⁴ Making Chicago a leading hub of advanced manufacturing is the first of 10 strategies included in the Plan for Economic Growth and Jobs released last year by World Business Chicago, the city's nonprofit economic development organization.⁵ This year the University of Illinois announced plans for a privately funded manufacturing-oriented R&D center to be located in Chicago. The university's proposed Illinois Manufacturing Lab would give local manufacturers access to computer simulation, workforce training, and faculty resources to help them become more innovative and competitive.⁶

If these Chicago-area manufacturing initiatives are to succeed, economic development policymakers and practitioners should not base their strategies on wishful thinking or uncritical imitation of strategies developed elsewhere. Instead, they need to understand manufacturing's place in the metropolitan area's economy, including how important manufacturing is to that economy, which manufacturing industries are most important, where manufacturing is located within the metropolitan area, the wages that manufacturing jobs pay, and how these things have changed in recent years. This briefing paper, the first in CUED's *Manufactur-*

ing *Chicago's Future* series, provides that basic information about the geographic aspects of Chicago-area manufacturing. It is based on an update of the author's previous work on the geography of U.S. manufacturing, published last year by the Brookings Institution.⁷

Methodology

This briefing paper covers manufacturing in the Chicago metropolitan statistical area, defined as Cook, DeKalb, DuPage, Grundy, Kane, Kendall, Lake, McHenry, and Will counties in Illinois; Jasper, Lake, Newton, and Porter counties in Indiana; and Kenosha County in Wisconsin. Manufacturing, as defined in the North American Industry Classification System (NAICS), includes only business establishments primarily engaged in the production of goods; corporate headquarters and R&D centers, if not in or immediately adjacent to factories, are not included. The briefing paper generally classifies manufacturing industries at the NAICS three-digit level, but some four-digit industries that are especially important to the national economy (motor vehicles and parts, aerospace, and pharmaceuticals) are considered separately.

The paper also analyzes high technology industries, defined on the basis of the extent to which they employ science- and engineering-related workers nationwide. Very high technology industries (computers and electronics, pharmaceuticals, and aerospace) are those in which science and engineering occupations account for at least five times the national average percentage of all workers, while moderately high technology occupations (petroleum and coal products, chemicals other than pharmaceuticals, transportation equipment other than autos or aerospace, machinery, and electrical equipment and appliances) are those in which science and engineering occupations make up at least two but less than five times the national average percentage.⁸

Economic development analysts often use an industry's percentage of a region's jobs as a multiple of that industry's percentage of nationwide jobs to measure whether the region specializes in that industry. In this briefing paper, the Chicago area is considered to specialize strongly in a manufacturing industry if the industry's percentage of the metropolitan area's total employment is at least 1.05 times its percentage of nationwide total employment.⁹

The economic forecasting firm Moody's Analytics is the source of most of the data in this briefing paper. However, because Moody's Analytics does not distinguish between the city of Chicago and suburban Cook County, the paper uses data from the Illinois Department of Employment Security's "Where Workers Work" series to estimate the percentages of total Cook County manufacturing employment that are located in the city and the suburban areas.¹⁰ The data in "Where Workers Work" are generally very comparable to the Moody's Analytics data; where they are not, separate data for the city of Chicago and suburban Cook County are not presented. The briefing paper provides information for

the year 2011, the most recent full year for which Moody's Analytics data are available. In making comparisons over time, the paper also uses data for selected earlier years and more recent quarterly data.

The Brookings Institution report "Locating American Manufacturing: Trends in the Geography of Production" provides additional methodological details.¹¹

Findings

A. The Chicago metropolitan area is one of the nation's major manufacturing centers, and manufacturing has become a more important specialization of the area over the last decade despite large manufacturing job losses.

The Chicago area has a large number of manufacturing jobs, and these make up an important part of the metropolitan area's economy. In 2011, the Chicago metropolitan area had about 411,000 manufacturing jobs, second only to metropolitan Los Angeles. Manufacturing also accounts for a disproportionately high percentage of the metropolitan area's total employment. In 2011 manufacturing made up 9.5 percent of all Chicago-area jobs, compared to only 8.5 percent of jobs nationwide. Thus, manufacturing's percentage of Chicago-area jobs was 1.11 times its percentage of all U.S. jobs. This indicates that metropolitan Chicago has a strong specialization in manufacturing compared to the nation as a whole.

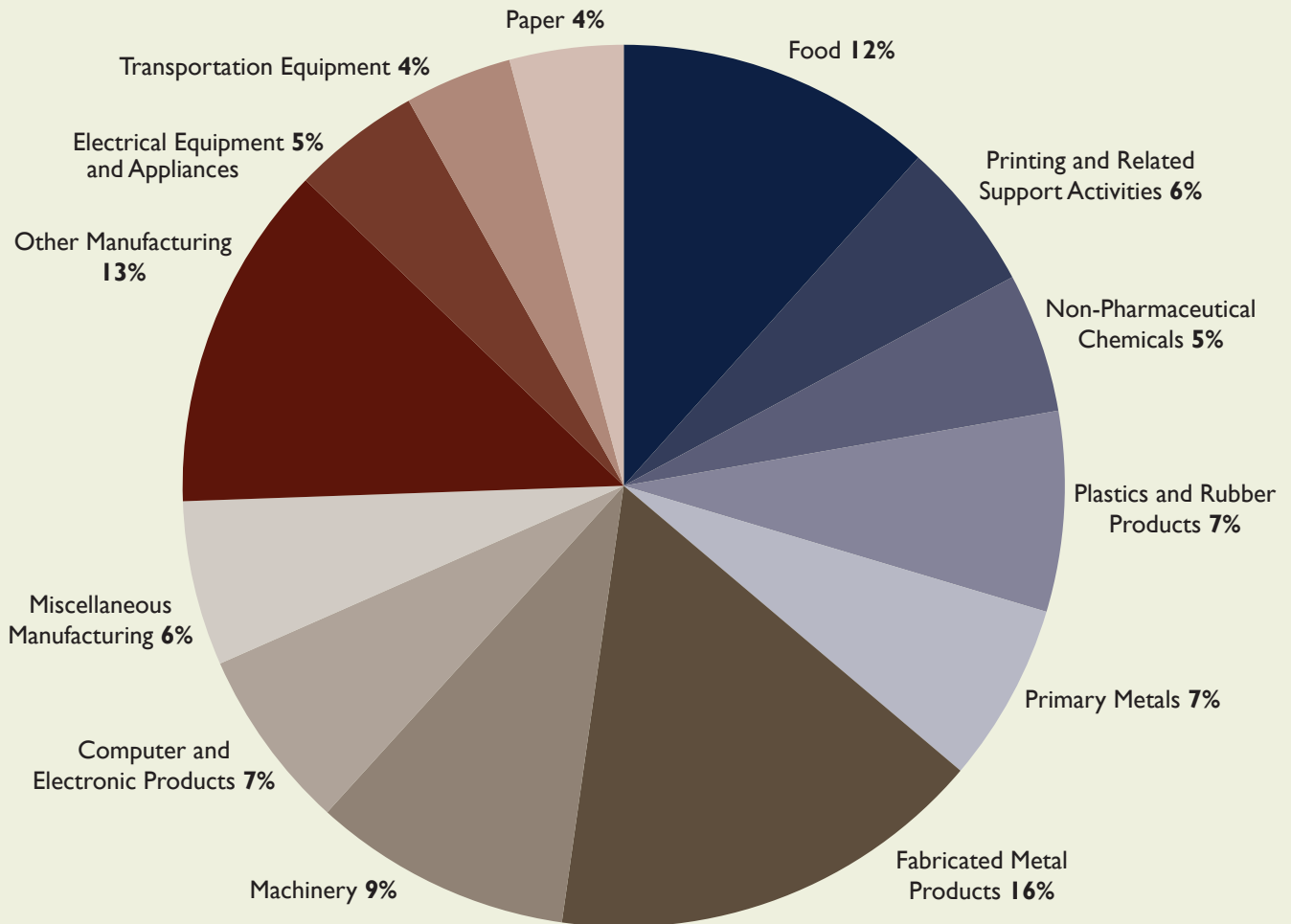
Despite the huge loss of manufacturing jobs that the Chicago area suffered during the first decade of the 21st century, manufacturing is, paradoxically, more important as an economic specialization in metropolitan Chicago now than it was a decade ago. The metropolitan area had about 185,000 fewer manufacturing jobs in 2011 than in 2001, and manufacturing's percentage of all Chicago-area jobs fell from 12.9 percent to 9.5 percent during this time. Yet manufacturing's percentage of all U.S. jobs fell even faster, from 12.0 percent to 8.5 percent. Thus, manufacturing's percentage of all metropolitan Chicago jobs rose from 1.08 times the national percentage in 2001 to 1.11 times that percentage in 2011. The metropolitan area became more specialized in manufacturing even as it lost manufacturing jobs.

B. The Chicago metropolitan area specializes strongly in 11 manufacturing industries, with moderately high technology industries more important in the region than very high technology industries.

Metropolitan Chicago's manufacturing base, like that of many of the nation's 100 largest metropolitan areas, is diverse. Figure 1 shows the industry composition of the Chicago area's manufacturing jobs. The metropolitan area's largest manufacturing industries are fabricated metal products, whose approximately 66,000 jobs make up 16 percent of the area's manufacturing jobs, and food manufacturing,

with about 48,000 jobs, about 12 percent of all manufacturing jobs in the area. The manufacturing industries with the most jobs, however, are not the same as the ones in which the metropolitan area specializes, since some industries that are large in Chicago are also large nationwide. Figure 2 shows the 11 manufacturing industries in which the Chicago metropolitan area strongly specializes. These industries are the ones that are most important to the metropolitan area’s manufacturing base.

Figure 1. Industry Composition of Metropolitan Chicago Manufacturing Jobs, 2011



Notes: “Transportation equipment” includes all motor vehicles and parts, aerospace, and rail and other transportation equipment.

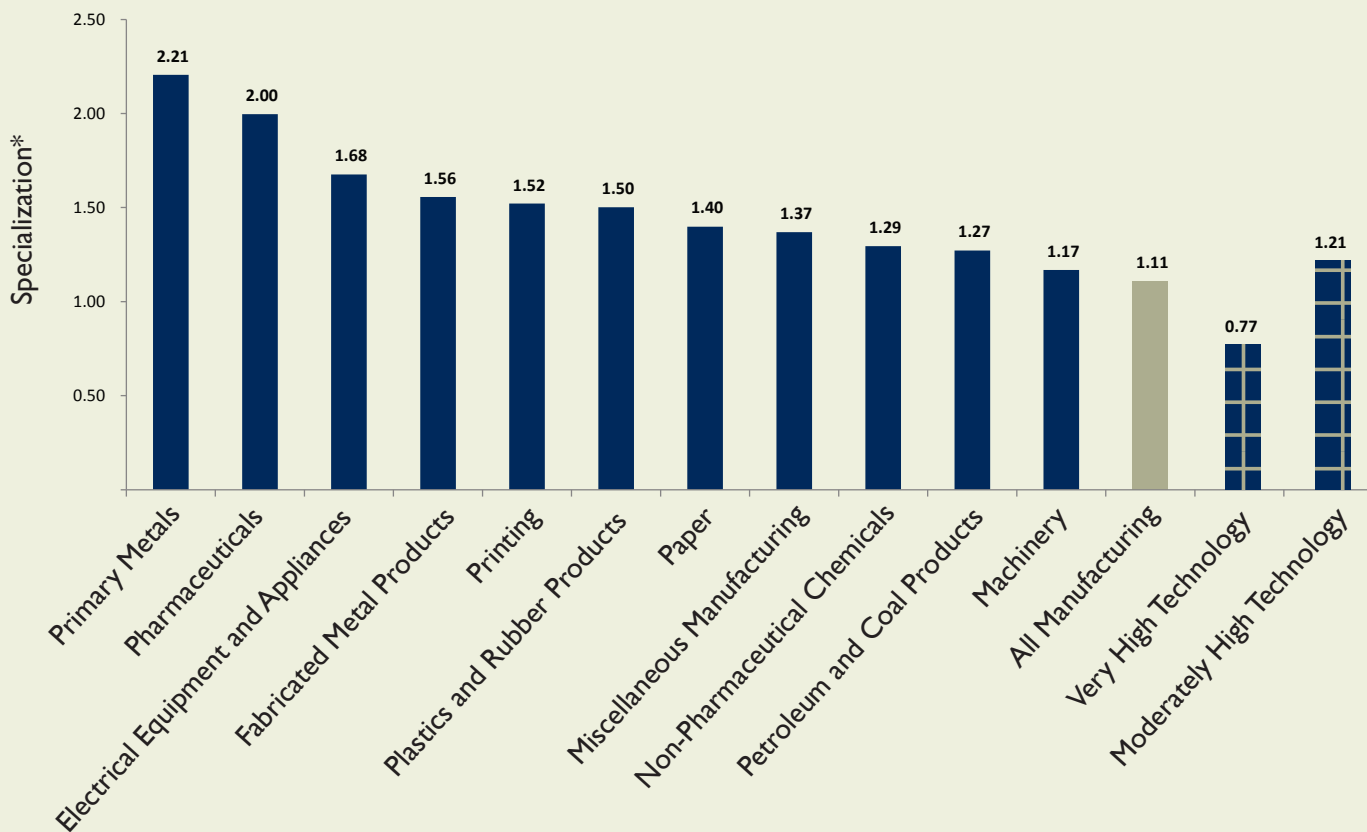
“Miscellaneous manufacturing” consists of a variety of industries that are not part of other industry categories. It includes, among other things, some medical devices, jewelry, silverware, toys, signs, and office supplies.

“Other manufacturing” includes furniture, wood products, beverage and tobacco products, pharmaceuticals, petroleum and coal products, nonmetallic mineral products, apparel, textile and textile product mills, and leather.

Source: Author’s analysis of Moody’s Analytics data.

Although the metropolitan area specializes strongly in pharmaceuticals, a very high technology industry, it does not specialize strongly in very high technology manufacturing industries in general. (In addition to pharmaceuticals, very high technology industries include aerospace and computers and electronics.) However, it does specialize strongly in moderately high technology industries, especially electrical equipment and appliances, chemicals (other than pharmaceuticals), and machinery. In 2011, moderately high technology industries in the Chicago area accounted for 1.21 times their percentage of all jobs nationwide, while very high technology industries in the metropolitan area made up less than their national average percentage of all jobs.

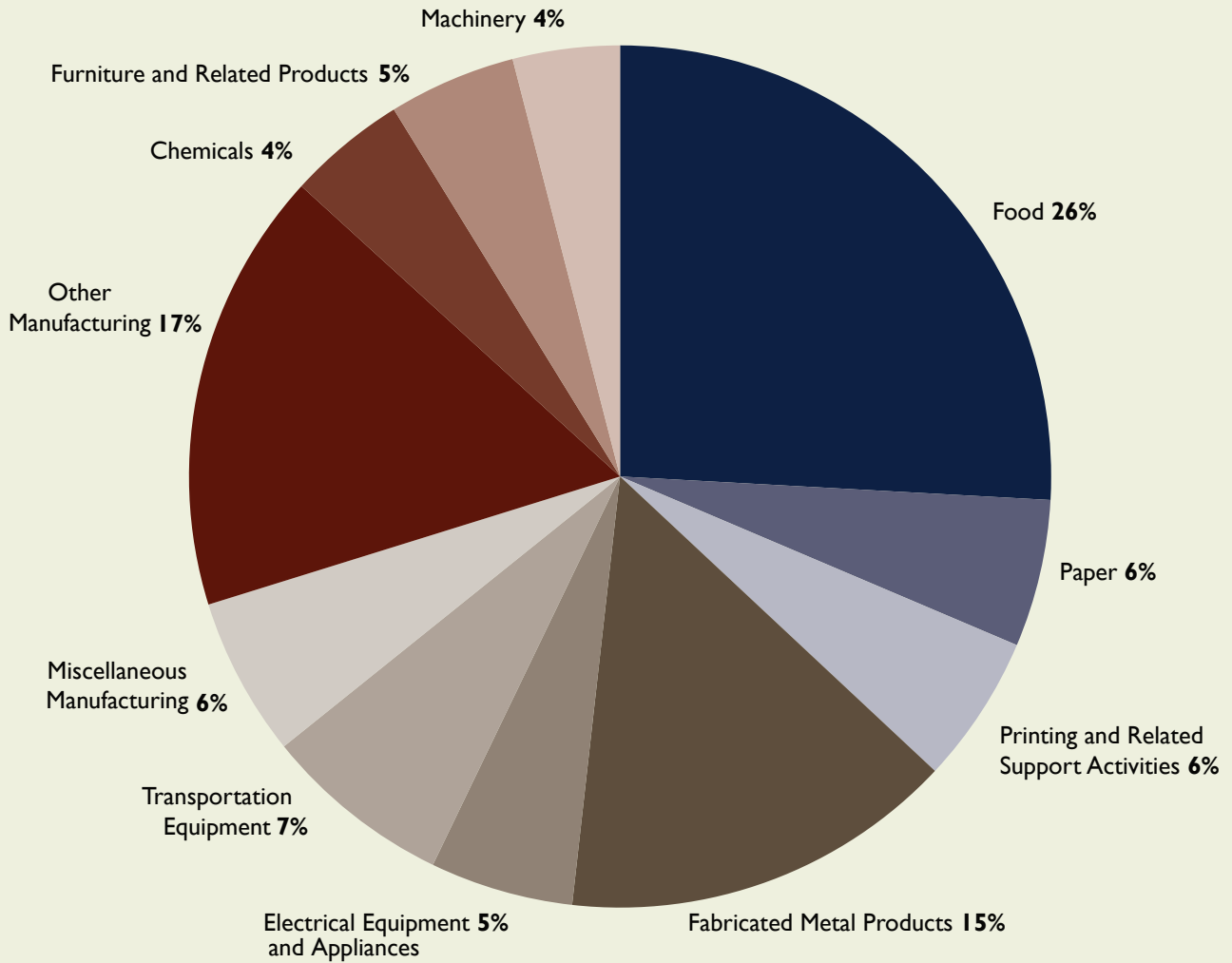
Figure 2. Metropolitan Chicago’s Strong Manufacturing Industry Specializations, 2011



*Industry’s percentage of all metropolitan Chicago jobs as multiple of its percentage of all U.S. jobs.

Source: Author’s analysis of Moody’s Analytics data.

Figure 3. Industry Composition of City of Chicago Manufacturing Jobs, 2011



Notes: “Transportation equipment” includes all motor vehicles and parts, aerospace, and rail and other transportation equipment.

“Chemicals” includes both pharmaceuticals and non-pharmaceutical chemicals.

“Miscellaneous manufacturing” consists of a variety of industries that are not part of other industry categories. It includes, among other things, some medical devices, jewelry, silverware, toys, signs, and office supplies.

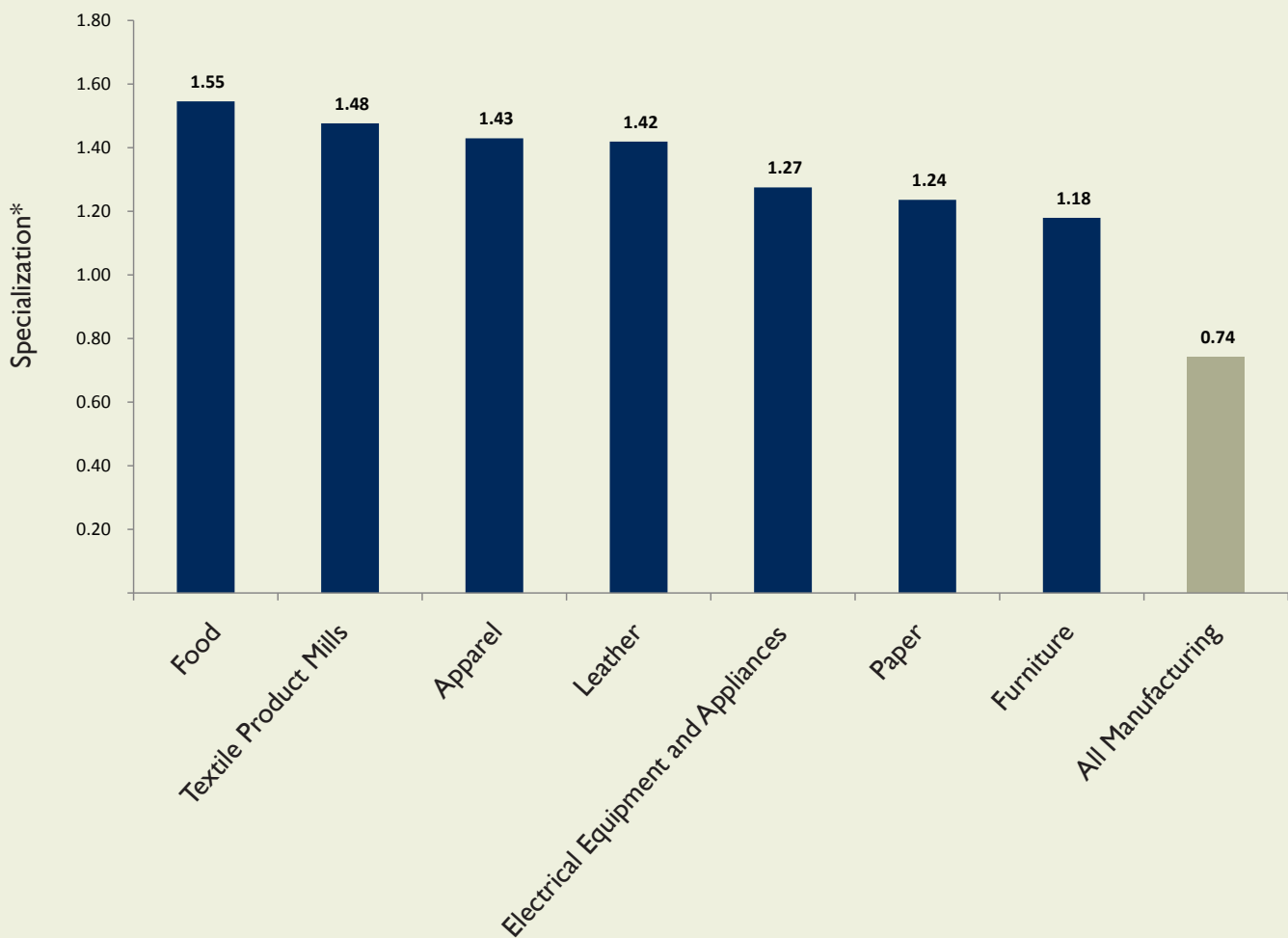
“Other manufacturing” includes wood products, beverage and tobacco products, petroleum and coal products, nonmetallic mineral products, primary metals, plastics and rubber products, computer and electronic products, apparel, textile and textile product mills, and leather.

Source: Author’s analysis of Moody’s Analytics data.

The city of Chicago has a distinctive manufacturing industry profile. Figure 3 shows the industry composition of the city’s approximately 65,000 manufacturing jobs. The city’s largest manufacturing industries are food manufacturing, with 26 percent of the city’s manufacturing jobs, and fabricated metal products, with 15 percent.

Figure 4 shows the manufacturing industries in which the city strongly specializes. These specializations differ greatly from those of the metropolitan area. Only paper and electrical equipment and appliances are strong specializations of both the city and the entire metropolitan area.

Figure 4. The City of Chicago’s Strong Manufacturing Industry Specializations, 2011

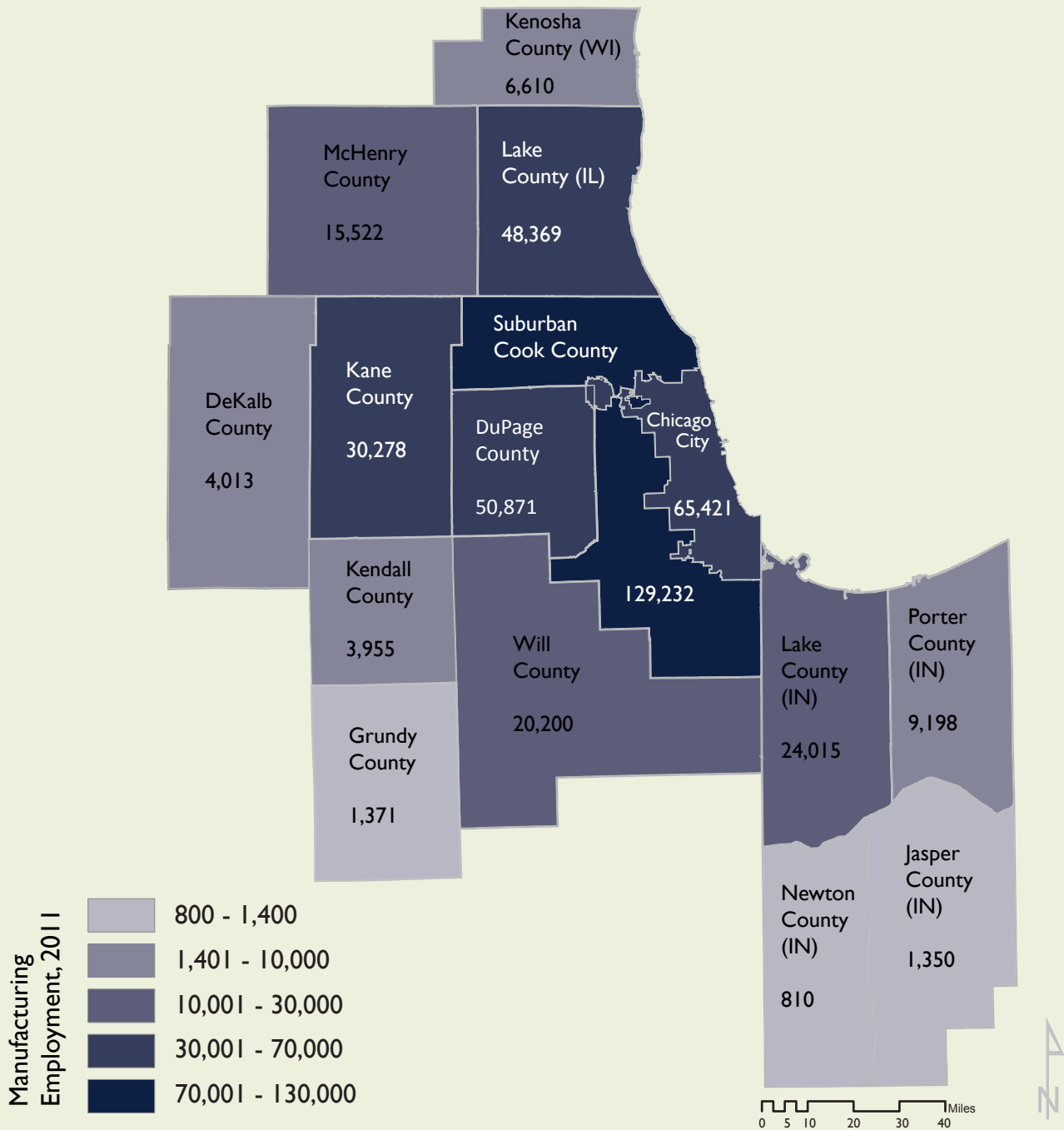


*Industry’s percentage of all metropolitan Chicago jobs as multiple of its percentage of all U.S. jobs.

Note: Very and moderately high technology manufacturing job estimates are not available for the city of Chicago.

Source: Author’s analysis of Moody’s Analytics data.

Figure 5. Manufacturing Jobs in Chicago Metropolitan Area Counties and the City of Chicago, 2011



Source: Author's analysis of Moody's Analytics data.

C. Almost half of all manufacturing jobs in the Chicago metropolitan area are in Cook County.

About 47 percent of the metropolitan area's manufacturing jobs are located in Cook County: 16 percent in the city of Chicago and 31 percent in suburban Cook. The only other counties in the area with at least 5 percent of the metropolitan manufacturing total are DuPage (12 percent), Lake (Illinois) (12 percent), Kane (7 percent), and Lake (Indiana) (6 percent). Figure 5 shows the number of manufacturing jobs in each county and in the city of Chicago.

Some of the Chicago area's strong manufacturing industry specializations have very different geographic patterns than manufacturing as a whole.

- About 85 percent of the area's pharmaceutical manufacturing jobs are in Lake County, Illinois, reflecting the presence there of several major pharmaceutical companies. Miscellaneous manufacturing, which includes a substantial part of medical device manufacturing, also has a large presence in Lake County (23 percent of the industry's jobs are located there), although the industry's geographic pattern is otherwise similar to that of manufacturing as a whole.
- Petroleum and coal products jobs (mainly in oil refineries) are located largely in Lake County, Indiana, which has 41 percent of those jobs; suburban Cook County has another 26 percent.
- Nearly half (47 percent) of the area's jobs in primary metal manufacturing (mainly steel manufacturing) are in Lake County, Indiana; another 20 percent are in adjoining Porter County and 14 percent are in suburban Cook.
- Large majorities of printing, paper, and electrical equipment and appliance manufacturing jobs are located in Cook County (54 percent of printing jobs, 57 percent of paper jobs, and 60 percent of electrical equipment and appliances jobs), with most of those in suburban Cook. DuPage County also has substantial numbers of jobs in all three industries.
- Will County has 12 percent of the area's jobs in chemical (other than pharmaceutical) manufacturing. This industry's geographic pattern is otherwise similar to that of manufacturing as a whole.

There are two regionally important industries in which the city of Chicago has a disproportionately large number of jobs. Although the city has only 16 percent of all the metropolitan area's manufacturing jobs, it has 21 percent of jobs in paper and 18 percent of jobs in electrical equipment and appliances.



D. In metropolitan Chicago, manufacturing offers higher wages than other industries.

In 2011, the average annual earnings (excluding employee benefits) in metropolitan Chicago manufacturing were \$67,168, about 16 percent above the \$56,579 overall average earnings for all jobs in the metropolitan area. Manufacturing's wage advantage reflects a variety of factors, including differences in workforce demographics and unionization, but the main reason why manufacturers pay high wages is to attract and maintain a workforce that is skilled and motivated to avoid the costs of downtime and take some responsibility for self-management.¹²

Metropolitan Chicago's manufacturing wages are high not only compared to wages in the rest of the metropolitan area's economy but also compared to manufacturing wages in the rest of the United States. Chicago-area average manufacturing earnings exceeded the U.S. manufacturing average (\$60,340) by 11 percent. Manufacturing wages are high in the Chicago area for two reasons. First, high-wage industries are more important in the Chicago area than nationwide. If metropolitan Chicago had had the same industry composition as the nation as a whole (but the same average earnings in each industry as it actually had), its 2011 average earnings would have been \$65,613 per year rather than \$67,168. Second, individual industries offer higher wages in the Chicago area than in the nation as a whole. In 17 of the 24 manufacturing industries covered in this report (all except beverage and tobacco products, textile mills, textile product mills, apparel, paper, computers and electronics, and aerospace), average annual earnings in the Chicago metropolitan area exceeded their respective national averages. Differences in wages between metropolitan areas, even within the same industry, reflect differences in education and skill, products and processes, and worker bargaining power.¹³



















Not all manufacturing industries offer high wages, though. Average annual earnings in the Chicago metropolitan area's highest-wage manufacturing industry, petroleum and coal products, were nearly \$117,000. This was 3.75 times the \$31,208 average earnings in the area's lowest-wage manufacturing industry, textile product mills.


Table I shows the average annual earnings in each of metropolitan Chicago's manufacturing industries. The table shows that the industries in which the metropolitan area has a strong specialization (shown with the blue cog) are evenly split between those with average earnings above the metropolitan manufacturing average and those with average earnings somewhat below that average; none of the metropolitan area's strong manufacturing industry specializations is a very low-wage industry. Most of those in which the city of Chicago specializes (shown with the red dotted cog) have average earnings below (in some cases, substantially below) that average.


E. During the last two years, metropolitan Chicago gained manufacturing jobs more rapidly than the nation as a whole.

Since the beginning of 2010, the numbers of manufacturing jobs in metropolitan Chicago and the entire United States have begun to rise after a decade of unprecedented decline. This growth is only partly the result of a “bounce-back” of demand after the Great Recession; it also reflects longer-term factors such as rising wages in China and is, therefore, likely to continue.¹⁴ The recent growth of manufacturing jobs has been slightly faster in the Chicago area than nationwide. From the first quarter of 2010, when manufacturing employment hit its low point in both the metropolitan area and the nation as a whole, through the third quarter of 2012 (the last quarter for which data are available), the number of manufacturing jobs increased by 5 percent in the Chicago area and 4 percent in the entire United States. This was not a consequence of more rapid overall job growth in the Chicago area; in fact, total employment rose by only 2 percent in the metropolitan area during this period, compared to 3 percent nationwide.

Table 1. Average Annual Earnings in Metropolitan Chicago Manufacturing Industries, 2011

Industry		Average Annual Earnings
Petroleum and Coal Products		\$116,983
Parmaceuticals		\$116,259
Primary Metals		\$83,452
Machinery		\$82,007
Chemicals (Non-Pharmaceutical)		\$81,699
Aerospace		\$79,350
Computers and Electronics		\$76,352
Rail and Other Transportation Equipment		\$74,622
Miscellaneous Manufacturing		\$74,028
Motor Vehicles and Parts		\$69,452
ALL MANUFACTURING		\$67,178
Electrical Equipment and Appliances	 	\$62,862
Paper	 	\$60,017
Fabricated Metals		\$56,689
Plastics and Rubber Products		\$55,830
Nonmetallic Mineral Products		\$55,788
Printing		\$54,507
Food		\$52,630
Furniture		\$49,241
Beverage and Tobacco Products		\$49,035
Leather		\$47,531
Wood Products		\$39,350
Textile Mills		\$38,231
Apparel		\$33,241
Textile Product Mills		\$31,208

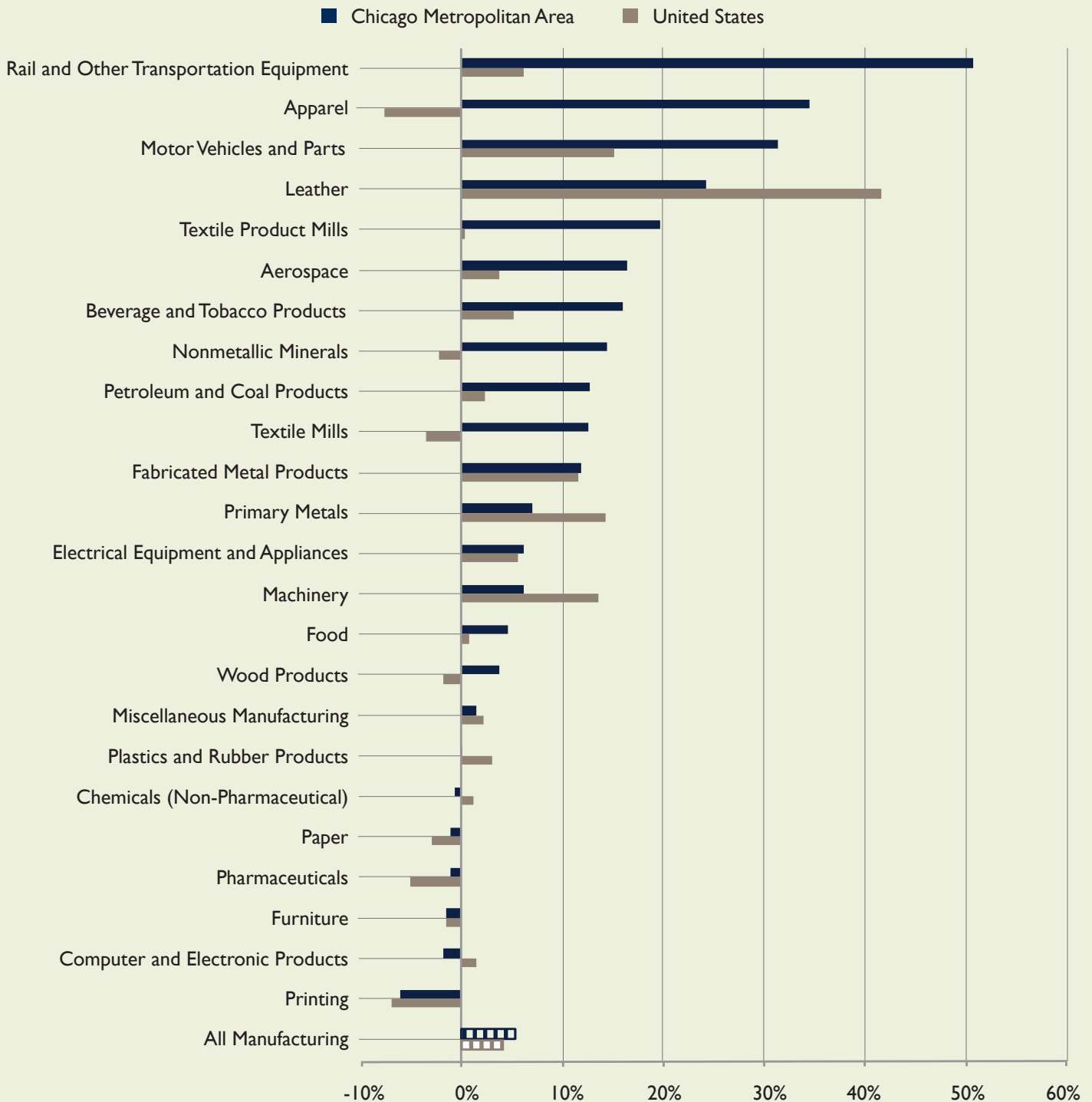
 Strong Specialization of the Chicago Metropolitan Area

 Strong Specialization of the City of Chicago

Source: Author's analysis of Moody's Analytics data.

In the United States as a whole, recent manufacturing job growth has occurred mainly in durable goods industries, especially machinery, fabricated metal products, and transportation equipment; nondurable goods employment as a whole continued to decline, and the only nondurable industry to experience rapid job growth

Figure 6. Percent Change in Manufacturing Jobs, by Industry, Metropolitan Chicago and the United States, 1st Quarter 2010-3rd Quarter 2012



Source: Author's analysis of Moody's Analytics data.

was leather products. Manufacturing job growth in the Chicago area has been more broadly based, with many nondurable goods industries (beverage and tobacco products, textile mills, textile product mills, apparel, petroleum and coal products, and leather products) as well as several durable goods industries (nonmetallic mineral products, fabricated metal products, and transportation equipment) experiencing double-digit job growth. Even in industries with slower recent job growth or job losses, metropolitan Chicago's job performance generally exceeded that of the entire United States during the last two years (figure 6).

Most of the strong industry specializations of the metropolitan area and the city of Chicago experienced job growth during the last two years. However, both pharmaceuticals and chemicals (other than pharmaceuticals) lost jobs, as did paper, printing, and furniture. Some other important Chicago-area industry specializations (plastics and rubber products, primary metals, machinery, and miscellaneous manufacturing) gained jobs, but more slowly than the nation as a whole.

The metropolitan area's job growth in high technology manufacturing industries also lagged that of the nation during the last two years. Very high technology industries lost jobs in the Chicago area while gaining jobs nationwide. Moderately high technology industries grew more slowly in metropolitan Chicago than in the entire United States.

Recent manufacturing job growth has not come close to making up for huge manufacturing job losses during the previous decade. Despite the recent growth, the number of manufacturing jobs remained 29 percent lower in the third quarter of 2012 than in 2001 in metropolitan Chicago and 27 percent lower in the nation as a whole.

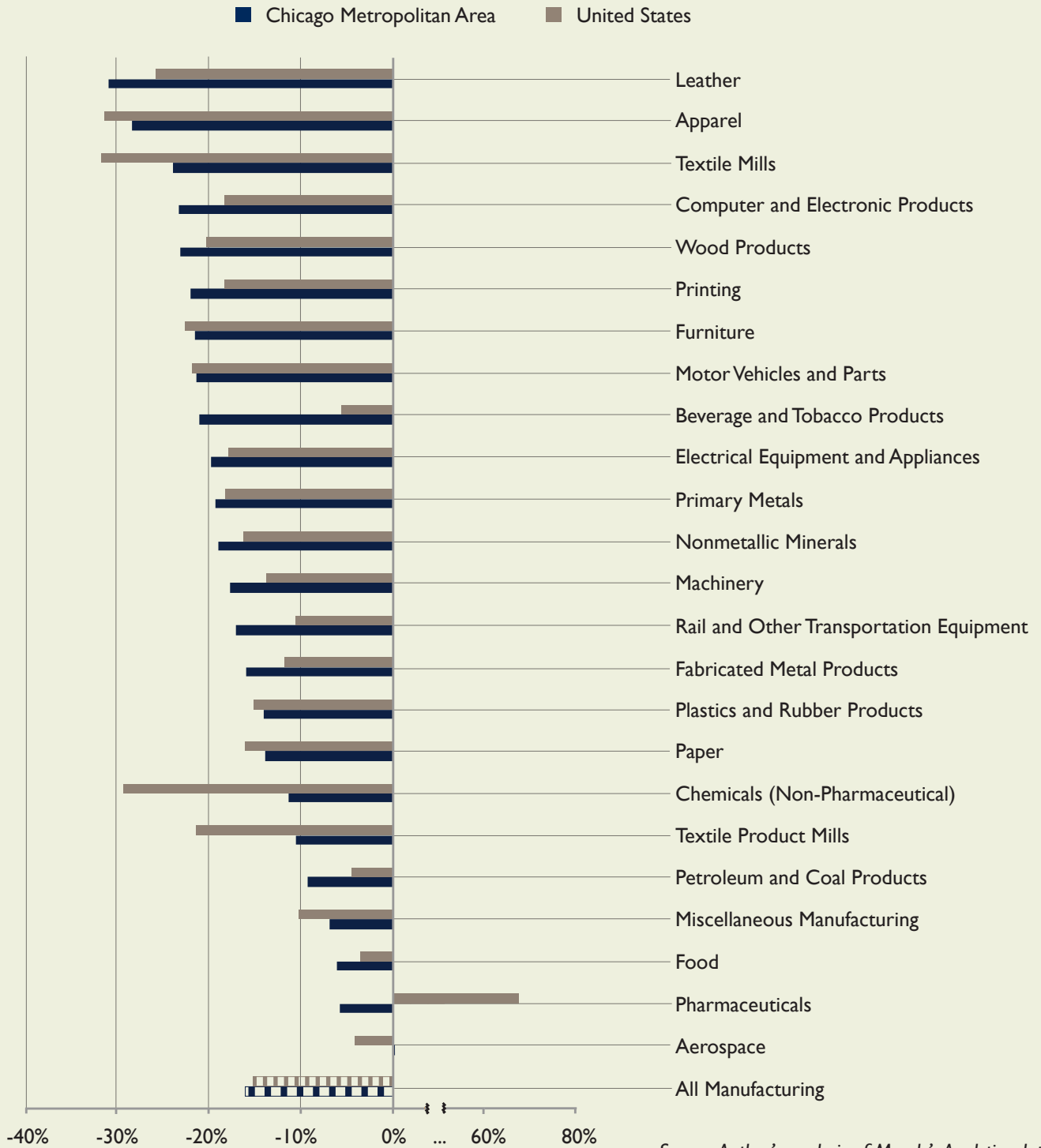
Between 2001 and 2010, the metropolitan area lost 32 percent of its manufacturing jobs, a slightly higher percentage than the nationwide 30 percent loss. Geographically, losses were more severe in the central part of the metropolitan area (the city of Chicago and suburban Cook County) than in outlying areas, although some outlying counties also had very severe losses. Thus, the geographic pattern of manufacturing job loss in metropolitan Chicago, as in the nation as a whole, resulted in the decentralization of manufacturing away from its historic core areas.¹⁵

Losses were most severe in Newton County, Indiana, which lost 48 percent of its manufacturing jobs between 2001 and 2010, followed by the city of Chicago (47 percent), Kenosha County, Wisconsin (44 percent), DeKalb County (35 percent), and suburban Cook County (35 percent). Losses were much more modest in Lake County, Illinois (16 percent) and Porter County, Indiana (19 percent). Only Will County gained manufacturing jobs (by 1.9 percent) during this time.

The manufacturing industries that lost the highest percentages of their jobs in the Chicago area between 2001 and 2010 were leather and apparel, both of which lost more than half their jobs. Most other manufacturing industries had percentage job losses above the metropolitan area average (figure 7). Only food manufacturing, miscellaneous manufacturing, and pharmaceutical manufacturing experienced losses

below 20 percent. Both very and moderately high technology industries in the Chicago area lost manufacturing jobs more rapidly than the nation as a whole, with losses more severe in very high technology industries.

Figure 7. Percent Change in Manufacturing Jobs, by Industry, Metropolitan Chicago, 2001-2010



Source: Author's analysis of Moody's Analytics data.

Conclusion: Implications for Manufacturing Policy in Metropolitan Chicago

Current enthusiasm for local and regional policies to strengthen manufacturing in metropolitan Chicago is well founded. Such policies make sense because the Chicago area is an important manufacturing center with specializations in many manufacturing industries, a manufacturing sector that on average offers higher-wage jobs than the rest of the area's economy, and a recent manufacturing job growth rate that exceeds the national average. That job growth can be expected to continue.

Policies to strengthen manufacturing in the metropolitan area should focus on industries in which the area already specializes, on new industries that can be developed from them, and on other industries that share a skill or technology base with them. Because the Chicago area specializes in many different manufacturing industries, there are many possibilities, and it is neither necessary nor desirable for all public and private manufacturing strategies to focus on the same industries.

Metropolitan Chicago is already a center for one type of very high technology industry, pharmaceuticals. In general, though, Chicago's high technology manufacturing industries are more concentrated in moderately high technology industries. Moreover, metropolitan areas rarely specialize in both very high technology and moderately high technology manufacturing industries, perhaps because the two kinds of high technology industries require very different kinds of skills and supporting institutions.¹⁶ Therefore, growth in high technology industries in the Chicago area is more likely to be in moderately high technology industries than very high technology industries, with the exception of industries related to pharmaceuticals. To the extent that efforts to strengthen the area's advanced manufacturing, such as the one envisioned in World Business Chicago's Plan for Economic Growth and Jobs, focus on high technology industries, they should pay more attention to the needs of moderately high technology industries than to those of very high technology industries.

Targeting particular industries, though, is not the only way to strengthen manufacturing in the metropolitan area. In nearly every manufacturing industry, even low-wage industries, some companies take a "high road" approach in which they compete by using highly paid skilled workers to help them innovate (often using advanced technologies), while others take a "low road" approach in which they compete mainly on the basis of low wages and low-cost geographic locations.¹⁷ Public policy should favor high road firms regardless of industry. For example, public and public-private organizations can provide assistance to manufacturers to help them become more productive and innovative, as the proposed Illinois Manufacturing Lab would do and as the Illinois Manufacturing Extension Center, in different ways, already does. State governments can also make the low road more costly by prohibiting local governments from offering economic develop-

ment subsidies that are used to recruit manufacturers and other geographically mobile businesses from other parts of the metropolitan area.

The decentralization of manufacturing from the city of Chicago and, to a lesser extent, from suburban Cook County, presents a challenge for local manufacturing policy because manufacturers are more productive when they locate in areas that have dense concentrations of other manufacturing and service companies.¹⁸ Cook County, with nearly half of all manufacturing jobs in the metropolitan area, offers manufacturers those benefits of density, as do concentrations of business in other parts of the metropolitan area. In deciding where to locate, manufacturers (and other companies) do not take into account the benefits that their individual decisions to locate in areas of greater density have on other companies. Likewise, they do not take into account the costs that they impose on other companies when they move away from such dense areas. Public policy should strengthen manufacturing in existing areas of manufacturing density. To design the right policies, it is important to know why decentralization is occurring (e.g., outlying areas may offer better access to highways and O'Hare Airport or more modern industrial facilities). Such knowledge can help county and municipal governments determine whether it is possible to offset the incentives to decentralize that companies face and, if so, how.

A final challenge for Chicago-area manufacturing policy efforts is that they are not, at present, coordinated with one another. This creates the danger that different policy efforts may work at cross purposes or that separate efforts may not be large enough to take full advantage of economies of scale. Although there is no need for all policy efforts to be conducted by a single public or private organization, manufacturing policy in Chicago would benefit from some looser form of coordination.

1. Executive Director and Associate Research Professor, Center for Urban Economic Development, The University of Illinois at Chicago, and Nonresident Senior Fellow, Brookings Institution Metropolitan Policy Program.
2. President Barack Obama's 2013 State of the Union Address is available at www.whitehouse.gov/state-of-the-union-2013. For commentary on the concept behind the National Network for manufacturing innovation, see Mark Muro and Kenan Fikri, "Manufacturing Hubs: What and Why?" Upfront Blog, Brookings Institution, February 13, 2013, www.brookings.edu/blogs/upfront/posts/2013/02/13-state-of-the-union-manufacturing-hubs-muro-fikri.
3. See Austin Polytechnical Academy Web site, www.austinpolytech.org/about.
4. See Chicago Manufacturing Renaissance Council Web site, www.chicago-manufacturing.org.
5. World Business Chicago, *A Plan for Economic Growth and Jobs* (Chicago, 2012).
6. Greg Hinz, "U of I to Open Chicago Manufacturing Institute," *Crain's Chicago Business* online, February 6, 2013, <http://www.chicagobusiness.com/article/20130206/BLOGS02/130209888/u-of-i-to-open-chicago-manufacturing-institute>
7. Susan Helper, Timothy Krueger, and Howard Wial, "Locating American Manufacturing: Trends in the Geography of Production" (Washington: Brookings Institution, 2012).
8. These cutoffs, developed by Bureau of Labor Statistics economist Daniel Hecker, are widely used to define high technology industries. See Daniel E. Hecker, "High-Technology Employment: A NAICS-Based Update," *Monthly Labor Review* 128 (7) (2005): 57-72.
9. If manufacturing's share of a region's employment is greater than its share of nationwide employment then the region is presumptively specialized in manufacturing. Helper, Krueger, and Wial, "Locating," uses the higher 1.05 cutoff to indicate a strong specialization in manufacturing. However, any such cutoff is inevitably arbitrary and there is no consensus in either the practitioner or academic literature about the appropriate cutoff to use to indicate a strong specialization.
10. See Illinois Department of Employment Security's "Where Workers Work" Web site, <http://www.ides.illinois.gov/page.aspx?item=929>. The small portion of the city of Chicago that is in DuPage County (a part of O'Hare Airport) contains no manufacturing jobs, so for the purposes of this briefing paper the city can be regarded as being located entirely in Cook County.
 11. Helper, Krueger, and Wial, "Locating."
 12. Susan Helper, Timothy Krueger, and Howard Wial, "Why Does Manufacturing Matter? Which Manufacturing Matters? A Policy Framework" (Washington: Brookings Institution, 2012).
 13. Helper, Krueger, and Wial, "Locating."
 14. Helper, Krueger, and Wial, "Why Does Manufacturing Matter?"
 15. Helper, Krueger, and Wial, "Locating."
 16. Helper, Krueger, and Wial, "Locating."
 17. Helper, Krueger, and Wial, "Locating"; Helper, Krueger, and Wial, "Why Does Manufacturing Matter?"
 18. Helper, Krueger, and Wial, "Locating."

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For More Information

Howard Wial
Executive Director and Associate Research Professor
Center for Urban Economic Development
The University of Illinois at Chicago
hwial@uic.edu
312-996-7194

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The Chicago metropolitan area is home to some of the nation's most ambitious local public-private initiatives to strengthen manufacturing. In this series of briefing papers on Chicago-area manufacturing, CUED provides economic development policymakers and practitioners with the information they need to make these efforts successful.

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