



The Bioscience Economy:

Propelling Life-Saving Treatments, Supporting State & Local Communities

2020

TEConomy/BIO Report Overview

- The ninth biennial report since 2004 tracking bioscience industry development at the national and state levels
- A focus on a diverse industry with broad opportunities:



The Bioscience Industry is in a Strong Position to Meet the Medical and Economic Challenges of a Global Pandemic

Two key characteristics of the industry set it apart and make it vital in meeting the challenges of the pandemic:

1. **The innovative capacity of the bioscience industry to address global challenges** from human health to food production and security, to clean energy, and sustainability; and
2. **The bioscience industry's role as a consistent economic stalwart**, with a track record of generating high-quality jobs and near continuous growth that has acted as a key buffer during prior economic recessions.

What stands out about the long-term industry trend is the industry's near continuous growth and its resiliency during the last two recessions—the biosciences have provided a much-needed buffer during economic downturns, a key characteristic amid the current pandemic-induced global downturn.

An Industry with Far-Reaching Impacts Across U.S. States and Metro Regions

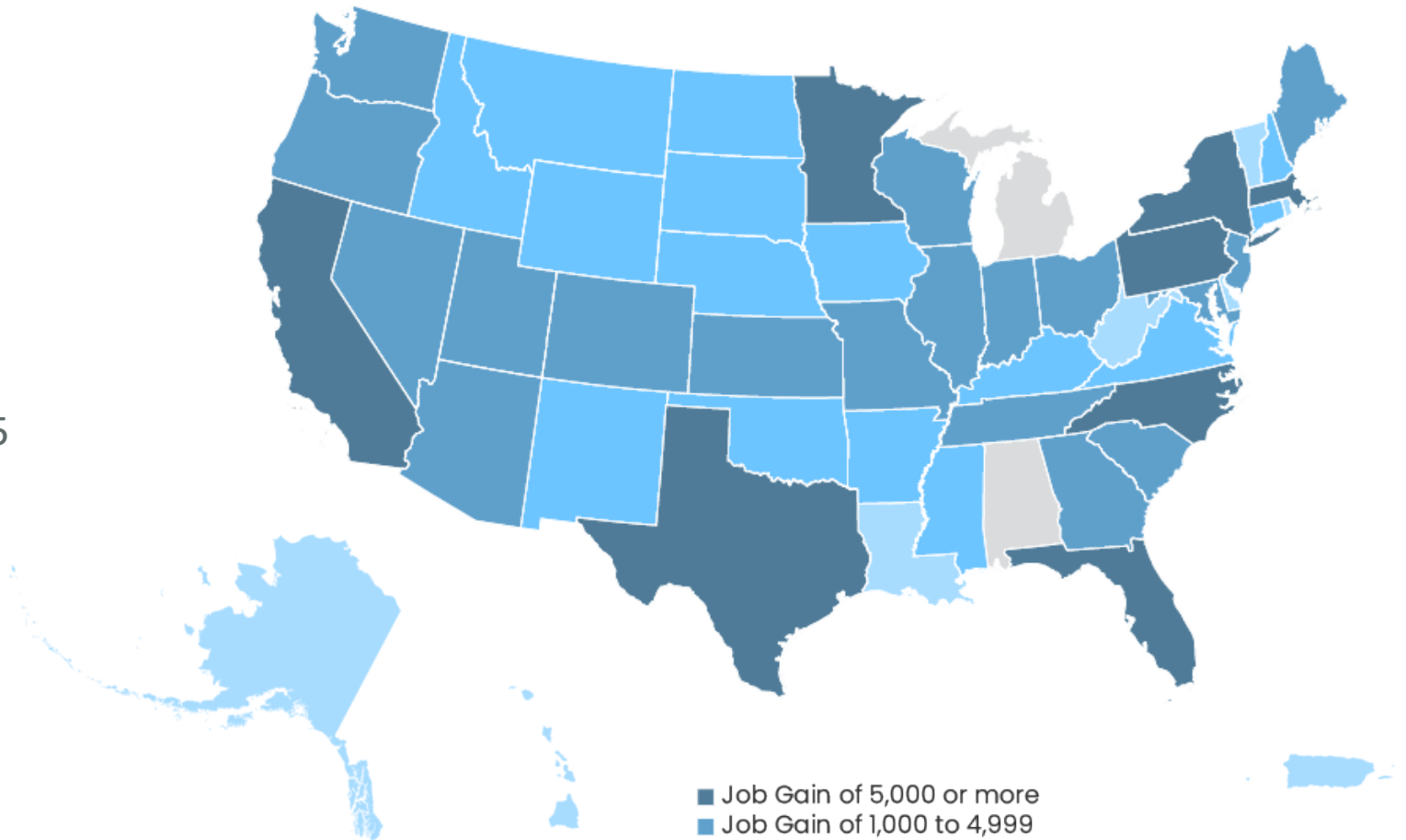
Change in Bioscience Industry Employment, 2016-18

Growth

- From 2016-18, 41 States grew their Bioscience employment (map)

Niche Specializations

- 35 States and Puerto Rico have a “specialization” in at least 1 of the 5 subsectors
- Across U.S. Metro Areas 217 out of 384 (57%) have a specialized subsector



■ Job Gain of 5,000 or more
■ Job Gain of 1,000 to 4,999
■ Unchanged or Job Gain of 1 to 999
■ Job Loss of -1 to -999
■ Job Loss of -1,000 or more

Bioscience Industry Economic Impacts: A \$2.6 Trillion Contribution to the U.S. Economy

**A Large, Well-Distributed
Geographic Footprint**

+

**High-Quality Job Creation
(Avg. Bioscience Wages of
Nearly \$108K)**

=

**Significant Economic
Impacts**

DIRECT IMPACT



Bioscience Industry
Employment
1.87M

TOTAL IMPACT



Employment
9.4M



Wages & Benefits
\$699B



Economic Output
\$2.6T

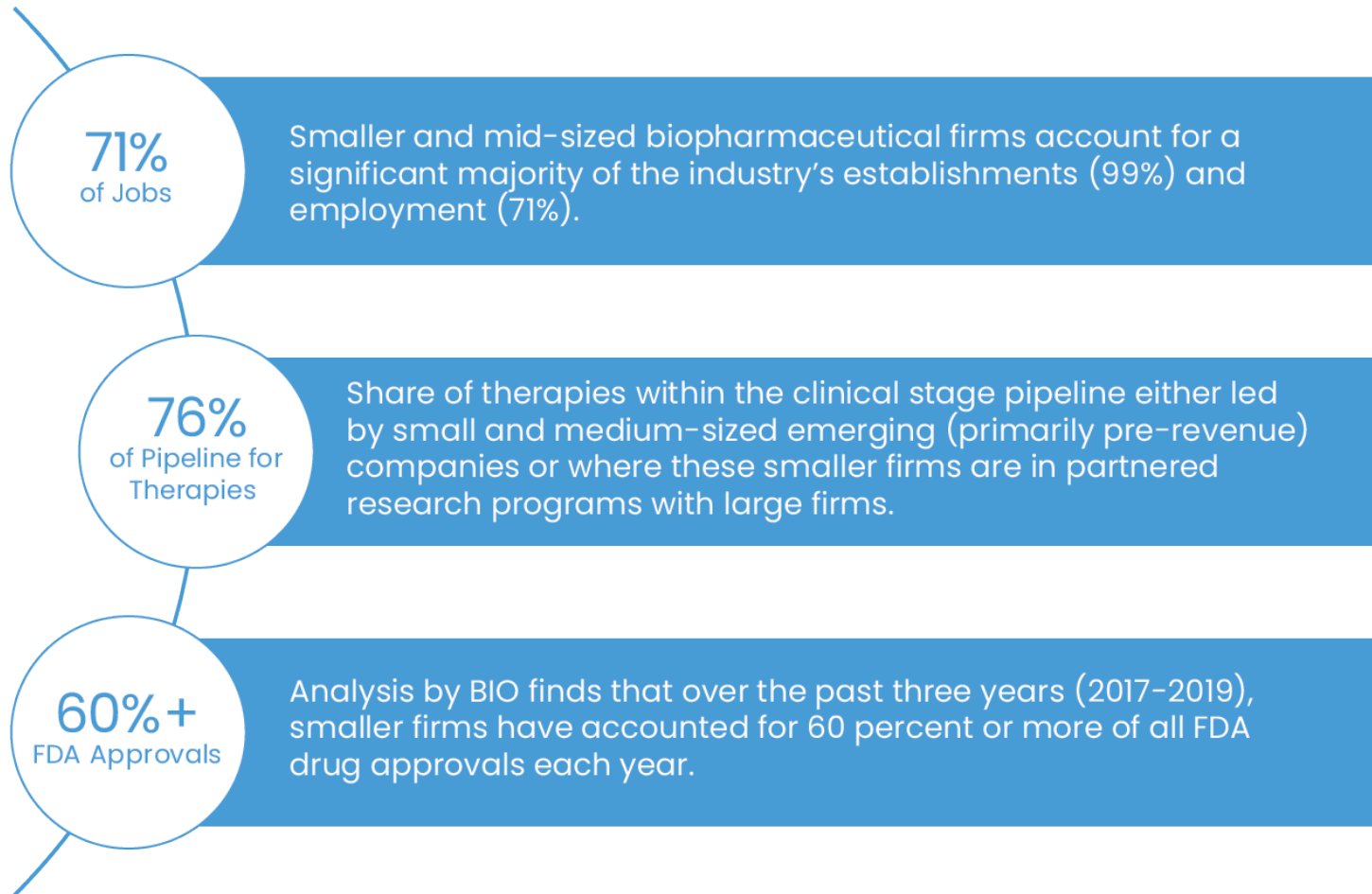


State & Local Taxes
\$97B



Federal Taxes
\$150B

Special Focus: The Role Small- and Mid-Sized Firms Play in the U.S. Biopharmaceutical Sector and Innovation Pipeline



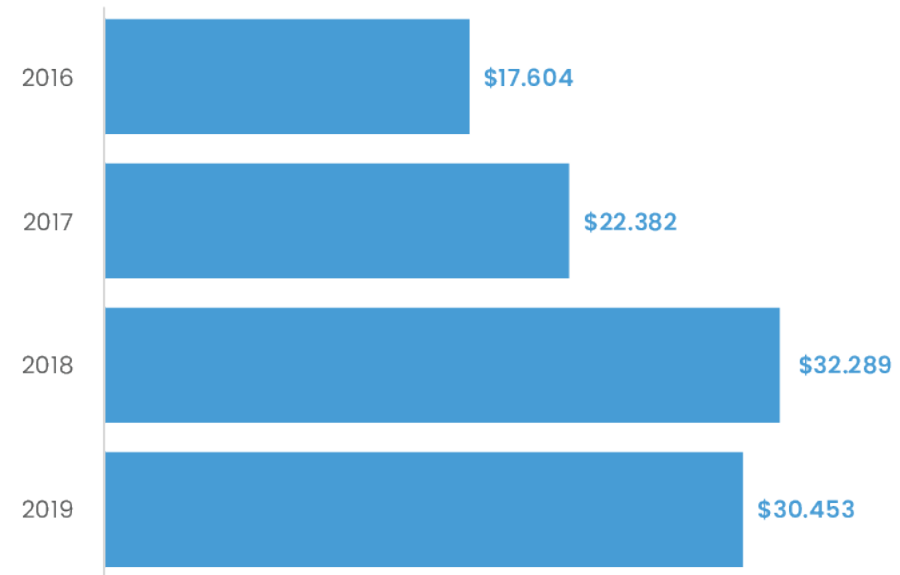
Positive Developments, Strong Growth Trends Across the Biosciences Innovation Ecosystem

Patent Activity Signals Increasing Bioscience Innovation



Source: TEconomy Partners analysis of U.S. Patent & Trademark Office data from Clarivate Analytics' Derwent Innovation patent analysis database.

Bioscience Venture Capital Investments Reach New Highs, Funding Shifts Toward Key Earlier Stages



Source: TEconomy Partners analysis of PitchBook Data, Inc.



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TEXAS 2020

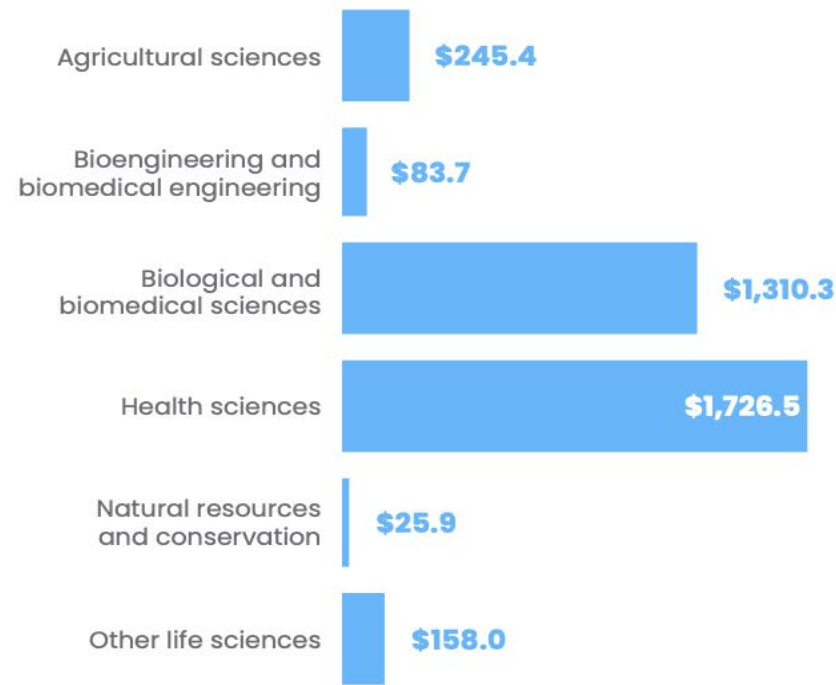
Industry Subsector	Texas		United States	
	2018	2016-2018 Change	2018	2016-2018 Change
Agricultural Feedstock and Industrial Biosciences				
Establishments	147	2.8%	1,785	4.4%
Employment	5,207	2.9%	68,642	0.9%
Location Quotient	0.91		n/a	
Direct-Effect Employment Multiplier	6.99			
Total Employment Impact	36,388			
Average Annual Wage	\$103,630	6.0%	\$83,151	2.7%
Bioscience-Related Distribution				
Establishments	3,457	16.4%	51,582	31.8%
Employment	46,245	21.1%	545,055	16.1%
Location Quotient	1.02		n/a	
Direct-Effect Employment Multiplier	4.18			
Total Employment Impact	193,288			
Average Annual Wage	\$109,126	12.2%	\$105,905	13.1%
Drugs and Pharmaceuticals				
Establishments	232	28.2%	4,451	18.6%
Employment	12,494	7.2%	308,357	3.1%
Location Quotient	0.49		n/a	
Direct-Effect Employment Multiplier	5.39			
Total Employment Impact	67,322			
Average Annual Wage	\$101,832	7.1%	\$113,544	-0.2%
Medical Devices and Equipment				
Establishments	529	21.9%	8,753	8.3%
Employment	11,337	4.4%	378,431	5.3%
Location Quotient	0.36		n/a	
Direct-Effect Employment Multiplier	2.98			
Total Employment Impact	33,827			
Average Annual Wage	\$82,482	8.1%	\$90,541	6.8%
Research, Testing, and Medical Laboratories				
Establishments	1,898	2.6%	34,572	4.7%
Employment	24,787	3.3%	569,470	4.0%
Location Quotient	0.52		n/a	
Direct-Effect Employment Multiplier	2.46			
Total Employment Impact	61,047			
Average Annual Wage	\$84,926	7.6%	\$120,320	12.5%
Total Bioscience Industry				
Establishments	6,263	12.3%	101,143	18.0%
Employment	100,070	11.5%	1,869,955	7.2%
Location Quotient	0.64		n/a	
Direct-Effect Employment Multiplier	3.92			
Total Employment Impact	391,872			
Average Annual Wage	\$98,917	10.4%	\$107,610	8.7%
Total Private Sector				
Establishments	677,560	5.7%	9,776,674	3.1%
Employment	10,427,255	4.7%	125,195,944	3.3%
Average Annual Wage	\$58,627	6.5%	\$57,043	6.9%

Texas Positive Developments, Strong Growth Trends Across the Biosciences Innovation Ecosystem – Research Funding

Bioscience Research in Texas

Bioscience Academic R&D Expenditures

\$ Millions, FY 2018



NIH Awards

\$ Millions, FY 2016–2019

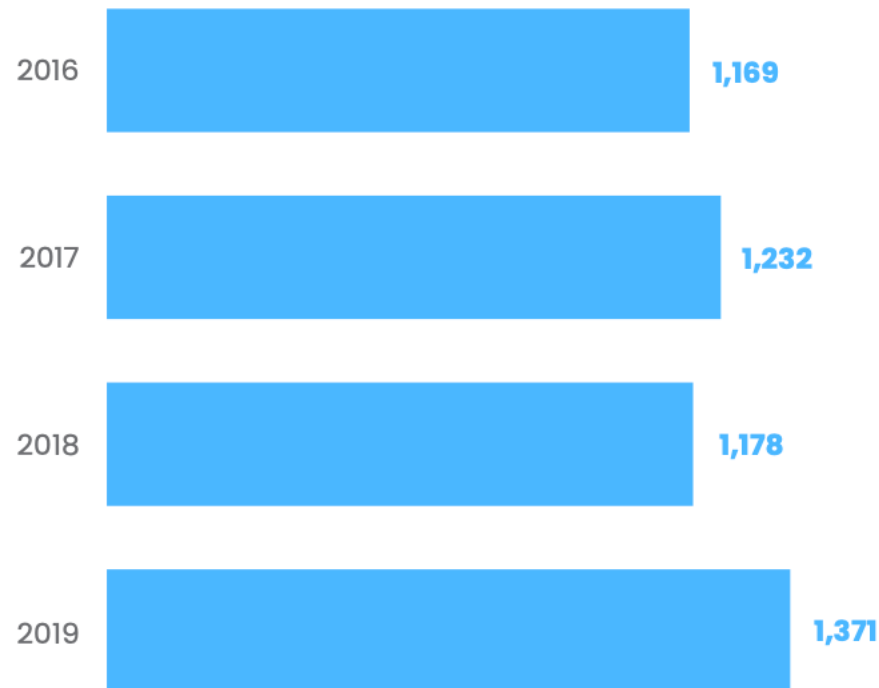


Texas Positive Developments, Strong Growth Trends Across the Biosciences Innovation Ecosystem - PATENTS

Bioscience Patents in Texas

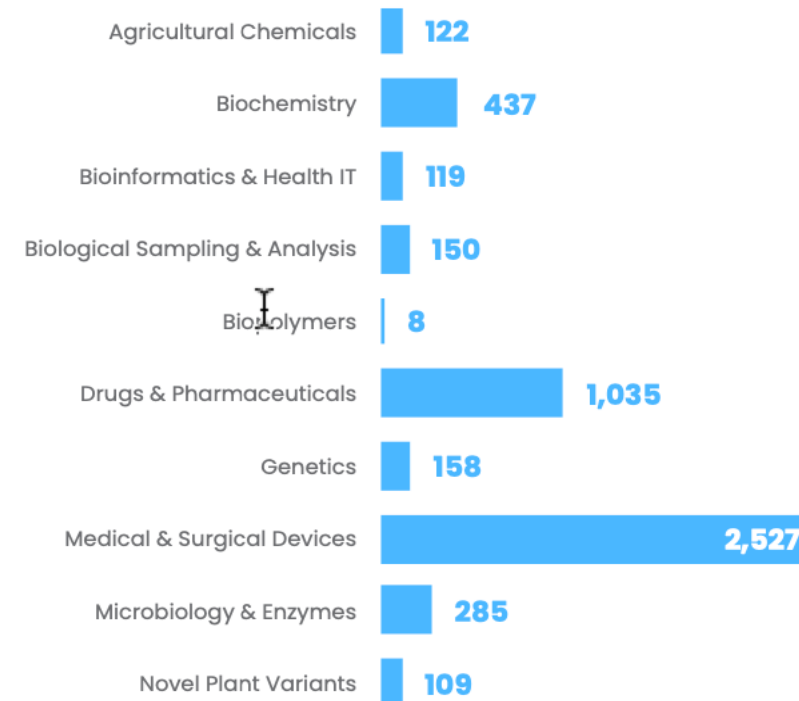
Bioscience-Related U.S. Patents

2016-2019



Bioscience-Related U.S. Patents by Segment

2016-2019



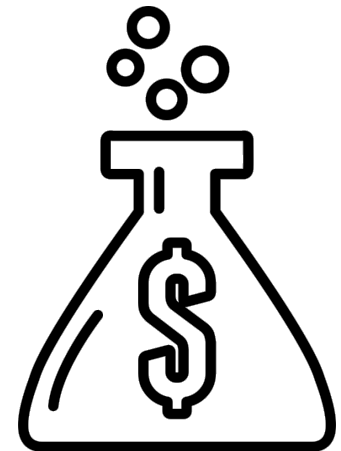
El Paso/Juarez Region Bioscience Success

- ✓ **Home to 35 Medical Device Firms, Global Leader B-D, and 40,000 jobs**
- ✓ **Vibrant University Medical Center of El Paso**
- ✓ **MCA Innovation Center in Cardwell Collaborative**
- ✓ **CPRIT and National Recognition**



Recent National Trends for Continued Growth

- ❖ Proximity to Academic Innovation as Continued Driving Force
- ❖ Smaller Metropolitan Areas Gaining Ground
- ❖ Leveraging Public-Private Mixed-Use Cluster Expansion
- ❖ Developing Agricultural and Environmental Sectors on Rise



Challenges Ahead in 2021 and Beyond

- ✓ Economic Impact on States and Supportive Legislation
- ✓ National Discussion on Cost of Healthcare
- ✓ Private Funding Sources
- ✓ New President and Congress





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Texas 2020

