



Fall 2002

*Buffalo Branch, Federal Reserve Bank of New York
160 Delaware Avenue
Buffalo, NY 14202
Tel: (716)849-5023
Fax: (716) 849-5218
www.newyorkfed.org/
buffalo*

*Barbara Walter
Senior Vice President and
Branch Manager*

*Reggie Melson
Community Affairs
Representative
reggie.melson@ny.frb.org*

*Richard Deitz, Ph.D.
Regional Economist
richard.deitz@ny.frb.org*

*Ramon Garcia
Assistant Economist
ramon.garcia@ny.frb.org*



*To view the latest results
of the Empire State
Manufacturing Survey,
visit:
www.newyorkfed.org/
rماغhome/regional/mfg_
survey/index.html*

*For the online version
of this newsletter
and other economic
research published by
the Federal Reserve
Bank of New York, visit:
www.newyorkfed.org/
rماغhome/regional*

THE REGIONAL ECONOMY

OF UPSTATE NEW YORK

Vitality in Upstate Medical Manufacturing

In 2006, Baby Boomers will begin entering their sixties. This change in the population will dramatically boost the demand for medical products and services—a health care trend that had already been rising steadily since World War II.¹ Along with this increasing demand have come a host of medical and biological breakthroughs that have spawned the development of a broad range of diagnostic and therapeutic treatments.

These factors have helped fuel a robust expansion of the medical manufacturing industry. Medical manufacturing, which includes the production of medical devices and pharmaceuticals, is currently one of the few U.S. manufacturing industries adding workers. Although the pharmaceutical industry and, to a lesser extent, the medical device industry have experienced consolidation in recent years, the demand for their products has continued to expand. And while the nascent biotechnology industry is not yet a major employer, many view it as the future of pharmaceuticals, destined to create jobs as well as lead to extraordinary cures and treatments. The overall economic impact of medical manufacturing is limited by the industry's small size, but its relative returns are enhanced because it pays good wages and employs an above average proportion of high-skilled workers.

The promise of medical manufacturing has not gone unnoticed by those concerned about the vitality of their local economies, and many communities are looking to become the next medical manufacturing hub. In this issue of *The Regional Economy of Upstate New York*, we describe the medical manufacturing industry generally and examine the industry's presence in upstate New York and its metropolitan areas.² We show that upstate has a considerable employment concentration in the manufacture of both medical devices and pharmaceuticals. This activity is distributed widely among the region's metropolitan areas, with Buffalo, Glens Falls, Rochester, Syracuse, and Utica specializing in the

industry overall and Albany showing strength in two subindustries.

What is Medical Manufacturing?

The medical manufacturing industry includes firms that research, develop, and manufacture products for the prevention, diagnosis, treatment, and cure of disease. It is divided into two broad categories: medical devices and pharmaceuticals. The medical device sector includes businesses that produce a vast array of instruments, supplies, machines, and other medical equipment intended for diagnostic and therapeutic purposes. Medical device firms range from producers of commodities such as disposable hospital supplies to high-tech manufacturers of medical implants and imaging machines.

The pharmaceutical sector comprises companies involved in the production of drugs and related products such as vitamins, herbs, blood derivatives, and antiseptics. Included in this sector are firms engaged in biological and medical research (also known as life sciences research). Many such firms focus on biotechnology: the application of biological knowledge and techniques to the development of products and services. Biotechnology has applications in a wide range of industries (such as agriculture, food processing, and chemical engineering), yet it is used most in health and medicine. Most biotechnology firms are involved primarily in research and development and do not manufacture drugs themselves; they typically sell or license their technology to pharmaceutical firms capable of large-scale production and distribution. Although not technically manufacturers, research biotechnology companies and other types of biomedical research firms are an integral part of drug development, and so are considered in our study to be a component of the medical manufacturing industry.

Despite being distinct industries with few direct linkages, medical devices and pharmaceuticals have a great deal in common. They often serve the same markets and have similar concerns about Food and

Table 5

Medical Manufacturing Industry Employment Location Quotients¹

Upstate New York and Its Top Metropolitan Areas, 2000

Location	Medical Devices				Pharmaceuticals			Medical Manufacturing	
	Optical Instruments & Lenses	Electro-medical Equipment	Medical Equipment & Supplies	Medical Devices Total	Pharmaceuticals & Medicines	Life Sciences Research ²	Pharmaceuticals Total	Medical Manufacturing Total	Employment
Rochester	4.1	1.0	3.1	2.6	1.6	0.2	1.2	2.0	6,164
Buffalo	4.4	0.9	1.4	1.5	1.4	2.2	1.7	1.6	4,732
Syracuse	0.1	1.8	2.5	2.2	1.8	0.3	1.4	1.9	3,570
Glens Falls	0.0	20.5	23.0	21.3	0.0	0.0	0.0	12.1	3,337
Albany	1.3	0.7	0.3	0.4	0.3	3.9	1.6	0.9	2,074
Utica	10.7	8.5	1.5	3.6	0.0	0.3	0.1	2.1	1,358
Upstate	2.6	1.5	2.0	1.9	1.4	1.4	1.5	1.7	26,118

Sources: U.S. Bureau of the Census, *County Business Patterns* (2000); *Census of Professional, Scientific, and Technical Services* (1997); authors' calculations.

Note: In some cases, employment was estimated from ranges of values.

¹Location quotients are a common measure of industry employment concentration. A quotient of 1.0 means that a region's concentration of employment in an industry is identical to that of the nation. Quotients above 1.2 (in bold) suggest specialization in a particular industry.

²Life sciences research employment values are from the 1997 *Economic Census*—the only government data source that separates the industry from physical and engineering research.

Syracuse also specialized in pharmaceuticals and medical equipment & supplies. Bristol-Myers Squibb, a multinational drug firm headquartered in New York City, has a sizable manufacturing plant there. Welch Allyn, a producer of medical instruments, has a large Syracuse operation as well.

Glens Falls had the highest medical manufacturing location quotients. Despite its small size, the metro has developed a relatively substantial medical device industry. A number of medium-sized medical device manufacturers have located there, including Boston Scientific/NAMIC, C. R. Bard, and Kendall Sheridan.

Utica showed a high employment concentration in optical instruments & lenses and electromedical equipment. Conmed Corporation, a producer of medical devices for surgery and critical care, accounted for over half of Utica's medical manufacturing employment.

Albany had an average concentration of medical manufacturing employment overall, but showed specializations in optical instruments & lenses and life sciences research. A large portion of the metro's life sciences employment is attributable to Albany Molecular Research, Inc., a biotechnology company that provides contract research services.

Conclusion

Medical manufacturing is a technology-intensive, well-paying industry with promising long-term prospects. Upstate New York plays a significant and diverse role in the industry, with specializations in the manufacture of both medical devices and pharmaceuticals. The region has demonstrated a particularly strong position in medical devices and is among the top U.S. locations for this industry.

Although the overall economic return of medical manufacturing is limited by its small size relative to the economy as a whole, the industry is growing in upstate New York. And while this growth has lagged that of the nation, the performance is encouraging in view of the general decline in the region's manufacturing sector. Significantly, medical manufacturing activity is widely dispersed upstate, with five metro areas—Buffalo, Glens Falls, Rochester, Syracuse, and Utica—exhibiting overall strength in the industry. Each of these areas, along with Albany, also specialized in at least two medical manufacturing subindustries.

Upstate New York has been struggling to adjust to the post-industrial economy. For the most part, the region has lagged in the development of the high-growth, technology-intensive industries that are creating good jobs and helping to transform local economies. However, this study suggests that medical manufacturing is a bright spot in the upstate New York economy.

Notes:

¹ From 1969 to 1999 alone, the amount spent on health care rose fourfold, to \$1.2 trillion, or more than 13 percent of GDP—up from just 6 percent of GDP three decades earlier (Health Care Financing Administration, National Health Expenditures 1969, 1999; U.S. Department of Commerce, Bureau of Economic Analysis, National Accounts 1969, 1999).

² Upstate New York refers to a fifty-county region of New York State that is distinct from downstate. Downstate is the New York State portion of the New York/Northern New Jersey/Long Island consolidated metropolitan statistical area, which includes the New York State counties of Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, and Westchester.

³ Medical equipment & supply manufacturing represents about 68 percent of the medical device industry. The pure manufacturing component of pharmaceuticals (not including life sciences research & development) represents about 70 percent of the pharmaceutical industry.

⁴ U.S. Bureau of the Census, *County Business Patterns* (2000).

⁵ Location quotients are calculated by dividing the percentage of a region's employment in an industry by the percentage of total U.S. employment in that

THE REGIONAL ECONOMY

industry. For example, if the manufacturing sector provided 30 percent of all jobs in a region, and the U.S. average was 15 percent of all jobs, the location quotient would be 2.0 (30/15).

⁶ Gardner (2001, p. 9).

⁷ See DeVol (1999) for a general discussion of factors affecting the location of high-tech firms.

⁸ See Cortright and Mayer (2002), who find that the biotechnology industry is largely concentrated within nine of the nation's metropolitan areas: Boston-Worcester-Lawrence, Los Angeles-Riverside-Orange County, New York-No. New Jersey-Long Island, Philadelphia-Wilmington-Atlantic City, Raleigh-Durham-Chapel Hill, San Diego, San Francisco-Oakland-San Jose, Seattle-Tacoma-Bremerton, and Washington-Baltimore. These areas were responsible for three-quarters of the nation's largest biotechnology firms and three-quarters of those formed in the past decade.

⁹ See Crandall (1993) for a discussion of the regional migration of manufacturing.

¹⁰ U.S. Bureau of the Census, *County Business Patterns* (1988, 1997).

¹¹ See Walcott (2002).

¹² National Institutes of Health (2002).

¹³ A metropolitan area consists of a population nucleus of at least 50,000 and its associated county, together with adjacent counties that have a high degree of economic and social integration with that nucleus.

References

- Cortright, Joseph, and Heike Mayer. 2002. *Signs of Life: The Growth of Biotechnology Centers in the U.S.* Washington, D.C.: Brookings Institution.
- Crandall, Robert W. 1993. *Manufacturing on the Move.* Washington, D.C.: Brookings Institution.
- DeVol, Ross C. 1999. *America's High-Tech Economy: Growth, Development and Risks for Metropolitan Areas.* Santa Monica, Calif.: Milken Institute.
- Gardner, Kent. 2001. "Will NYS Miss the Biotech Train?" In *Close-Up on the NYS Economy.* Rochester, N.Y.: Gleason Center for State Policy.
- National Institutes of Health, Office of Extramural Awards. 2002. "NIH Extramural Awards by State and Foreign Site." <<http://grants1.nih.gov/grants/award/state/state.htm>> (August 2002).
- U.S. Bureau of the Census. 1997. *Census of Professional, Scientific, and Technical Services.* Washington, D.C.
- . Various years. *Census of Manufactures.* Washington, D.C.
- . Various years. *County Business Patterns.* Washington, D.C.
- Walcott, Susan W. 2002. "Analyzing an Innovative Environment: San Diego as a Bioscience Beachhead." *Economic Development Quarterly* 16, no. 2 (May): 99-114.

Richard Deitz and Ramon Garcia

The views expressed in this newsletter are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

Buffalo Branch
Federal Reserve Bank of New York
PO Box 961
Buffalo, NY 14240-0961

PRESORTED
STANDARD
U.S. POSTAGE
PAID
BUFFALO, NY
PERMIT NO. 1