

The Biopharmaceutical Industry Fueling the U.S. Economy and Global Competitiveness

The United States is recognized as the global leader of biopharmaceutical innovation. That leadership is built upon the success of the research and development (R&D) ecosystem. Biopharmaceutical companies sit at the heart of this ecosystem, supporting high-wage jobs across the country through the substantial research, development, manufacturing, and distribution of new medicines and vaccines in the United States.

I America's Biopharmaceutical Industry Fuels the U.S. Economy

Beyond the value that medicines deliver to patients, the biopharmaceutical sector has a profound impact on our local, state and national economies. The economic impact of research-based biopharmaceutical companies and their resilient supply chains are substantial:

- The U.S. biopharmaceutical sector **directly supports more than 900,000 jobs** and a total of **more than 4.4 million jobs across the economy**.ⁱ
- The combined effects of the direct output of the biopharmaceutical sector, the output of its vendors and suppliers, and the economic activity of its workforce resulted in **more than \$1.4 trillion in economic output in 2020**.ⁱⁱ
- **Every direct job in the biopharmaceutical industry supported a total of five jobs across the economy**, as a result from the broader impacts of its supply chain and the personal spending of its workforce.ⁱⁱⁱ

One reason for the broad reach of the industry's economic impact is the sheer number of clinical trials sponsored by the industry across the country. In 2017, biopharmaceutical companies sponsored about 4,500 clinical trials in the United States alone. These trials were conducted in all 50 states, the District of Columbia, and Puerto Rico and involved close to 1 million participants, accounting for nearly \$43 billion in economic activity.^{iv}

The industry's manufacturing footprint in the U.S. is also extensive and growing, with more than 1,500 facilities across 47 states and Puerto Rico currently manufacturing FDA-approved medicines and related products and employing over 330,000 high-wage workers in manufacturing establishments.^v

The economic impact of industry is built in part on its advanced manufacturing and technical expertise. As the complexity of drug development evolves, manufacturing process innovations have become just as important as product innovations themselves. Biopharmaceutical companies are constantly researching, developing and adopting new technologies and processes that create efficiencies in R&D, manufacturing and distribution systems. Some, such as high-volume cell processing and advanced purification, preservation, and new distribution modes, will be essential for manufacturing the next generation of game-changing treatments like cell and gene therapies.^{vi}

The COVID-19 pandemic has showcased the unique expertise of the biopharmaceutical industry, its technological capacity and its globally resilient supply chains. Over the course of the pandemic the industry not only developed safe and effective vaccines and treatments in record time, but it ramped up manufacturing on a global scale at unprecedented levels. In fact, even prior to knowing the efficacy of particular vaccine candidates, companies were already proactively seeking to increase their own manufacturing capabilities as well as collaborating with other manufacturers who shared available capacity to help produce more than 15 billion vaccines as of October 2022.^{vii}

I America's Biopharmaceutical Industry is the Most Research Intensive

The significant investments made by biopharmaceutical companies in the R&D enterprise drives the tremendous economic impact of the industry. As the global leader in R&D, the biopharmaceutical industry's research intensity is unparalleled in the U.S. economy.^{viii} Relative to other manufacturing industries, the biopharmaceutical industry invests 13 times more in R&D per employee and employs the largest share of all manufacturing R&D workers in the United States.^{ix, x}

PhRMA member companies invested \$102.3 billion in R&D in 2021, the highest investment on record, and approximately one out of every five dollars of revenue went to R&D – among the highest R&D intensity ratios of all industries, and six times the average for the manufacturing sector as a whole.^{xi} In fact, the sector accounts for the single largest share of all U.S. business R&D, representing one out of every six dollars spent on domestic R&D by U.S.^{xii}

I Threats to the Economic Impact of Industry and Continued Global Leadership

America's robust R&D enterprise is the envy of the world. In fact, with nearly 60% of biopharmaceutical patents granted, the U.S. leads the world in biopharmaceutical IP generation.^{xiii} Likewise, it is not surprising that over half of venture capital investments in biopharmaceutical startup companies are made in the U.S., where the biopharmaceutical R&D enterprise thrives.^{xiv} But today, the economic impact of the industry and its position as the global leader of biopharmaceutical innovation are at risk.

A new drug price-setting law is expected to have a negative \$645 billion impact on the biopharmaceutical industry over the next 10 years.^{xv} Not only would the law reduce resources available to invest in the next generation of treatments and cures, but it would also lead to significant job loss. One analysis estimates that more than 600,000 American jobs could be lost as a result of the new law.^{xvi} Moreover, the jobs at risk are precisely the kinds of jobs that policymakers aim to grow: high-value jobs that deliver disproportionate benefits to the U.S. economy in terms of scientific advancement, GDP, exports, and tax revenue.

Unfortunately, the misguided policies included in the new law also threaten to undermine America's competitive position as the world leader in biopharmaceutical innovation. In 1990, biopharmaceutical R&D investment in Europe was over 45% higher than similar investment in the U.S. However, decades of government price controls across Europe drove biopharmaceutical investment out of Europe and toward the United States, and today the comparison is exactly reversed. At a time when countries in Asia and elsewhere are enacting policies to encourage and grow their biopharmaceutical sectors, government price setting could lead to the movement of R&D and manufacturing investments and jobs out of the U.S. and toward our competitors, to the detriment of U.S.-based biopharmaceutical clusters and the many jobs they support in communities across the country.^{xvii}

Rather than eroding the economic contributions of the industry and its global leadership in biopharmaceutical innovation, we need a policy and regulatory system that recognizes the value of science, robust investment in new treatments and cures, and strong intellectual property rights and enforcement to protect those innovations.

i TEconomy Partners, LLC. The Economic Impact of the U.S. Biopharmaceutical Industry: 2020 National and State Estimates. February 2022. Report prepared for PhRMA.

ii Ibid.

iii Ibid.

iv TEconomy Partners; for PhRMA. Biopharmaceutical Industry-Sponsored Clinical Trials. April 2019.

v NDP Analytics; for PhRMA. Analysis of the US FDA's Drug Establishments Current Registration Site. January 2020.

vi TEconomy Partners; for PhRMA. Biopharmaceutical Manufacturing in the U.S.: Making Cutting-Edge Medicines Today and Leading the Way on Medicines of Tomorrow. March 2019.

vii Unicef, [COVID-19 Market Dashboard](#).

viii M Muro et al. America's advances industries: New trends. Brookings Institute. August 2016.

ix NDP Analytics. [IP-intensive manufacturing industries: driving US economic growth](#). September 2017. Updated April 2020.

x National Science Foundation Business R&D and Innovation Survey (BRDIS). [TABLE 5.3](#). Worldwide, domestic, and foreign total and R&D employment, by industry and company size: 2017, February 20, 2020. Accessed April 2019.

xi NDP Analytics. IP-Intensive Manufacturing Industries: Driving US Economic Growth. Washington, DC: NDP Analytics. September 2017.

xii National Science Foundation Business R&D and Innovation Survey (BRDIS). Table 26 Domestic R&D paid for and performed by the company, by industry, and company size: 2017. <https://nces.nsf.gov/pubs/nsf20311#data-tables6>. February 2020.

xiii National Science Foundation, National Science Board. Science and Engineering Indicators 2018. Chapter 8 Appendix Table 8-13: USPTO patents granted in pharmaceuticals, by region, country, or economy: 2000-16. <https://www.nsf.gov/statistics/2018/nsb20181/data/appendix>. Published 2018. Accessed April 2019.

xiv PhRMA Analysis of Pitchbook data. Updated February 2022. <https://pitchbook.com>

xv Avalere. [Drug Pricing Bill Could Reduce Manufacturer Revenue by Over \\$450B](#). July 27, 2022.

xvi Vital Transformation, [Build Back Better Act: Total market impact of price controls in Medicare parts D and B](#). July 28, 2022.

xvii Pham ND, Donovan M. NDP Analytics. [Will US Leadership in Biopharmaceutical R&D Continue? Consequences of Price Controls and Other Anti-Innovation Policies](#), November 2020.