



BioPharma Economic Impact on the US Economy

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- 1 BioPharma Industries Definition
- 2 Determining Economic Impact
- 3 Direct Impact and Recent Years' Growth
 - Employment & Labor Income
 - Value Added
 - Summary
- 4 Beyond Direct Effects
- 5 R&D Intensity
- 6 Conclusion



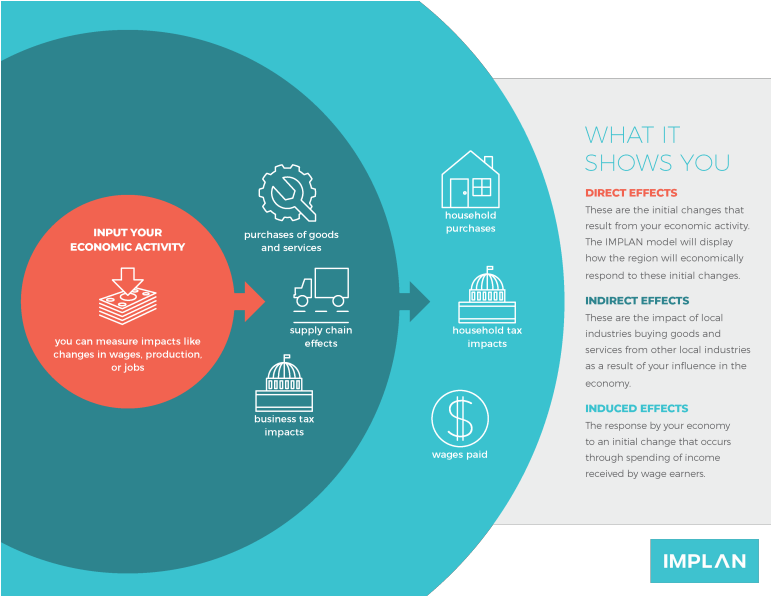
Table: BioPharma Industries - NAICS 2022

NAICS	DESCRIPTION
325411	Medicinal and botanical manufacturing
325412	Pharmaceutical preparation manufacturing
325413	In-vitro diagnostic substance manufacturing
325414	Biological product (except diagnostic) manufacturing

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Labor Income includes both BioPharma supported employee compensation (salary, wages and benefits) and proprietor income

Similarly, **Employment** is a measure of the number of jobs tied to BioPharma economic activity.

Value Added can be thought of as contribution to GDP

Total Value of Output is the value of all goods and services whose economic activity is supported by BioPharma.



1. Direct Effects are associated with the initial production of the industry being analyzed.

2. Ripple Effects account for all production along the supply chain, and the additional production triggered by spending on payroll and purchases of these suppliers.

a. Indirect Effects account for the fact that each supplier of goods and services to a particular industry like BioPharma purchases its inputs from other suppliers.

b. Induced Effects account for employees within the directly and indirectly affected industries spending their increased income widely and thus triggering additional production

3. Total Effects are then the sum of **Direct** and **Ripple Effects**.

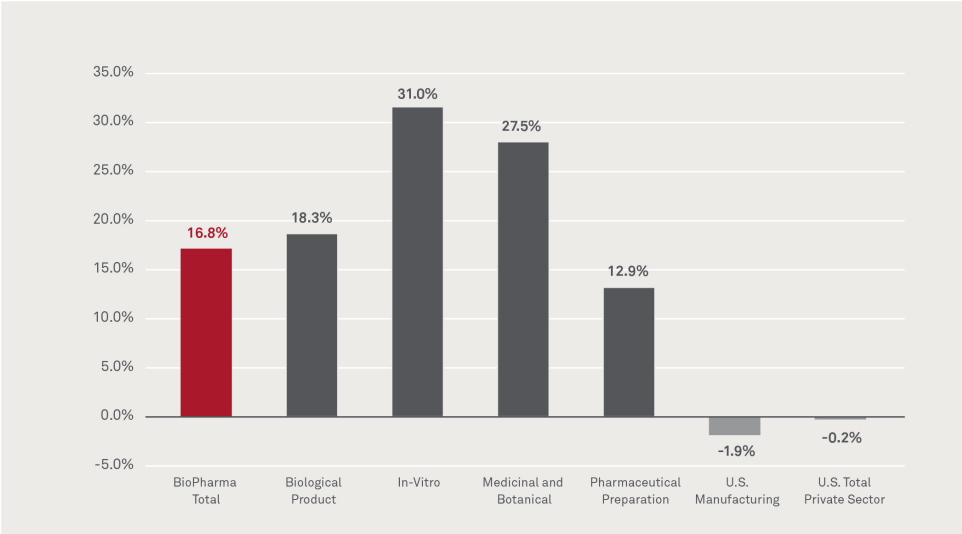


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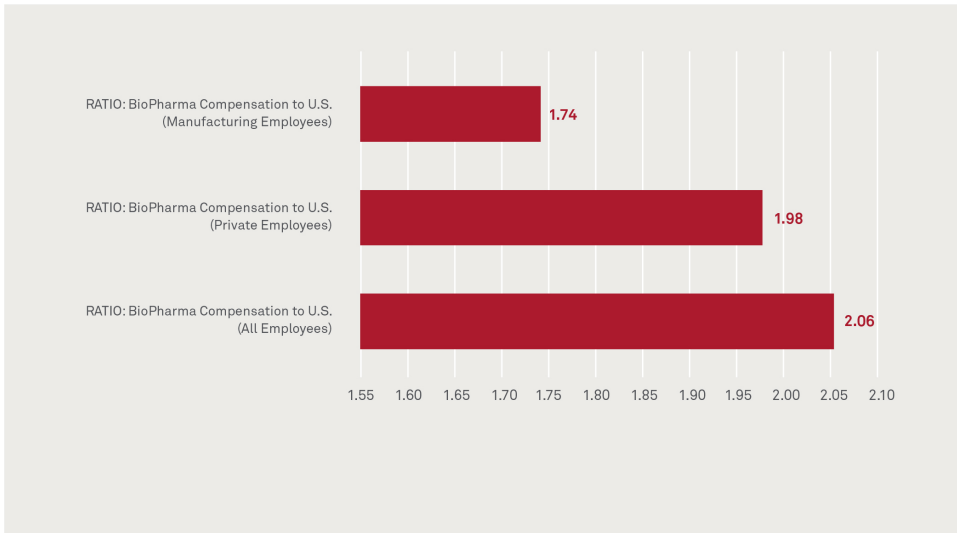


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BioPharma Direct Employment Change, 2018-2021



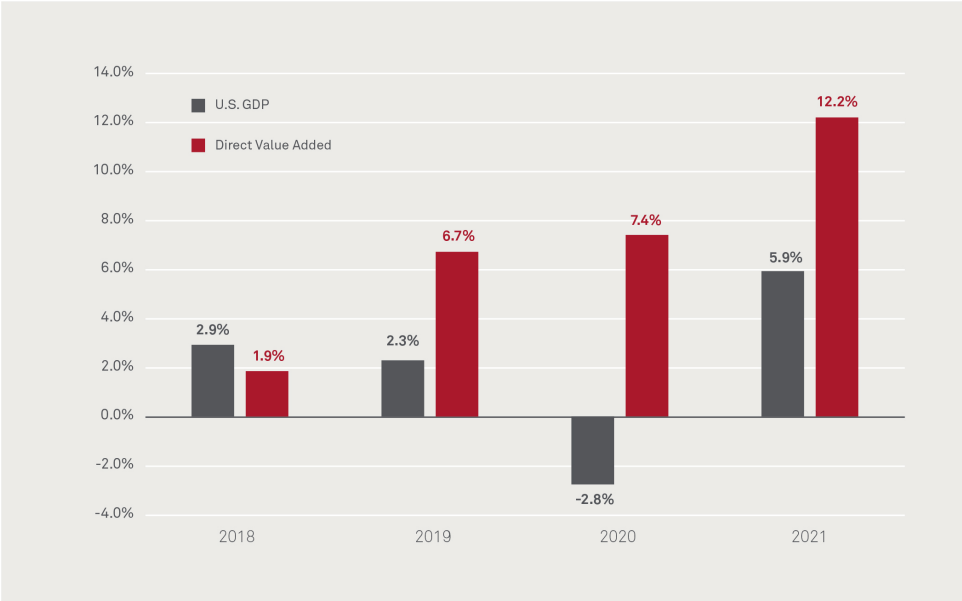
BioPharma Compensation Ratios Compared to Other U.S. Industries, 2021



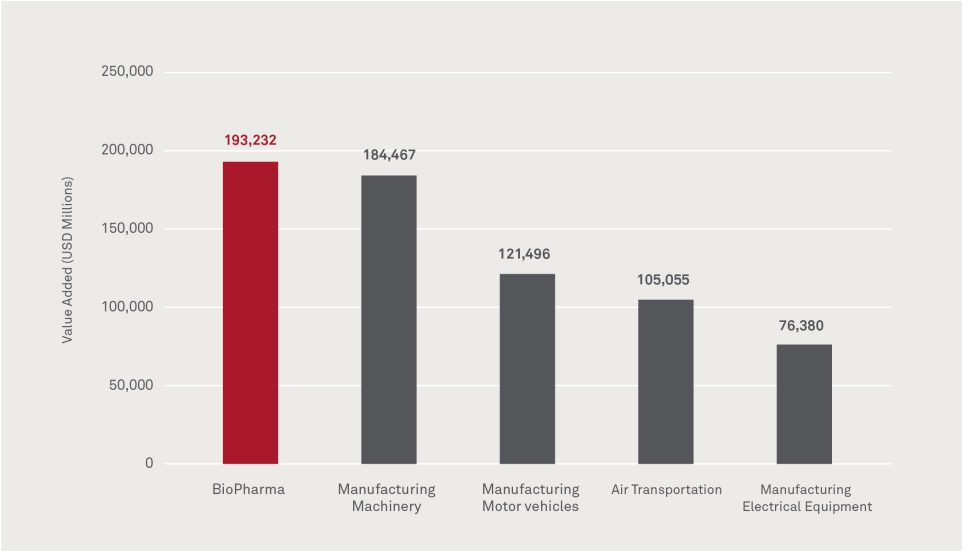


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Growth in BioPharma Value Added vs. Real GDP, 2018-2021



Comparative Industry Value Added, 2021





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BioPharma Direct Impacts, 2018 and 2021



USD MILLIONS				
	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
2018	249,165	41,156	150,148	327,766
2021	291,033	53,997	193,232	356,549
%Δ	16.8%	31.2%	28.7%	8.8%

Outline



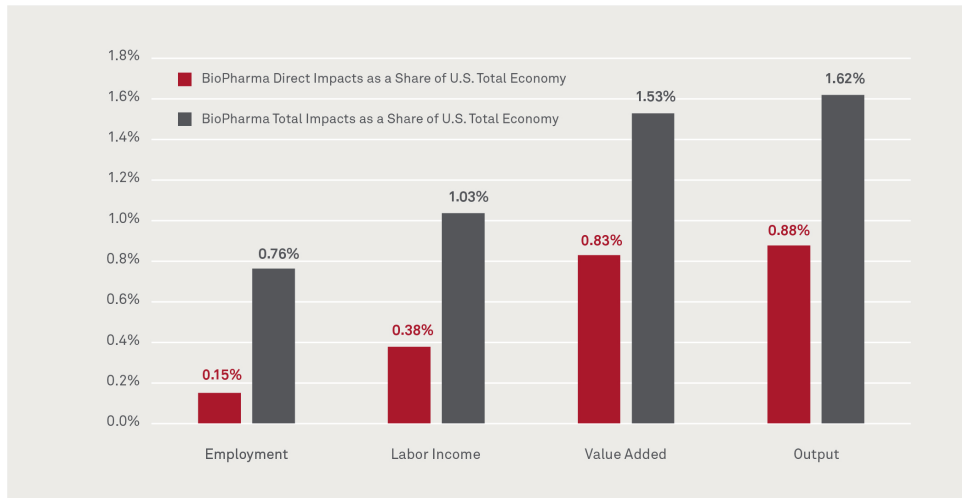
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The Impact of BioPharma on the U.S. Economy, 2021



USD MILLIONS				
	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
Direct	291,033	53,997	193,232	356,549
Indirect	495,588	48,217	82,811	161,097
Induced	703,665	45,792	80,221	141,104
Total	1,490,286	148,006	356,264	658,749
Multiplier	5.12	2.74	1.84	1.85

BioPharma Industry's Contributions to the U.S. Economy, 2021



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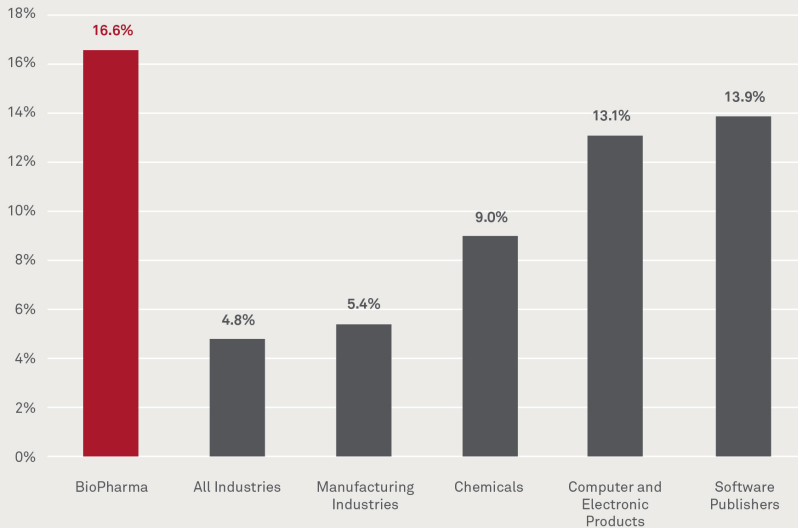


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- The U.S. has taken a preeminent role drug development:
 - ▶ 44% of R&D companies have their headquarters in the U.S. in 2022
 - ▶ 53.4% of all drugs at the R&D stage worldwide are under development in the U.S.
- BioPharma is a major investor in R&D, having invested 16.6% of its revenue in 2020, totaling \$91.8 billion

U.S. Industries R&D Intensity, 2020



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- BioPharma has grown significantly in recent years, with all major measures experiencing robust growth:
 - ▶ Employment: 16.8%
 - ▶ Labor income: 31.2%
 - ▶ Value added: 28.7%
- BioPharma pays premium compensation on average compared to other industries:
 - ▶ 74% premium over manufacturing
 - ▶ 98% premium over private jobs
 - ▶ 106% premium over all U.S. jobs



- In 2021 alone, the BioPharma industry has supported over 1,490,000 total jobs in the U.S. economy, with a **5.12** multiplier in terms of the larger economy.
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