
MID-YEAR 2024

The National Life Science Market Overview



NEWMARK

Market Observations

U.S. venture capital funding surged to \$15.8 billion in the first half of 2024, set to exceed last year's total.

Life science M&A activity reached \$62.0 billion through the second quarter of 2024, which is roughly half of the year prior's total.

Amid labor market headwinds average monthly gains have given way to losses. With that, R&D employment is showing positive growth.

Big Pharma continues to allocate more revenue to research and development efforts, signaling strong future growth.



The Bay Area and San Diego are driving modest demand growth, but tenants remain cautious and are leasing less space for shorter terms.

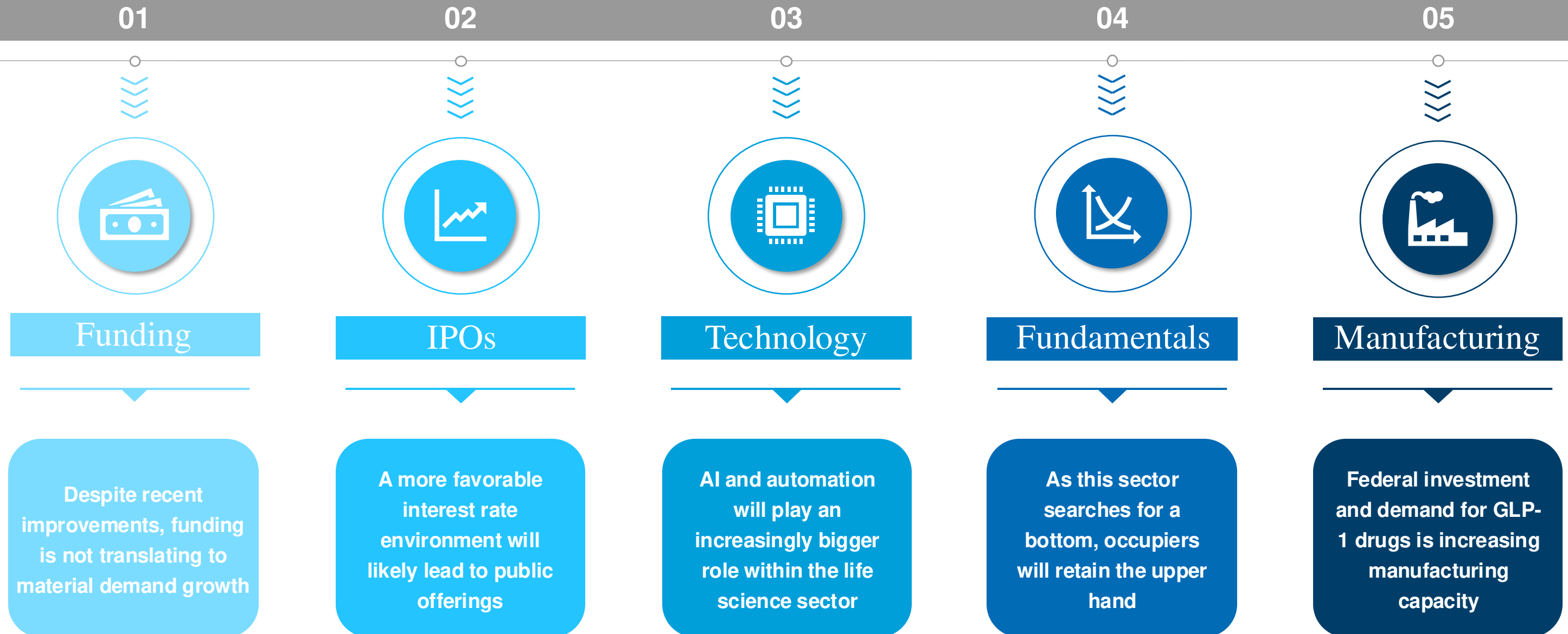
Vacancies continue to rise across most major markets, with roughly half of the key clusters boasting vacancies above 20%.

Although asking rents nearly doubled over the past five years, asking rents are correcting materially in many major life science markets.

After three quarters of record levels of deliveries, new purpose-built construction is slowing down rapidly.

The rising use of weight loss drugs has prompted several pharma companies to expand their domestic manufacturing capacity.

2024 Life Science Trends to Watch



Despite ongoing challenges, the life science sector remains poised for long-term growth, driven by sustained research and development and technological advancements. These efforts focus on addressing the healthcare needs of an aging population, developing innovative drug therapies, and supporting public health initiatives.

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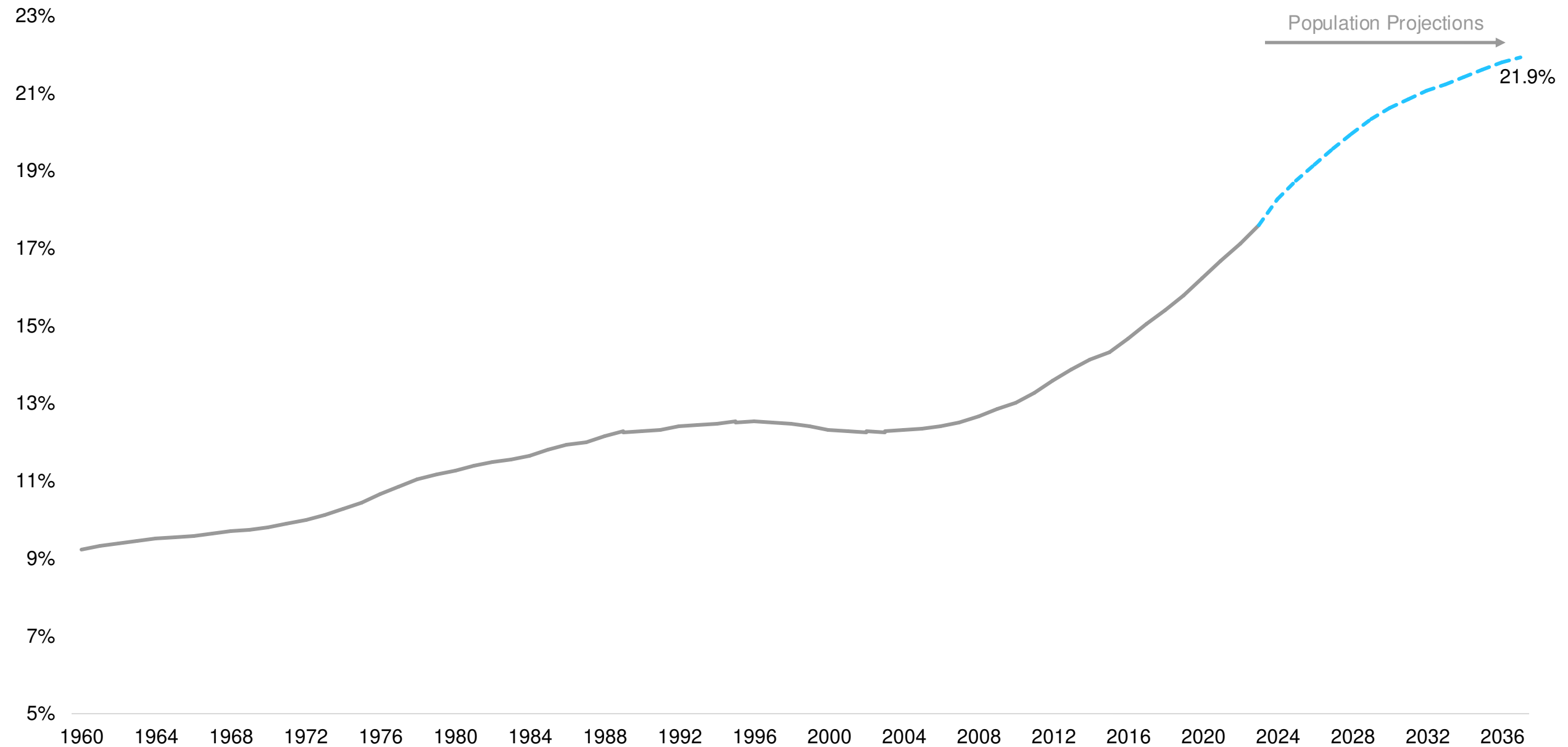
Demand Drivers



The Graying of America: U.S. Population is Aging

As of 2023, the percentage of U.S. residents aged 65 and older rose to 17.6%. Much of this growth can be attributed to the aging Baby Boomers, which has historically been the nation's largest generation. Population projections point to accelerated growth among this age cohort. This aging demographic will remain a driving force behind the growing emphasis on healthcare and life sciences.

Percent of U.S. Population Aged 65 and Above

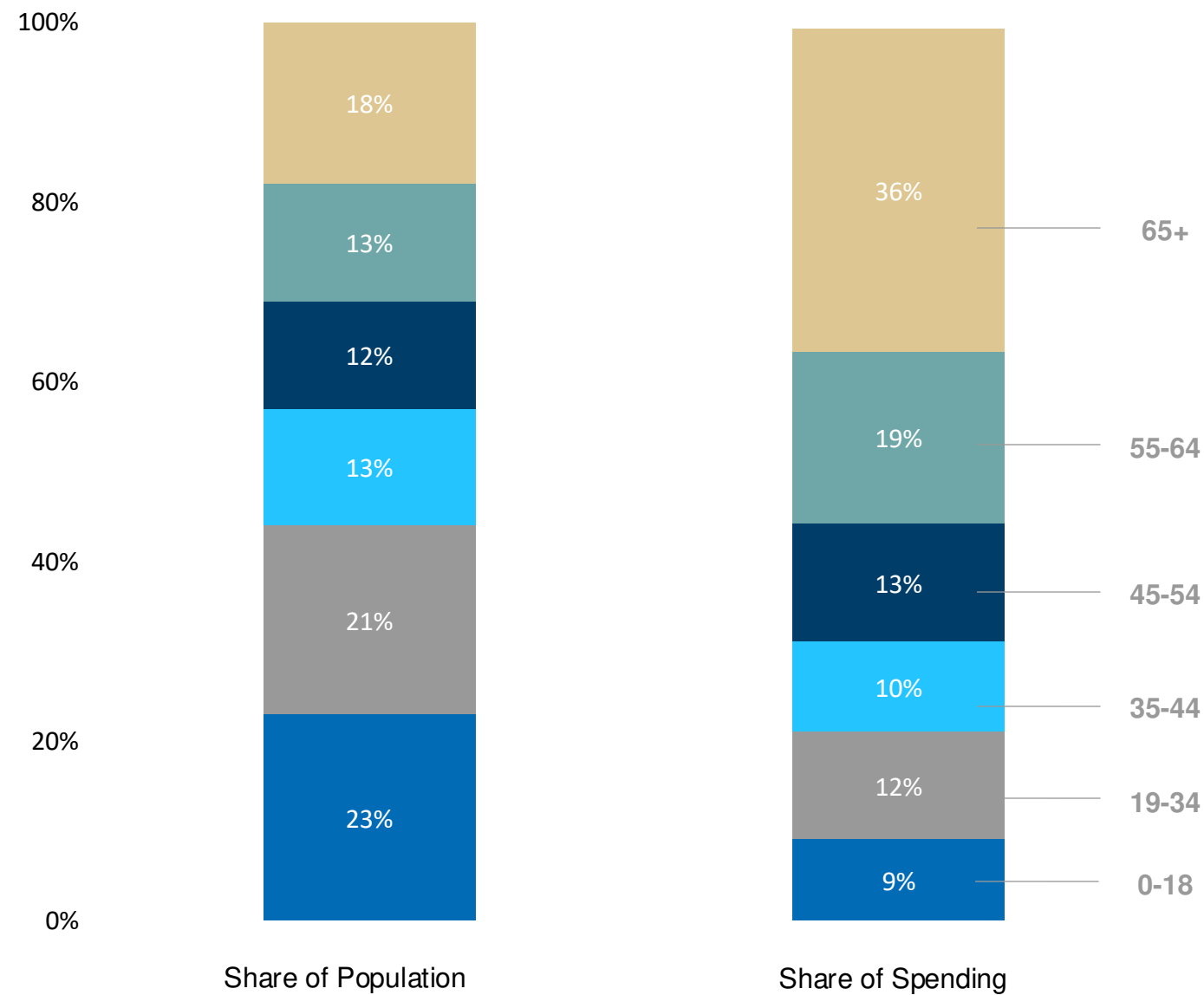


Source: The United Nations Population Division's World Population Prospects, JobsEQ, Newmark Research

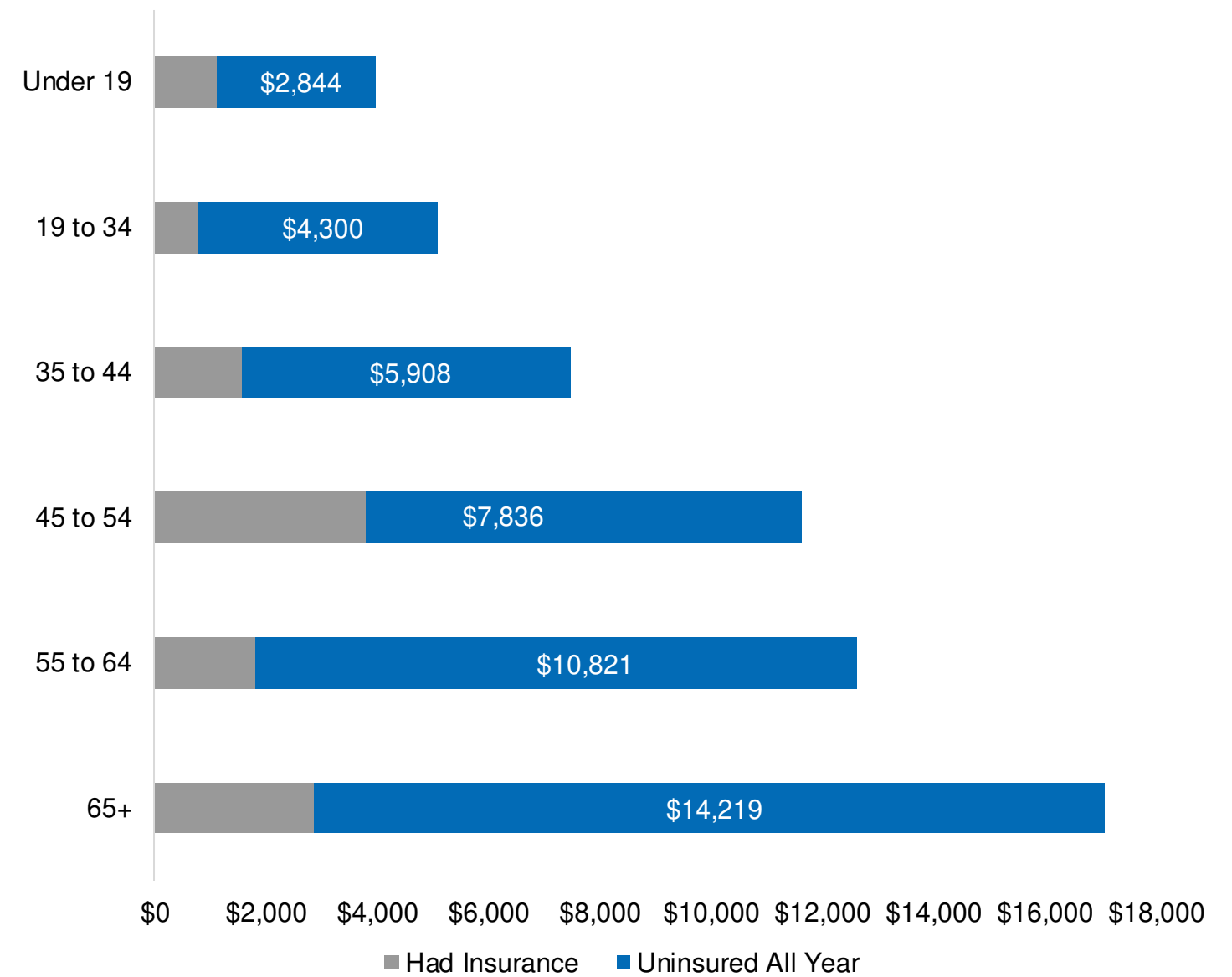
The Price of Aging: Older Cohorts Maintain Higher Healthcare Costs

Individuals aged 65 years and older account for the greatest share of total healthcare spending. On a per-capita basis, the oldest insured age cohort spends 31.4% more than those aged 55 to 64 years old. As the U.S. population continues to age, healthcare spending will have an increasingly significant impact, likely benefiting the life science sector.

Share of Total Population and Total Health Spending by Age Group, 2021



Average Total Health Spending by Insurance Status, 2021

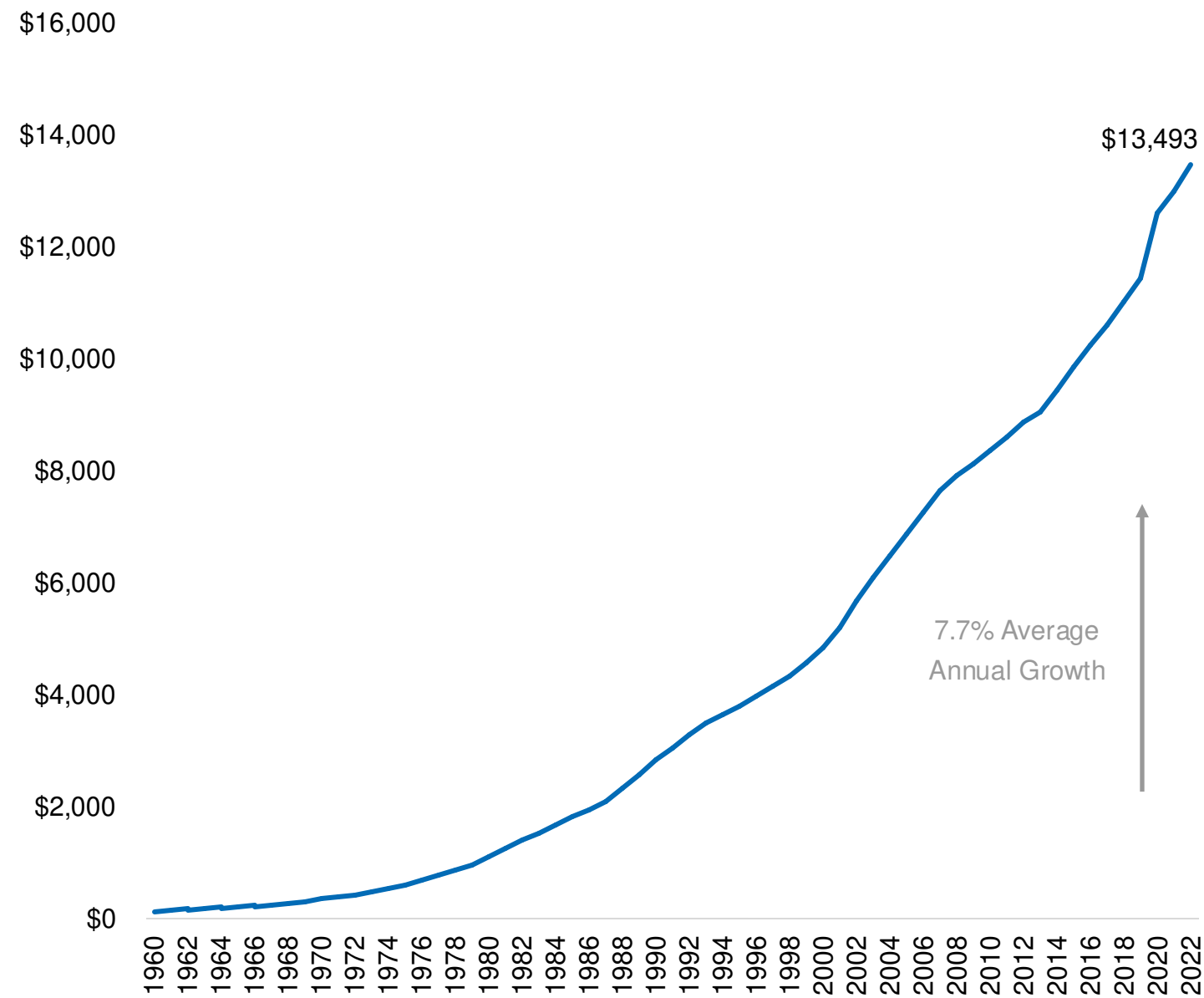


Source: KFF Analysis of Medical Expenditure Panel Survey 2021 data, Newmark Research

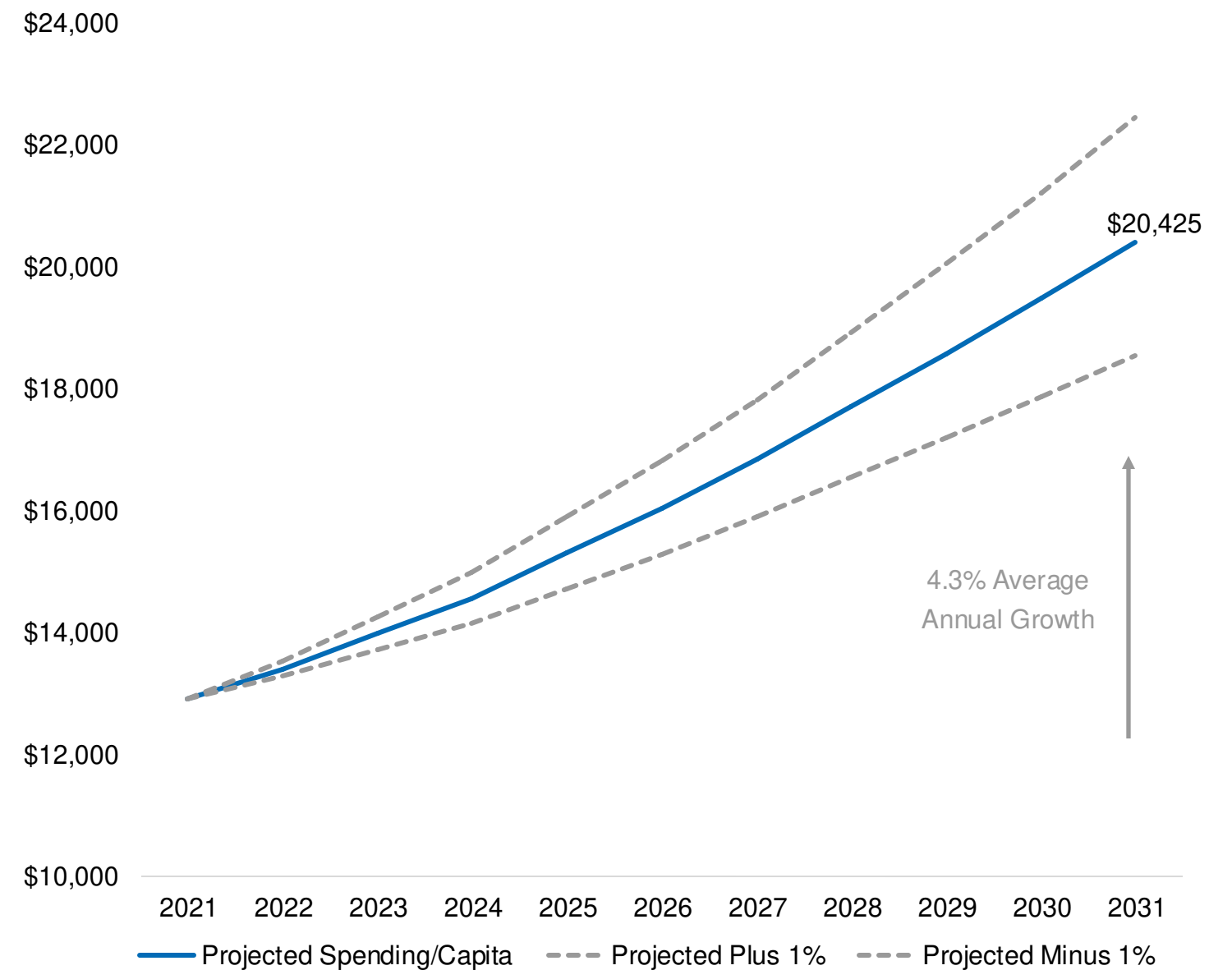
Healthcare Spending Per Capita Has Reached a 60-Year High and is Rising

As the population ages, an increased focus on healthcare will drive life science demand. Healthcare spending has increased an average of 7.7% annually since 1960, with inflation driving more recent trends. Per-capita spending in the base case scenario is projected to increase by roughly 58.0% by 2031 or 4.3% per year. If healthcare spending per capita increases by an additional 1.0% annually, this could reach 73.9% by 2031. Given historical patterns, actual spending growth may be higher.

U.S. Per Capita Health Expenditures (All Spending Types by All Sources)



Scenarios of Projected Annual Change in U.S. Per Capita Health Spending

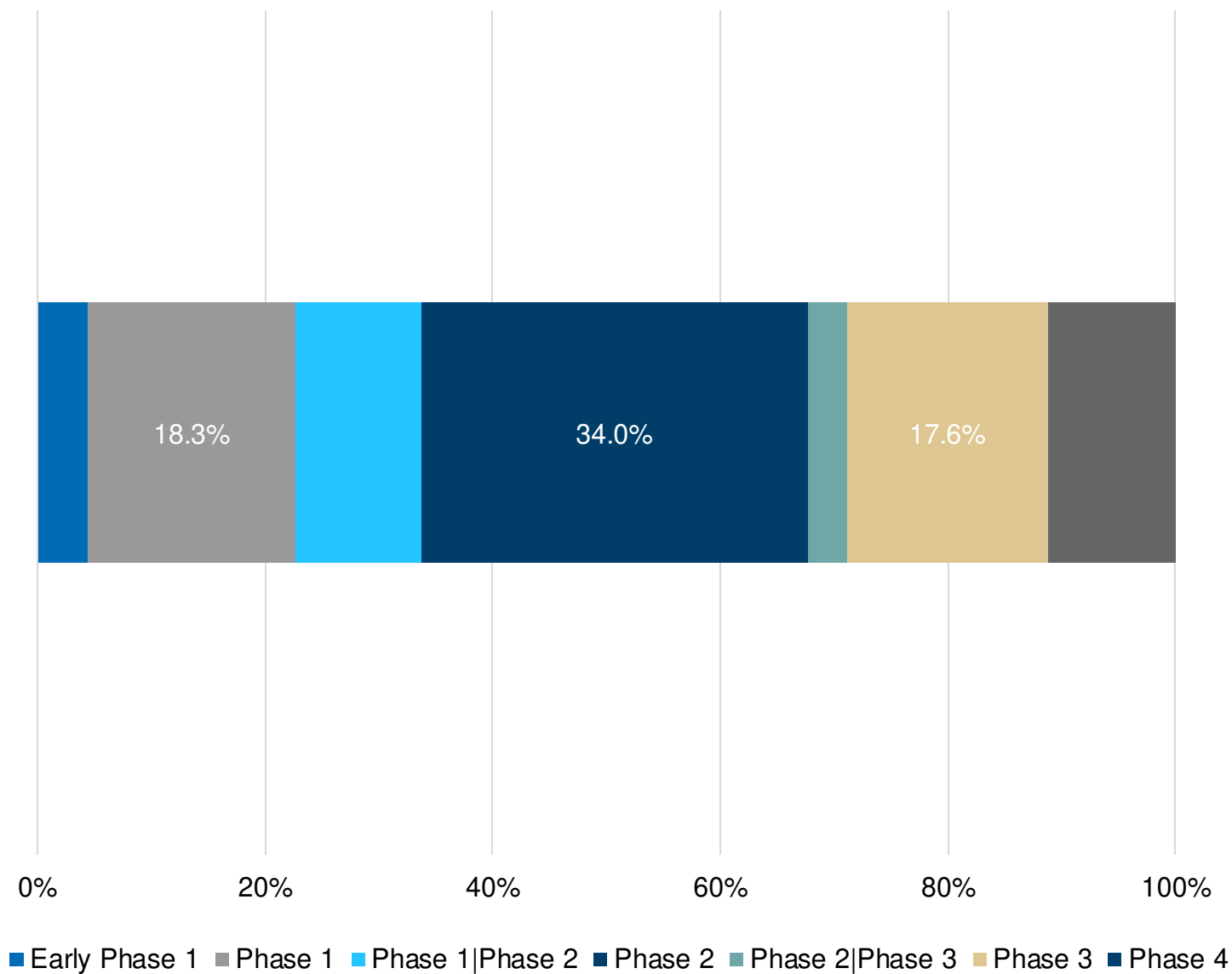


Source: KFF Analysis of Medical Expenditure Panel Survey 2022 data, KFF Analysis of NHEA, National Health Spending Explorer, Newmark Research

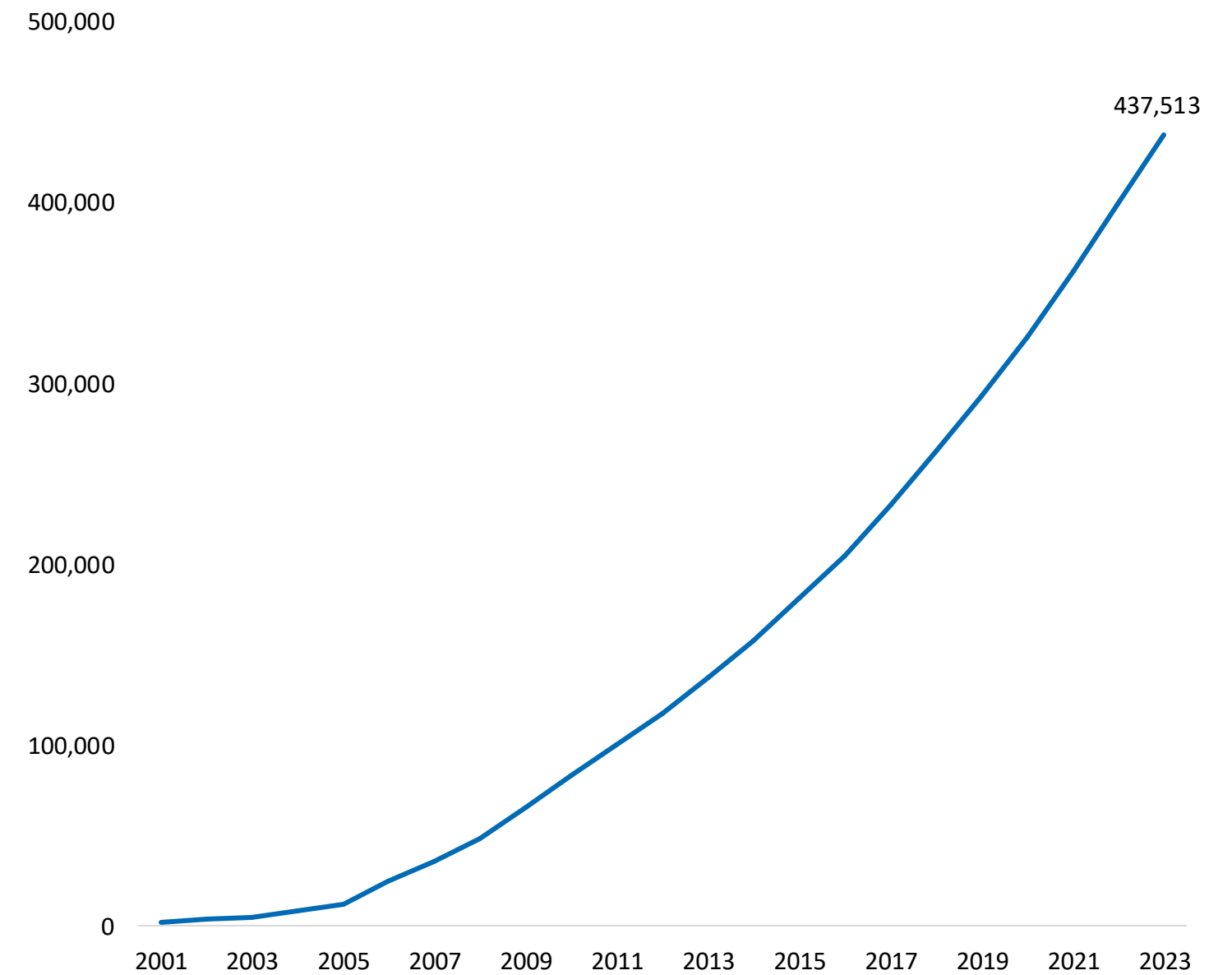
Growth in Active Clinical Trials Supports Future Lab Demand

Over the last 20+ years, U.S. clinical trials have grown exponentially; the number of registered studies reached a record high in 2023. Life science companies with drugs in any phase of trial could experience greater space needs, but later-stage studies tend to be larger. Clinical trials receive funding from several sources, with private investment and the National Institutes of Health being the primary contributors.

Clinical Trials by Phase



Number of Registered Clinical Studies



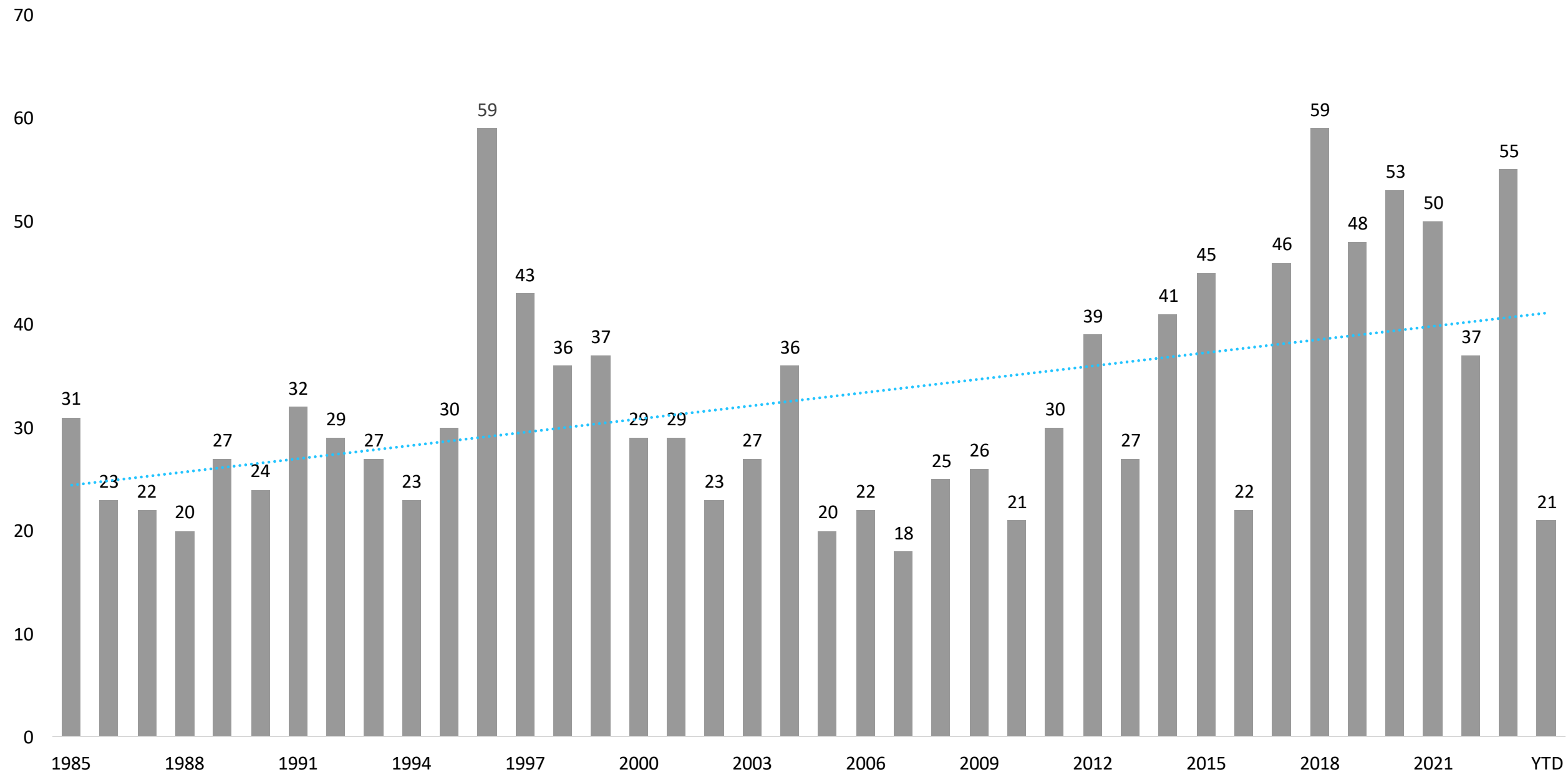
Source: ClinicalTrials.gov, Newmark Research

Note: Includes interventional clinical trials with a recruitment status of not yet recruiting, recruiting, enrolling by invitation, and active (not recruiting).

Positive Momentum in FDA Approvals Could Spur More Biotech Investment

Following a record year for drug approvals, the FDA approved 21 novel drugs in the first half of 2024. As new drugs and treatments progress through the pipeline, biotech companies will need more research, development, and manufacturing space. According to PhRMA, only 12% of new molecular entities that enter clinical trials receive FDA approval.

FDA Annual New Drug Approvals

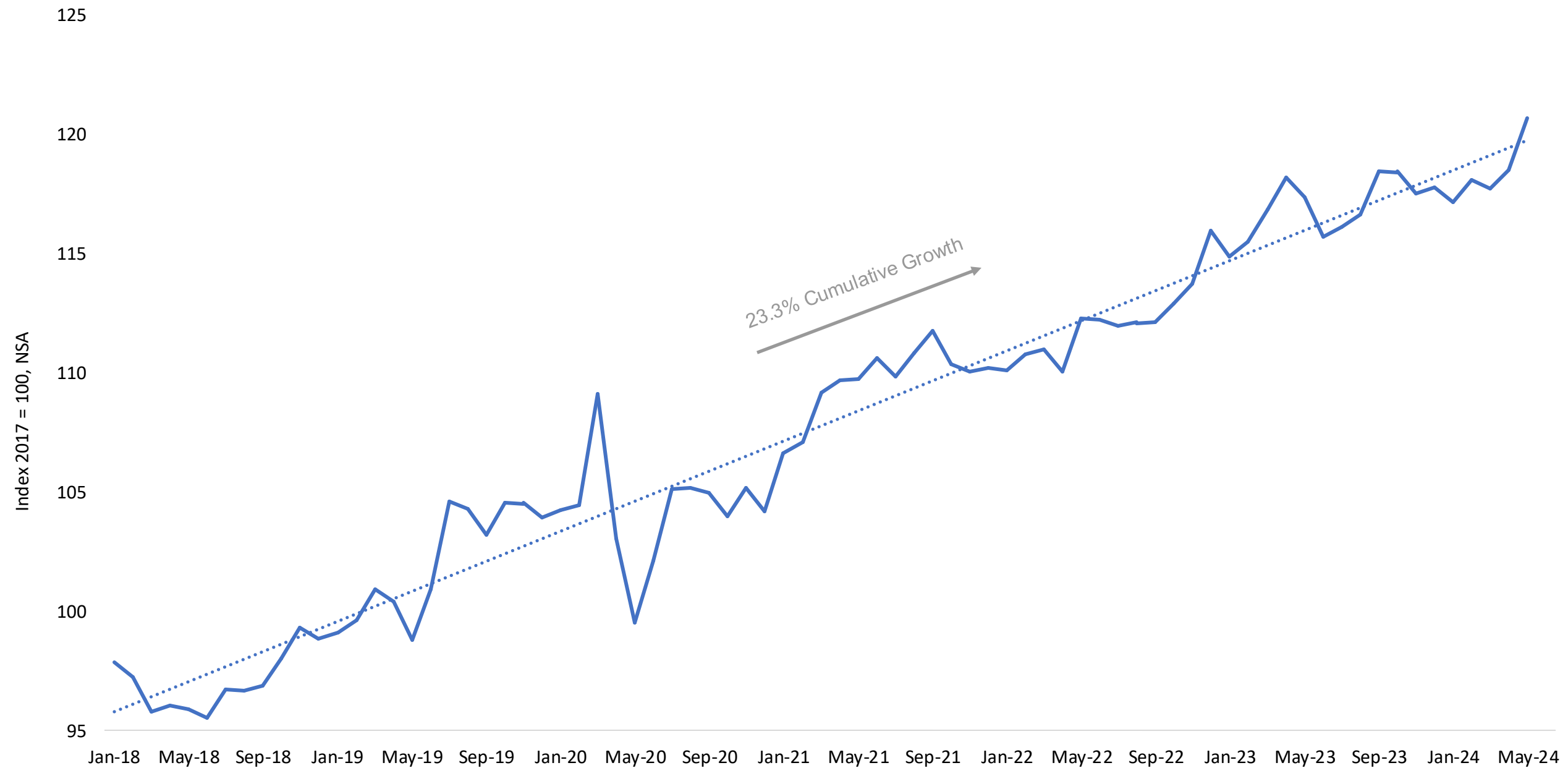


Source: Board of Governors of the Federal Reserve System, Newmark Research

Pharmaceutical Manufacturing Production Is off from the Peak

The industrial production of pharmaceuticals and medicine, which measures the real output of U.S.-based establishments, surpassed the previous five-year peak reported in mid-2023. Recent federal investments in this space and the growing demand for GLP-1 drugs is fueling increased manufacturing capacity. In response, several drug makers have announced sizeable expansions in recent months.

Industrial Production: Manufacturing: Non-Durable Goods: Pharmaceutical and Medicine

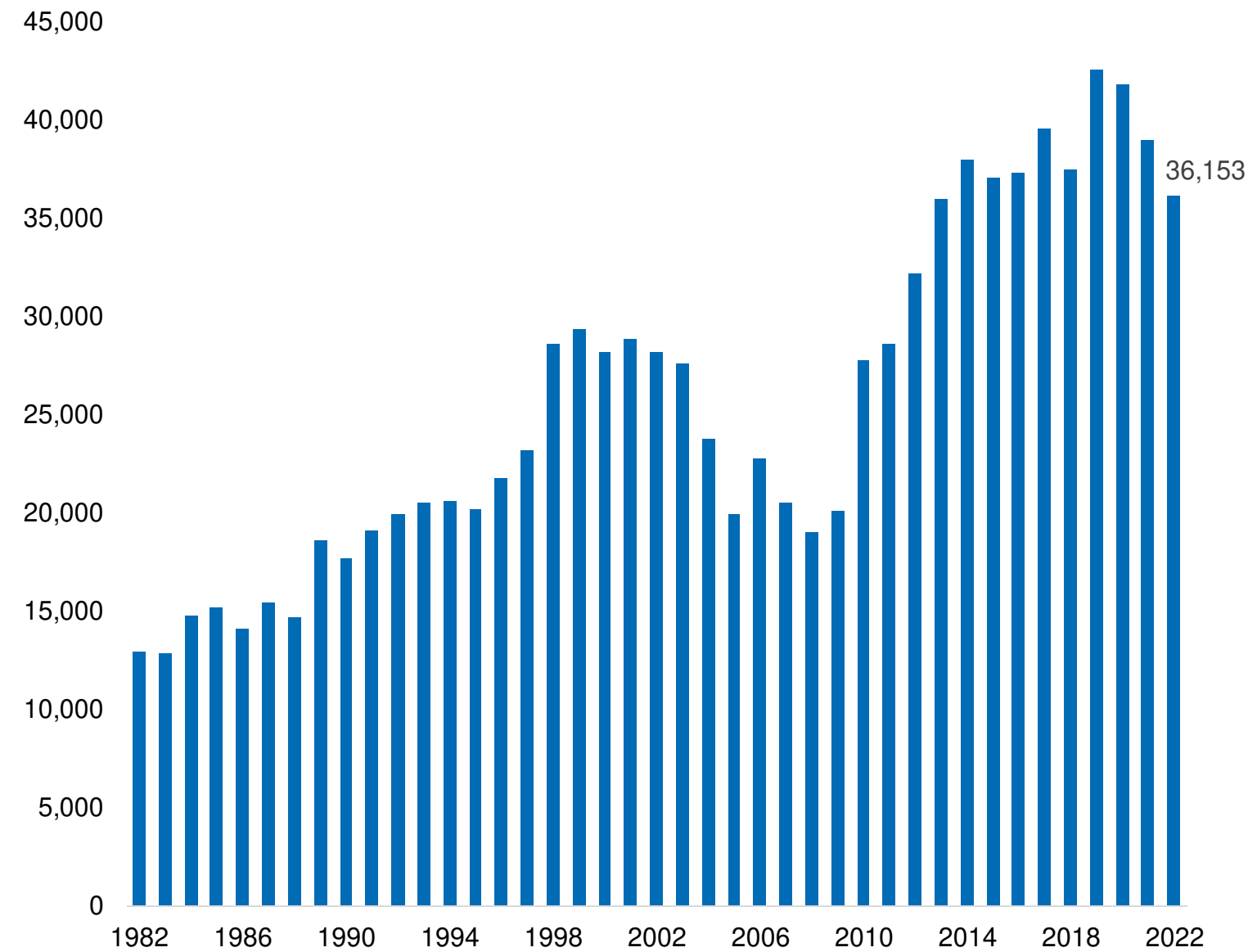


Source: Board of Governors of the Federal Reserve System, Newmark Research

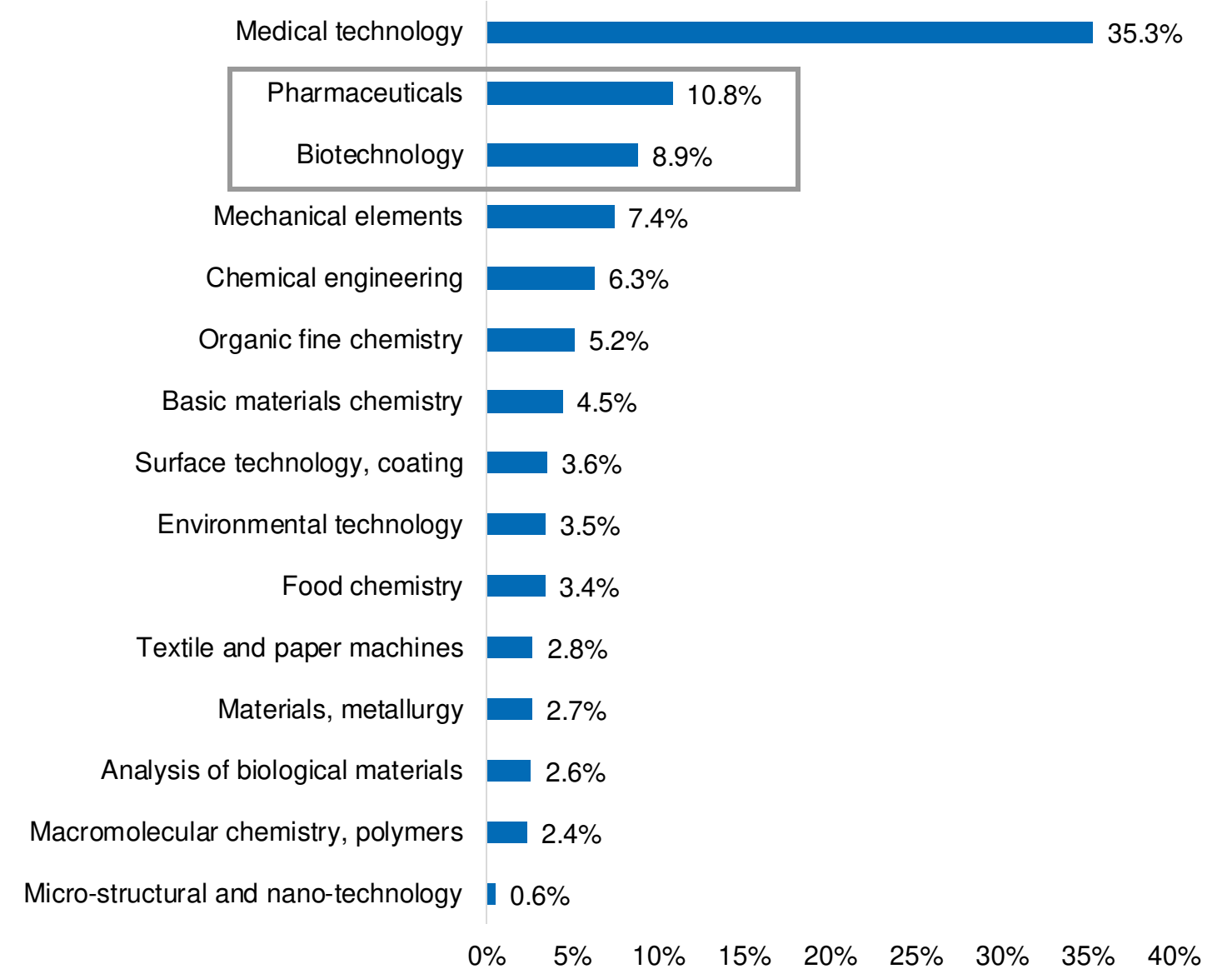
The Impending Patent Cliff Stands to Reshape the Pharmaceutical Industry

Patents issued for biotech-related fields reached a two-year low in 2022. The pharmaceutical and biotechnology fields still represent close to 20.0% of all biotech-related patents issued. The impending “patent cliff” facing several big pharma companies is fast approaching and represents a key risk for investors. According to PharmaVoice, patents on 190 drugs will expire by 2030, which will ultimately impact sales revenue.

Biotech-Related Patents Issued by Year



2022 Patents by Field of Technology

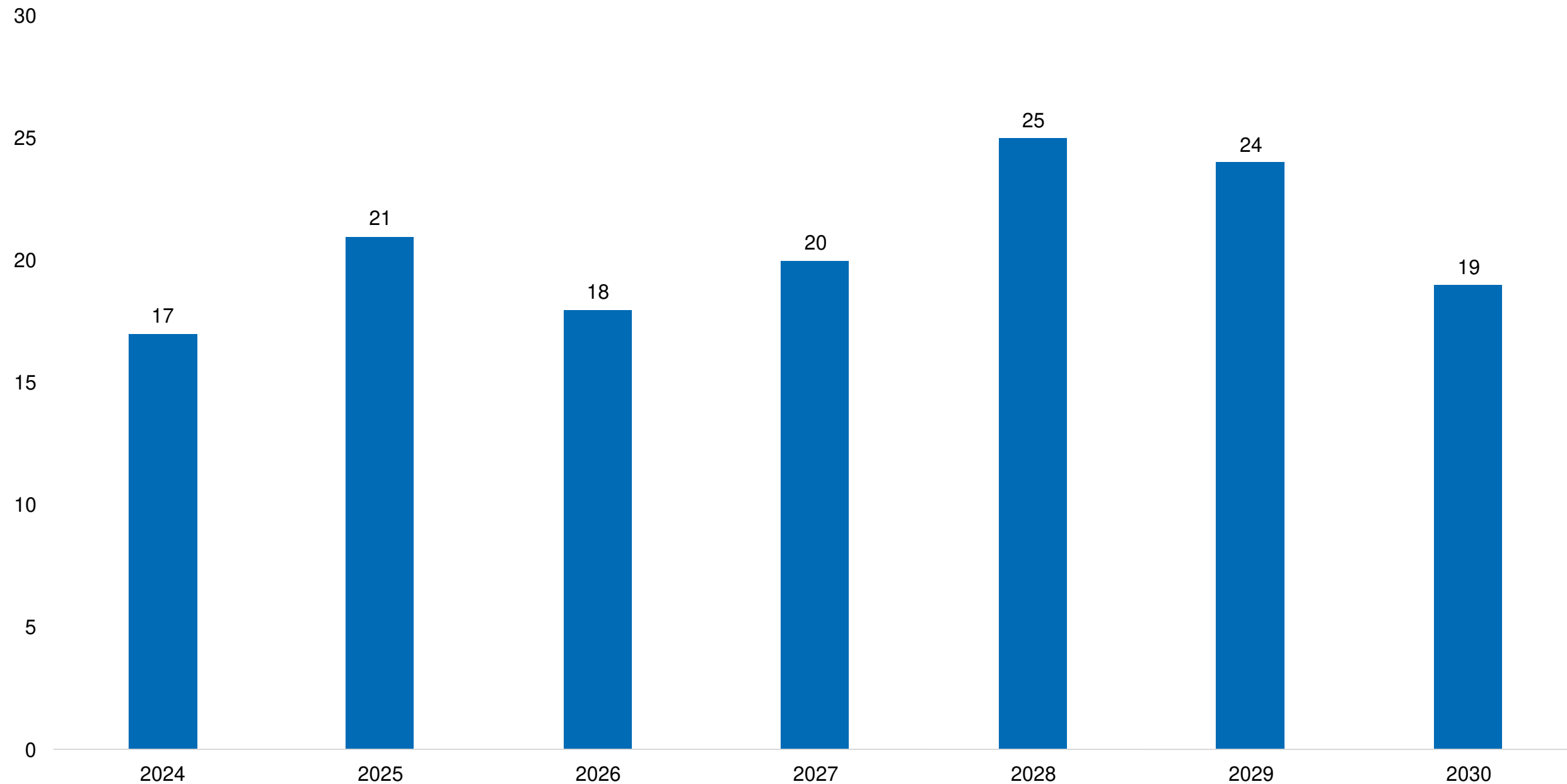


Source: WIPO Statistics Database, Healthpeak Properties, Newmark Research

The Patent Cliff Has Implications for Big Pharma

The size of these impending patent expirations is unprecedented. According to Bloomberg data compiled by RSM US LLP, 144 drug patents from the largest 18 pharmaceutical companies are set to expire between 2024 and 2030. The associated revenues surpass \$300 billion. While the 300 new medicines approved from 2018 to 2023 will help offset projected revenue losses, challenges lie ahead.

Drug Patent Expirations | 18 Largest Pharmaceutical Companies



Source: Bloomberg, RSM US LLP, Newmark Research

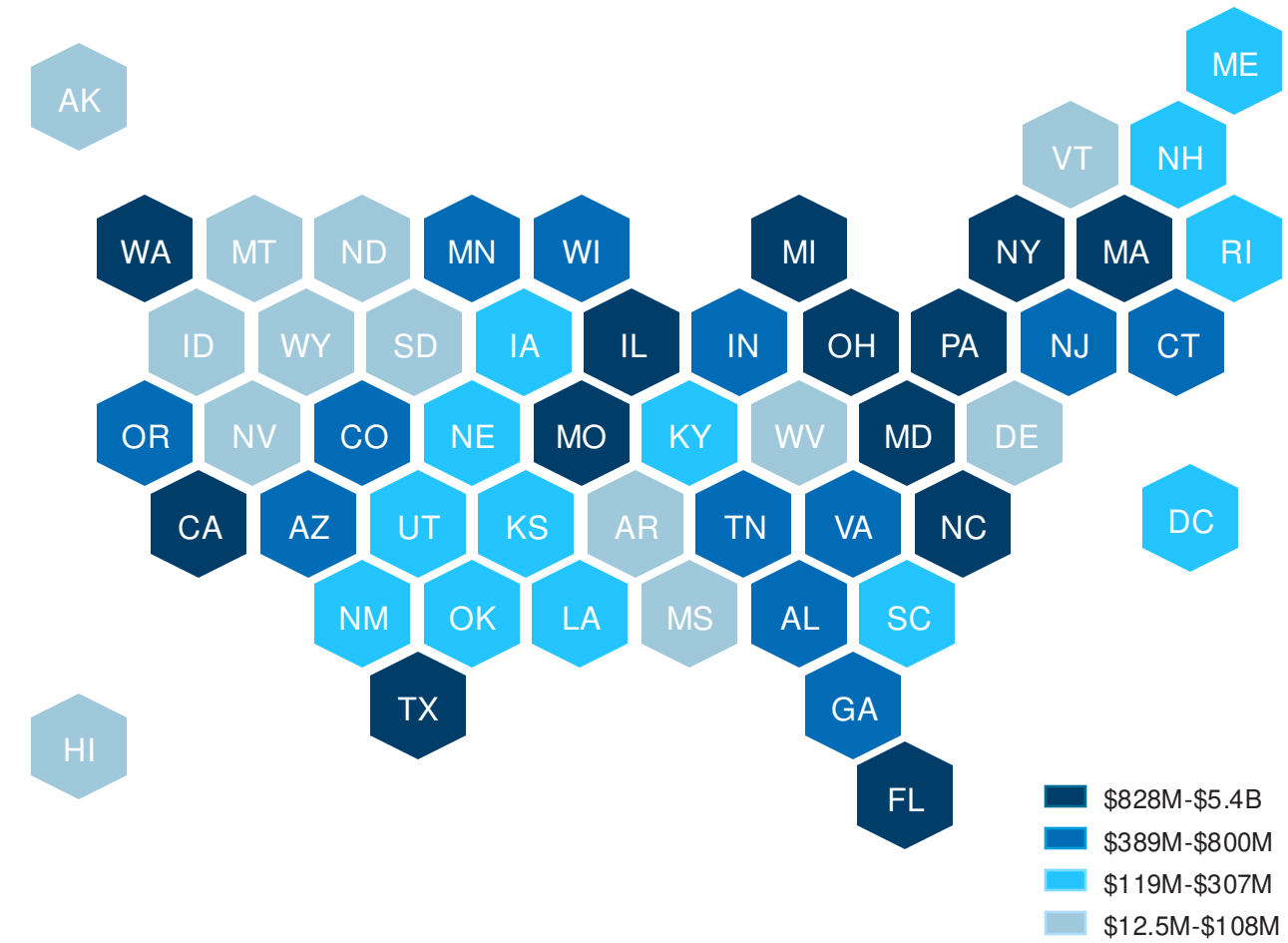
States with Top Life Science Clusters Dominate Grant Funding

Federal funding for medical research and development is an important part of the U.S. life science ecosystem. It's not surprising, therefore, that states with mature life sciences industries top the list of NIH funding awards. The top five states accounted for 45.8% of NIH funding in the fiscal year 2023, with California leading the way.

Top 10 Hospitals for NIH Funding, Fiscal Year 2023

Rank	Hospital	Location	FY 2023 Funding
1	Massachusetts General Hospital	Boston	\$675M
2	Brigham and Women's Hospital	Boston	\$403M
3	Boston Children's Hospital	Boston	\$239M
4	MD Anderson Cancer Center	Houston	\$192M
5	Cincinnati Children's Hospital	Cincinnati	\$170M
6	Children's Hospital of Philadelphia	Philadelphia	\$166M
7	Dana-Farber Cancer Institute	Boston	\$163M
8	Beth Israel Deaconess Medical Ctr	Boston	\$126M
9	Seattle Children's Hospital	Seattle	\$116M
10	St. Jude Children's Hospital	Memphis	\$116M

NIH Funding by State, Fiscal Year 2023



- 5** Half of the top 10 hospitals for 2023 NIH funding are in Boston.
- \$2.4** The top U.S. hospitals captured \$2.4 billion in 2023 funding
- 46%** The top 5 states received 45.8% of all 2023 NIH funding.
- 11** More than 10 states were awarded \$1.0 billion+ in 2023.

Source: National Institutes of Health, Newmark Research

The Venture Capital Landscape is on More Positive Footing

1Q 2024

\$6.6B

Raised

700+ deals

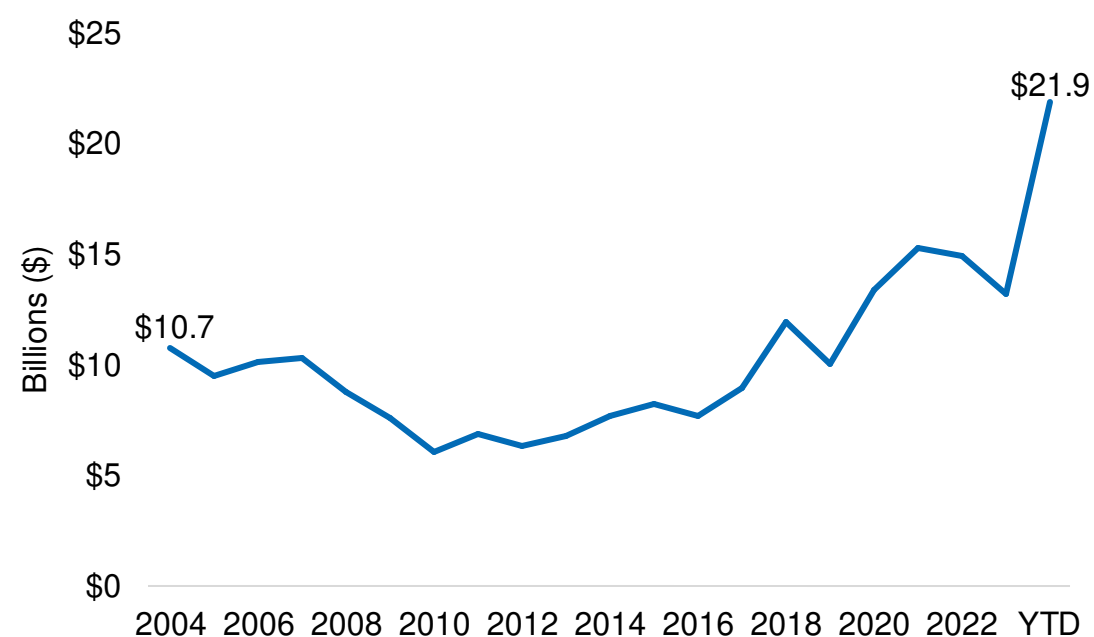
\$21.9M average round

2Q 2024

\$9.2B

Raised

Average Round Size



The Outlook for VC Funding is Looking Brighter

New and established venture capital funds have raised billions of dollars to invest in biotech and life science companies. Expectations for capital deployment should improve as a result. Below is a list of select funds recently closed.

Firm	Fund Size	Closed
Decheng Capital	\$700M	Q1/Q2 2024
Foresite Capital	\$900M	Q1/Q2 2024
Goldman Sachs Asset Management	\$650M	Q1/Q2 2024
J.P. Morgan Private Capital	\$500M	Q1/Q2 2024
ORI Capital	\$260M	Q1/Q2 2024
ARCH Ventures	\$3.0B	Q1/Q2 2024
OrbiMed*	\$4.3B	Q3/Q4 2023
Westlake Village Biopartners	\$450M	Q3/Q4 2023
Bioluminescence Ventures	\$477M	Q3/Q4 2023
Pivotal Life Sciences	\$389M	Q3/Q4 2023
Abingworth	\$356M	Q3/Q4 2023
Yosemite	\$200M	Q3/Q4 2023

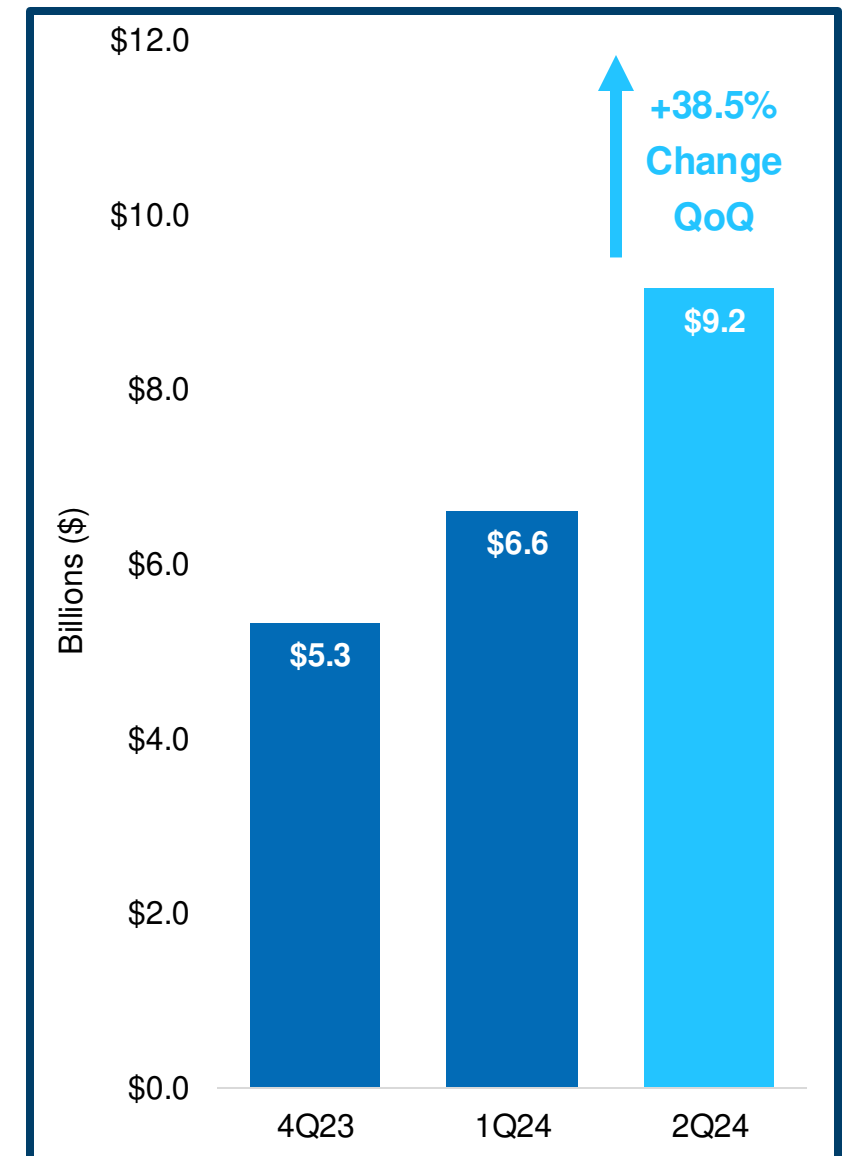
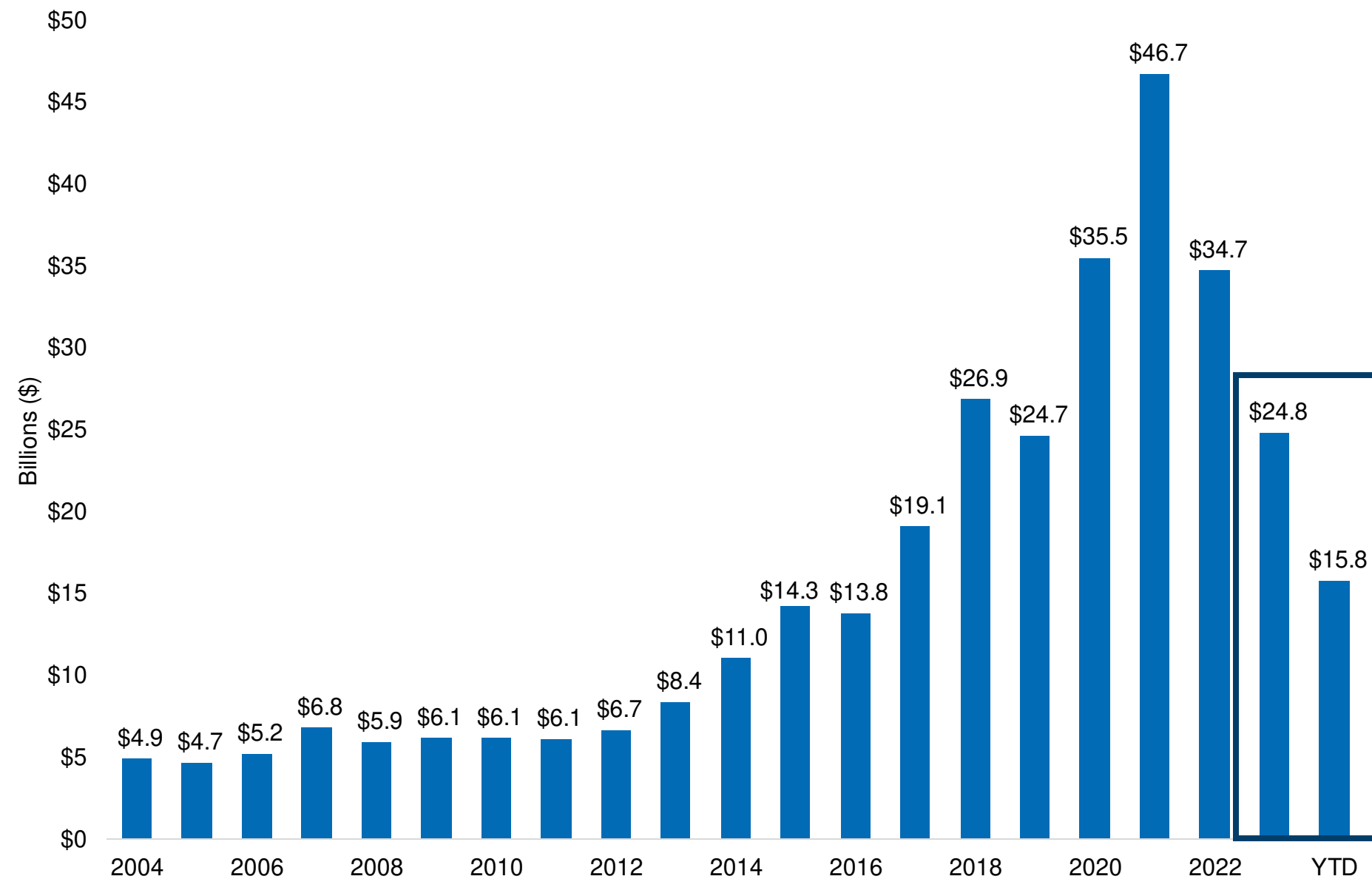
Source: PitchBook, Newmark Research

*Across three funds

Venture Capital Funding Post Second Quarter of Growth

Venture capital funding for U.S. life science companies reached \$15.8 billion during the first half of 2024 and is now on pace to outstrip last year's totals. Xaira Therapeutic's \$1 billion funding commitment represents the largest funding events of 2024. Increasing deal sizes indicate continued selectiveness among investors when deploying capital. Life science companies with the most promising science should still be able to raise capital, but they will need to do more with less.

Annual VC Funding (2004-2024)

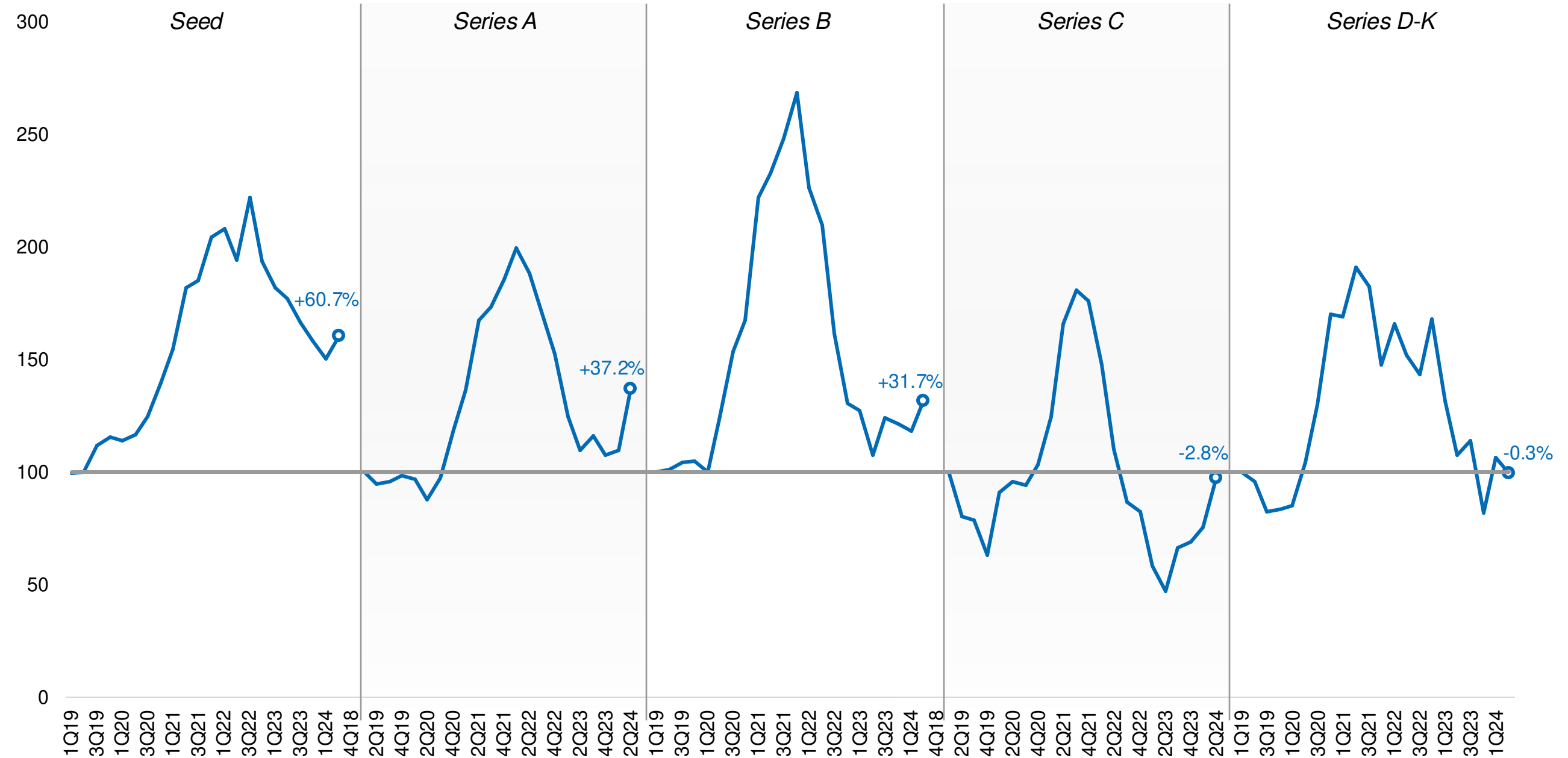


Source: PitchBook, Newmark Research

Seed Funding Boasts Relative Resilience

While venture capital funding is off from peak volumes, seed funding for U.S. life science companies is still more than 60% above 2019 levels. Series A and B funding are also more than 30% above 2019 levels and have posted positive momentum in recent quarters.

VC Funding by Series | 4-Quarter Moving Average | Indexed to 2019

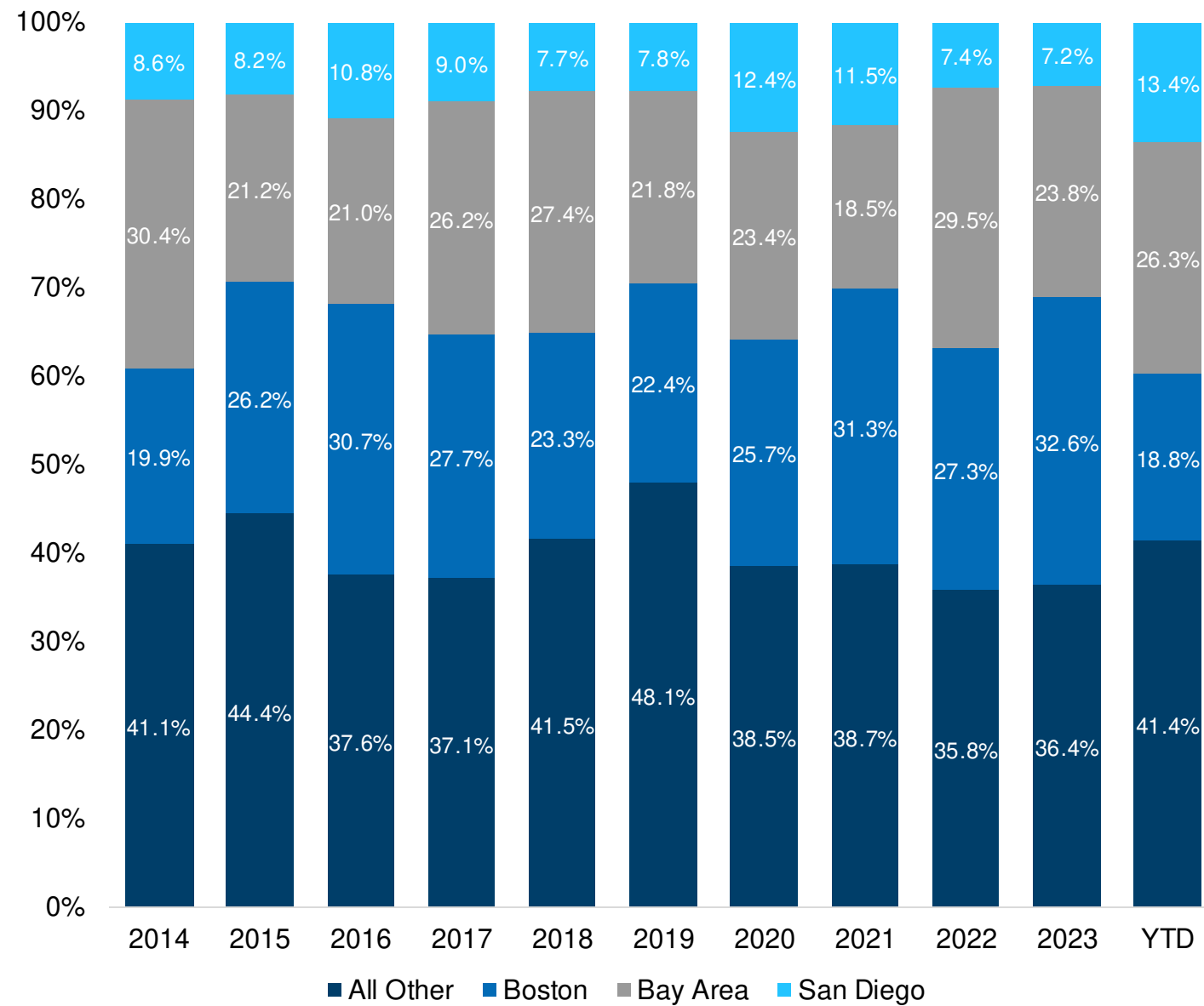


Source: PitchBook, Newmark Research

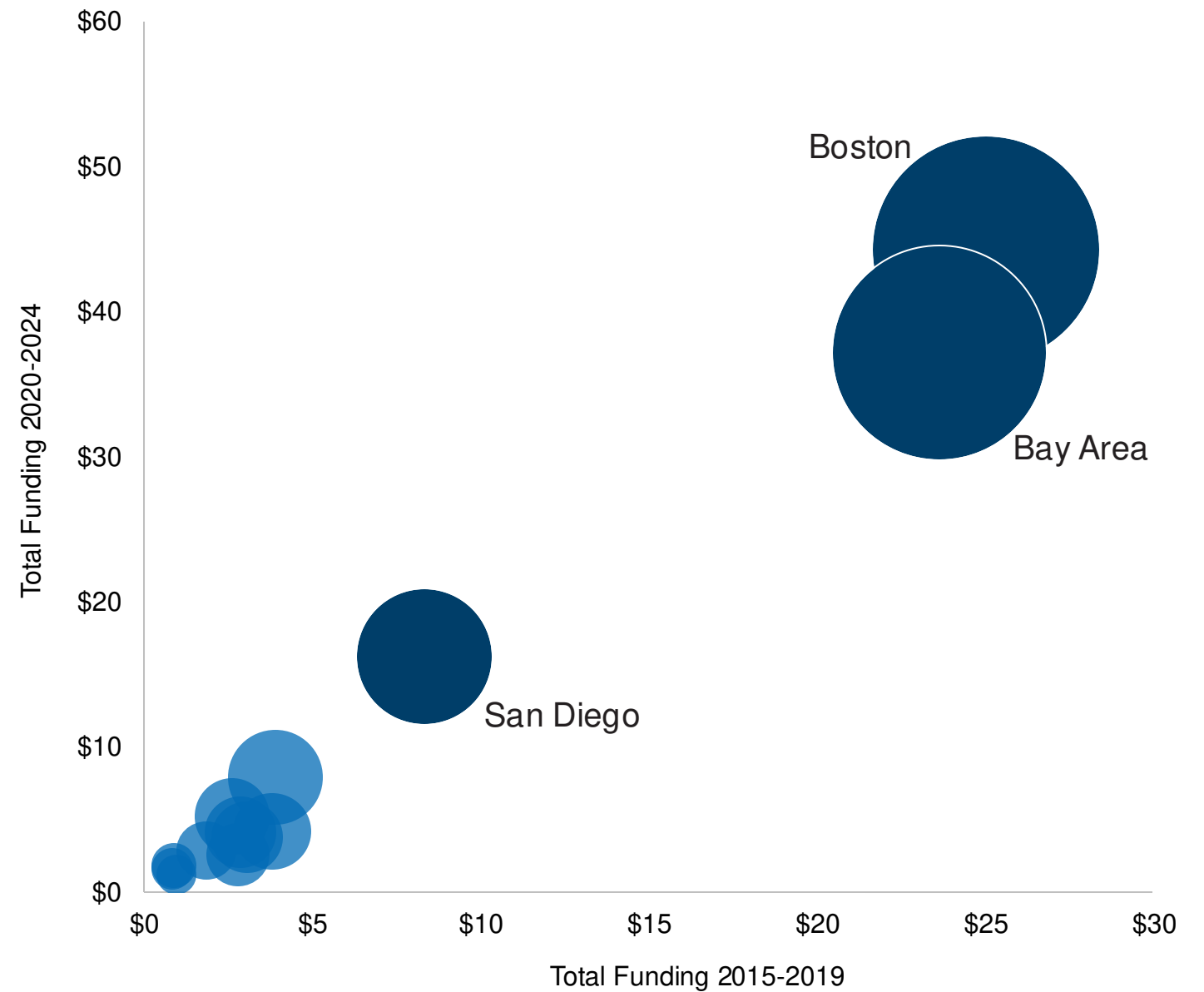
VC Funding is Trending More Positively in the Bay Area and San Diego

The top three life science hubs in the U.S. consistently attract close to 60.0% of all venture capital funding annually. During the first half of 2024, life science companies based in these three markets raised \$9.2 billion in funding. Greater Boston's share of the total declined considerably, ending the second quarter of 2024 at 18.8%.

Historical Life Science Funding: Top 3 Clusters as % of Total



Historical Life Science Funding: By Metro (in billions)



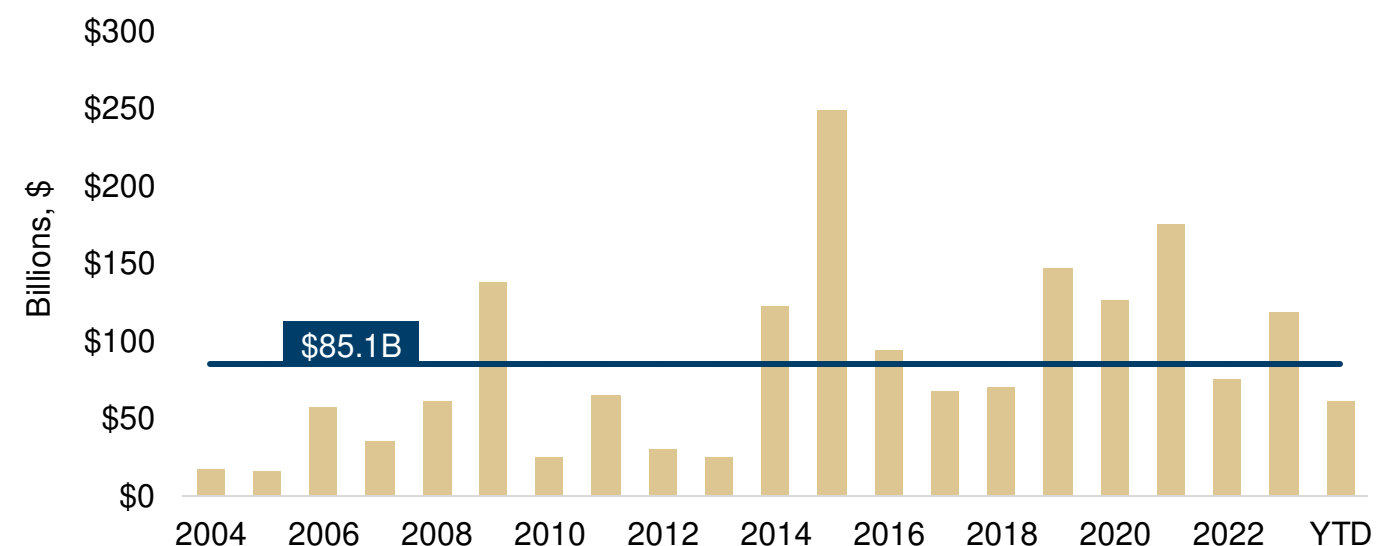
Source: Pitchbook, Newmark Research

Size of bubble represents total funding 2015-2024

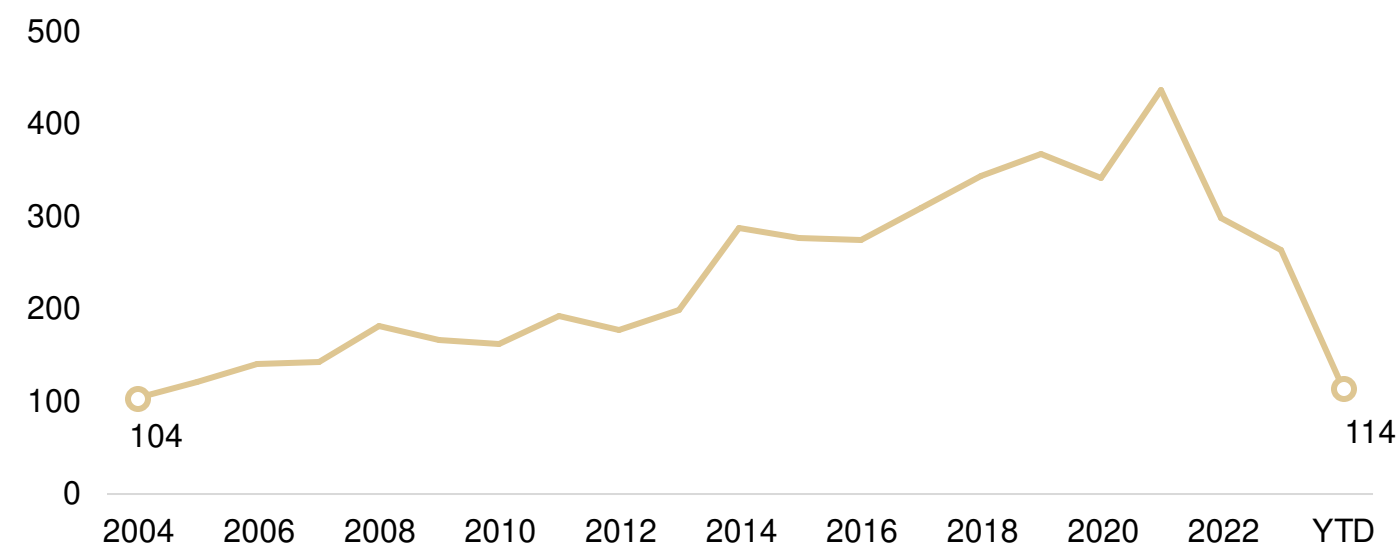
M&A Momentum Continues into 2024

While the number of transactions continued to decline through the first half of 2024, deal volume remained favorable. Life science M&A activity reached \$62 billion through the second quarter of 2024, approximately half of the total for the previous year. Large pharmaceutical companies like Bristol-Myers Squibb, AbbVie, and Roche have all made acquisitions in recent months. The top three life science markets in the U.S. accounted for an above-average share of M&A activity this year.

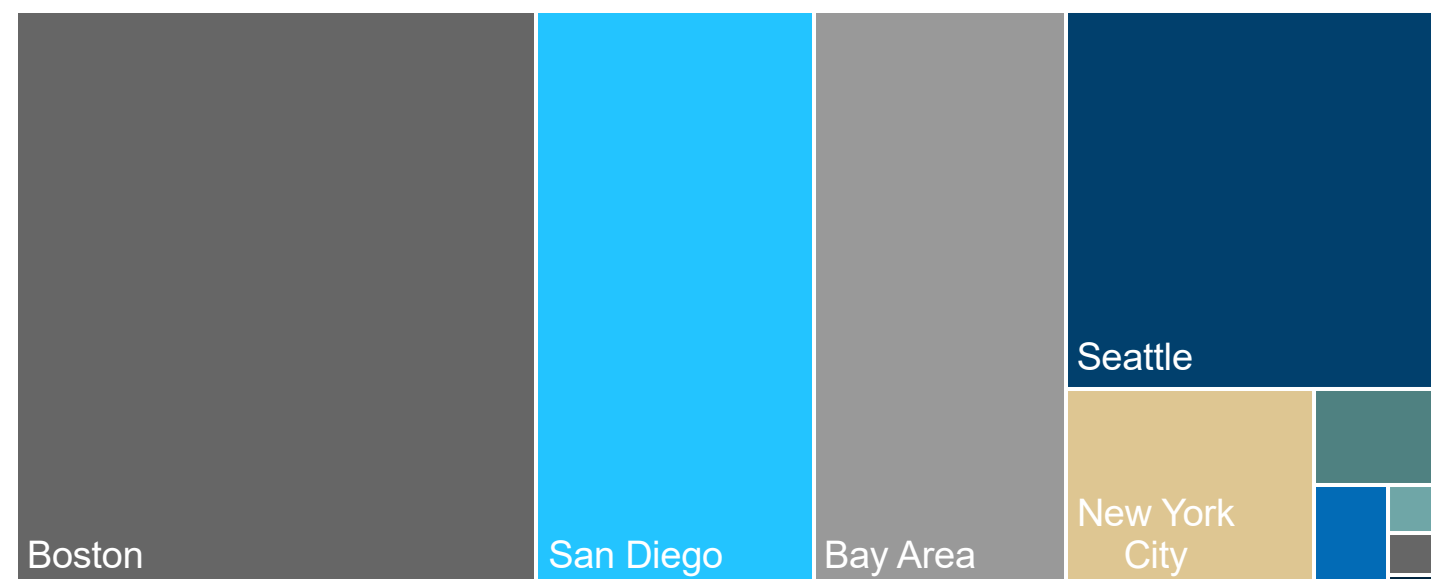
U.S. Life Science M&A Activity | Capital Invested



U.S. Life Science M&A Activity | Deal Count



Share of 1H 2024 Life Science M&A Volume (\$)



Top 1H 2024 Life Science M&A Transactions

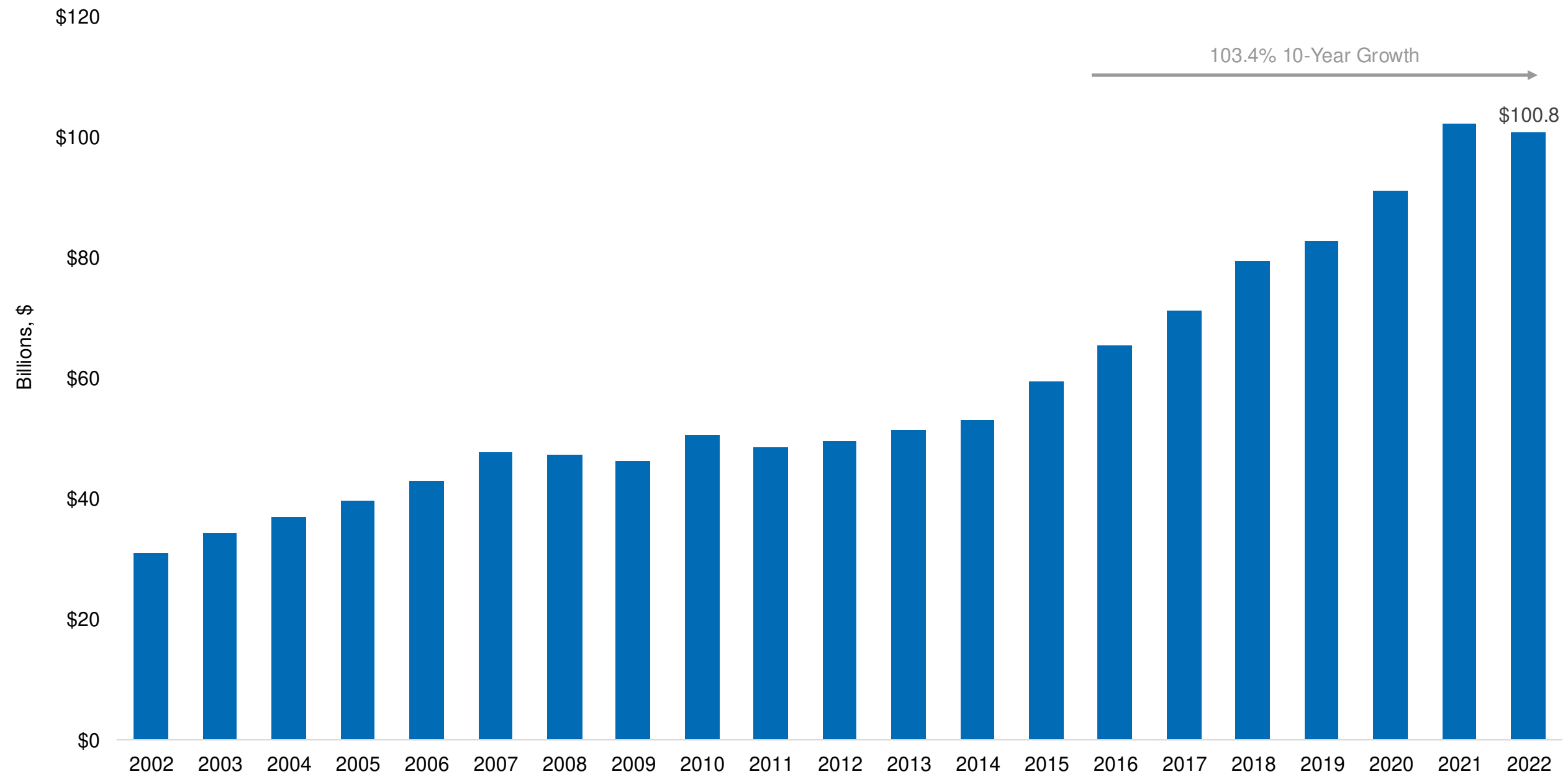
Year	Acquisition	Buyer	Acquisition Price
2024	Karuna Therapeutics	Bristol-Myers Squibb	\$13.8B
2024	Immunogen	AbbVie	\$9.8B
2024	Alpine Immune Sciences	Vertex Pharmaceuticals	\$4.9B
2024	CymaBay Therapeutics	Gilead Sciences	\$4.3B
2024	RayzeBio	Bristol-Myers Squibb	\$3.9B
2024	Carmot Therapeutics	Roche	\$3.3B
2024	Ambrx	Johnson & Johnson	\$2.4B
2024	Deciphera Pharma	ONO Pharmaceuticals	\$2.4B

Source: Pitchbook, Newmark Research

Robust Spending in Corporate R&D Is Driving Rapid Scientific Advances

In 10 years, PhRMA member companies increased research and development spending by more than 100.0%, with trillions of dollars invested over the last 30 to 40 years. Though total investment declined slightly in 2022, this represents the second consecutive year that biopharma companies have spent more than \$100 billion in R&D. Nearly 29% of R&D spending was invested in Phase III R&D activities.

Domestic Biopharma R&D and R&D Abroad, PhRMA Member Companies

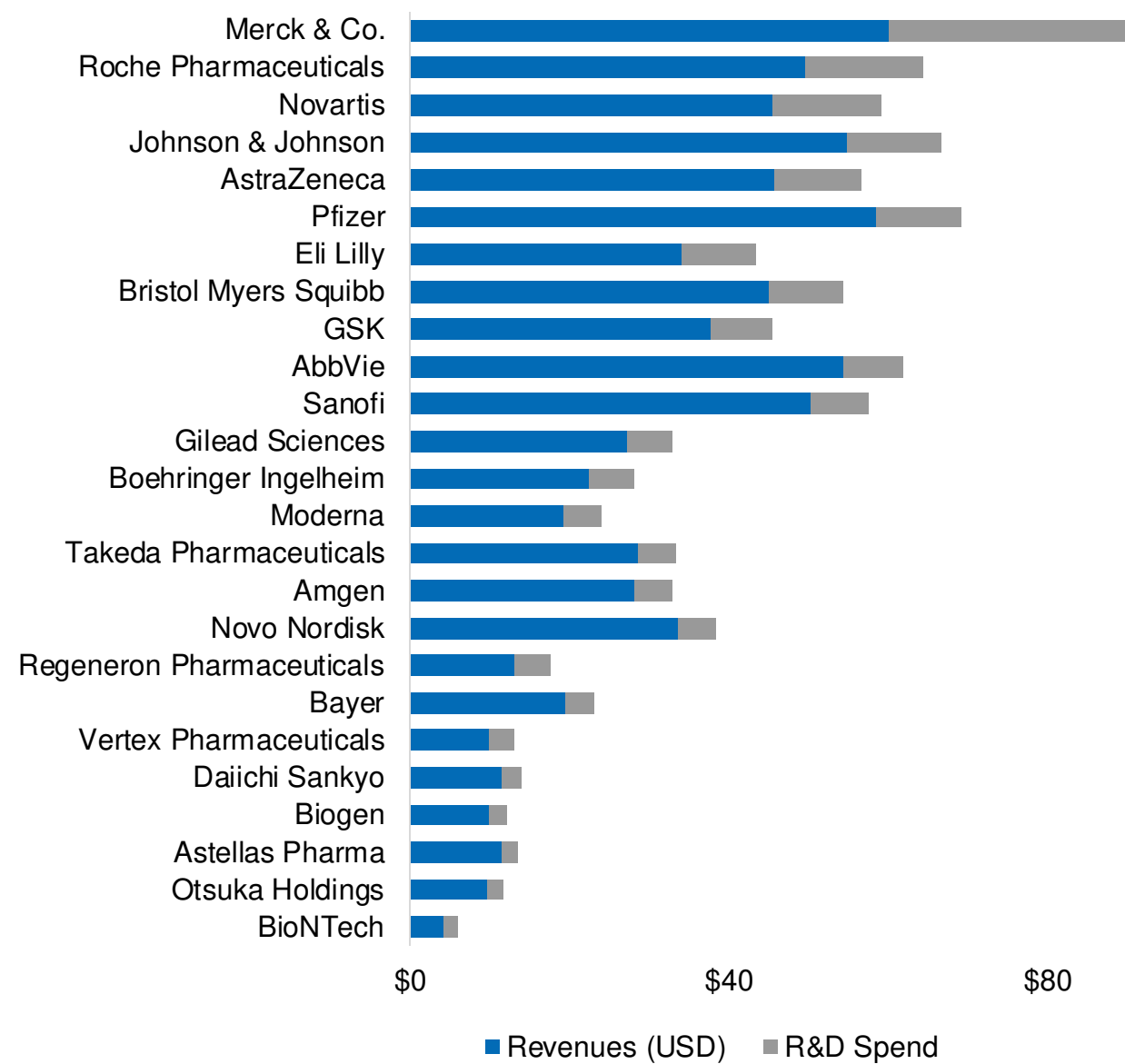


Source: Pharmaceutical Research and Manufacturers of America (PhRMA Member Companies), Newmark Research

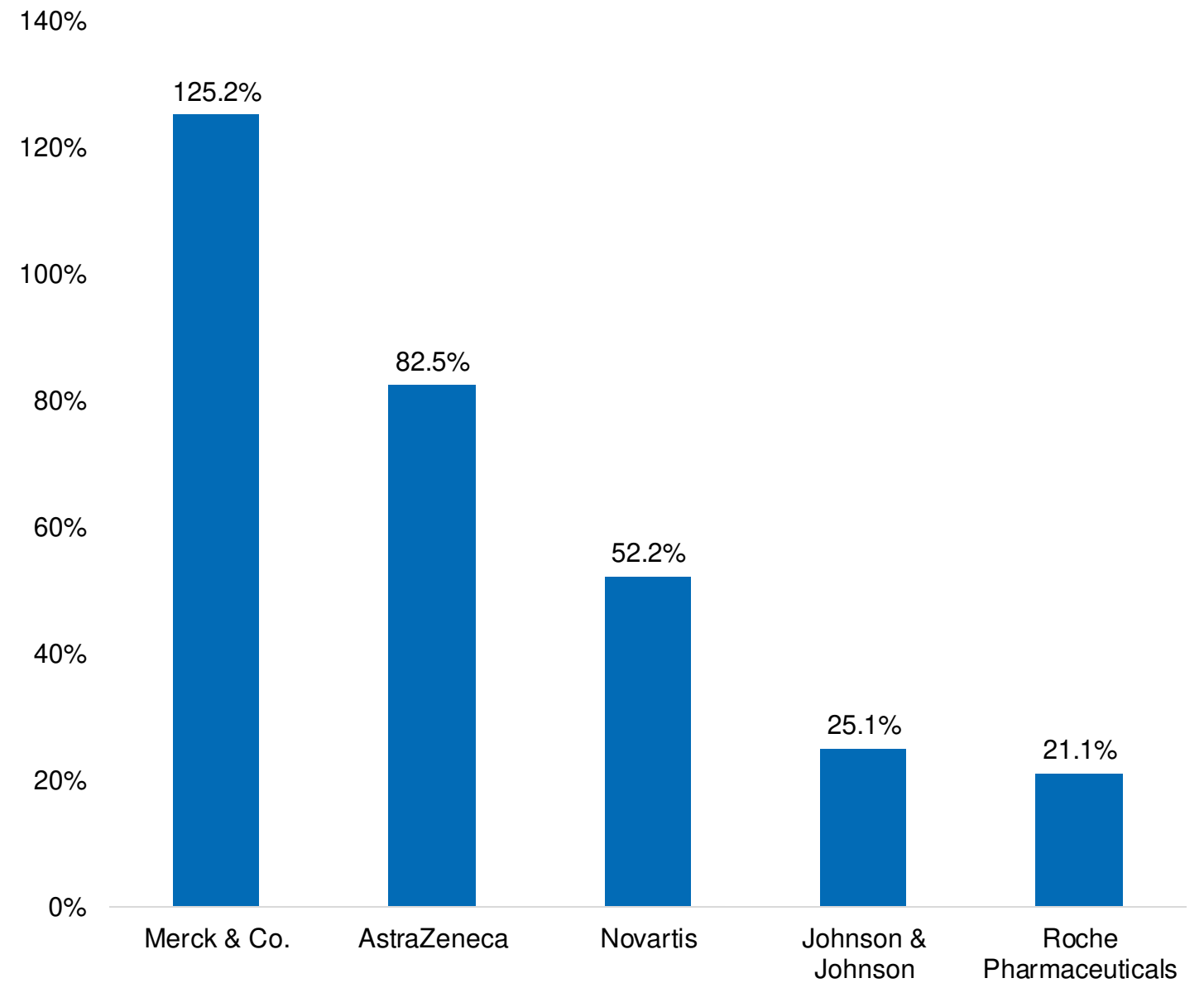
Big Pharma Maintains Strong Investment in Research and Development

According to Drug Discovery & Development, most large pharmaceutical companies are dedicating 14% to 30% of revenues to R&D, with Merck & Co. allocating \$30.5 billion for R&D spending in 2023. As the largest source driving life science R&D, a resurgence in spending bodes well for growth this sector.

Select 2023 Revenue and R&D Spending (in billions)



Growth in R&D Spending (2020 to 2023)

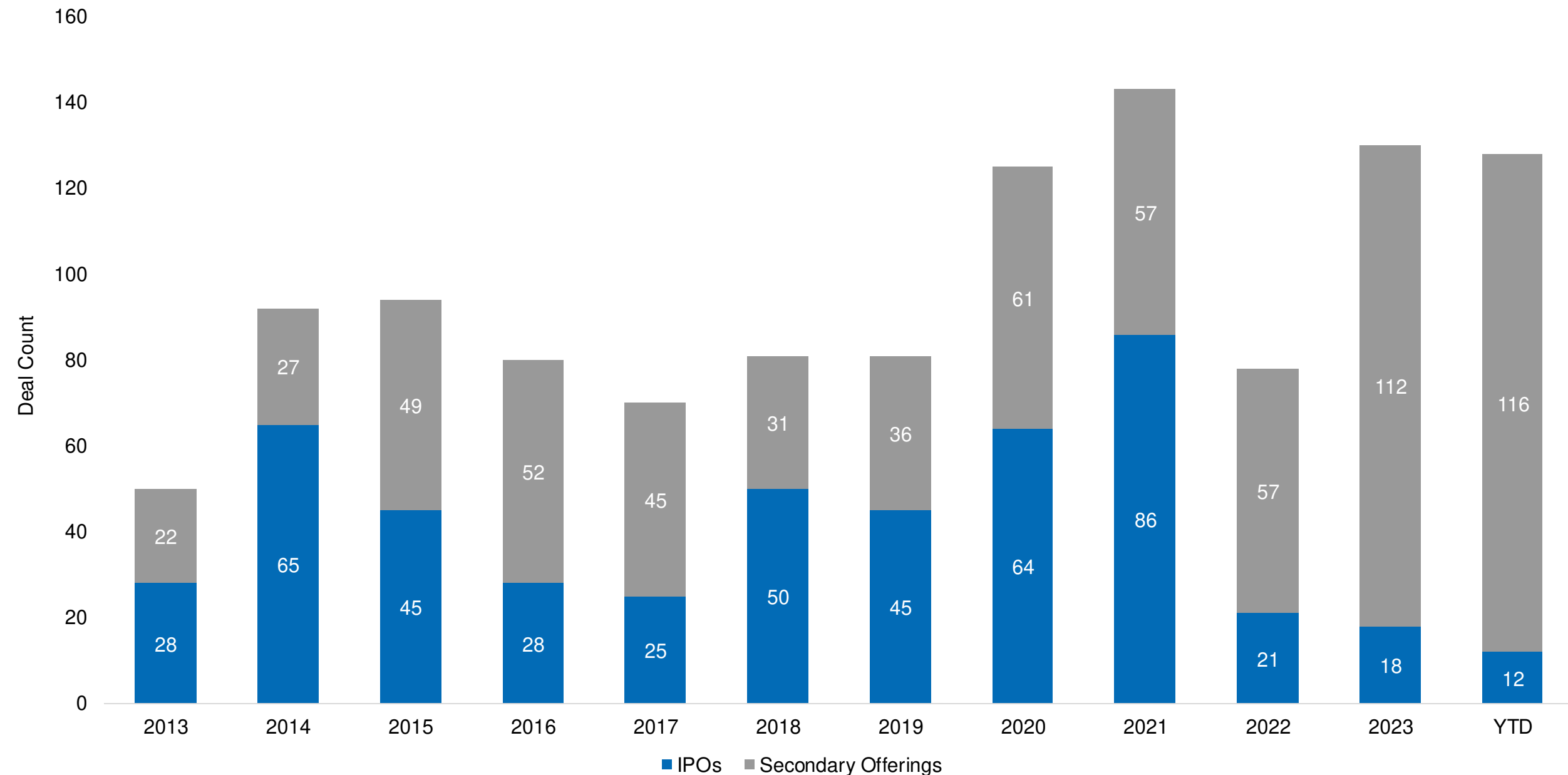


Source: Drug Discovery & Development, Newmark Research

The IPO Market Appears to be Thawing, Signaling Positive Momentum

For biotech IPOs, 2022 and 2023 were among the slowest years on record. In the first half of 2024, 12 biotech companies went public, with total capital raised approaching that of the previous years. Investors are likely to remain focused on the highest-quality companies to mitigate downside risks.

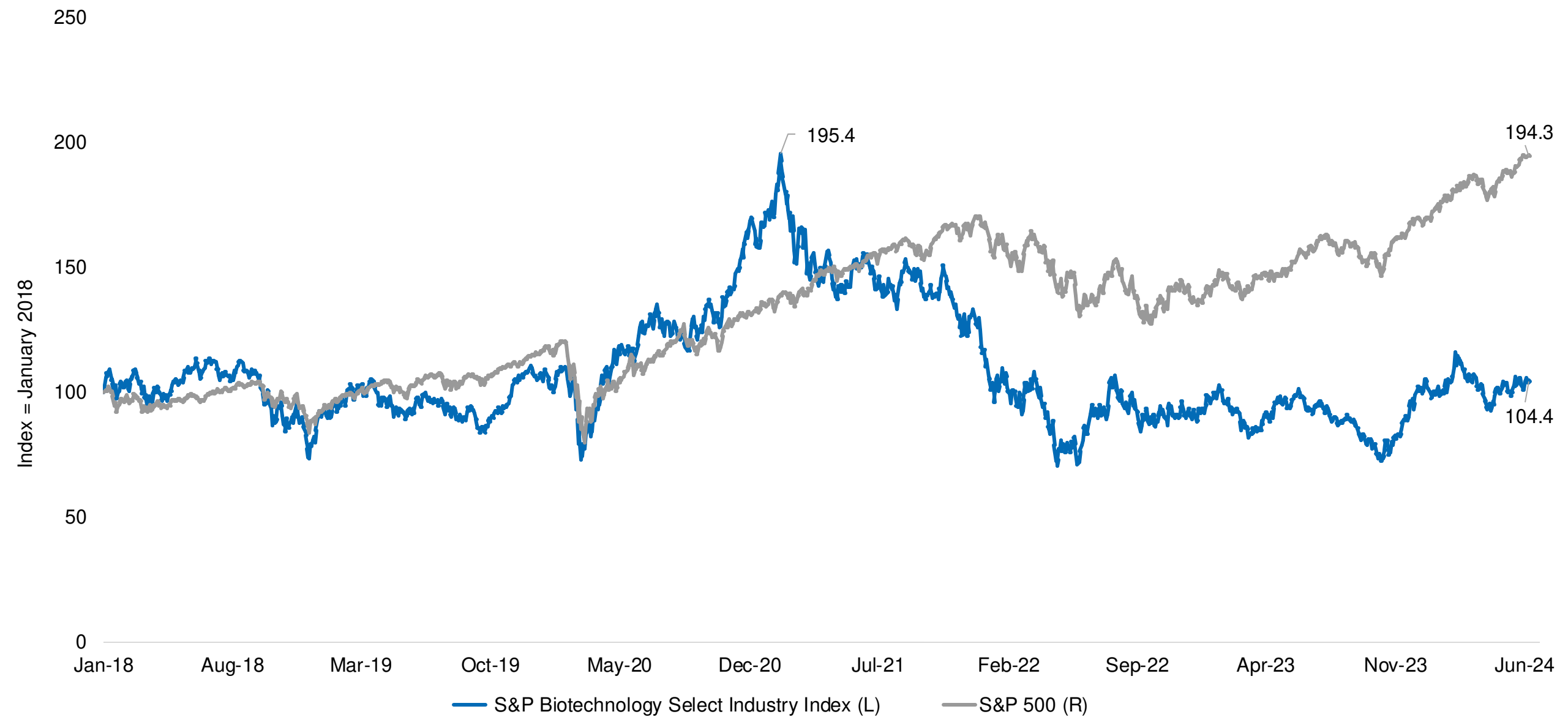
Public Sources of Capital



Public Market Performance Continues to Diverge

The S&P Biotech Index highlights the run-up in public company valuations and oversized initial public offerings. After peaking in late 2020 at the height of the market, the index continued to decline throughout most of 2023. Although a modest recovery in late 2023 set the stage for more gains heading into 2024, growth seems to have pulled back by the end of the second quarter.

S&P Biotechnology Select Industry Index | S&P 500



Source: S&P Global, Newmark Research

MID-YEAR 2024 U.S. LIFE SCIENCE MARKET OVERVIEW

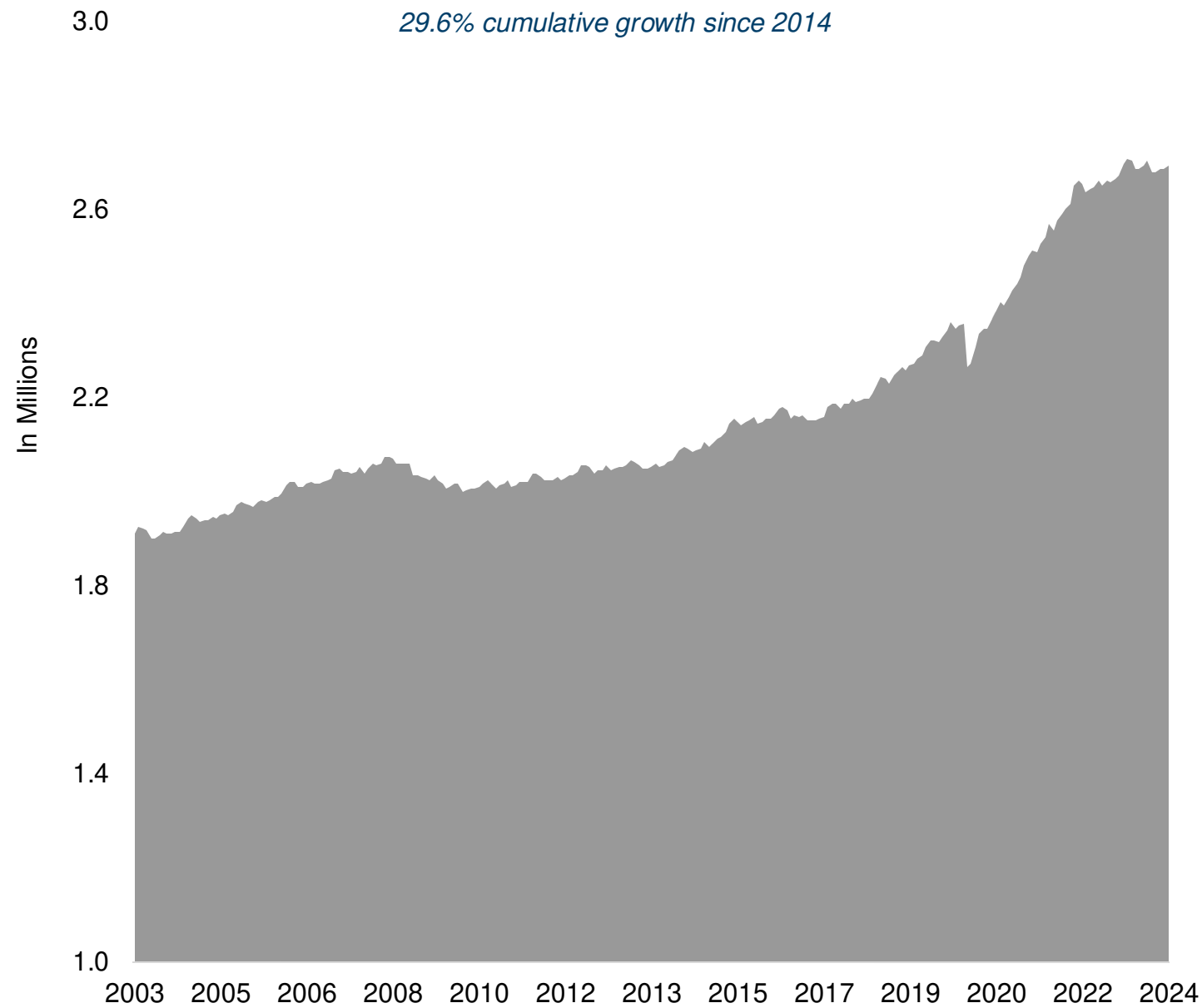
Industry and Talent Trends



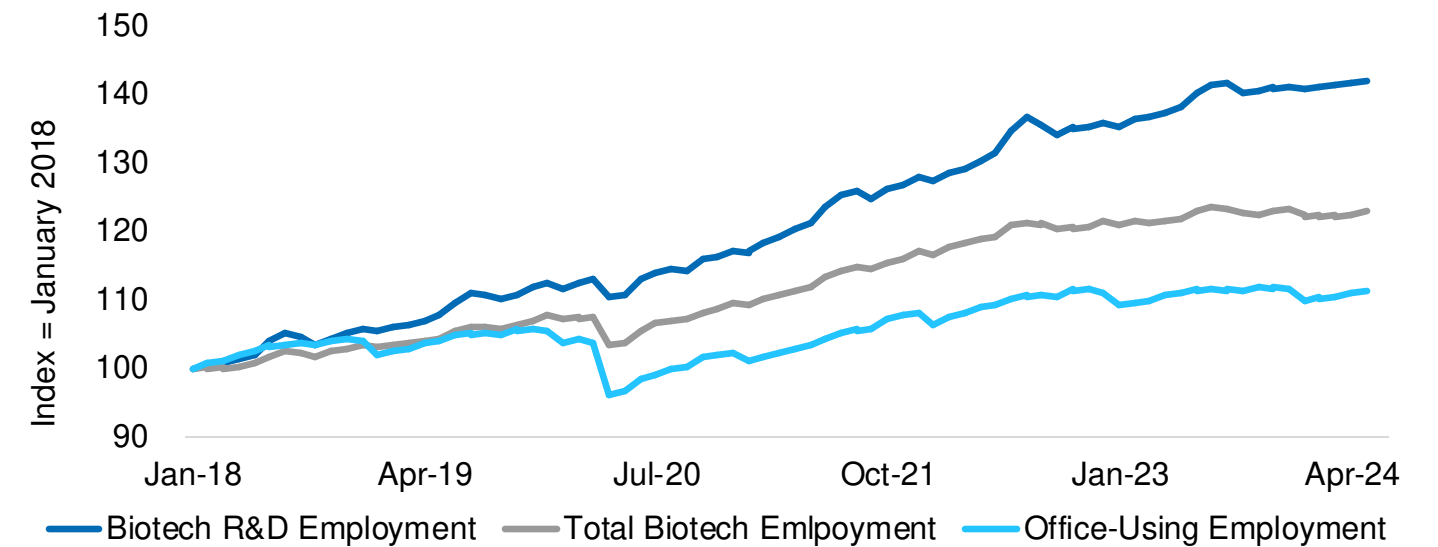
Amid A Broader Deceleration, R&D Employment Outperforms

The expansion in biotech employment began to accelerate in 2017, driven by growth in funding, IPO activity and real estate fundamentals in the life science sector. By mid-2023, year-over-year job growth had fallen below 2.0% for the first time since early 2021 and annual gains have continued to wane. Employment in research and development is trending similarly; however, year-over-year growth ended May at 2.8%. Both sectors are outpacing office-using employment.

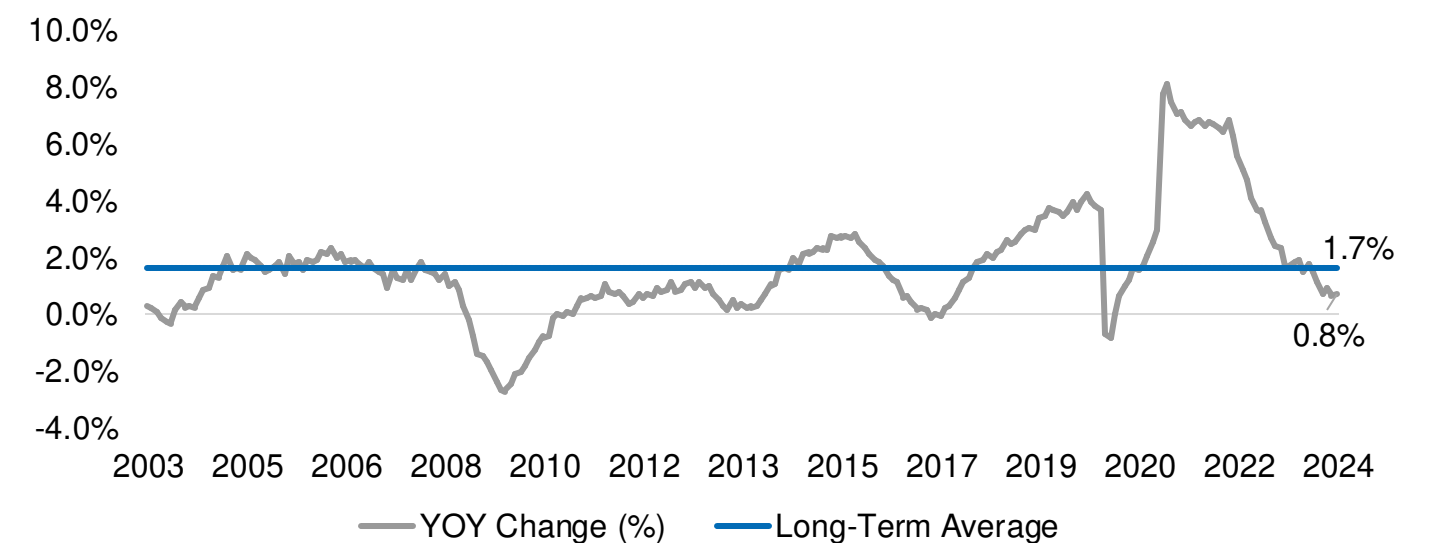
Total U.S. Biotech Employment



U.S. Employment Indices



Change in Total U.S. Biotech Employment

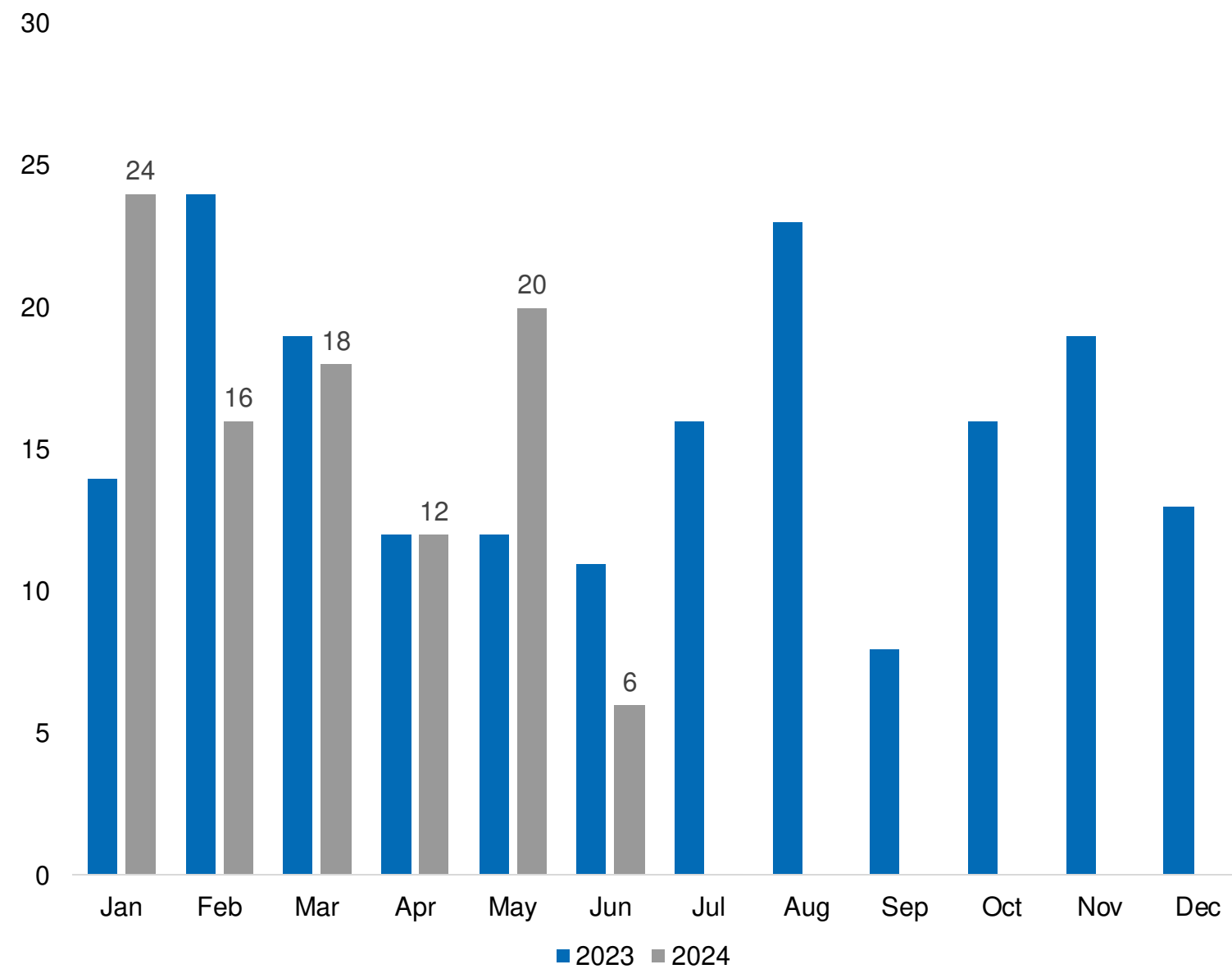


Source: Moodys, BLS, Newmark Research

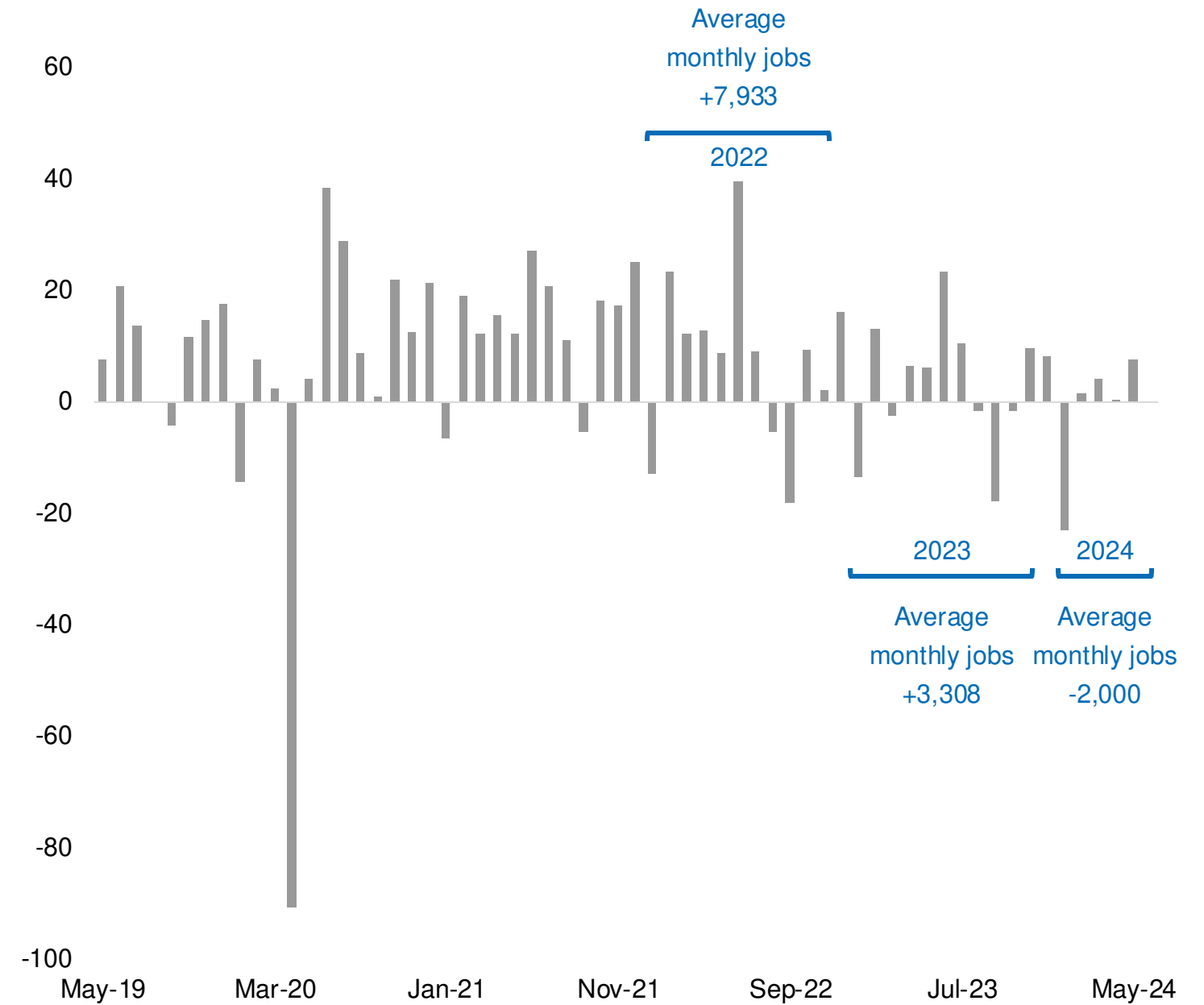
Biotech Sector Layoffs Persist

Nearly 100 biotech companies announced layoffs during the first six months of the year, putting the sector on track to match last year's total of 187 announcements. Given the weakened labor market conditions, average monthly gains have turned into losses. Sector headwinds are likely to continue affecting labor markets throughout the remainder of 2024.

Number of Life Science Companies Announcing Layoffs



Monthly Change in Life Science Employment

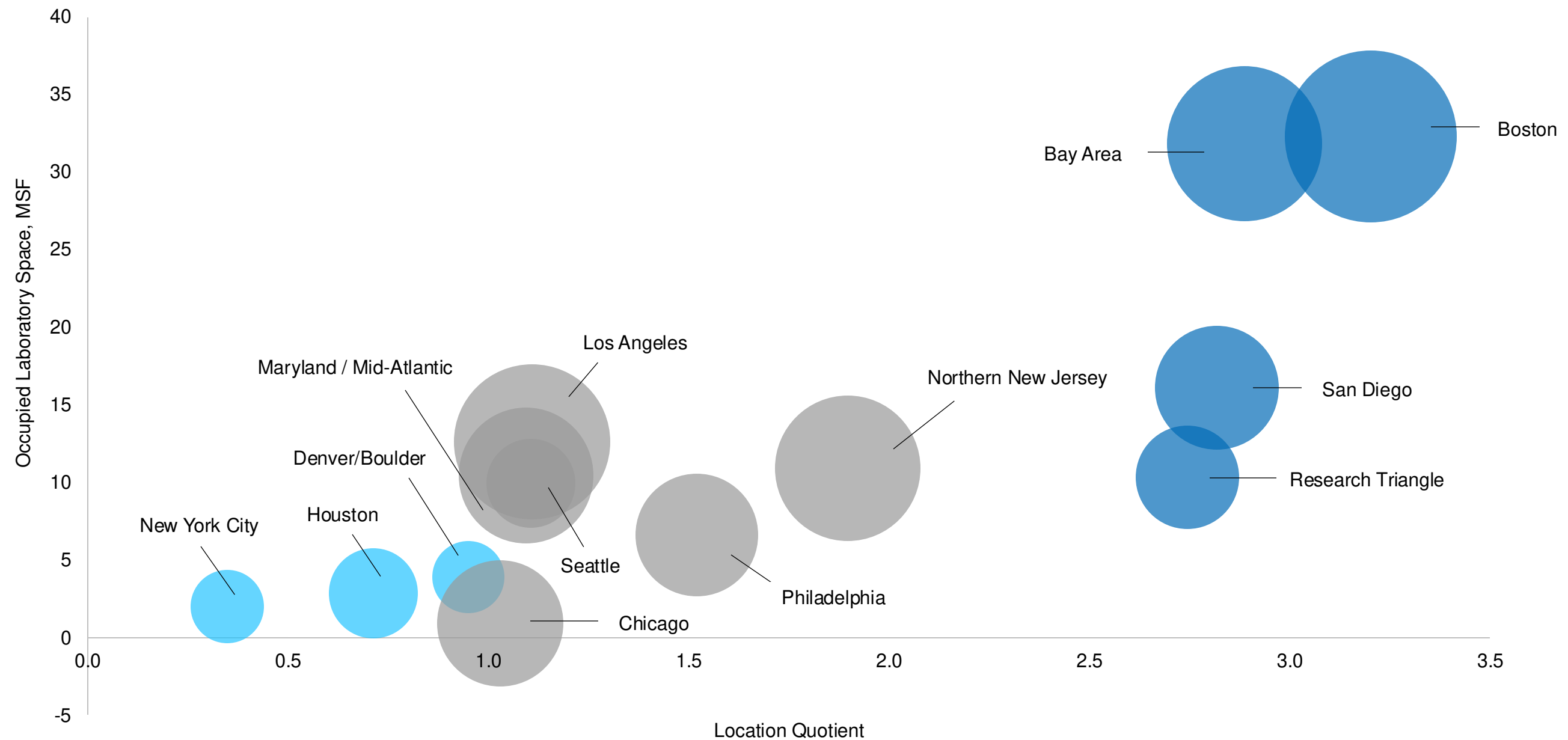


Source: Fierce Biotech, Moodys, Newmark Research

Key Hubs Maintain High Occupation Density

The top four life science markets boast the highest concentrations of biotech employment within the U.S. Access to a deep talent pool remains a critical driver of tenant demand and industry growth.

Size and Density of Biotech Employment



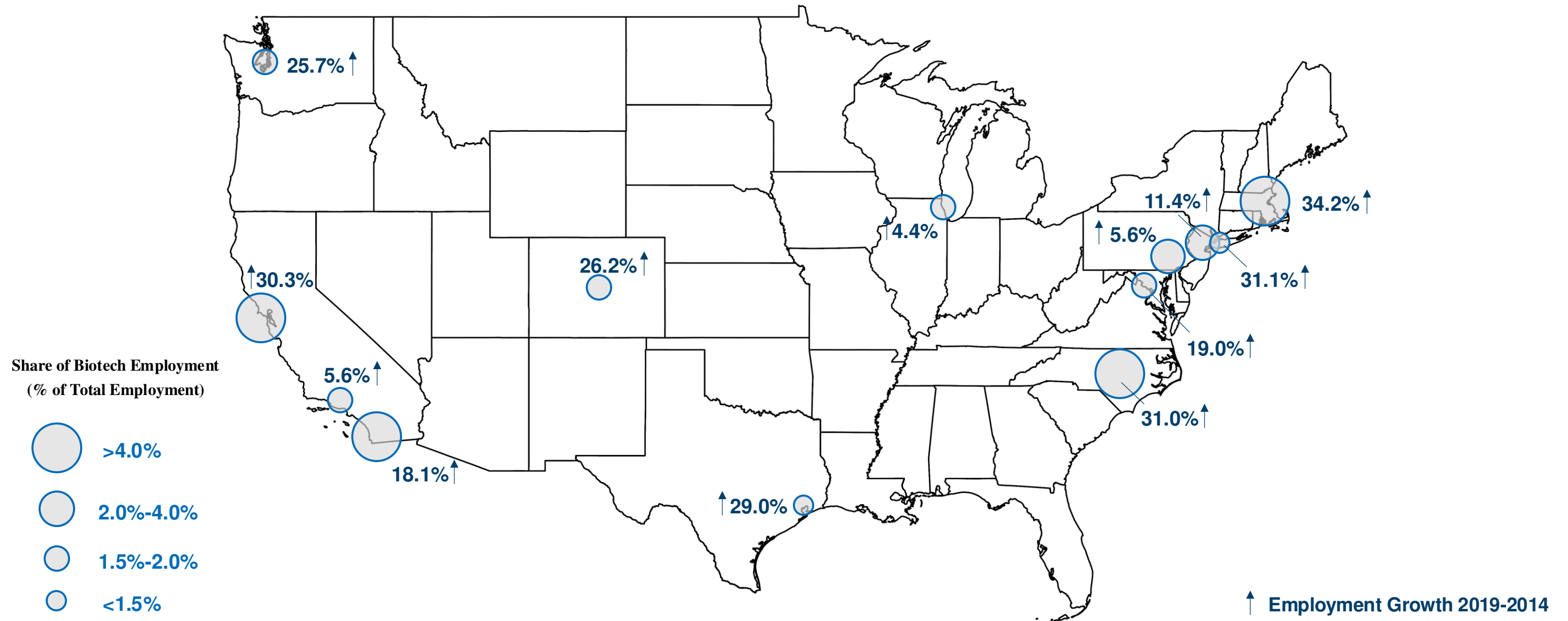
Source: JobsEQ, Newmark Research

Size of bubble represents total biotech employment

Large Markets Also Boast Above-Average Job Gains

Labor market weakness has taken hold in several markets, leading employment growth to fall behind recent historic norms. While quarterly employment gains are abating across the board, job growth is fairing better in the secondary and tertiary markets. The top three life science clusters have posted moderate losses in recent quarters, with slight increases reported among the other 10 regions.

Biotech Employment Concentrations and Historical Growth (2019-2024)

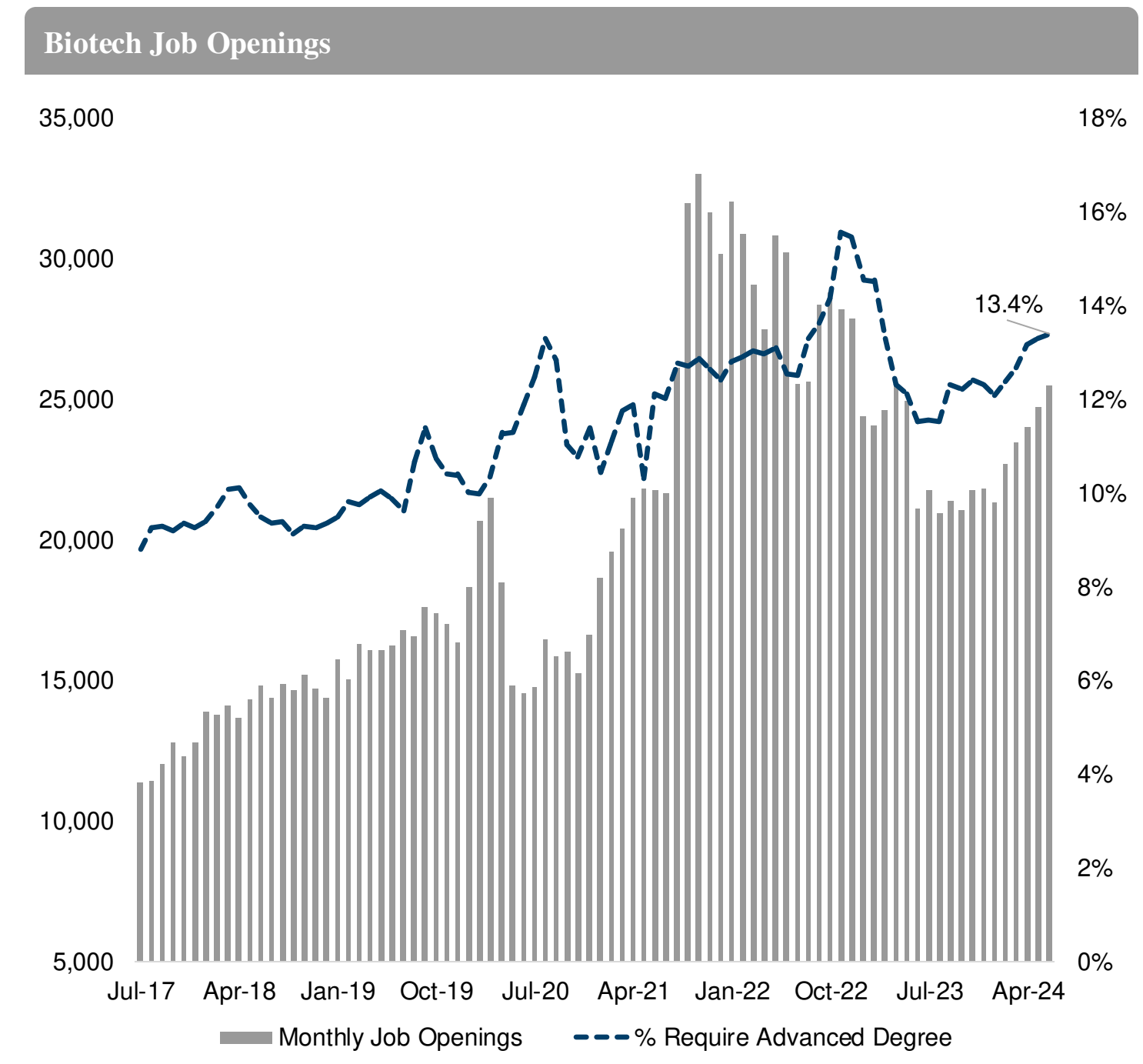
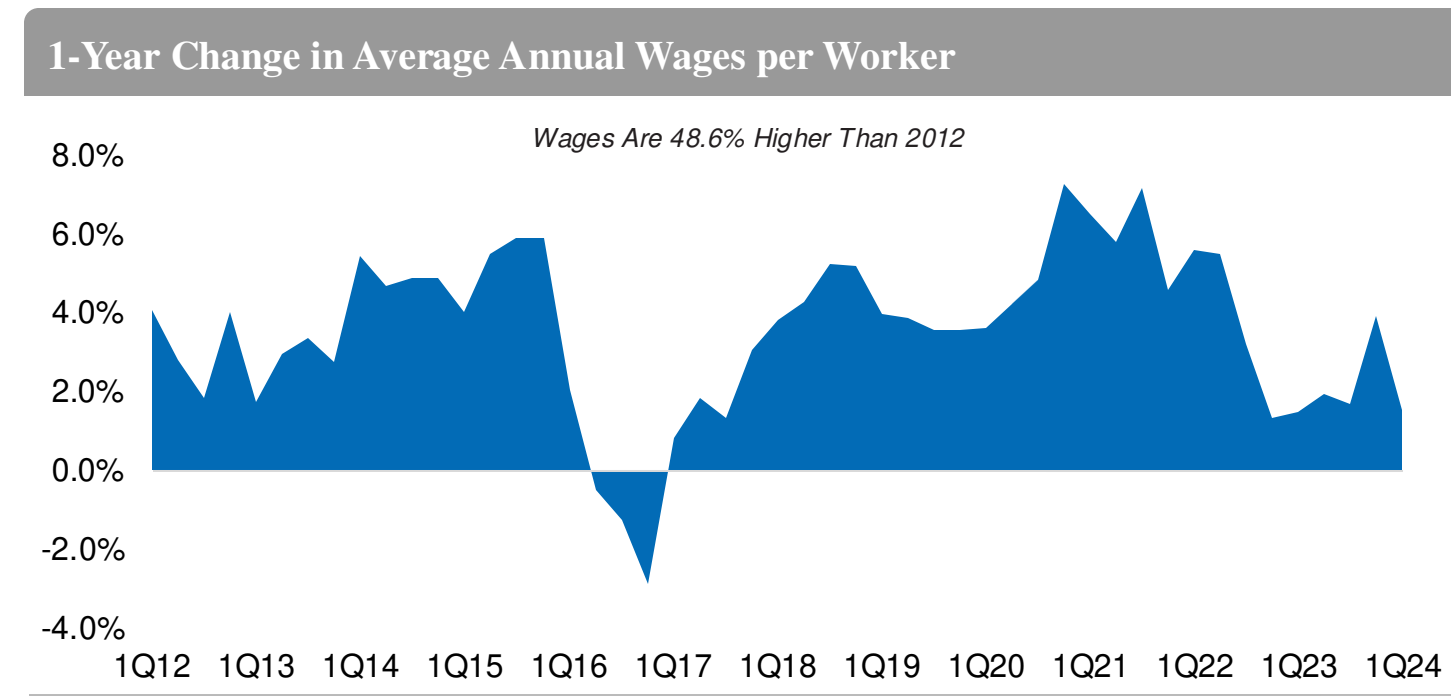


Source: JobsEQ, Newmark Research

Job Openings Have Improved in the Life Science Sector

Despite persistent layoffs, biotech-related job openings increased over the last year and are now 21.6% above the 2023 trough. The share of jobs requiring an advanced degree continued to climb as well, reaching over 13% by the end of the second quarter of 2024. Wage growth is comparatively lower than recent history but is still trending in a positive direction. Labor market weakness could curtail further near-term gains.

1Q24 Ave. Annual Salaries	Biochemists	Biomedical Engineers	Chemists	Medical Scientists
Boston	\$130,900	\$117,400	\$123,000	\$130,000
Bay Area	\$139,400	\$132,400	\$126,000	\$145,400
San Diego	\$128,100	\$121,800	\$112,400	\$123,100
U.S. Average	\$117,800	\$109,700	\$98,200	\$114,800

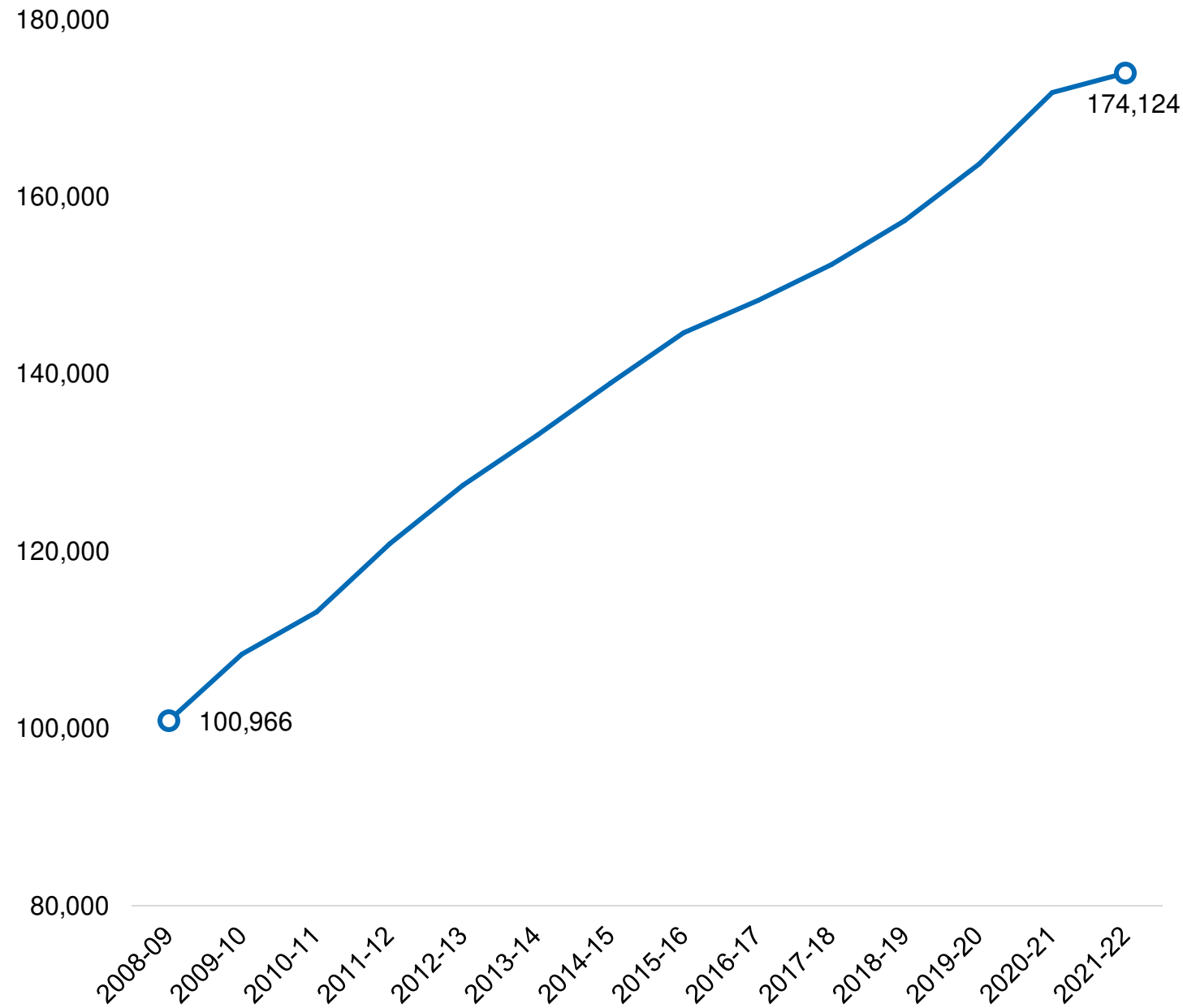


Source: JobsEQ, Newmark Research

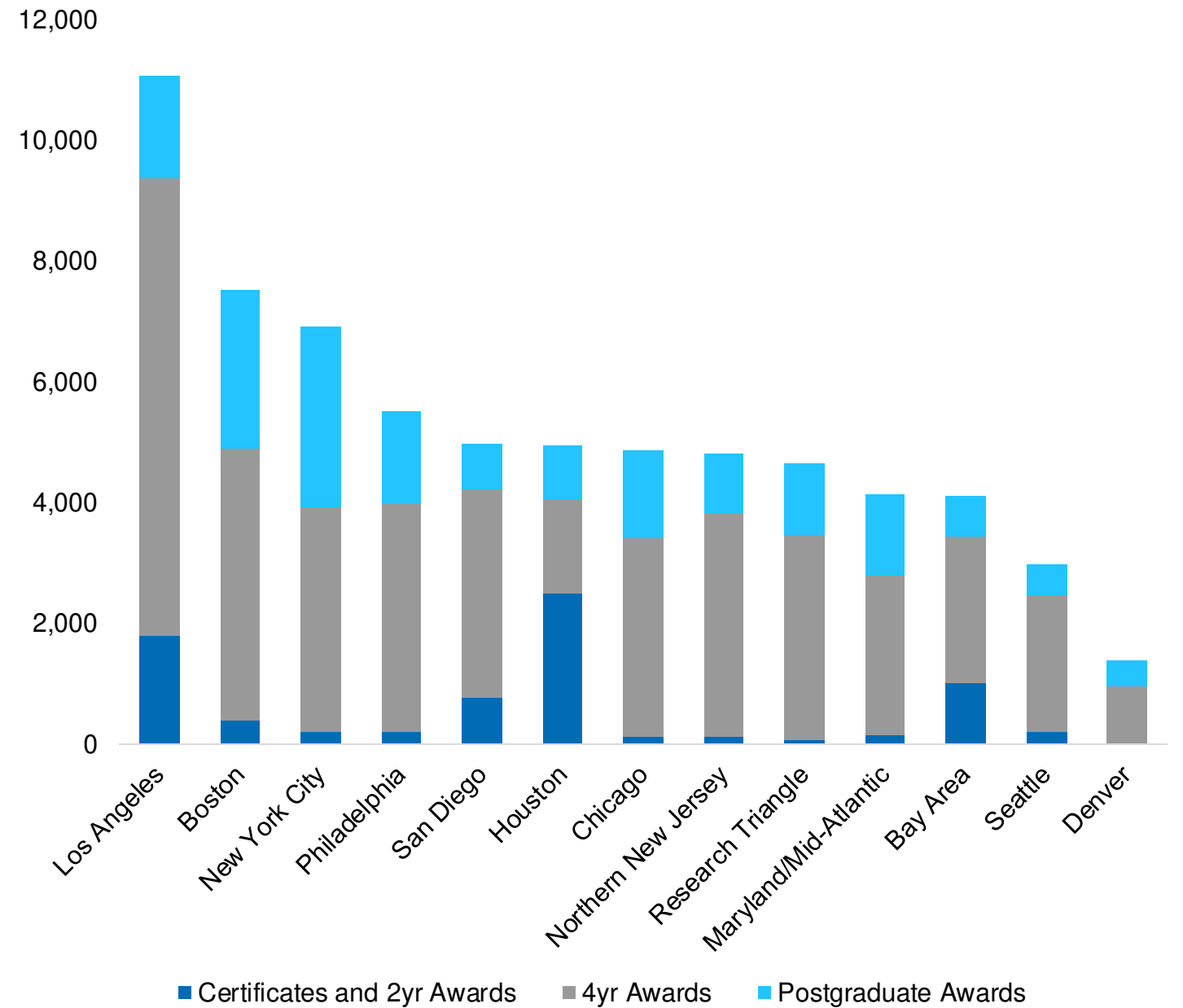
Emerging Talent Remains Critical for Long-term Sector Growth

The number of biological and biomedical science degrees awarded each year continues to grow, increasing by 70.0% since 2008. The most life science-related degrees are being awarded in Los Angeles, Boston and New York City, closely aligning with significant tech transfer activity in these areas.

Biological and Biomedical Sciences Degrees Awarded



Life Science-Related Degrees Awarded by Metro

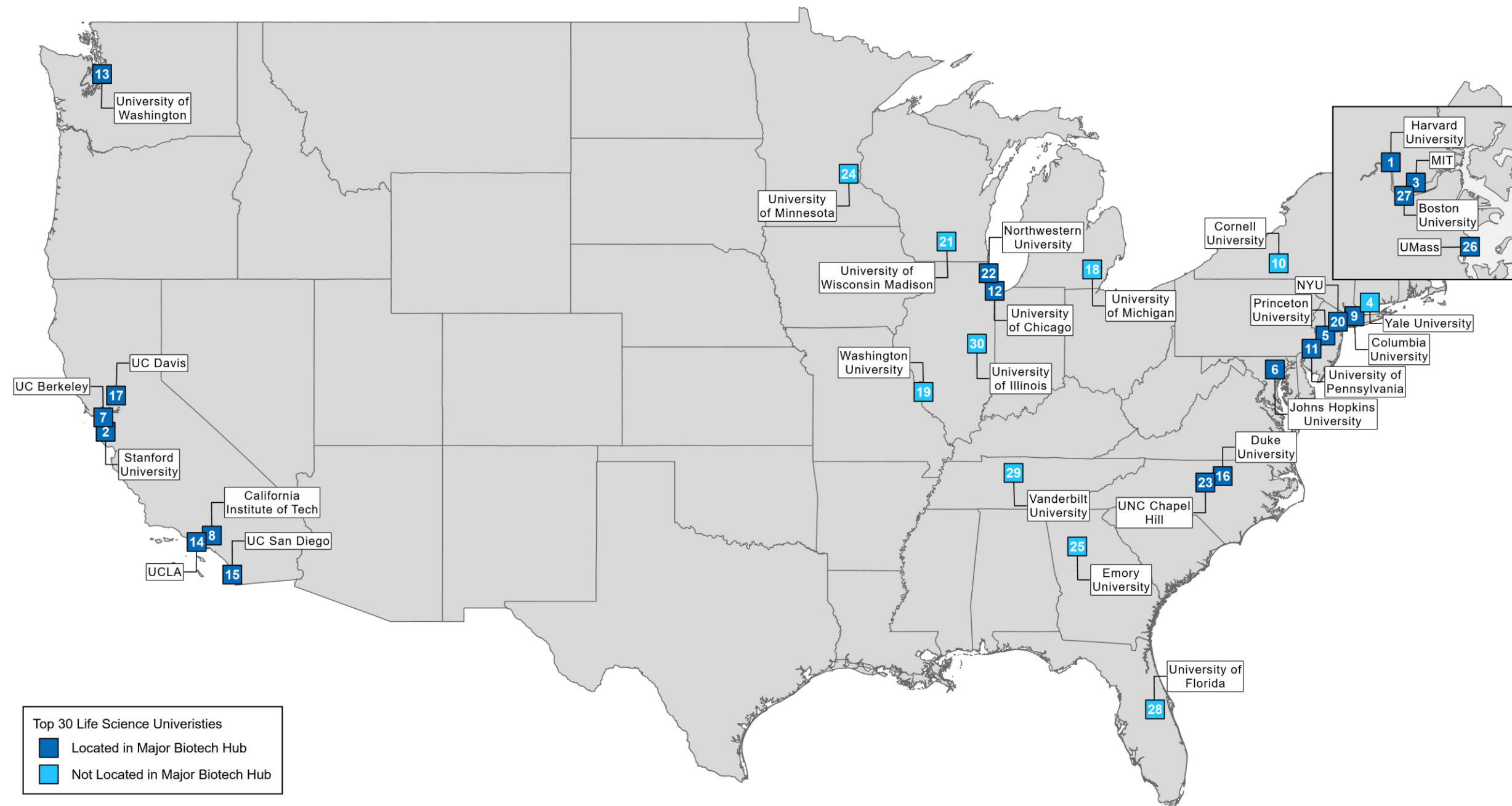


Source: JobsEQ, National Center for Education Statistics, Newmark Research

Colleges and Universities Support the Talent Pipeline

The concentration of top educational institutions is vital to the life science ecosystem. To maintain a steady pipeline of qualified employees, leading markets for life science are also home to many colleges and universities that produce the most life science degrees. Notably, 20 out of the 30 top schools for life science degrees are located in major biotech hubs.

Top 30 Universities for Life Science Degrees



Source: Times Higher Education 2024 Rankings, Newmark Research

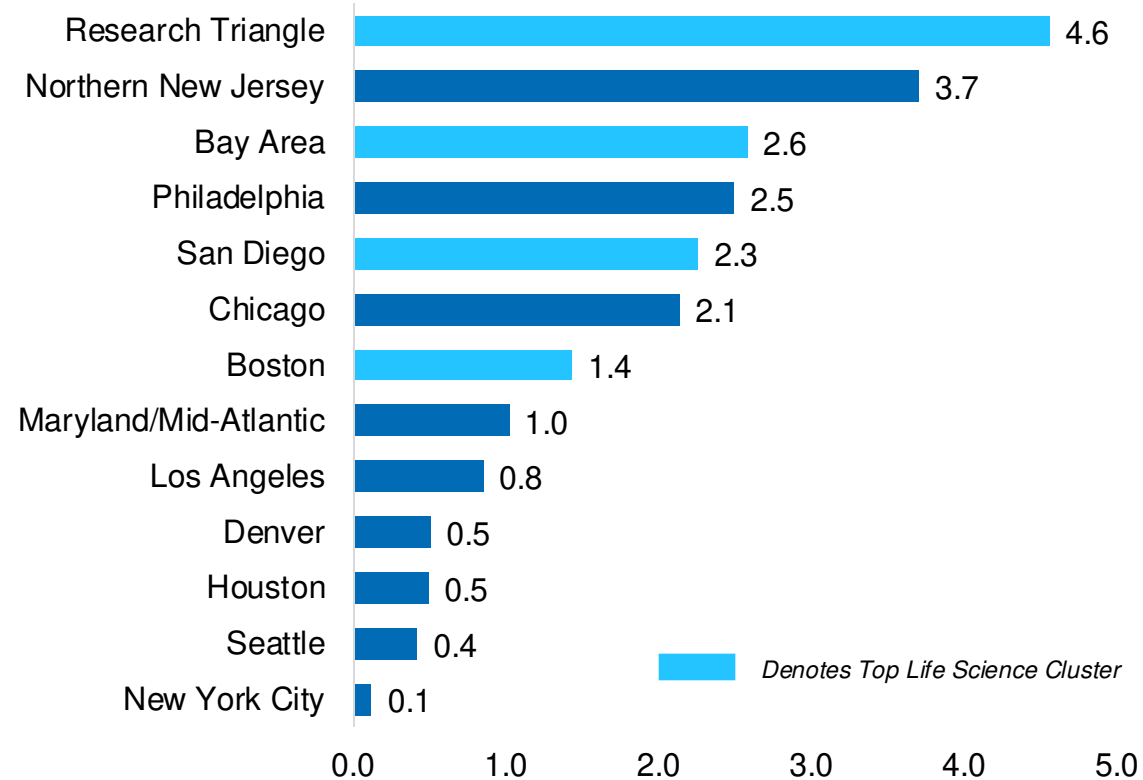
Despite Current Job Losses, the Outlook for Biomanufacturing is Positive

A resurgence in domestic drug manufacturing has pushed employment in this sector to a 30-year high. While Northern New Jersey has the highest number of jobs, the Research Triangle holds the highest concentration of jobs among the top life science markets. Across the U.S., biomanufacturing employment peaked in May of 2023 and ended the year 1.9% below that high point. Prospects for growth remain positive due to recent investments in the onshoring and nearshoring of advanced manufacturing facilities in North America.

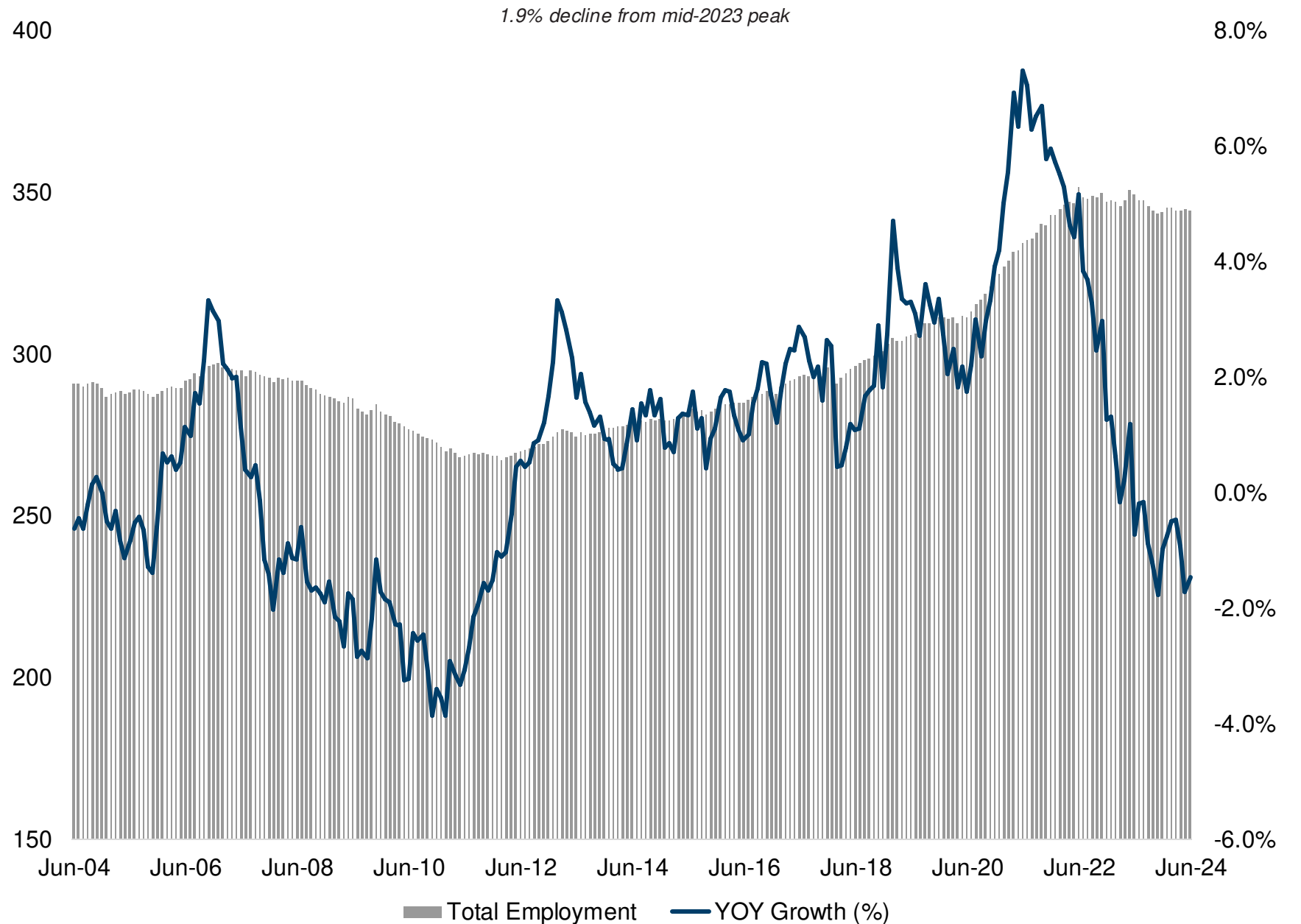
1Q24 Pharmaceutical and Medicine Manufacturing Employment

Northern New Jersey	27,438
Chicago	20,891
Philadelphia	15,992
San Francisco	14,149
Los Angeles	11,920

Pharmaceutical and Medicine Manufacturing Location Quotients



Historical Pharmaceutical and Medicine Manufacturing Employment



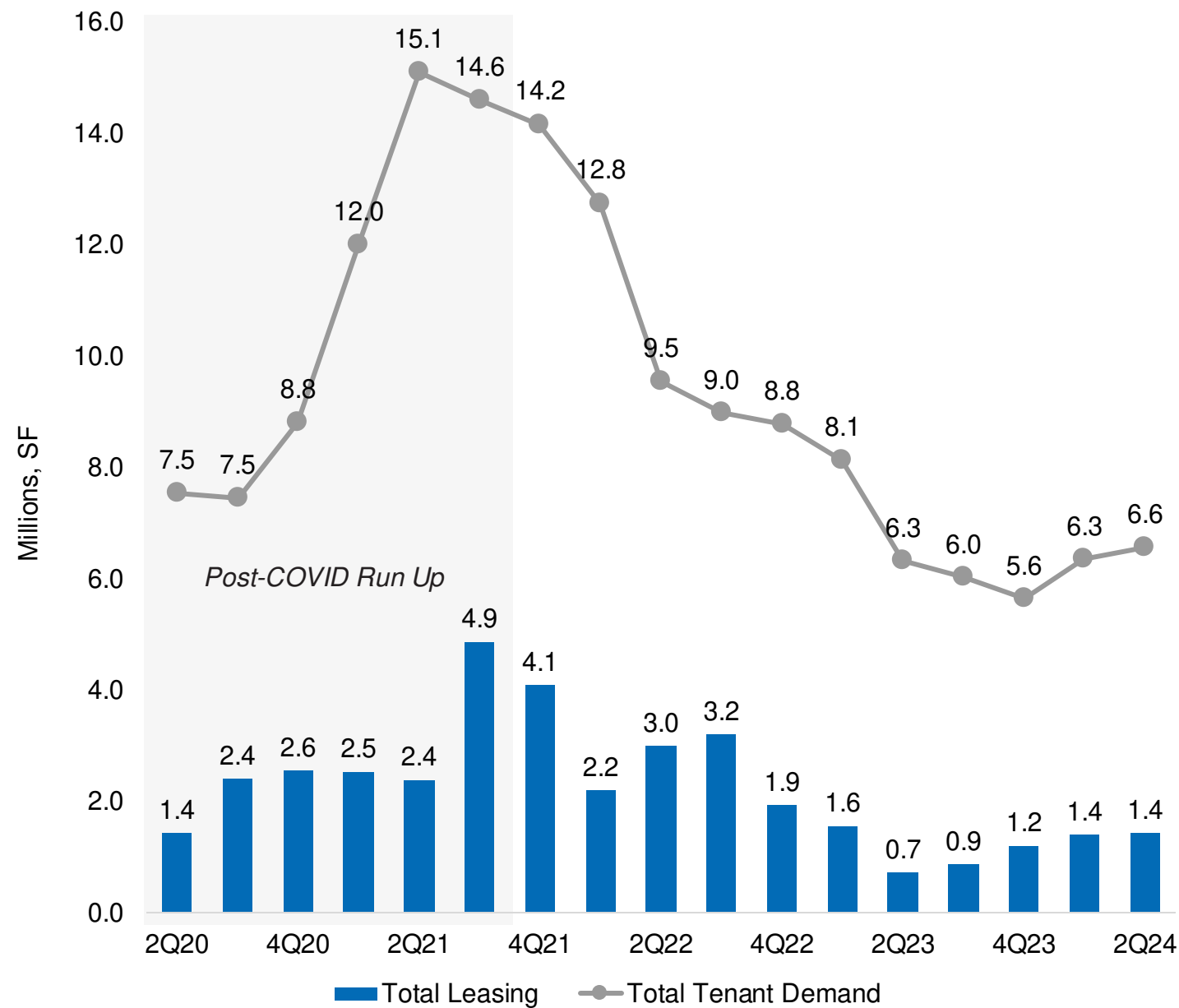
Market Fundamentals



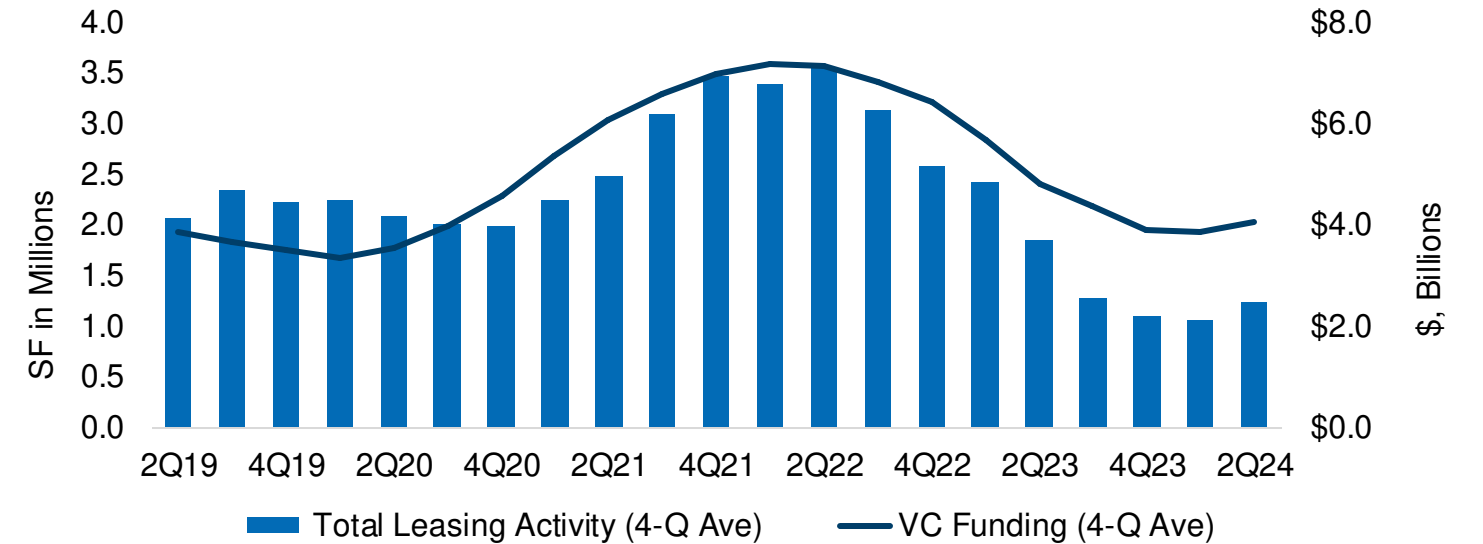
Life Science Demand is Slowly Improving

Active tenant requirements improved modestly during the first half of 2024, reaching 6.6 million SF across the Boston, Bay Area and San Diego markets. Total requirements are 16.6% above year-end 2023 levels, and as a result, leasing volumes are beginning to show signs of growth. However, velocity remains well below the 2021 peak, averaging 1.4 million SF of executed leases per quarter in 2024.

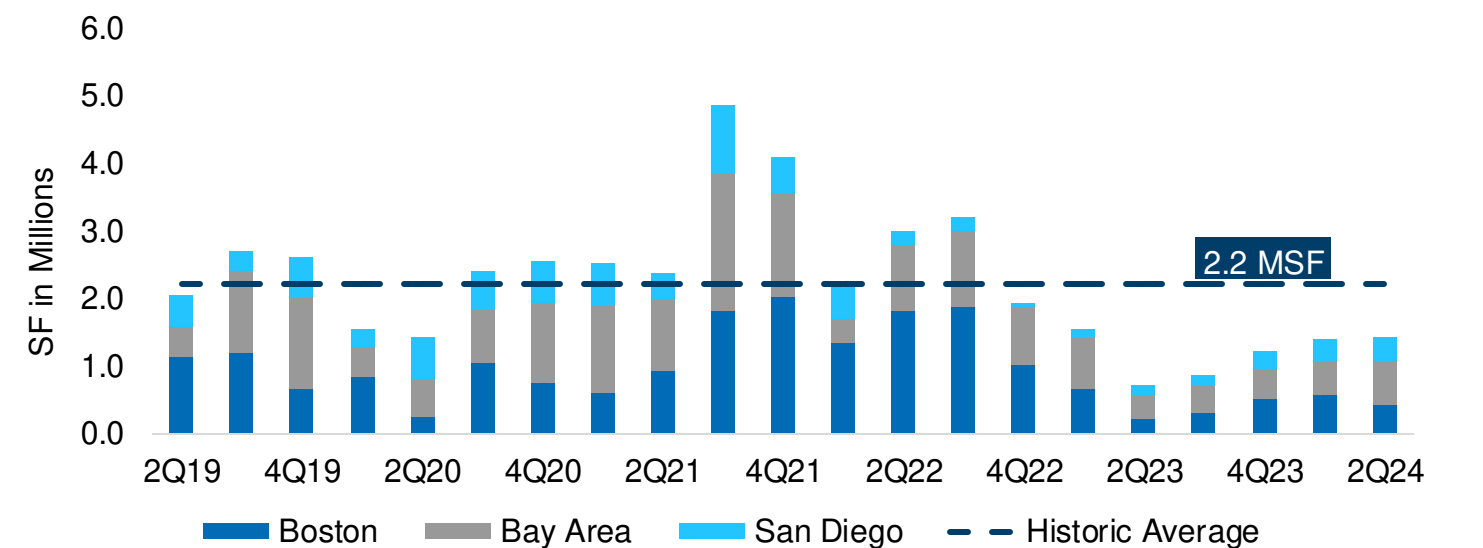
Historical Active Tenants in the Market and Leasing Activity



Historical Venture Capital Funding and Leasing Activity



Historical Leasing Activity by Market



Source: Newmark Research
 Note: Data inclusive of Boston, Bay Area and San Diego only. The Bay Area tenant demand data only includes the Peninsula since 2021

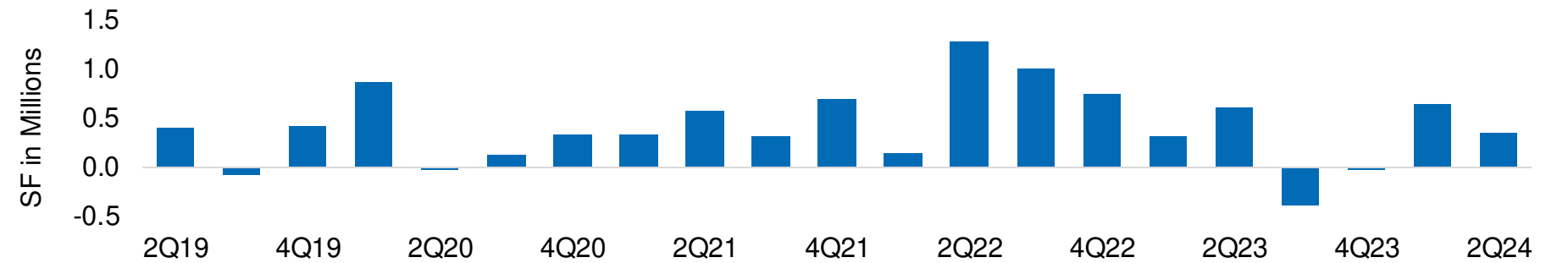
Most Markets have Posted Occupancy Losses in 2024

Only four of the top 13 U.S. life science markets posted positive net absorption in the first half of 2024, with pre-leasing in new construction driving most gains in Boston and San Diego. The Bay Area continues to post the largest occupancy losses, totaling roughly 1.5 million SF during the first and second quarters of 2024.

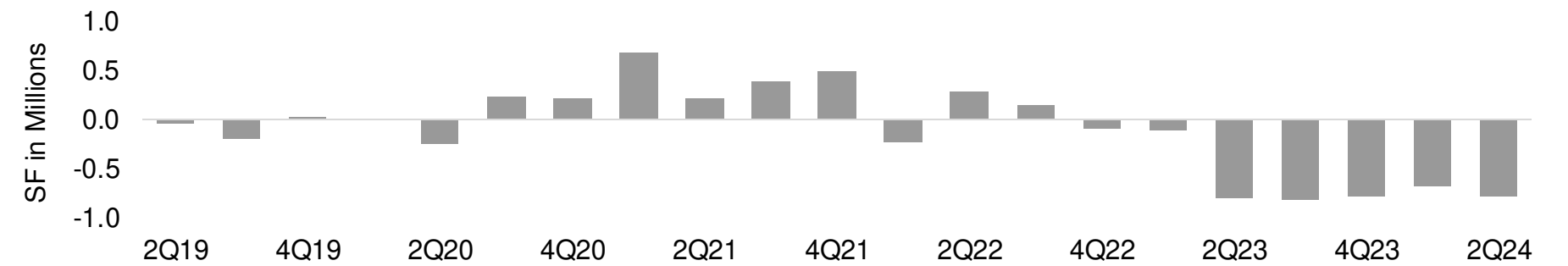
1H24 Net Absorption by Market



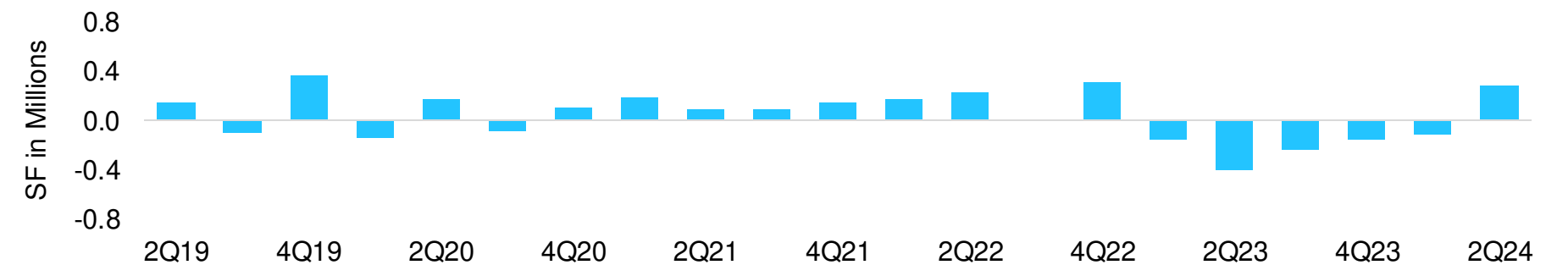
Historical Net Absorption | Boston



Historical Net Absorption | Bay Area



Historical Net Absorption | San Diego

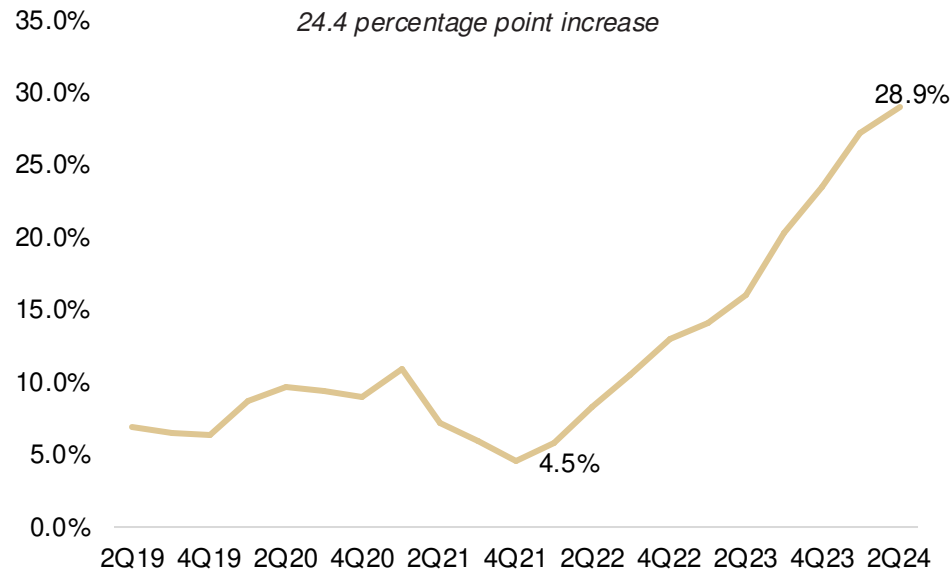


Source: Newmark Research

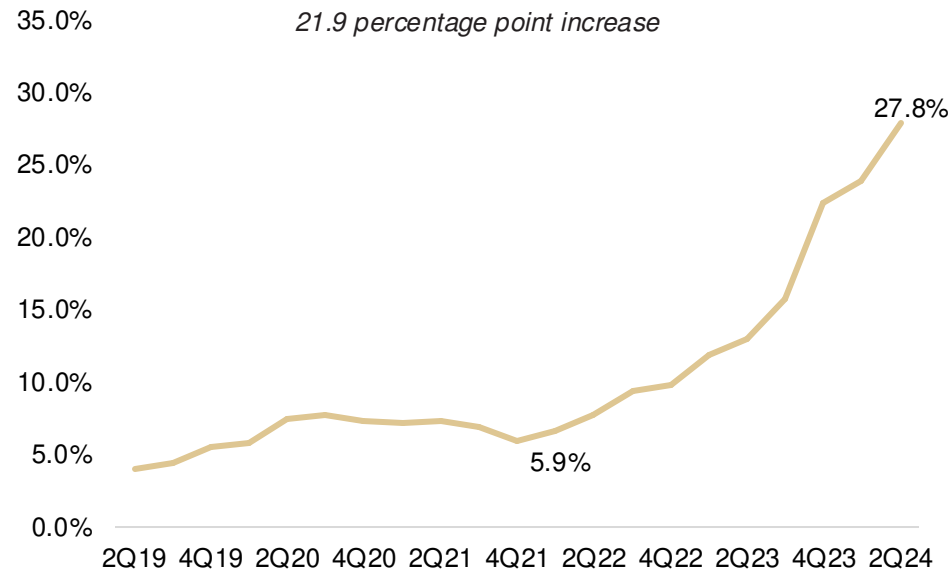
Boston Continues to Lead the Market Correction

Laboratory availabilities within the top three U.S. life science clusters have been rising sharply since late 2021 as supply-side pressures weigh further on market fundamentals. Although pricing has nearly doubled over the last five years, growth has slowed throughout the past 24 months, and rent losses have emerged across the board.

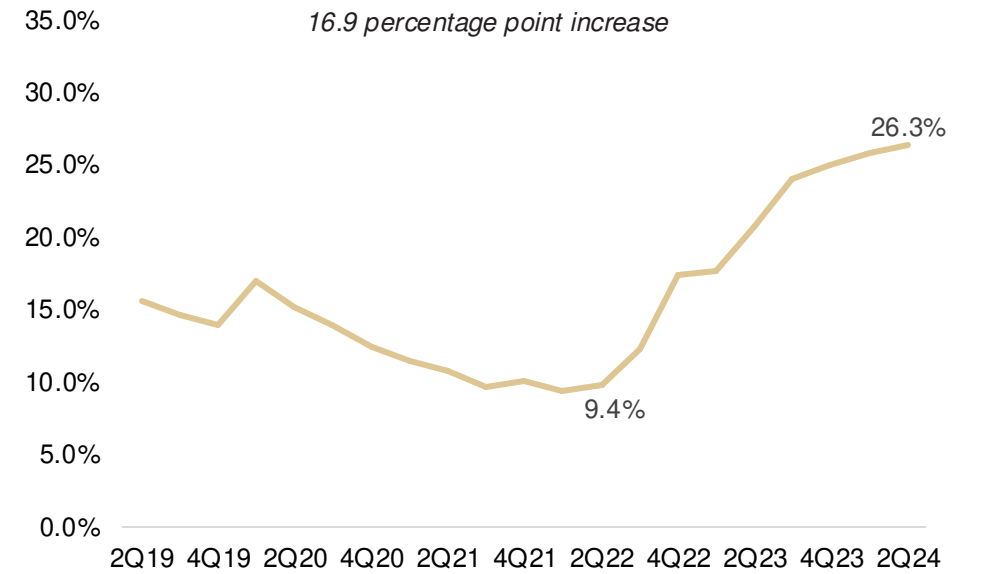
Boston Availability Rate



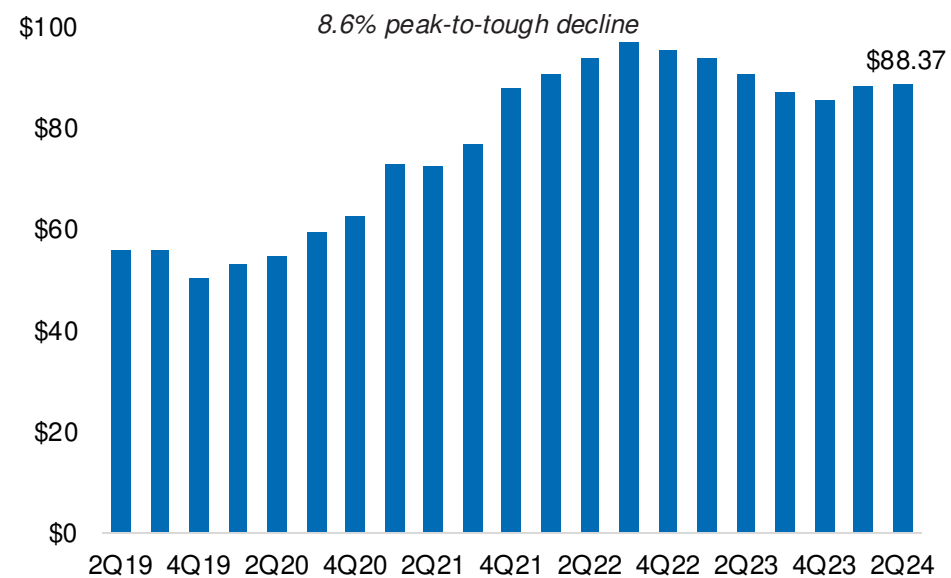
Bay Area Availability Rate



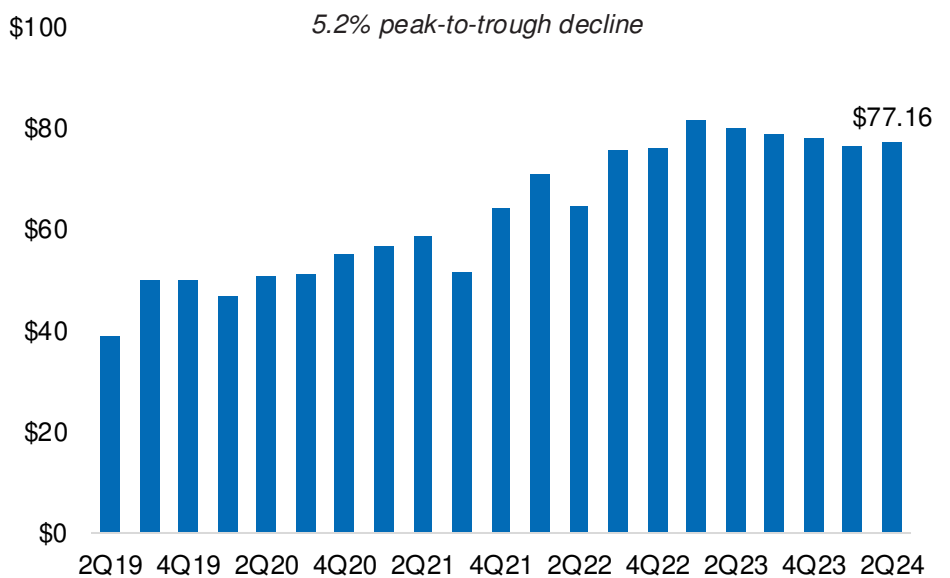
San Diego Availability Rate



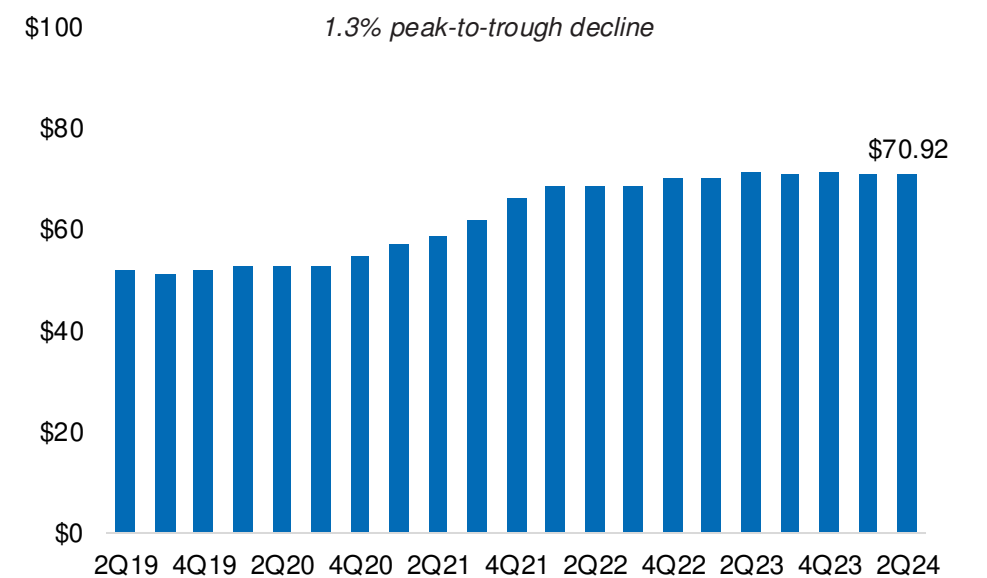
Boston Laboratory Asking Rents (\$/SF)



Bay Area Laboratory Asking Rents (\$/SF)



San Diego Laboratory Asking Rents (\$/SF)

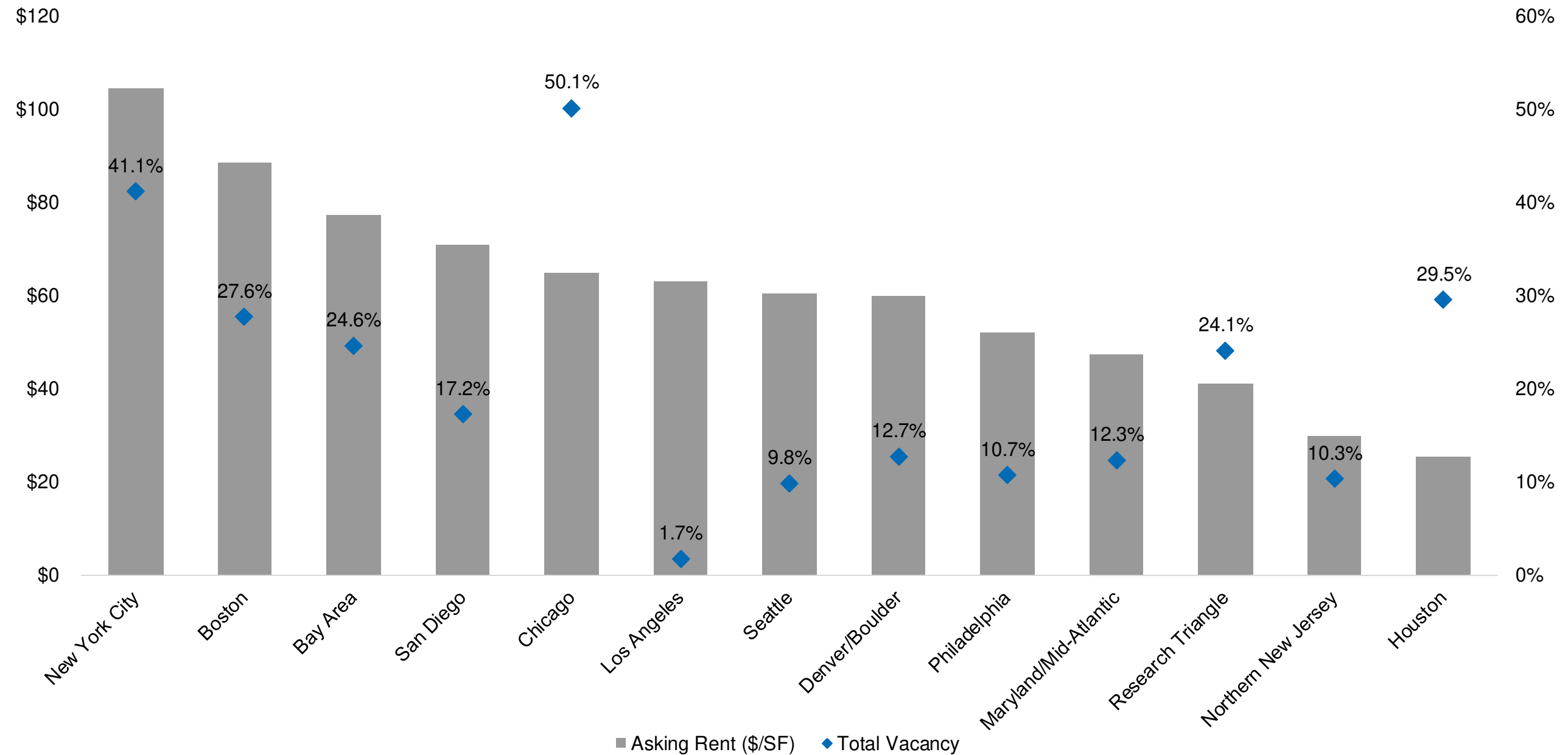


Source: Newmark Research

Fundamentals are Unwinding across Most Markets

As of the second quarter of 2024, only two key life science clusters maintained a sub-10% vacancy rate. Most markets reported significant vacancy increases compared to year-end 2023 as supply and demand continue to diverge. While softening fundamentals have also led to lower asking rents overall, premium pricing on new construction is keeping lease rates elevated in select locations.

2Q2024 Vacancy Rate and Average Asking Rent by Market

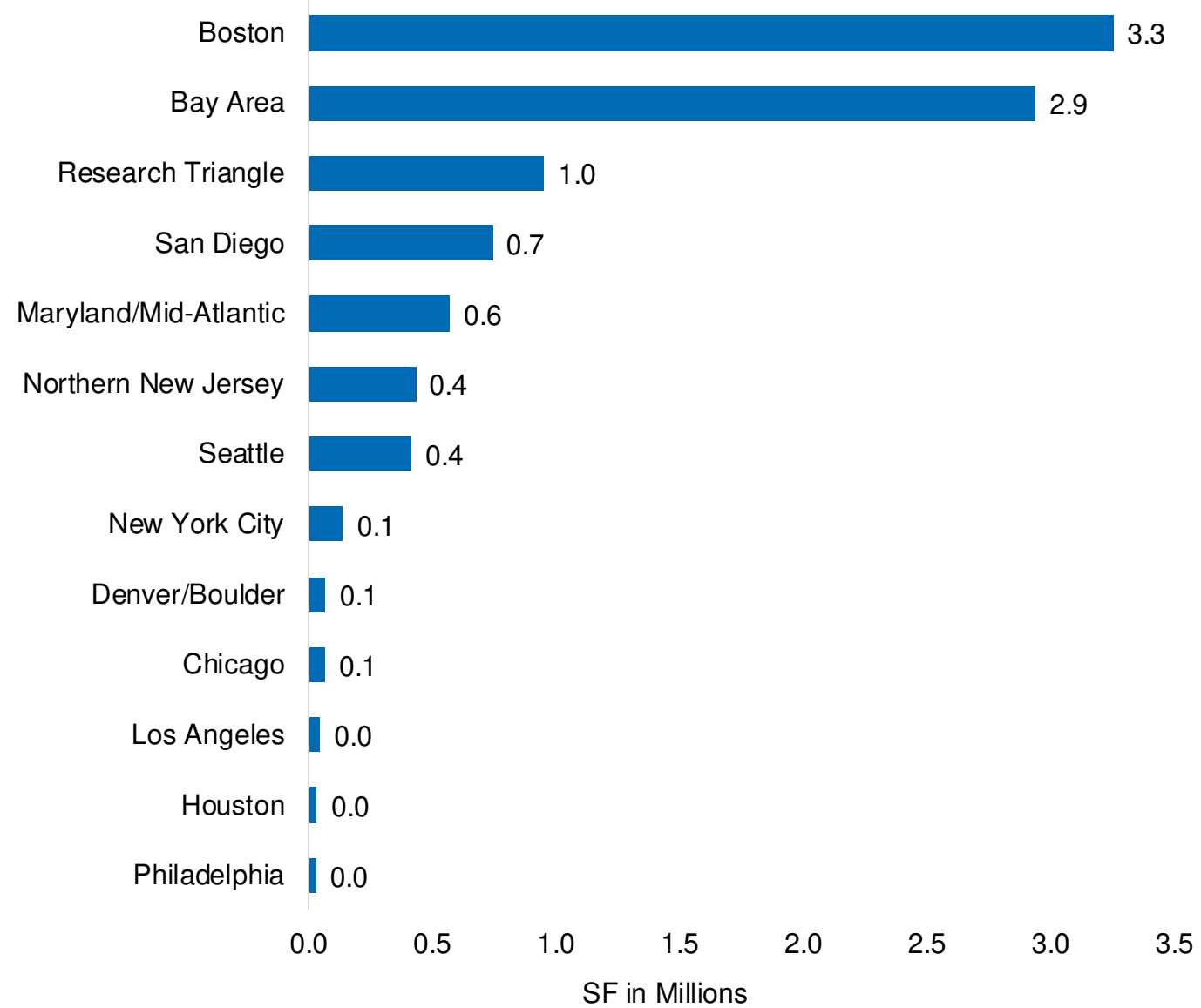


Source: Newmark Research

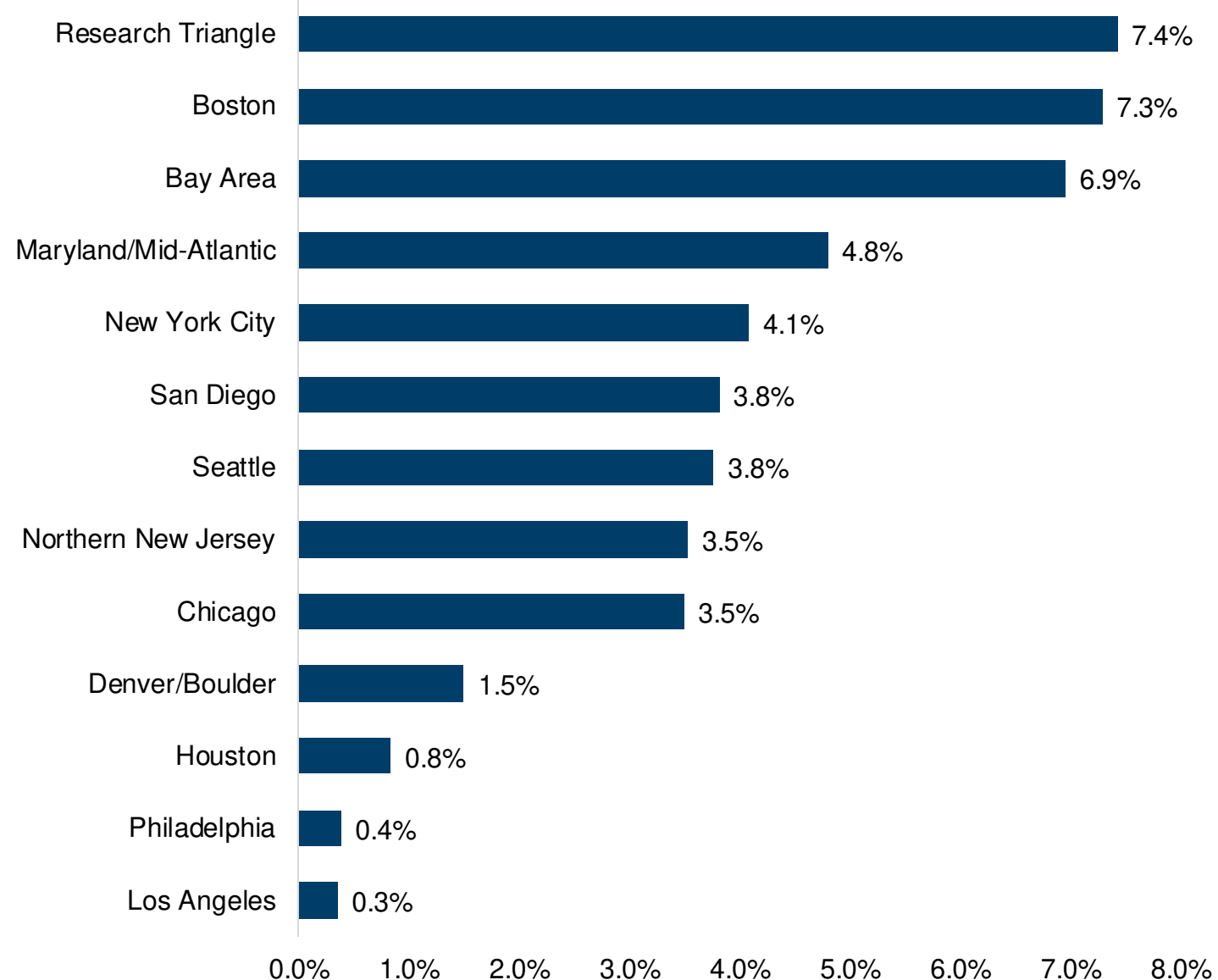
Sublease Availabilities are Rising in Several Markets

Occupiers now have access to more built-out laboratory space than at any point in history, with 9.7 million SF of sublets available as of the second quarter of 2024. The top three life science markets account for nearly 74.0% of the U.S. sublease inventory. The Research Triangle has the highest sublease availability as a percentage of existing inventory.

SF of Available Sublease Space by Market



Sublease Availability Rates by Market

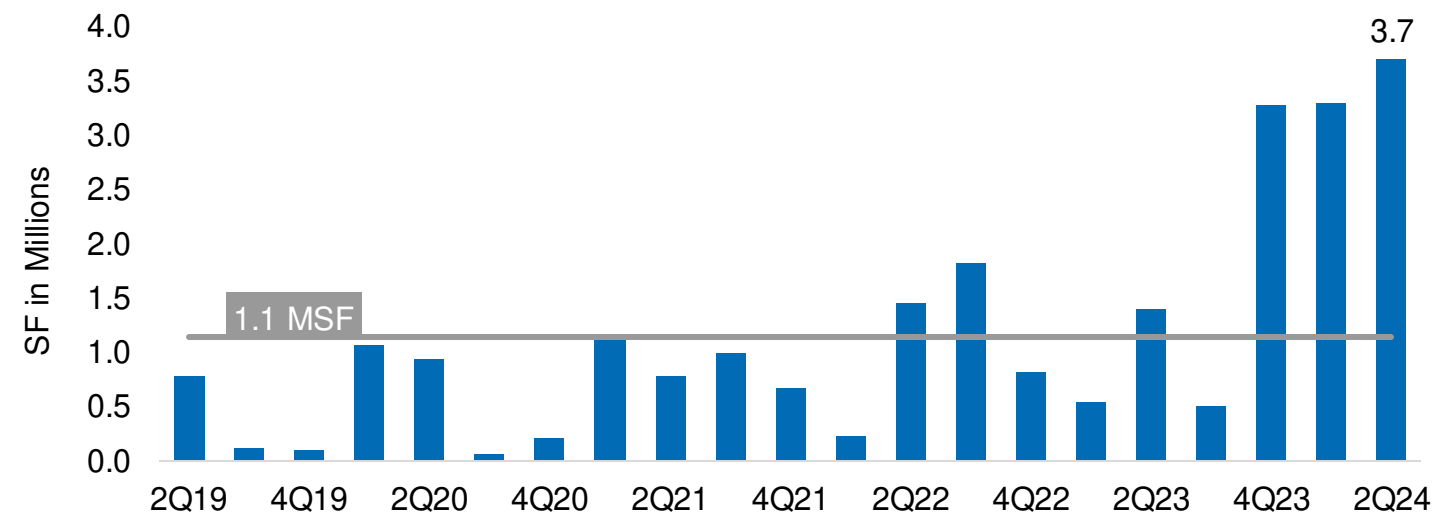


Source: Newmark Research

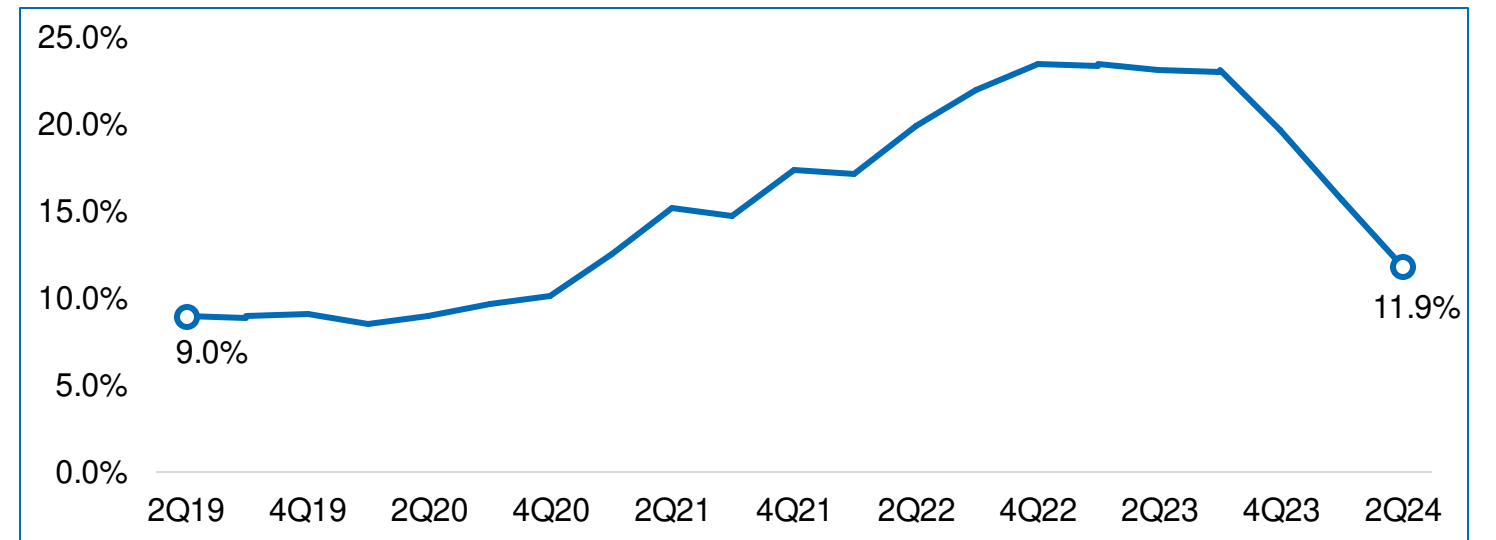
Record Deliveries Will Give Way to More Moderate Construction

The roughly 7.0 million SF of new purpose-built product delivered during the first half of 2024 in the top three U.S. life science clusters represents a historic high, surpassing annual delivery totals for 2023 by a wide margin. While future deliveries remain concentrated in these three main markets—Boston, the Bay Area, and San Diego, which account for 79% of the square footage currently under construction—developers are also active in secondary regions.

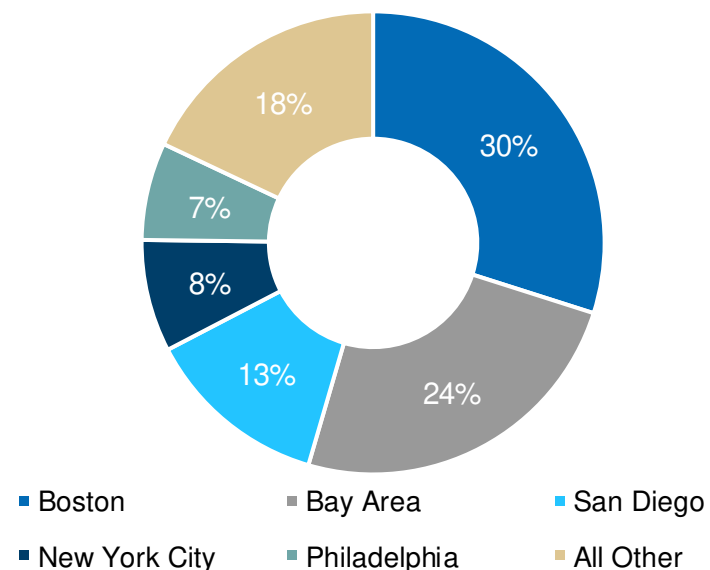
SF of Purpose-Built Laboratory Space Delivered*



SF Under Construction a % of Existing Laboratory Inventory*



Share of SF Under Construction



Key Laboratory Developments

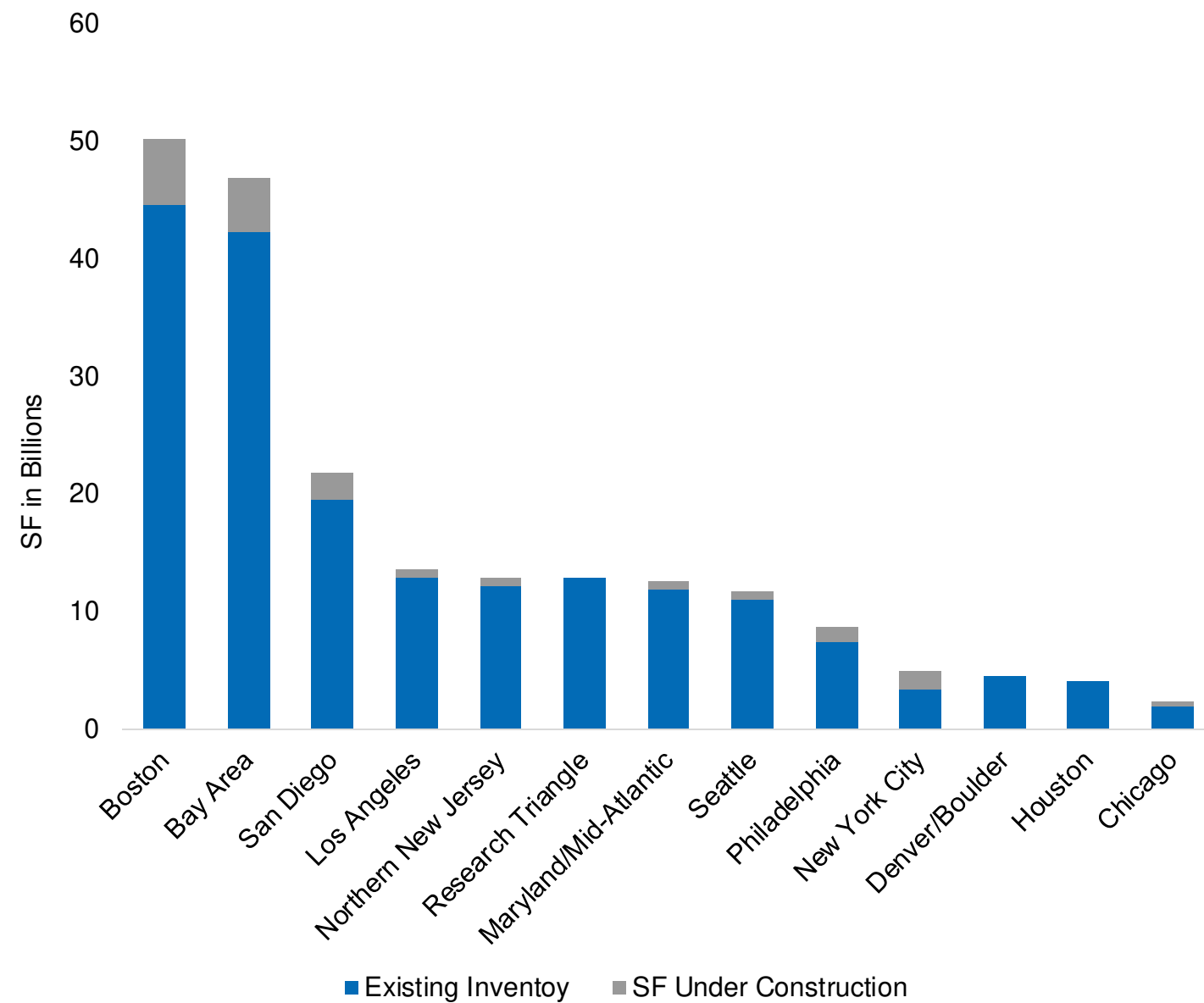
60 Guest Street	One Milestone	ELCO Yards	The Landing	Pacific Center
				
Boston Urban Edge	Boston Urban Edge	Redwood City	Burlingame	Sorrento Mesa
350,000 SF	440,000 SF	670,578 SF	503,500 SF	496,000 SF
Lendlease / Ivanhoe Cambridge	Breakthrough Properties / Tishman Speyer	IQHQ	King Street Properties / Helios Real Estate	Sterling Bay
2024	2025	2025	2025	2024

Source: Newmark Research
*Only includes Boston, Bay Area and San Diego

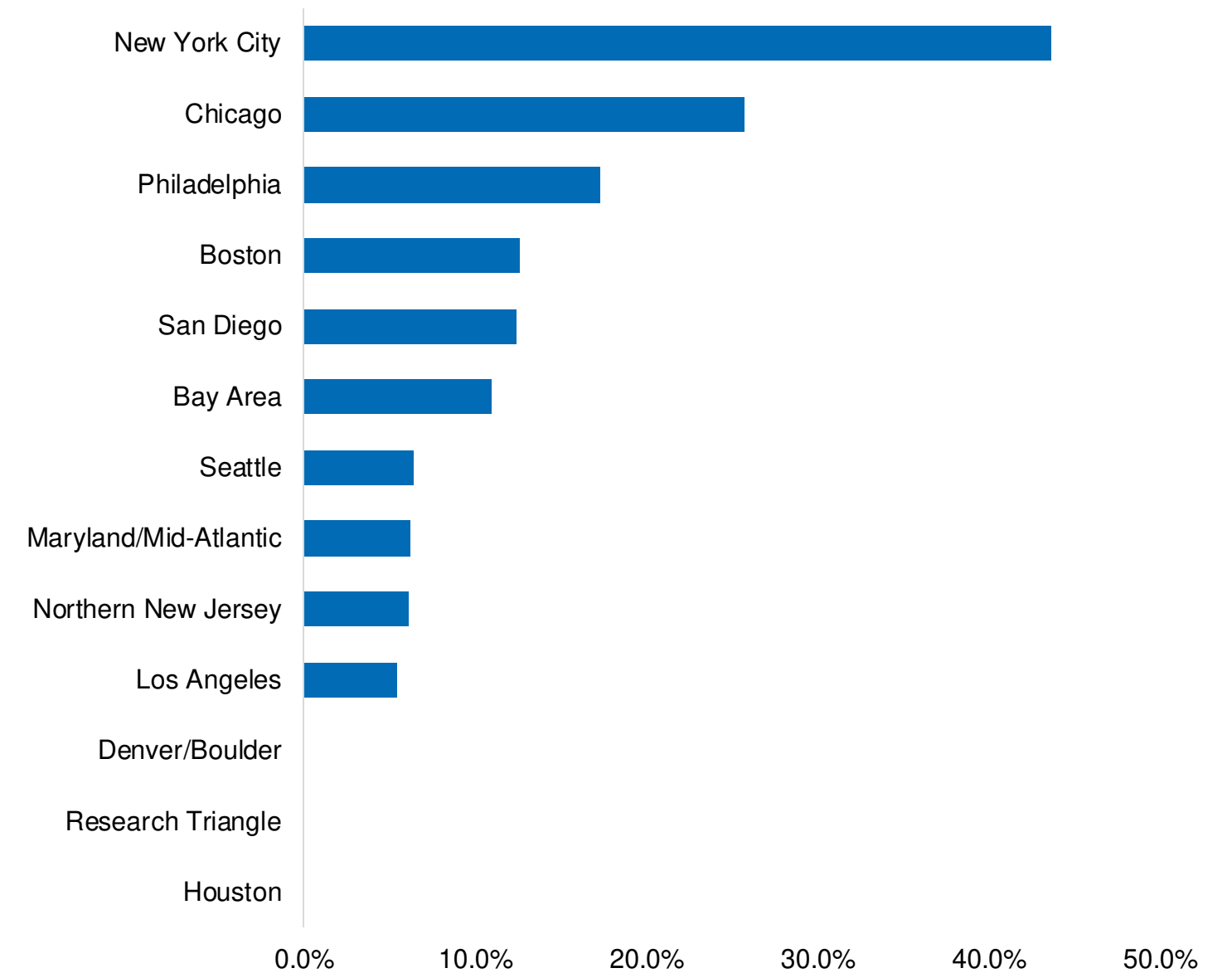
Despite Elevated Deliveries, New Life Science Development Is Abating

With several million SF of new purpose-built lab coming on line in the last six months, the amount of purpose-built laboratory space still under construction is waning. As of the second quarter of 2024, only 18.8 million SF of new supply was underway across the top 13 life science markets. The under-construction pipeline has declined by nearly 26.0% since the end of 2023.

Existing Inventory and SF of Purpose-Built Space Under Construction



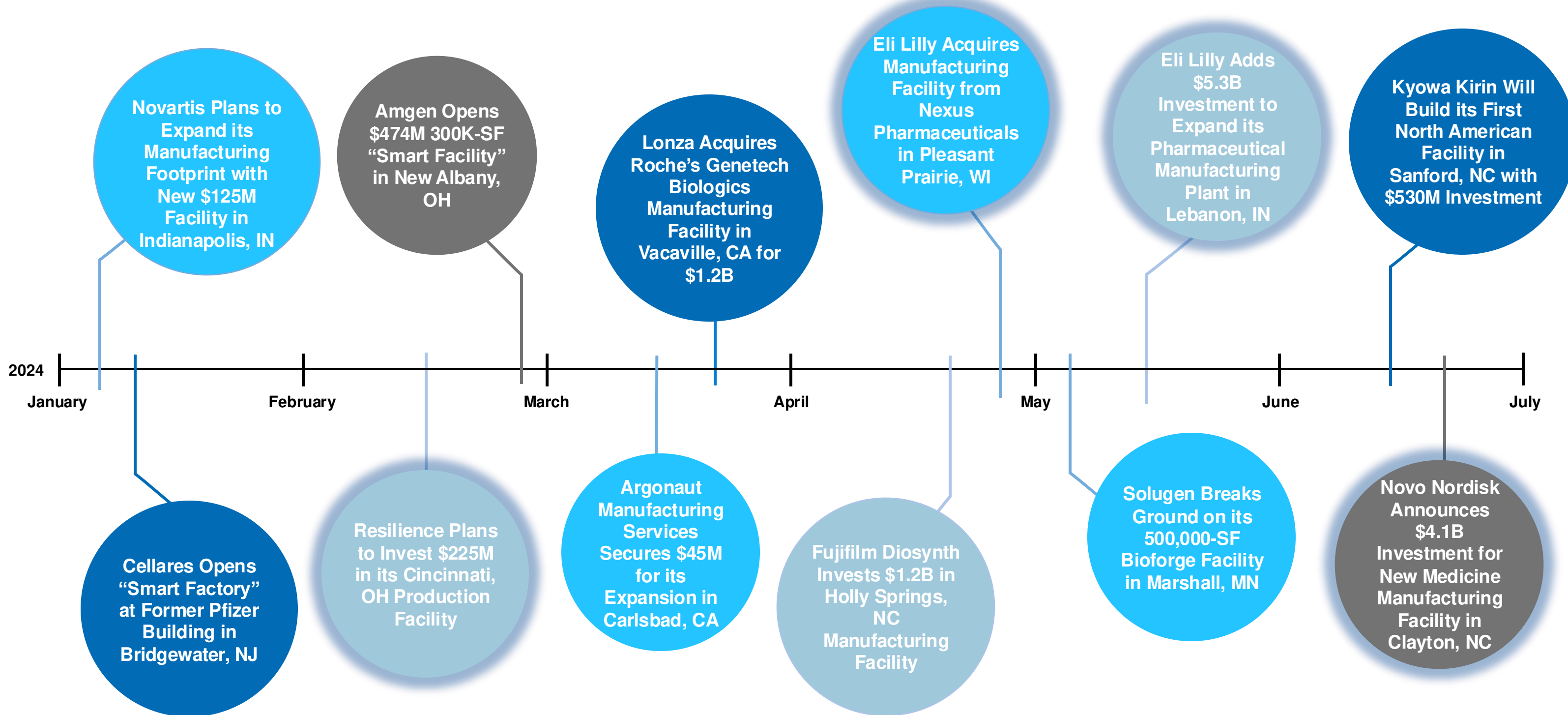
SF Under Construction a % of Existing Laboratory Inventory



Source: Newmark Research

New Biomanufacturing Facilities and Expansions as of Mid-Year 2024

Several major biotech companies, fueled in part by the growing use of GLP-1 drugs, have made substantial investments in new manufacturing facilities across the U.S.



Source: Newmark Research
Shadow Indicates manufacturing facilities that will support GLP-1 manufacturing capacity

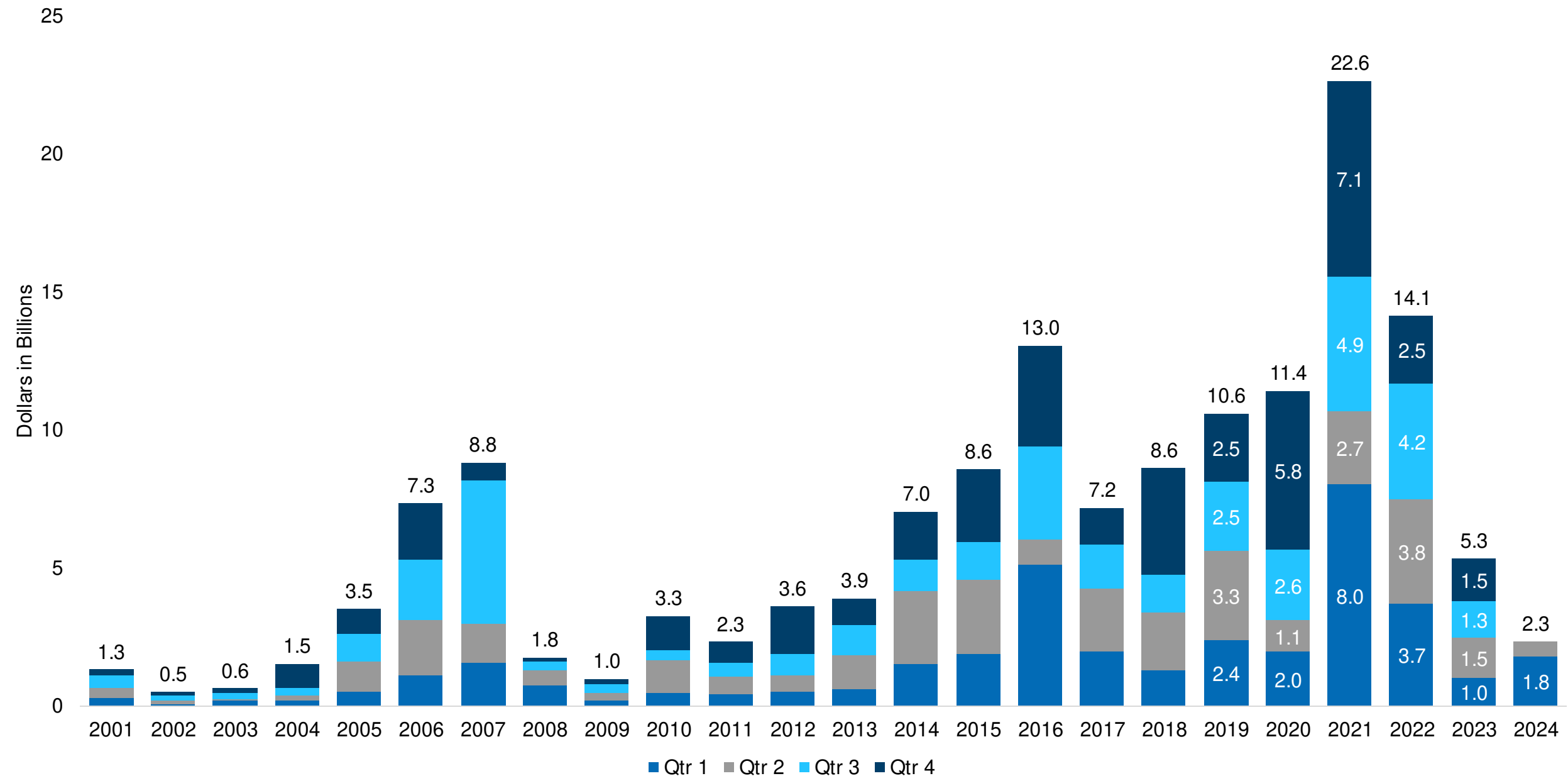
Capital Markets



R&D* Investment Sales Remained Muted in the First Half of 2024

R&D transaction activity totaled \$2.3B in 1H24, down 6% year-over-year. Sales continue to run materially below their pre-pandemic pace; activity was down 47% in 1H24 compared to the 2017-to-2019 average. Cost of capital continues to be a concern, but this is shared by all property segments. More to the point, life science markets continue to work through absorption of both new purpose-built buildings as well as conversions. Investor appetite will begin to recover as prospects for NOI growth improve.

R&D Investment Sales

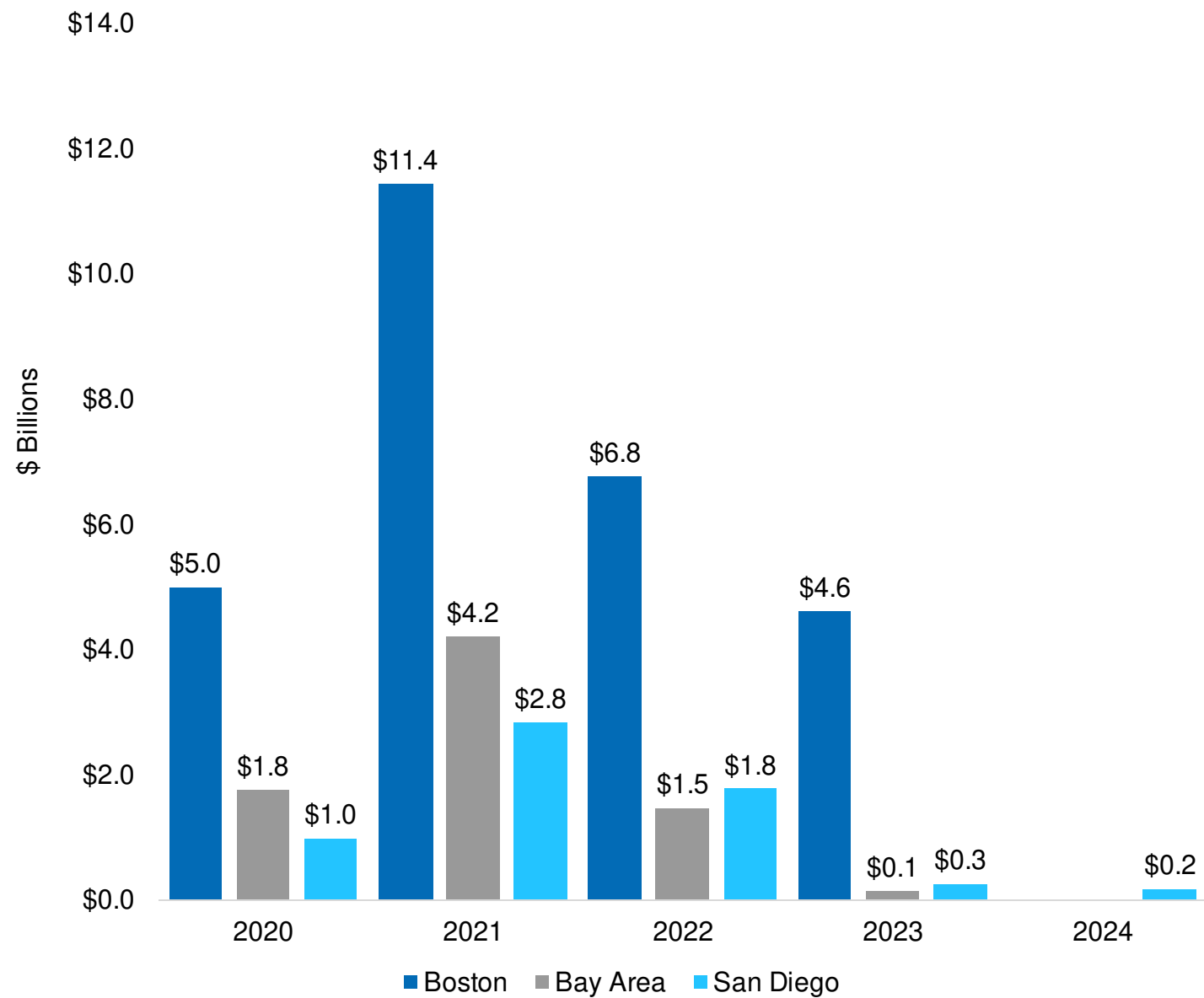


Source: RCA, Newmark Research as of 8/19/2024
 *We use the R&D property subtype as a proxy for Life Science

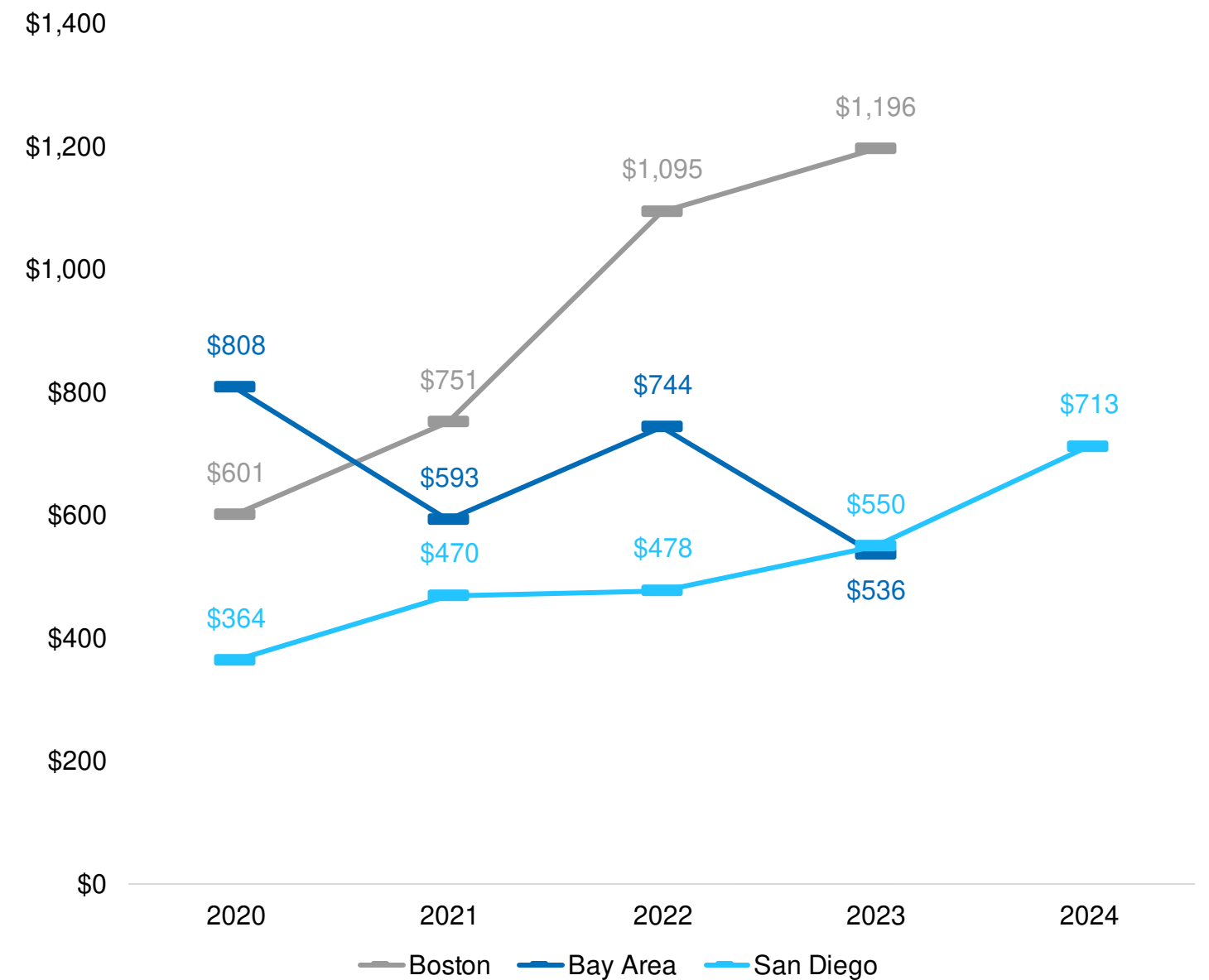
Sales Transactions for Life Science Assets are Limited

According to proprietary analysis from Newmark, \$41.4 billion in life science-related assets changed hands in the nation's top three biotech hubs from 2020 through the first half of 2024, with 2021 marking the height of activity. Despite such limited deal volume, pricing on properties that are trading remain elevated as buyers focus on core strategies and locations.

Total Life Science-Related Investment Sales: Top 3 Markets



\$/SF of Life Science Sale Transactions: Top 3 Markets

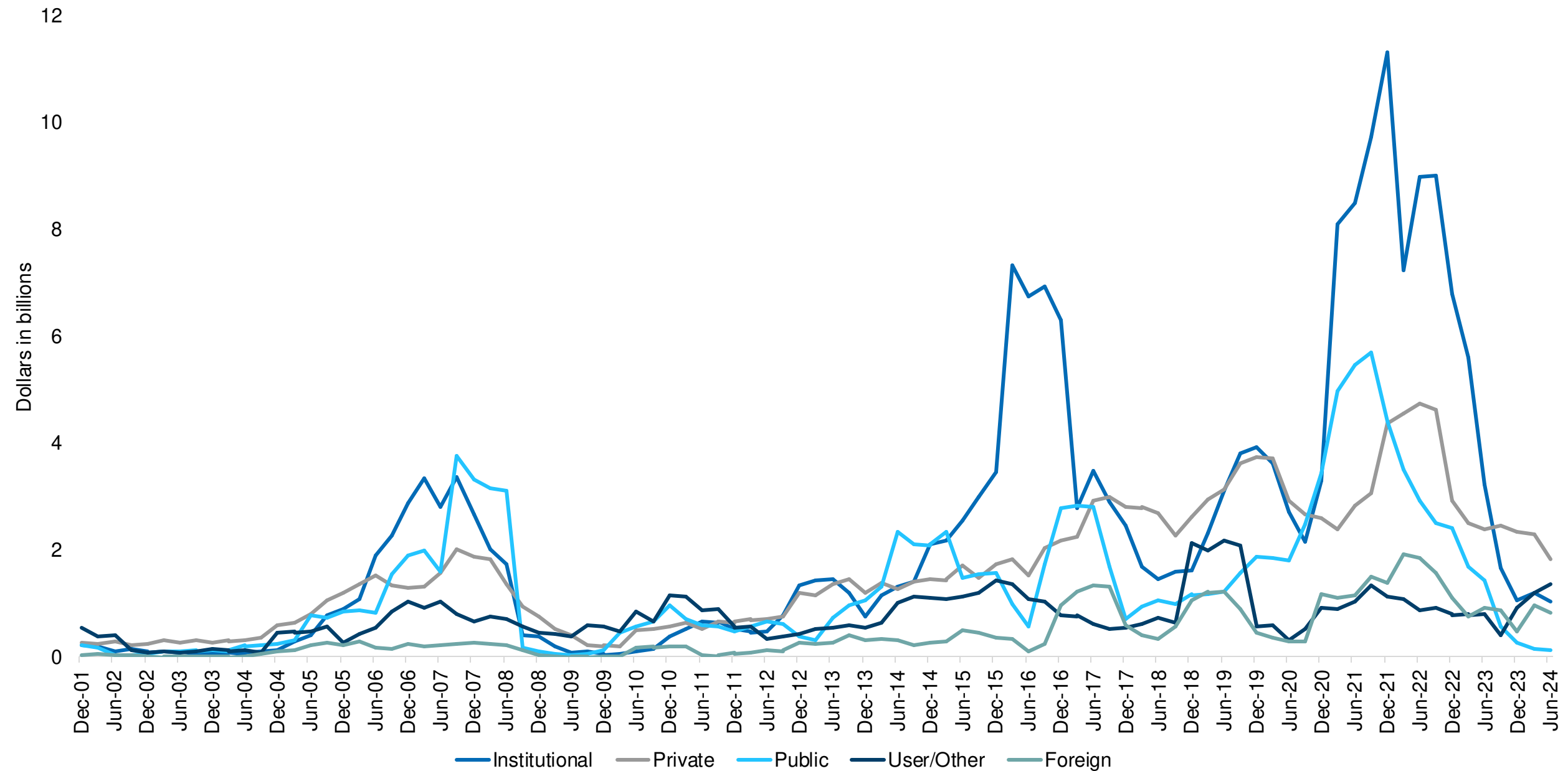


Source: Real Capital Analytics, Newmark Research

Most Capital Groups Remain on Sidelines Though Some Occupiers Taking Advantage

Institutional and REIT investor demand drove the acquisitions to their 2021 peak; however, since then these groups have become very quiet, particularly REITs. Private capital acquisitions seemed to be stabilizing in 2023 at levels commensurate with pre-pandemic but have more recently decelerated. Foreign capital activity has been more stable, which coupled with weak activity from other sectors has driven the cross-border share to a new record (16% in 1H24). User acquisitions have accelerated both in nominal and share terms.

R&D* Acquisition Volume, Rolling 4-Quarter

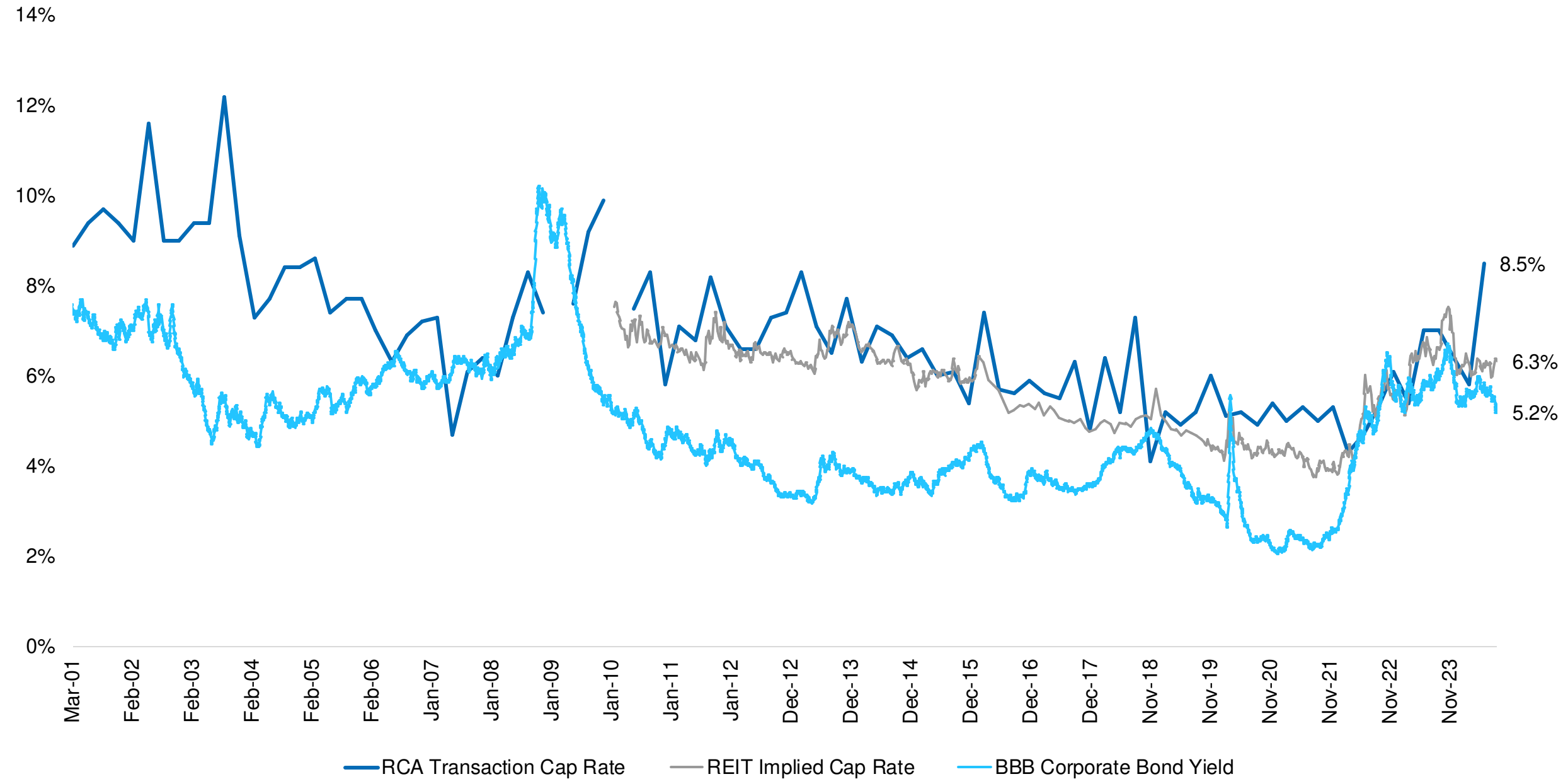


Source: RCA, Newmark Research as of 8/19/2024
 *We use the R&D property subtype as a proxy for Life Science

Life Science Cap Rates Have Risen Significantly

The spread to BBB corporate bond yields, a proxy for the cost of low leverage, fixed-rate debt, is modestly positive but extremely tight compared to historical averages. This will continue to place upward pressure on cap rates in public and private markets.

R&D* / Life Science Cap Rates

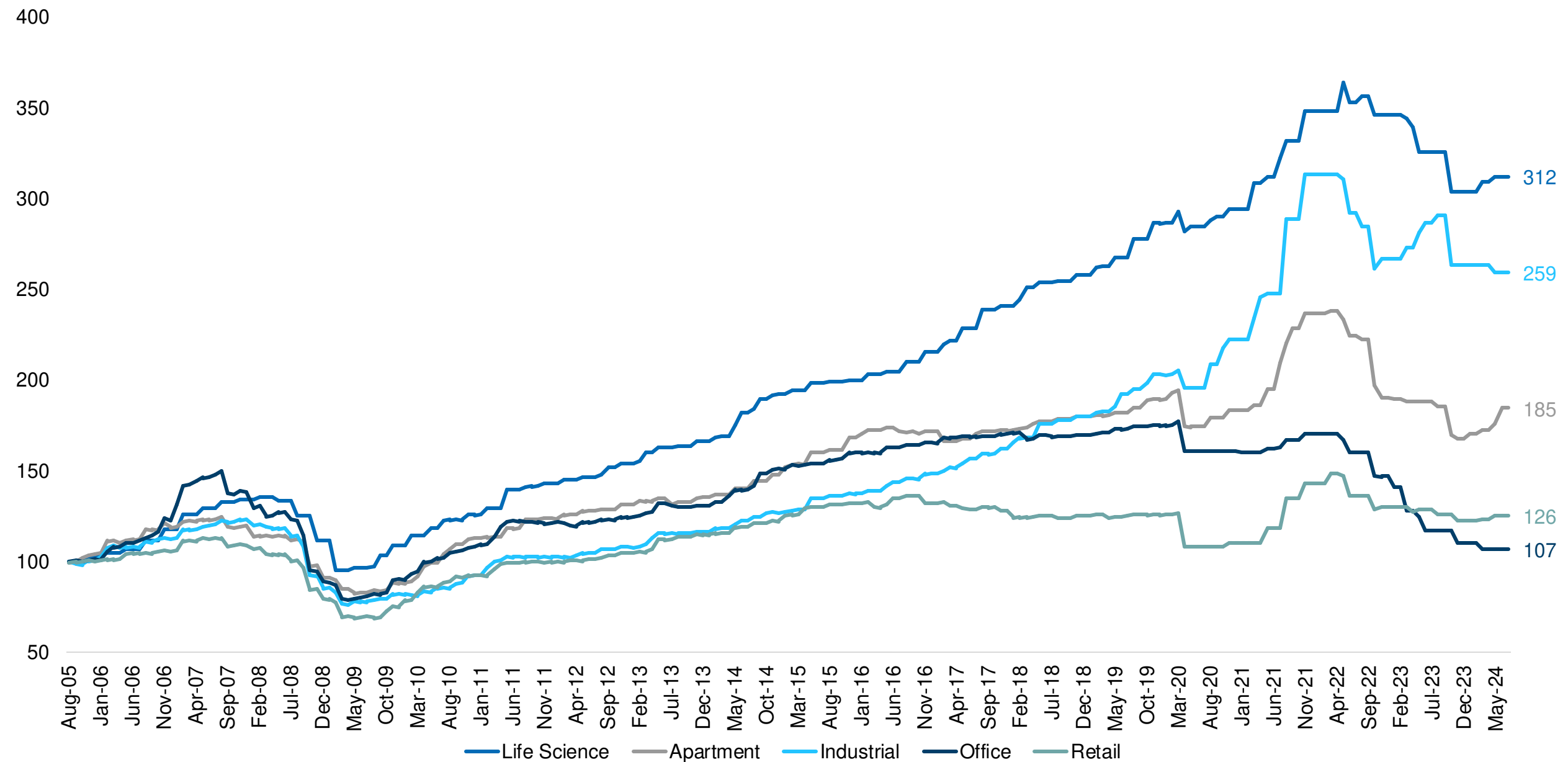


Source: RCA, Green Street, Ice Data Indices, LLC, Newmark Research as of 8/19/2024
 *We use the R&D property subtype as a proxy for Life Science

Life Science Has Outperformed All Other Property Types Since 2008

From 2019 to the post-pandemic peak, life science outperformed all sectors, excepting industrial, up 27.1%. Life science values are now down 14.3% from the peak, which is a better showing compared with all other property types. While this augurs poorly for the returns of investors who entered at the top of the market, these price declines are unlikely to foment the kinds of debt issues widely projected for the office and multifamily sectors. Indeed, life science values are up 8.9% compared to December 2019.

Green Street Commercial Property Price Index (Aug 2005 = 100)

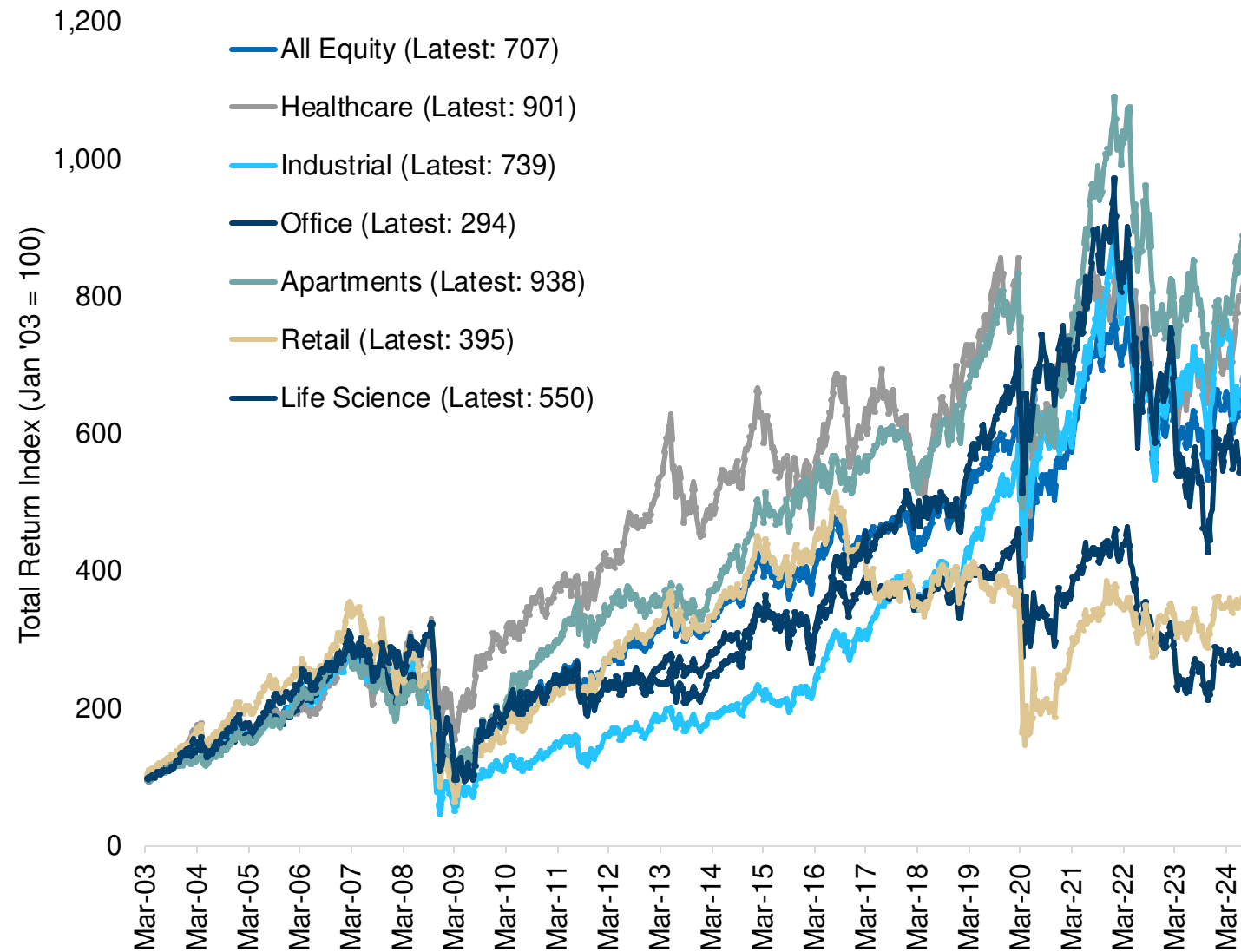


Source: Green Street, Newmark Research as of 8/19/2024

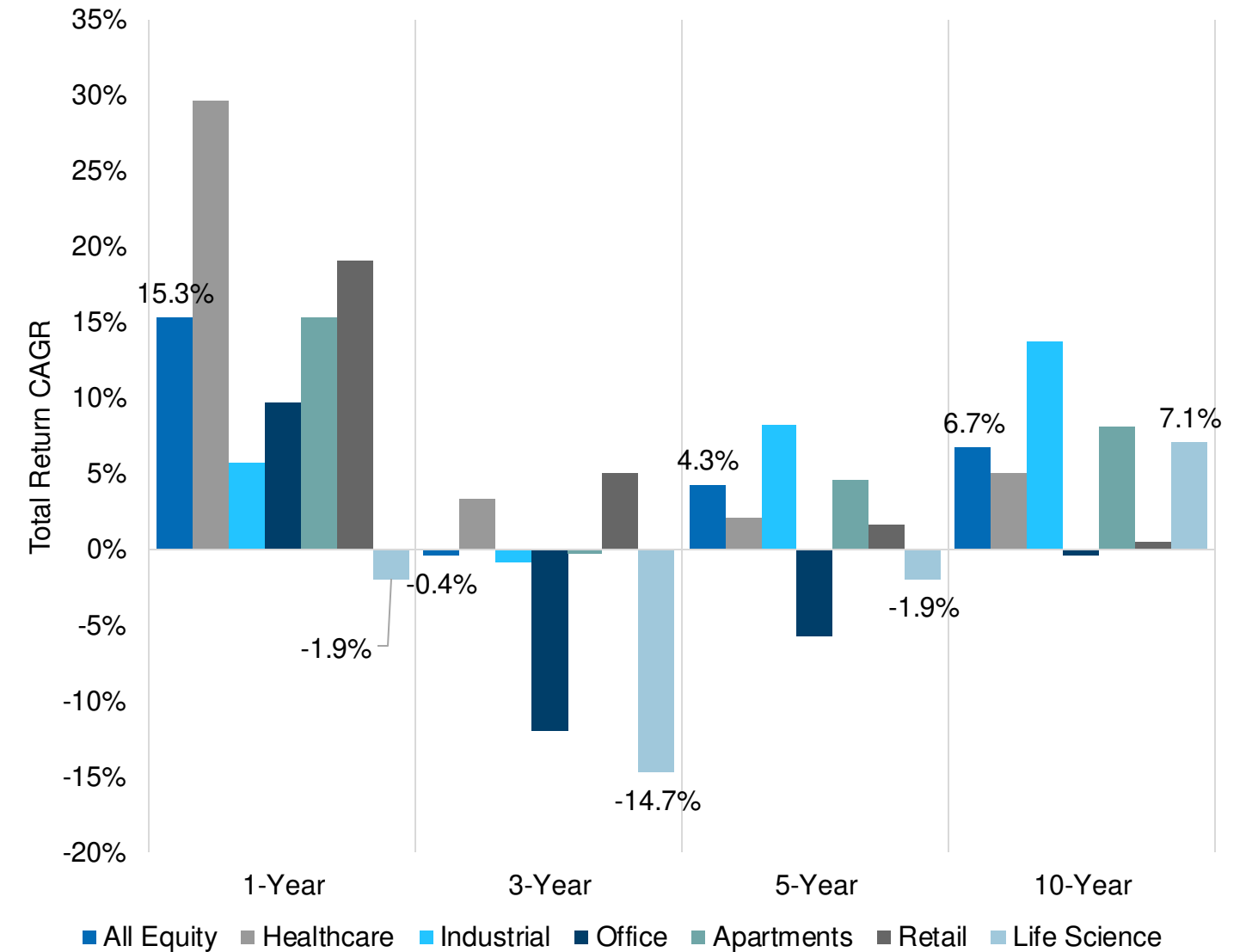
Life Science REITs Have Underperformed in Recent Years

In contrast to other sectors, there is not a deep bench of REITs to use to proxy the performance of the life science sector. Accordingly, public market performance is more easily skewed by security specific factors. With that caveat, life science has underperformed the overall market over the last 1-, 3- and 5-years while still outperforming on a 10-year hold.

REIT Total Return



REIT Total Return CAGR

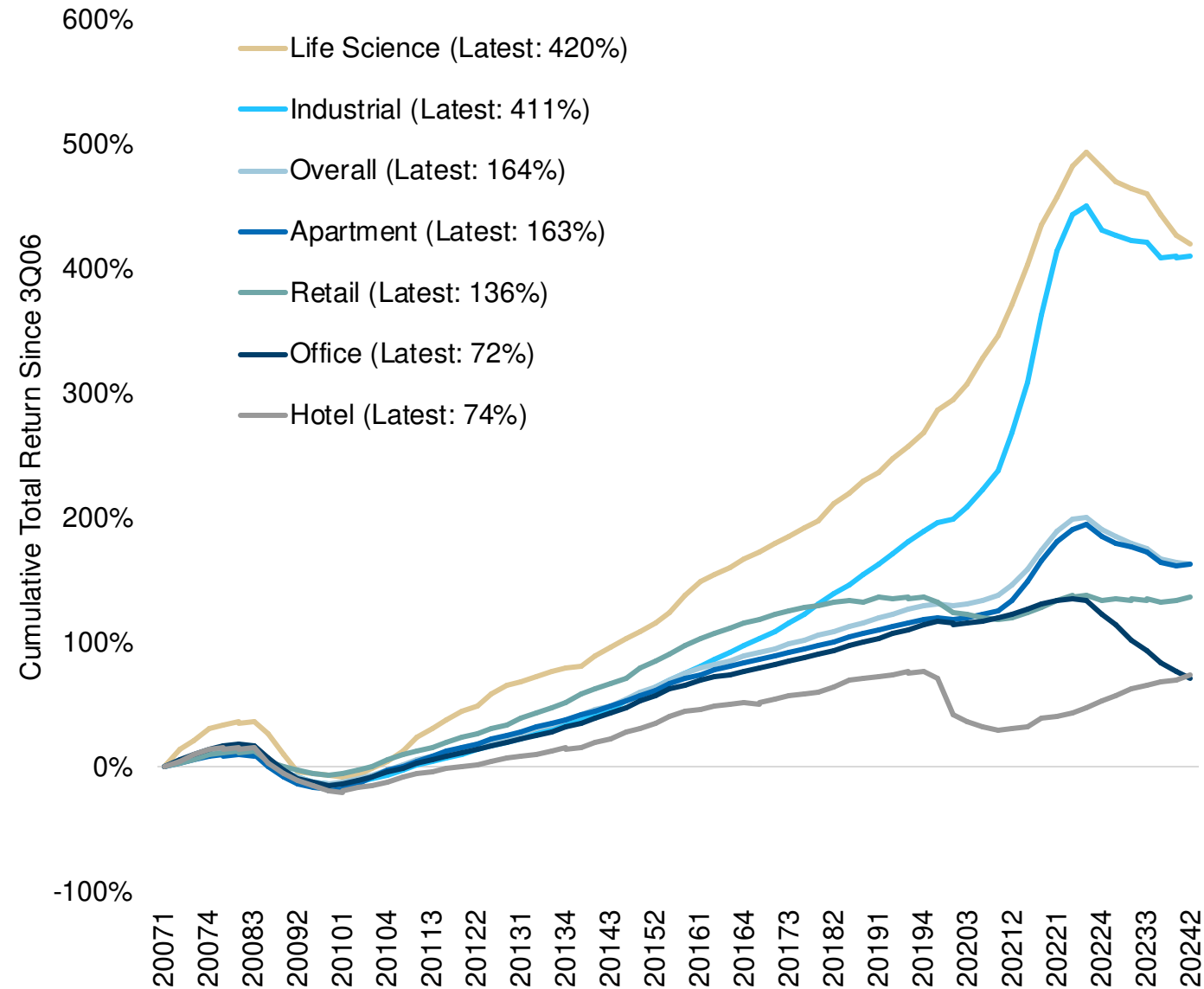


Source: Bloomberg; Moody's Analytics Calculated, Newmark Research as of 8/19/2024
 Note: Alexandria Real Estate Equities used to represent life science REIT performance.

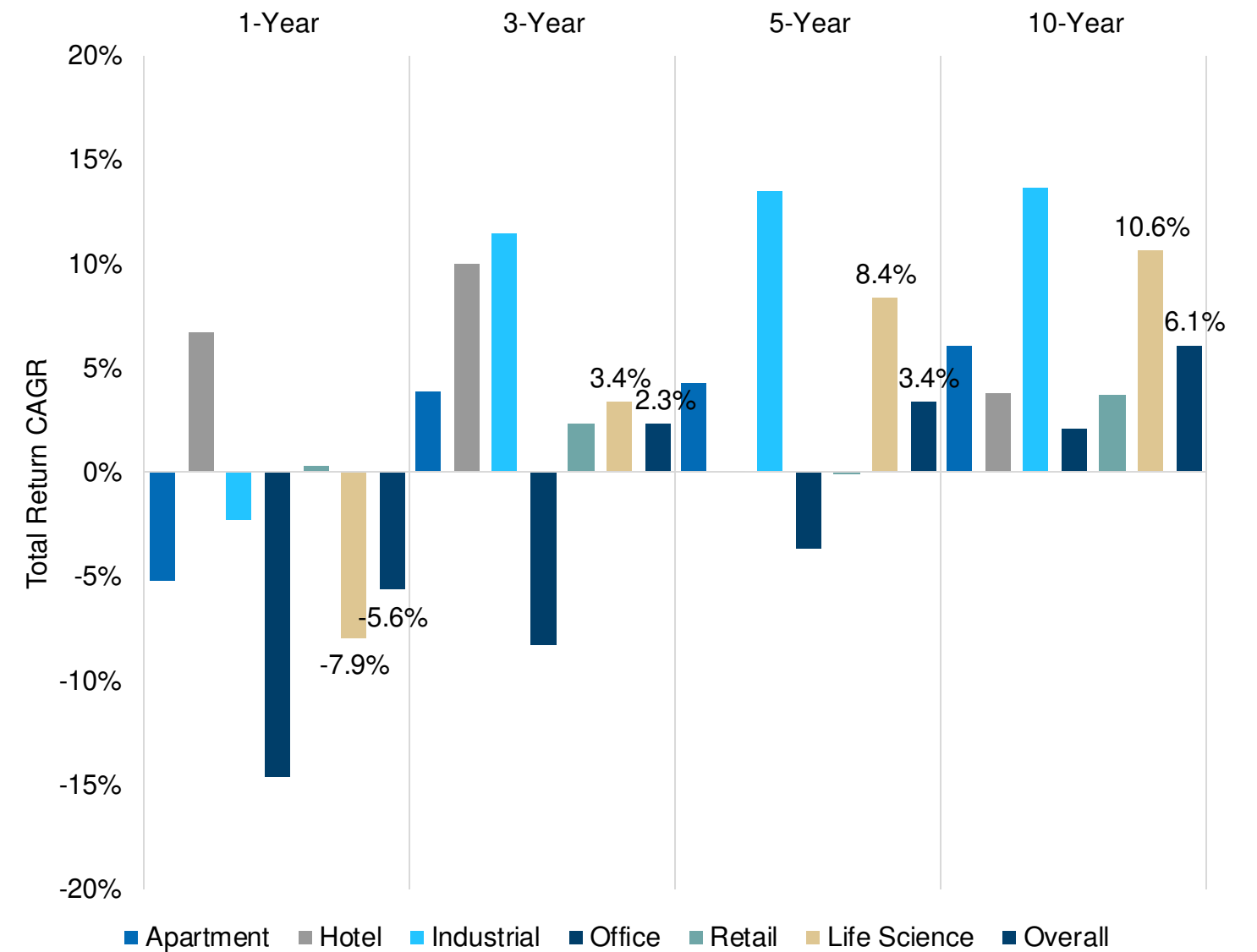
Private Market Returns Second Only to Industrial Over Last 10 Years

Life science has generated negative total returns for the last seven quarters with a total drawdown of negative 12.5%, slightly underperforming the national property index at negative 12.3%. This performance is similar to the decline in the Life Science CPPI. Looking over longer time spans, life science has consistently outperformed most sectors in the NPI.

NCREIF Life Science Sector Has Outperformed All Other Since 2006



Only Industrial Has Outperformed in Last 10 Years, Returns Softened in TTM



Source: NCREIF, Newmark Research as of 8/19/2024

MID-YEAR 2024 U.S. LIFE SCIENCE MARKET OVERVIEW

Life Science Market Profiles



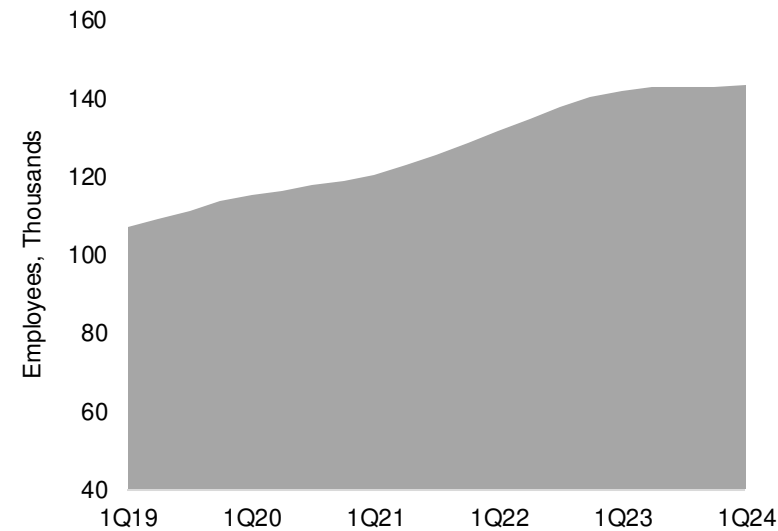
Boston

- The supply imbalance continues to weigh on laboratory vacancy across Greater Boston, which has increased for an eighth consecutive quarter. Vacancy for laboratory space in Greater Boston is now more than five times higher than the 5.1% trough reported two years ago.
- Tenants are leasing less space for shorter terms. Average direct deal length is down by 41% from the peak and transaction sizes are off by more than 50.0%.
- Greater Boston's supply pipeline has reached a three-year low. Following the most robust construction cycle this market has ever seen, developers have pulled back on new starts. With roughly 7 million SF remaining in the pipeline, completions will remain elevated above historic norms for another 12 to 18 months.

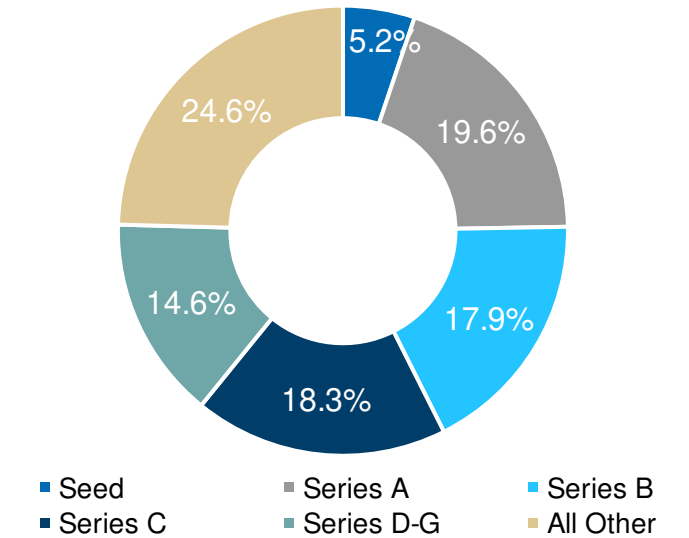
Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
AbbVie	222 Jacobs St., Cambridge	East Cambridge	Sublease	72,000
Treeline Biosciences	500 Arsenal St., Watertown	Urban Edge	Lease Expansion	45,000
Pace Analytical Services	19 Presidential Way, Watertown	Urban Edge	Lease Extension	23,777

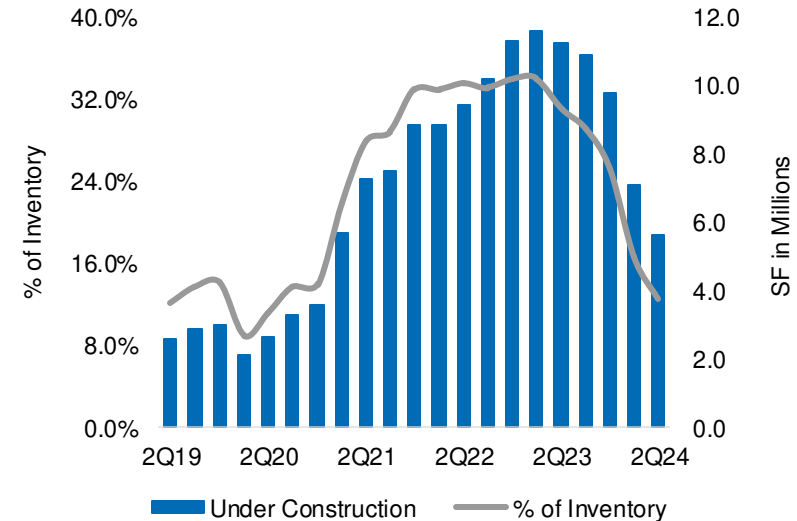
Life Science Employment



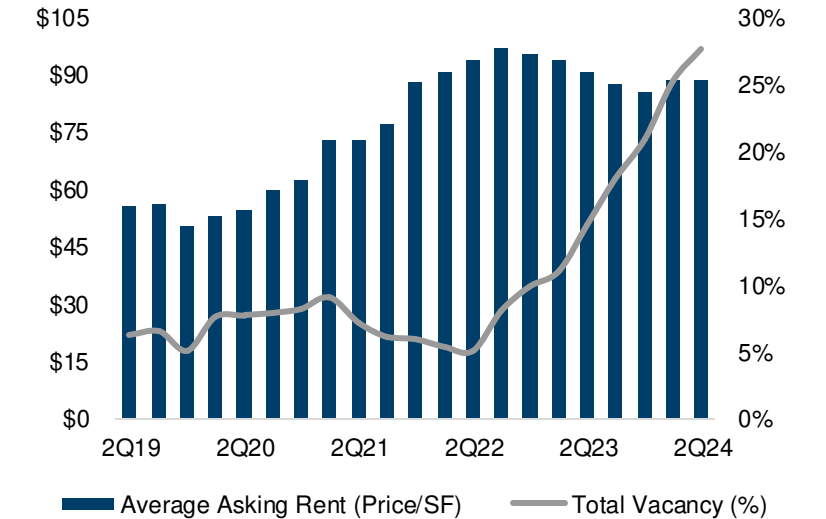
1H2024 Venture Capital Funding



Life Science Construction



Asking Rent and Vacancy



Mid-Year Stats

44.6 MSF Total Inventory	5.6 MSF Under Construction	1.0 MSF YTD Net Absorption
27.6% Vacancy Rate		\$88.37 / SF Asking Rent (NNN)

Top Tech Transfer Universities

- Harvard University
- MIT
- Tufts University
- Northeastern University
- UMass Boston
- Brandeis University

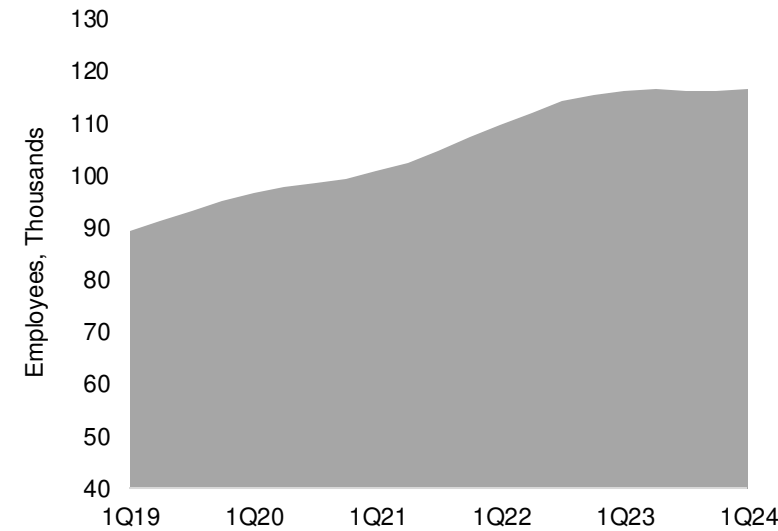
San Francisco Bay Area

- The Bay Area life science market is currently exhibiting signs of a correction, as leasing activity has notably decreased from the height of the pandemic era. Asking rates are expected to continue to soften in the near term as landlords continue to offer elevated concessions to boost occupancy rates.
- A continued heightened focus on capital preservation by companies throughout the region in addition to a noticeable slowdown in demand for lab space has led to mass layoffs and footprint rightsizing across the Bay Area.
- Look for supply-side pressures to continue driving the availability rate upwards towards new record highs as ground-up construction and conversion product is expected to deliver over the course of the next several quarters, paving the way for a continued tenant-friendly market environment.

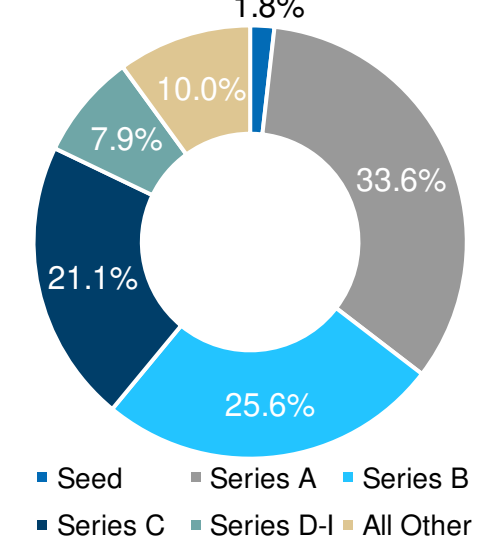
Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Confidential Tenant	1300 Main St., Redwood City (ELCO Yards)	Redwood City	Direct Lease	115,000
Pulmonx	200 & 700 Chesapeake Dr. Redwood City	Redwood City	Lease Renewal	75,100
Protagonist Therapeutics	7575 & 7707 Gateway Blvd., Newark	Newark	Lease Renewal/Expansion	60,600

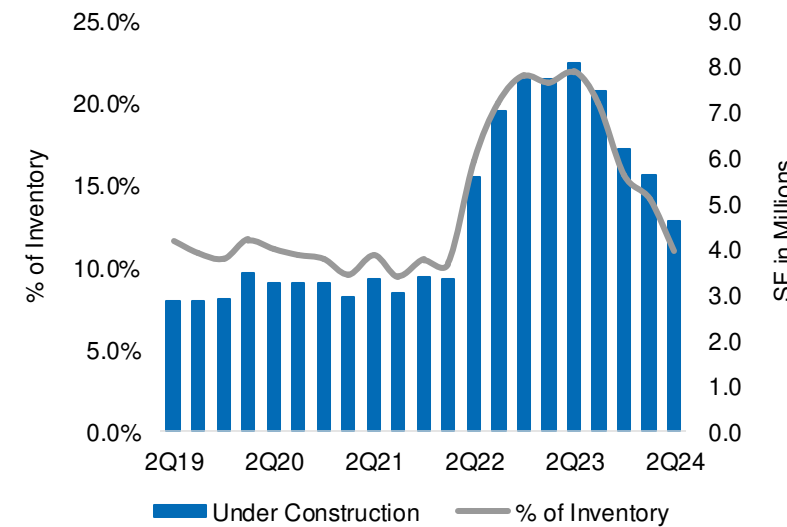
Life Science Employment



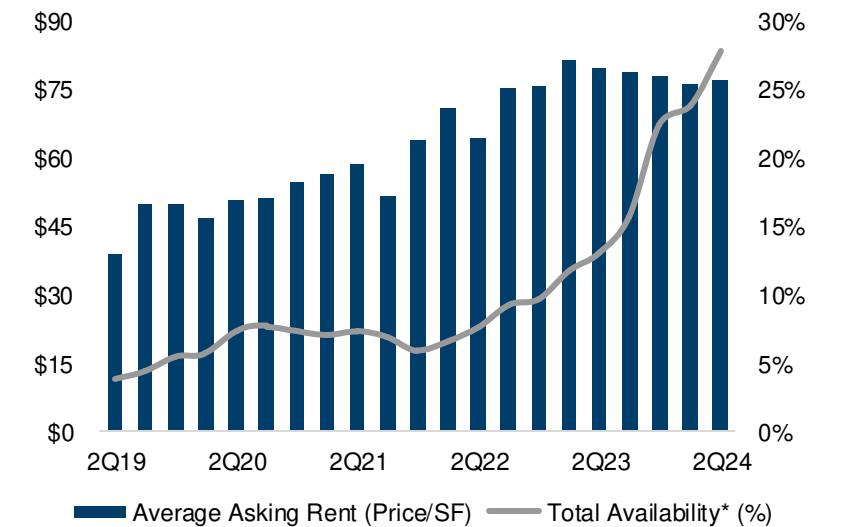
1H2024 Venture Capital Funding



Life Science Construction



Asking Rent and Availability*



Mid-Year Stats

42.3 MSF Total Inventory	4.6 MSF Under Construction	-1.5 MSF YTD Net Absorption
27.8% Availability Rate*		\$77.16 / SF Asking Rent (NNN)

Top Tech Transfer Universities

- Stanford University
- University of California, Berkeley

* Total availability is represented instead of total vacancy since the San Francisco Bay Area Market has not historically separated vacancy and availability.

San Diego

- Two quarters of robust venture capital and post-IPO investments have boosted the coffers of local companies and set the stage for increased tenant demand.
- Rent growth has been negative in the first half of 2024 as vacancy has climbed for six consecutive quarters. Leasing activity has picked up, and net absorption has turned positive, but it will still take several years for the market to absorb all the new product that has delivered and current construction projects that are set to deliver over the next two years.
- Nearly 2.5 million SF of new projects are under construction in the core life science submarkets and scheduled to deliver over the next two years. This new space will lead to years of elevated vacancy until the market has had time to absorb it all.

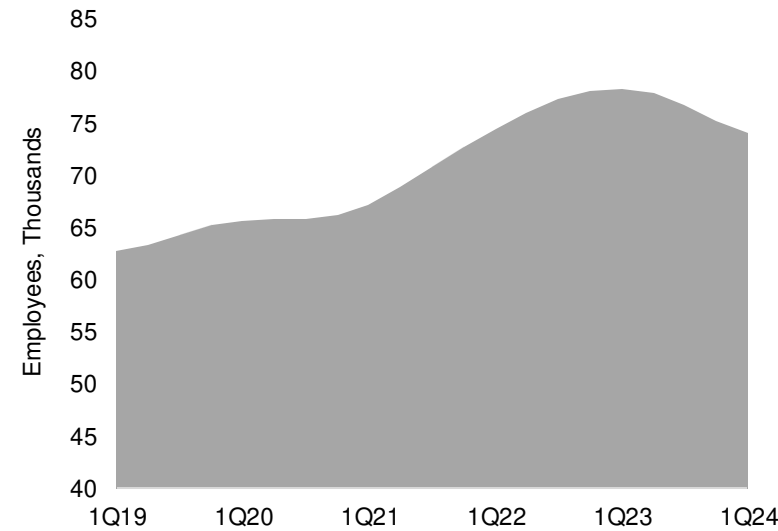
Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Bayer/Vividion Therapeutics	10075 Barnes Canyon Rd., San Diego	Sorrento Mesa	Direct Lease	127,300
Avidity BioSciences	3020 Callan Rd., San Diego	Torrey Pines	Sublease	105,500
BlossomHill Therapeutics	10255 Science Center Dr., San Diego	Torrey Pines	Direct Lease	46,300

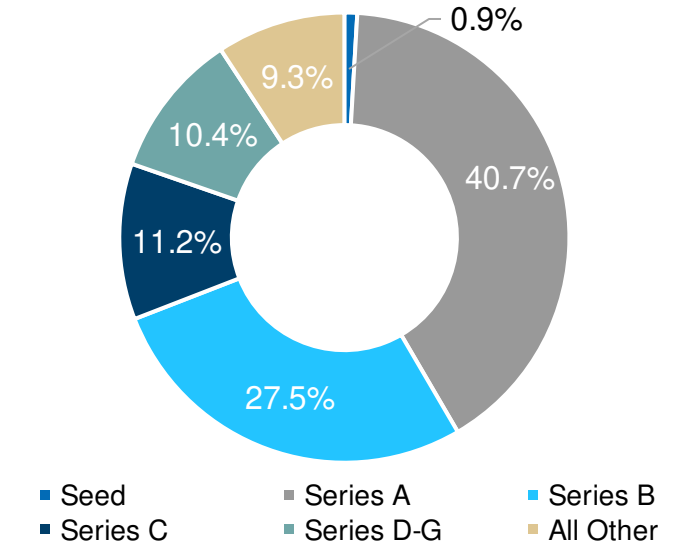
Select Sale Transactions

Building / Address	Submarket	Sale Price	Price / SF	Square Feet
3020 & 3030 Callan Rd., San Diego	Torrey Pines	\$153.4M	\$1,362	173,311
10140 Mesa Rim Rd., San Diego	Sorrento Mesa	\$23.0M	\$541	42,547

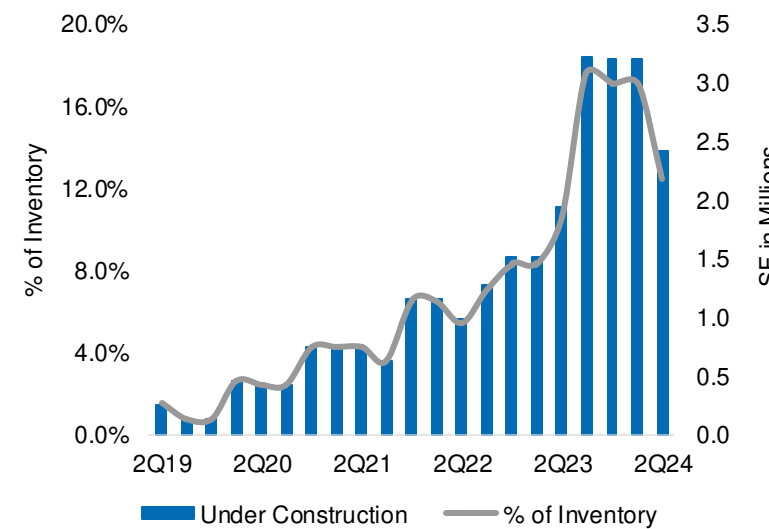
Life Science Employment



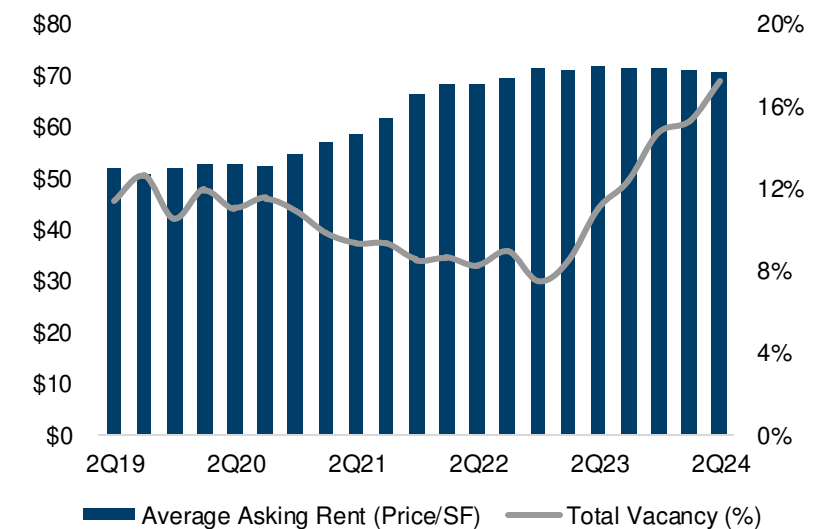
1H2024 Venture Capital Funding



Life Science Construction



Asking Rent and Vacancy



Mid-Year Stats

19.4 MSF Total Inventory	2.4 MSF Under Construction	184 KSF YTD Net Absorption
17.2% Vacancy Rate		\$70.68 / SF Asking Rent (NNN)

Top Tech Transfer Universities

• San Diego State University	• University of California, San Diego
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Raleigh/Durham (Research Triangle)

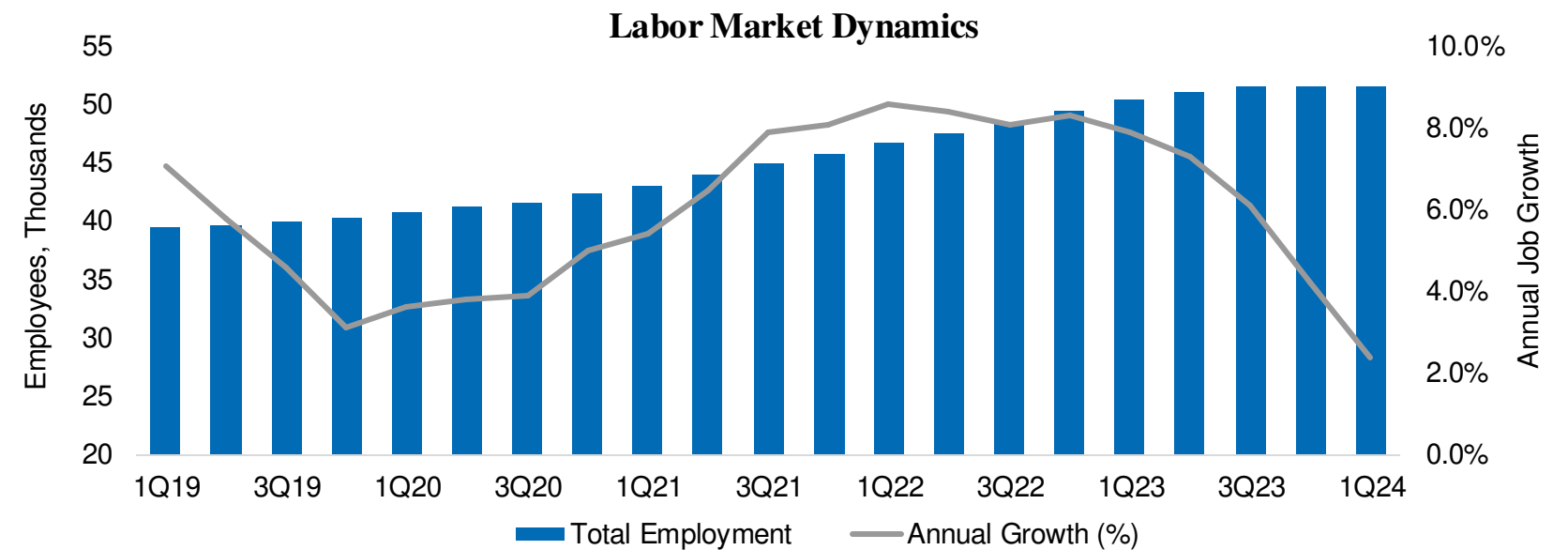
- Headwinds persist in the local life science market as vacancies continuing to expand. The majority of life science leasing is via renewals of existing tenants and speculative research and development suites, which are generally 10,000 SF or less.
- The past six months have seen significant new deliveries of quality assets, which have been almost exclusively in the cGMP/advanced manufacturing arena. Tenant interest for these assets remains varied among life science, chip and semiconductor manufacturers and other clean technology companies.
- A sizable portion of new and expanded leases within life science parks are attributed to these non-life science users that require similar robust base building systems and infrastructure.

Select Lease Transactions

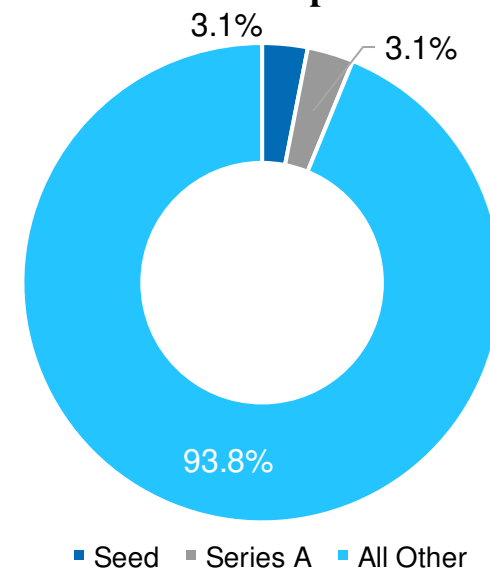
Tenant	Building / Address	Submarket	Type	Square Feet
Solvias	2400 Perimeter Park Dr., Morrisville	RTP/RDU	Direct Lease	55,000
Nhanced Semiconductor	617 Davis Dr., Morrisville	RTP/RDU	Direct Lease	54,000
EPL	4022 Stirrup Creek Dr., Durham	RTP/RDU	Lease Extension	36,000

Select Sale Transactions

Building / Address	Submarket	Sale Price	Price / SF	Square Feet
4018 Stirrup Creek Dr., Durham	Research Triangle	\$27.5M	\$288	95,620



1H2024 Venture Capital Funding



Top Tech Transfer Universities

1. North Carolina State University
2. Duke University
3. University of North Carolina at Chapel Hill

Mid-Year Stats

12.8 MSF Total Inventory	0 SF Under Construction	-52 KSF YTD Net Absorption	24.1% Vacancy Rate	\$41.00 / SF Asking Rent (NNN)
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Greater Philadelphia

- Philadelphia's life science market has been experiencing robust growth and innovation, fueled by its strong ecosystem of academic institutions, hospitals, pharmaceutical companies, and a growing number of startups. The city benefits from a highly educated workforce, with graduates from local institutions like the University of Pennsylvania and Drexel University providing an attractive talent pool for companies in the life sciences sector.
- While venture capital funding for Philadelphia-area life sciences declined last year, 2024 has already seen notable deals, including Arrivent Biopharma's \$175 million IPO in January.
- The demand for lab space and R&D facilities in Philadelphia has surged, prompting the development of new complexes and the conversion of traditional office buildings into lab spaces. Key areas such as University City have become focal points for life science clusters.

Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Align Precision	425 Privet Rd., Horsham	Montgomery County	Direct Lease	86,000
DSM Biomedical	400 Devon Dr., Wayne	Chester County	Direct Lease	76,800
Wistar Institute	225 N 38 th St., Philadelphia	University City	Sublease	32,000

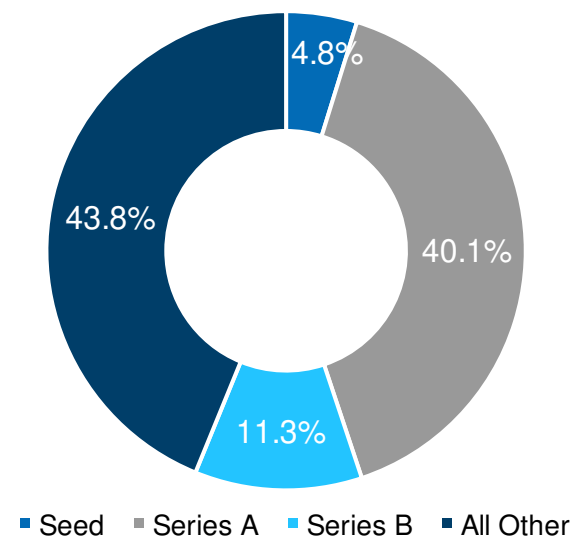
Select Sale Transactions


Building / Address	Submarket	Sale Price	Price / SF	Square Feet
9001 Torresdale Ave., Philadelphia	Philadelphia County	\$5.3M	\$84	62,750

Labor Market Dynamics



1H2024 Venture Capital Funding





Top Tech Transfer Universities

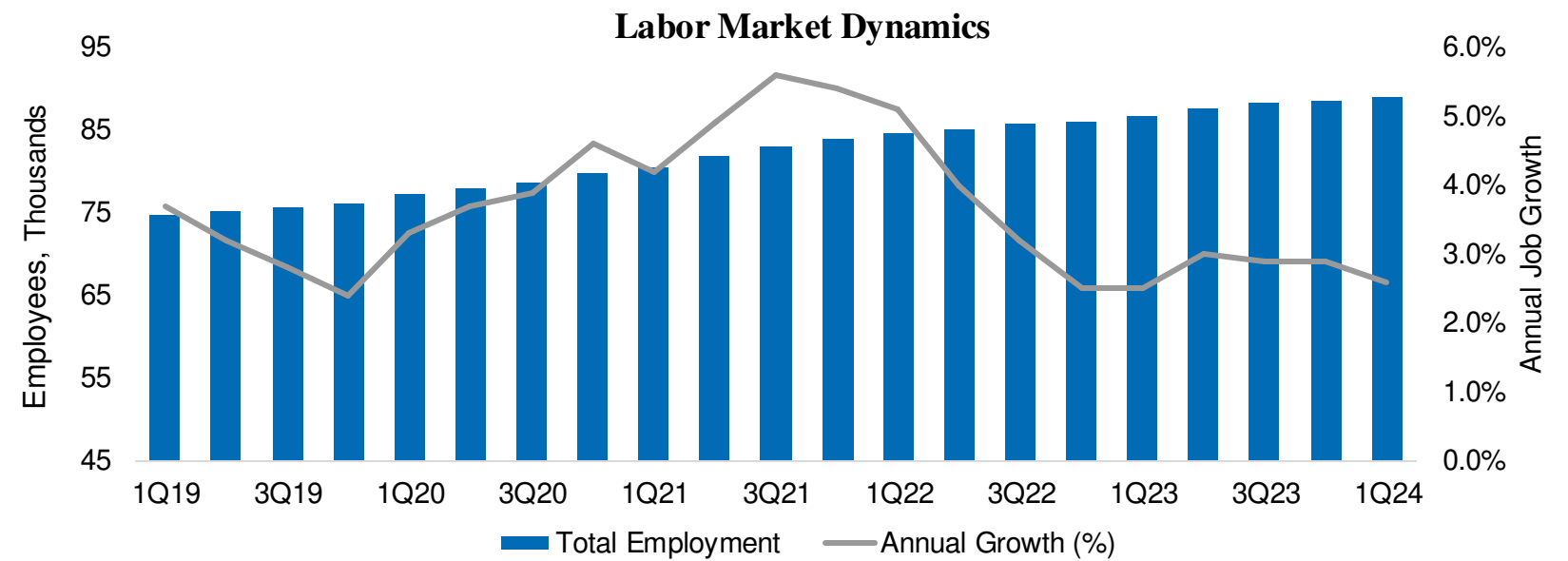
- University of Pennsylvania
- Drexel University
- Temple University

Mid-Year Stats

7.4 MSF Total Inventory	1.3 MSF Under Construction	-142 KSF YTD Net Absorption	10.7% Vacancy Rate	\$52.00 / SF Asking Rent (NNN)
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Maryland / Mid-Atlantic

- The Mid-Atlantic life science market has experienced an oversupply of space. This has resulted in the average lease term for new leases being a little over five years; a decrease from almost 10 years in 2022. This has led to many developers in the region halting speculative construction and will only break ground once an anchor tenant is secured. This slowdown in new deliveries will give the market time for demand to catch up with the oversupply.
- Despite the slowdown, the long-term growth outlook for the Mid-Atlantic life science market remains positive, thanks to the region's highly educated workforce and top research institutions, including Johns Hopkins University and the University of Maryland. These institutions continue to provide a steady pipeline of highly skilled workers for the life science sector.
- Even with the current market slowdown, major institutions in the region are expanding. Montgomery County recently announced a University of Maryland-anchored project to build up to 3.7 million SF of life science-focused mixed-use space near the North Bethesda metro station.



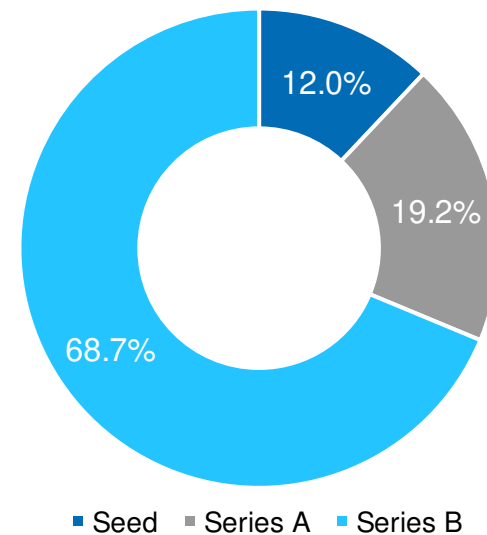
Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Precision for Medicine	8440 Broadband Dr., Frederick	I-270 Corridor	Lease Expansion/Renewal	116,000
Virginia Heart	1900 Gallows Rd., Vienna	Vienna	Direct Lease	7,700

Select Sale Transactions

Building / Address	Submarket	Sale Price	Price / SF	Square Feet
10301 Georgia Ave., Silver Spring	Silver Spring	\$15.3M	\$169	90,000
10521 Rosehaven St., Fairfax	Fairfax	\$6.5M	\$107	61,000
9707 Medical Center Dr., Rockville	Rockville	\$5.5M	\$137	40,200

1H2024 Venture Capital Funding



Top Tech Transfer Universities

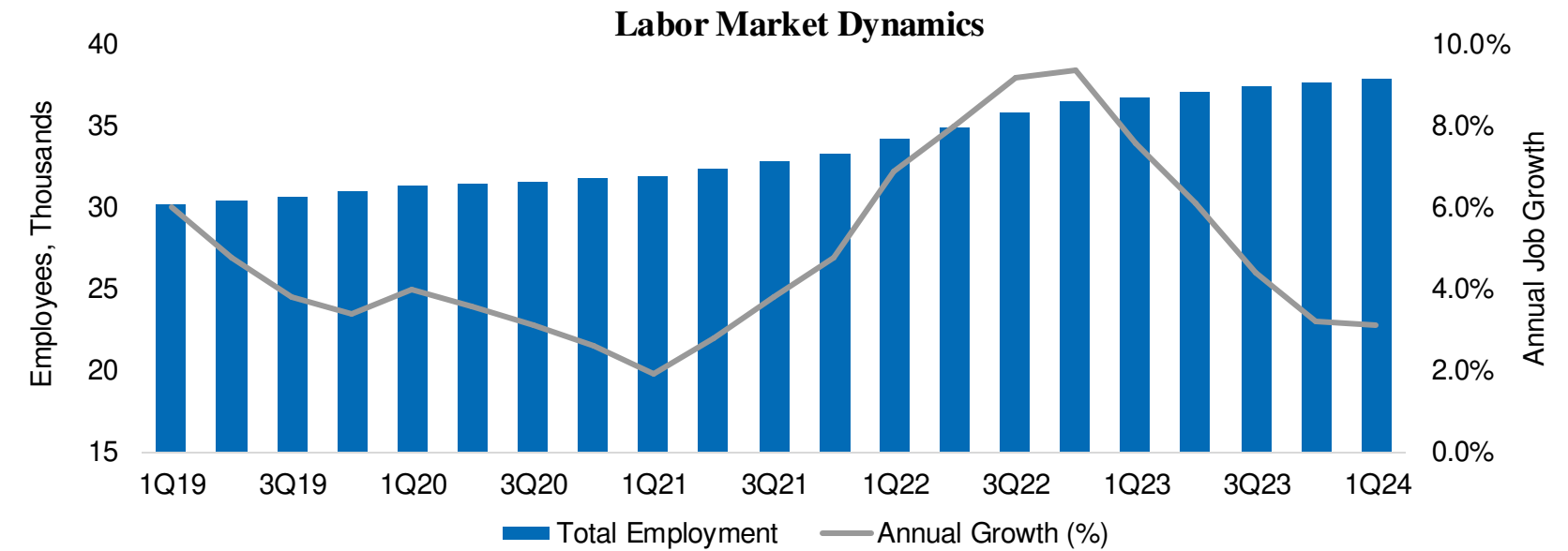
1. Johns Hopkins University
2. University of Maryland, College Park

Mid-Year Stats

11.9 MSF Total Inventory	742 KSF Under Construction	-97 KSF YTD Net Absorption	12.3% Vacancy Rate	\$47.44 / SF Asking Rent (NNN)
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Seattle

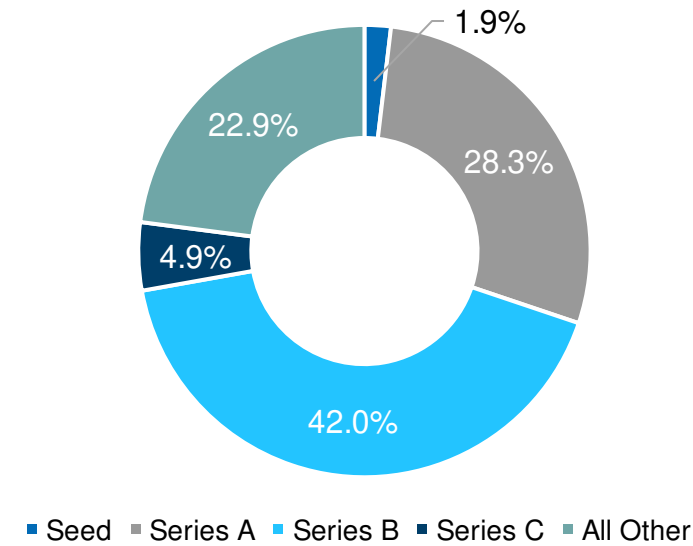
- Although life science demand has been muted in recent quarters, the second quarter of 2024 saw a slight uptick in tenant activity. The region experienced a modest net negative absorption of approximately 31,000 SF, with the overall vacancy rate at 9.8%.
- Rental rates for lab space in Bothell currently range from \$32-\$46/SF NNN, while Seattle's average rates range from \$65-\$85/SF NNN.
- Cascadian, an office-to-life science conversion in South Lake Union by LPC & Invesco, returned to the lender in early July 2024. The lender, KKR, acquired it for their debt value of \$161.76 million.



Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Summit Imaging	Woodinville Corporate Center, Woodinville	Woodinville/Bothell	Direct Lease	31,200
Allen Institute	Dexter Yard, Seattle	Lake Union	Lease Expansion	24,200
BrainChild Bio	Butcher's Table, Seattle	Belltown/Denny	Direct Lease	4,600

1H2024 Venture Capital Funding



Top Tech Transfer Universities

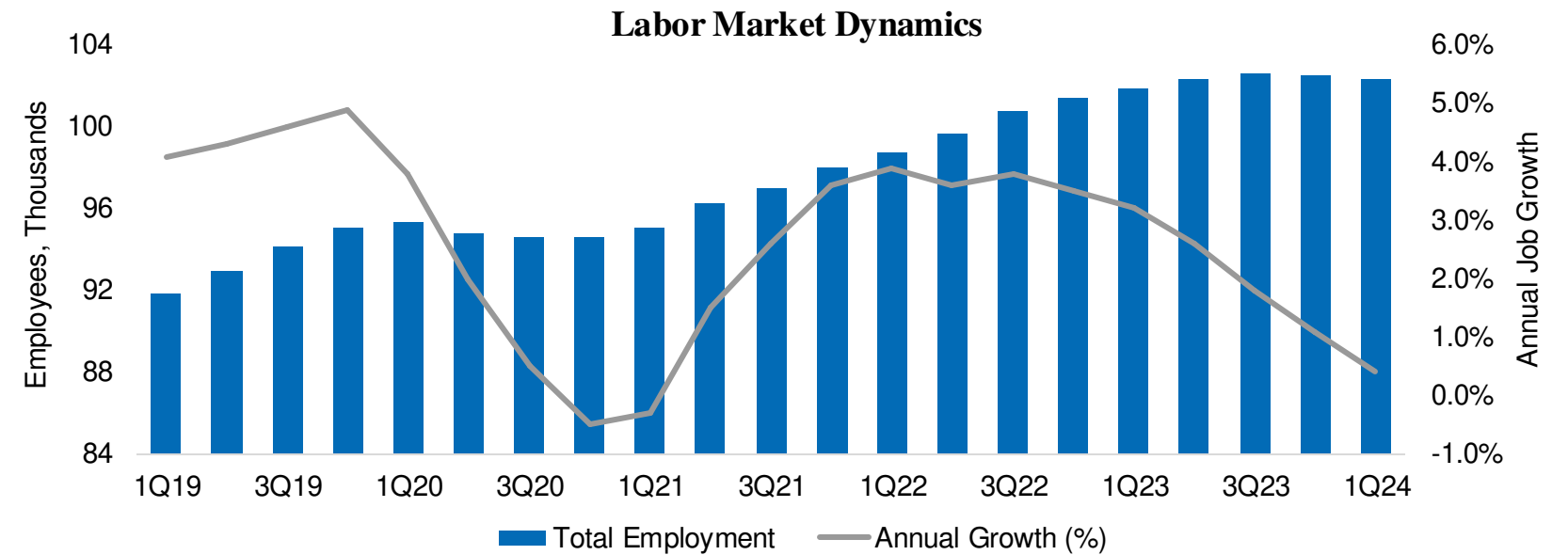
1. University of Washington
2. Washington State University

Mid-Year Stats

11.0 MSF Total Inventory	710 KSF Under Construction	-120 KSF YTD Net Absorption	9.8% Vacancy Rate	\$60.59 / SF Asking Rent (NNN)
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Northern New Jersey

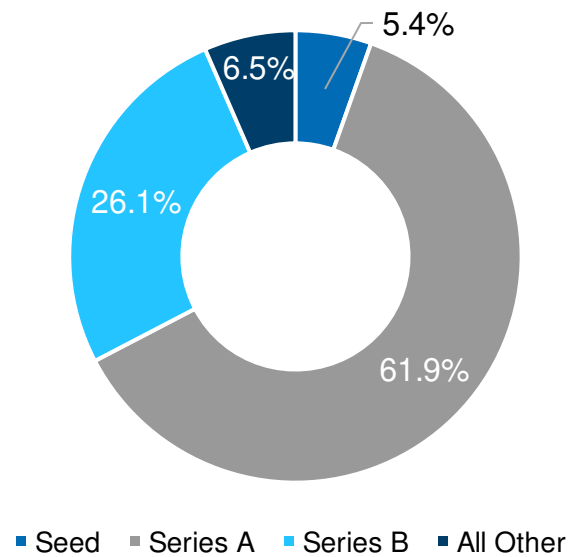
- Within the state's borders reside 14 of the top 20 pharmaceutical companies and eight of the top ten research & development companies in the world.
- National economic challenges and rising interest rates have impacted the life science market in Northern New Jersey as vacancies increased by 50 basis points year over year to 10.3%.
- Office-to-lab conversions have been instrumental in addressing the demand for lab space over the last several years. Even with the new vacancies, active demand still exceeds 1 million SF.
- Construction has begun at the 400,000-SF BeiGene manufacturing campus located in the Princeton West Innovation Park in Pennington. The property is set to deliver during the first quarter of 2025.



Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Syneos Health	301 College Rd., E. Princeton	Princeton Area	Lease Renewal	44,000
IAVI	95 Greene St., Jersey City	Hudson Waterfront	Direct Lease	29,800
RegenLab USA	95 Greene St., Jersey City	Hudson Waterfront	Direct Lease	15,800

1H2024 Venture Capital Funding



Top Tech Transfer Universities

1. Princeton University
2. Rutgers University New Brunswick

Mid-Year Stats

12.2 MSF Total Inventory	750 KSF Under Construction	-107 KSF YTD Net Absorption	10.3% Vacancy Rate	\$29.76 / SF Asking Rent (NNN)
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Los Angeles – Orange County

- While the Los Angeles metropolitan area is considered an emerging life science market, it has the building blocks and momentum to become a top-tier national market. A deep, diverse and educated labor pool provides opportunities for major pharmaceutical and biotechnology companies to expand.
- Following a challenging capital markets and funding environment in 2023, companies entered 2024 with a focus on conserving capital and reducing overhead costs. Although job growth in the sector has slowed, optimism remains strong in Los Angeles's emerging markets, driven by increased M&A and partnership activity.
- Despite cautious optimism, Los Angeles life science VC funding began the first quarter with over \$600 million closed, primarily in three separate early and later-stage rounds. Activity slowed in the second quarter but continued with several smaller seed, Series A, and Series B rounds exceeding \$100 million.



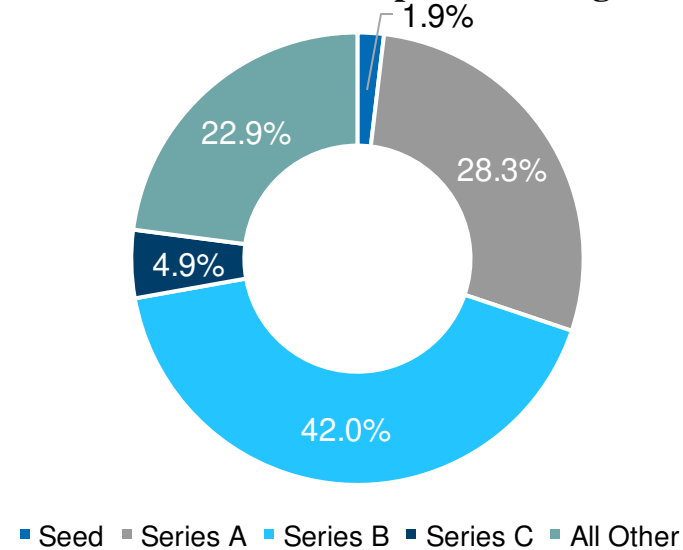
Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
AstraZeneca	18408-18412 Oxnard St., Tarzana	SFV	Direct Lease	128,000
Captura	2585 Nina St., Pasadena	Pasadena	Direct Lease	18,000
AcuraStem	150 N Orange Grove Blvd., Pasadena	Pasadena	Direct Lease	7,000

Select Sale Transactions

Building / Address	Submarket	Sale Price	Price / SF	Square Feet
10800 W Pico Blvd.	Culver City	\$700M	\$1,000	700,000

1H2024 Venture Capital Funding




Top Tech Transfer Universities

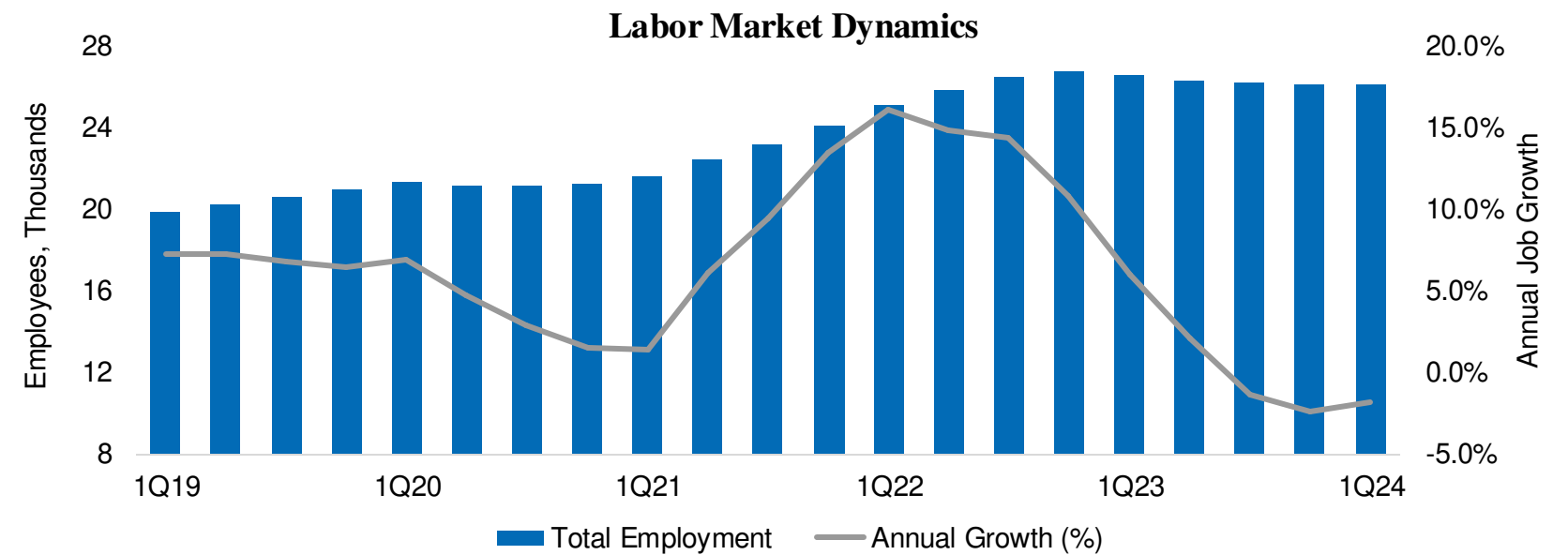
1. California Institute of Technology
2. USC
3. UC Los Angeles
4. UC Davis
5. UC Irvine

Mid-Year Stats

12.8 MSF Total Inventory	700 KSF Under Construction	128 KSF YTD Net Absorption	1.7% Vacancy Rate	\$63.00 / SF Asking Rent (NNN)
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New York City

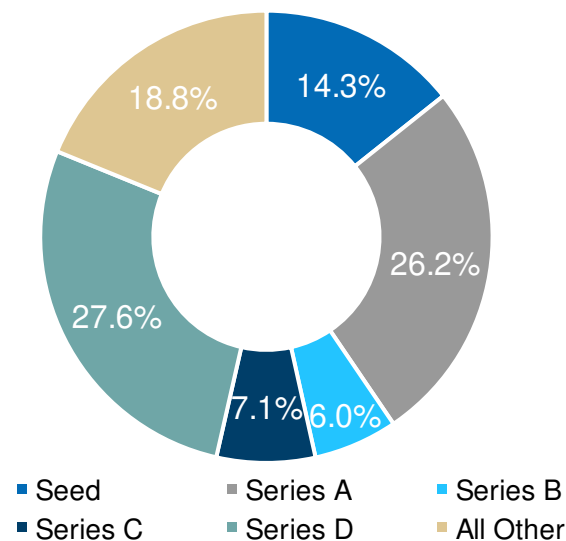
- The Chan Zuckerberg Initiative announced the opening of a new Biohub in NYC. CZ Biohub NY will be housed on Columbia University's campus and will include collaborative efforts from Columbia University, The Rockefeller University and Yale University. The City and State of New York are each contributing \$10 million in funding to the efforts.
- Harlem Biospace announced they will open a second location in the West Harlem Innovation District, providing additional incubator space for the growing life sciences market in NYC.
- The City and State announced a public/private partnership called SPARC Kips Bay, a new 1.5-million-SF hub that will encompass a full city block for life science, academic and medical use. The project is expected to create 10,000 jobs over the next 30 years, generating a \$25 billion impact to the city.



Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Graviton Bioscience	125 West End Ave., New York	Upper West Side	Direct Lease	30,000

1H2024 Venture Capital Funding



Top Tech Transfer Universities

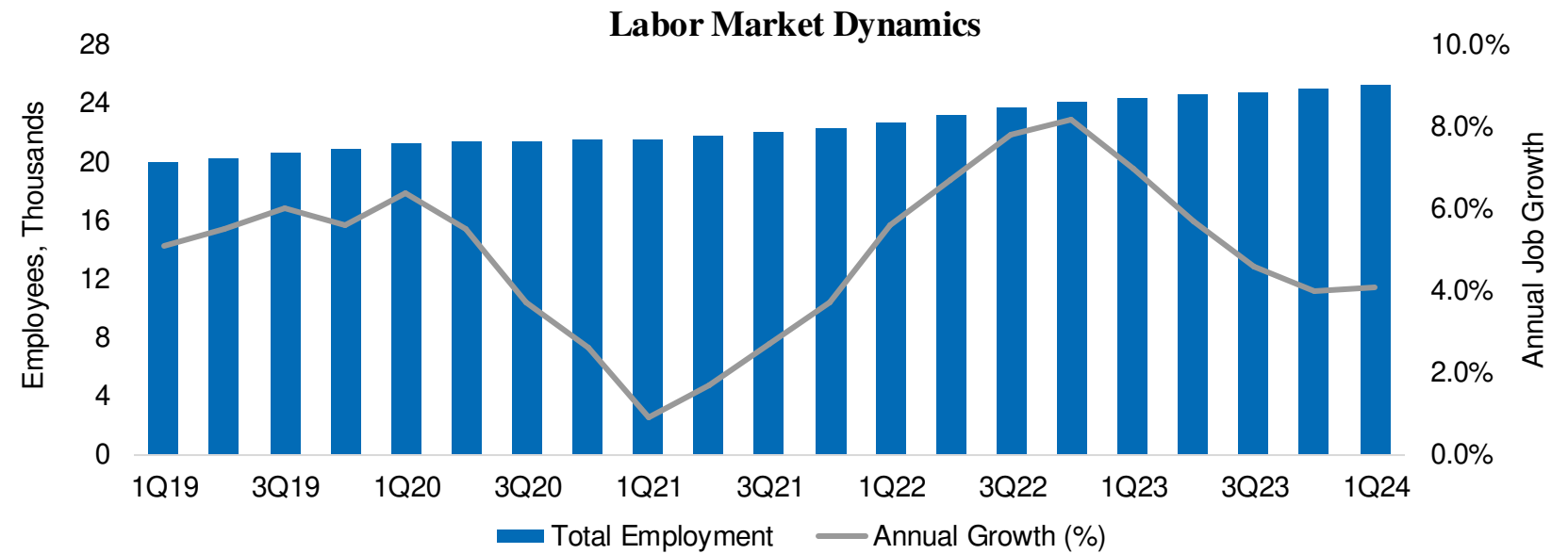
1. Columbia University
2. New York University

Mid-Year Stats



Denver/Boulder

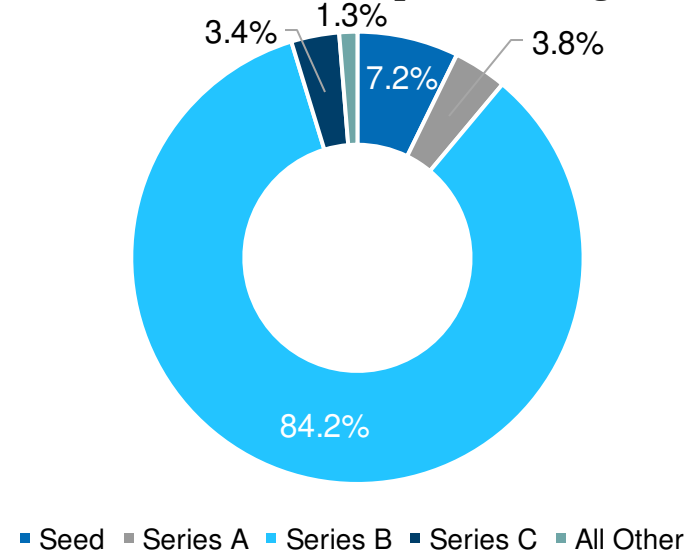
- Over \$1.2 billion was raised by Colorado Life Science Companies in Q1 and Q2 2024, nearly reaching the totals of 2023 (\$1.47B) and 2022 (\$1.6B) and potentially on pace to reach 2021's \$2.4 billion raise.
- In the second quarter of 2024, Enveda Biosciences added \$55 million to its \$119 million Series B fundraising round completed in 2023, as the company prepares to begin several clinical trials in the coming quarters.
- BioMed Realty delivered 5505 Central, a 63,000-square-foot purpose-built lab building in Boulder's Flatiron Park, which was delivered in lab shell condition and is ready for tenant improvements.
- Pfizer announced it will close its 160,000-SF Boulder R&D facility. The property was purchased by Invesco in December 2020 for \$99 million (\$612/SF) and the property will offer the largest contiguous block of lab space in the Denver/Boulder market.



Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Integrated DNA Technologies	2425-2555 55 th St., Boulder	Boulder	Lease Renewal/Expansion	48,000
BioLoomics	2425-2555 55 th St., Boulder	Boulder	Direct Lease	13,300

1H2024 Venture Capital Funding



Top Tech Transfer Universities

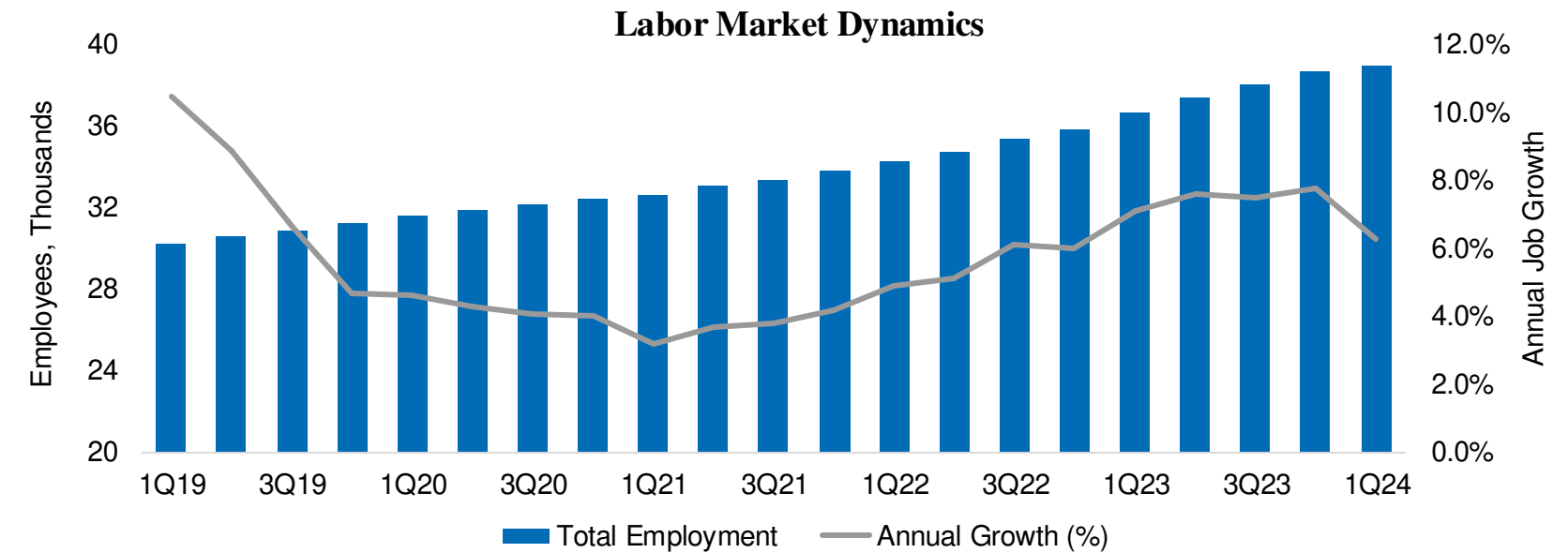
1. University of Colorado Boulder
2. Colorado School of Mines
3. University of Denver

Mid-Year Stats

4.5 MSF Total Inventory	0 SF Under Construction	-182 KSF YTD Net Absorption	12.7% Vacancy Rate	\$60.00 / SF Asking Rent (NNN)
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Houston

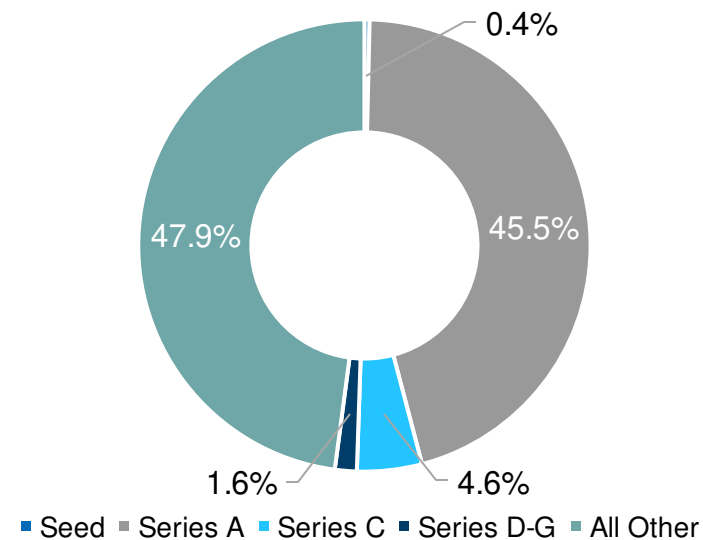
- Emerging biotechnology and regenerative science company PranaX recently signed a lease at the newly built Levit Green Phase I in the Texas Medical Center. PranaX will occupy 7,400 SF of turn-key lab space on the second floor and will also build an ISO-7 clean room.
- Howard Hughes and Vitrian have announced a joint venture called The Woodlands Innovation District, which aims to attract additional biomanufacturers to the area. The Woodlands Innovation District will include five sites ranging from 40,000 to over 200,000 SF, with spaces expected to be move-in ready for tenants by spring 2025. Existing life science companies in The Woodlands include Cellpoint Bioservices, VGXI, and MilliporeSigma.



Select Lease Transactions

Tenant	Building / Address	Submarket	Type	Square Feet
Houston Methodist	1840 Dynamic Way, Houston	South Main/ Medical Center	Direct Lease	75,800
PranaX	3131 Holcombe Blvd., Houston	South Main/ Medical Center	Direct Lease	7,400

1H2024 Venture Capital Funding



Top Tech Transfer Universities

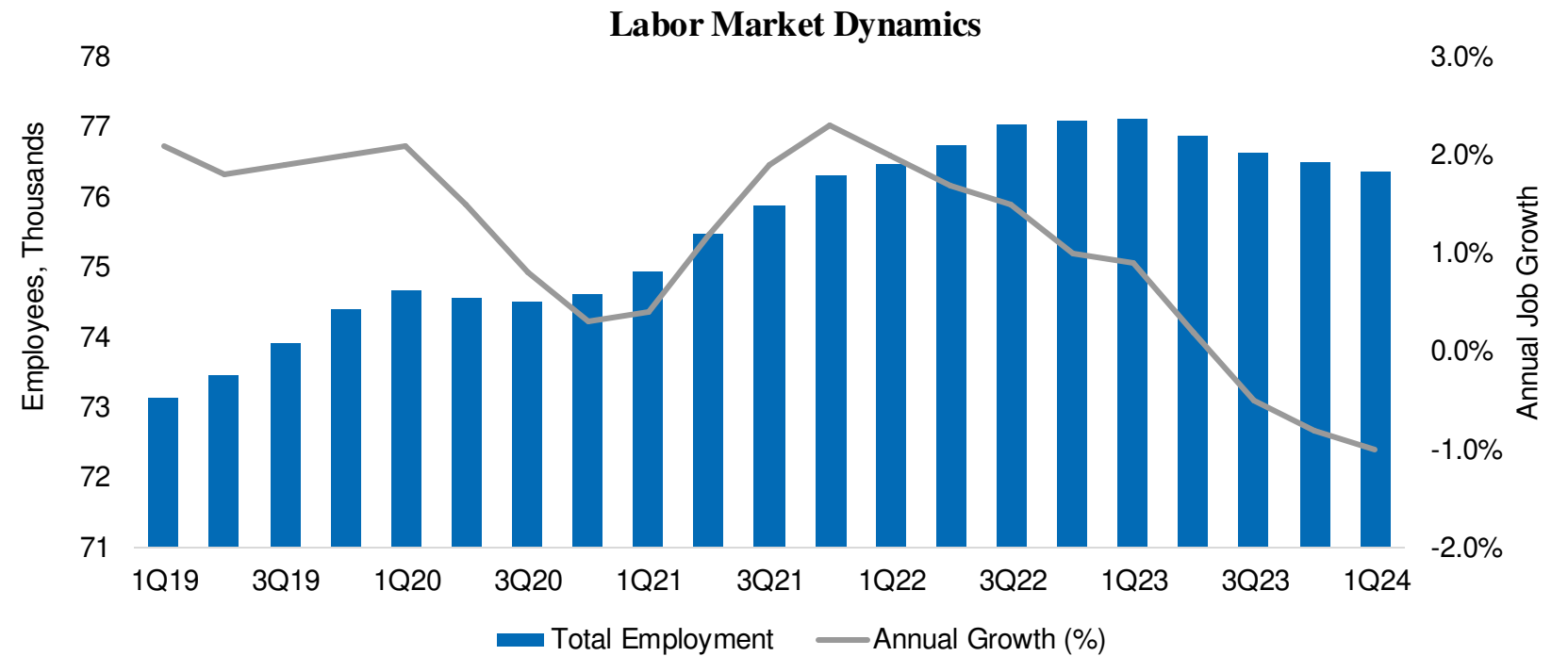
- Rice University
- University of Houston

Mid-Year Stats

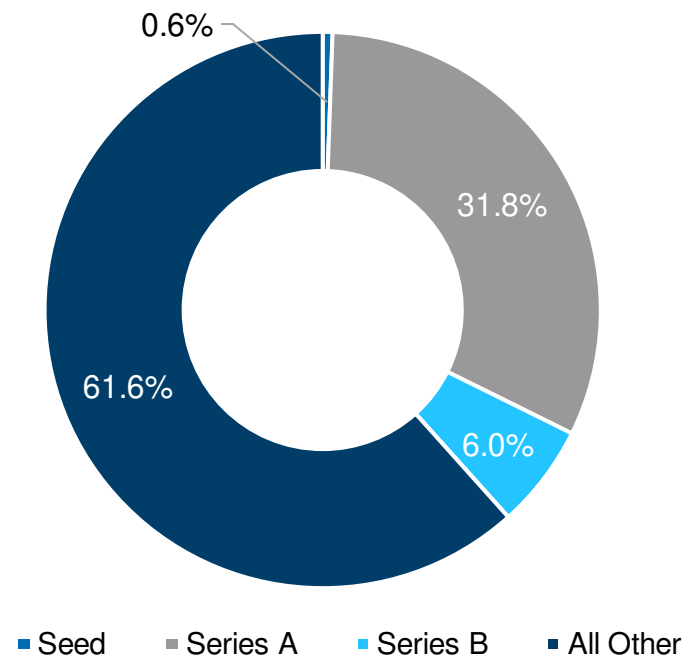
4.0 MSF Total Inventory	0 SF Under Construction	-35 KSF YTD Net Absorption	29.5% Vacancy Rate	\$25.40 / SF Asking Rent (NNN)
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Chicago

- Demand for life science space in Chicago remains slow, with a recent announcement indicating that a proposed life science development in Fulton Market will pivot to apartments instead.
- In the suburbs, American Landmark Properties has placed the last parcel of land at their Illinois Science & Technology Park up for sale.



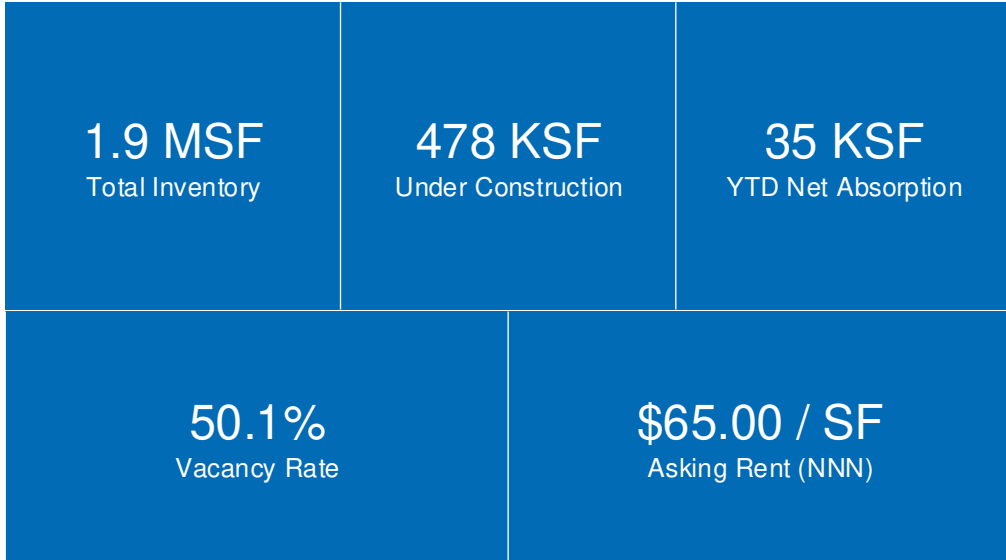
1H2024 Venture Capital Funding



Top Tech Transfer Universities

1. Northwestern University
2. University of Chicago
3. University of Illinois at Chicago

Mid-Year Stats



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