CUSHMAN & WAKEFIELD

Cushman & Wakefield

Life Sciences Update

H1 2024

Key Takeaways

- The patent cliff will continue to make pharma M&A and innovative drug discovery critical.
- Softer demand and an increase in vacant sublease space has translated to lower asking rents in some markets. However, the strong appetite for highly amenitized, newly constructed class A space is expected push asking rents higher as a significant amount of new space delivers in the sector through 2025.
- The total market vacancy rate has increased due to the influx of vacant sublease space and some new construction projects delivering vacant. This trend should start winding down in 2025 as the life sciences construction pipeline contracts and occupiers absorb some of the current vacancy.
- Labor growth through the next five years will remain robust, and the current construction activity should readily accommodate this demand.

Key Takeaways

- Despite an enthusiastic start to 2024, global funding levels were flat during the first half of 2024 when compared to the first half of 2023. Global life sciences funding in 2024, including VC and IPOs, totaled nearly $26.7 billion, in line with the $26.8 billion from the first half of 2023.

- Halfway through 2024, most ongoing clinical trials are focused on drug-related interventions, followed by biological interventions.

- AI implementation in clinical trials is expected to improve efficiencies throughout the clinical trial lifecycle.

- Emerging markets continue to increase their traction in the sector.

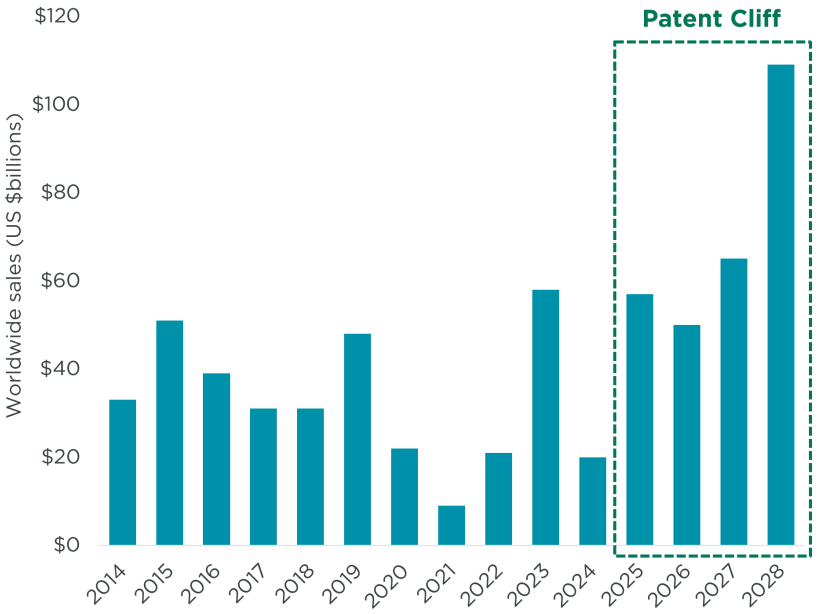
- European markets: Recent conditions have been challenging, but the outlook has improved. With medical advances accelerating, new treatments emerging and public sector support strong, activity and interest in the sector is set to increase in the months ahead.

CUSHMAN & WAKEFIELD

Trends in Life Sciences

Sector Shifts Due to Upcoming Patent Cliff

Revenue at Risk from Loss of Exclusivity



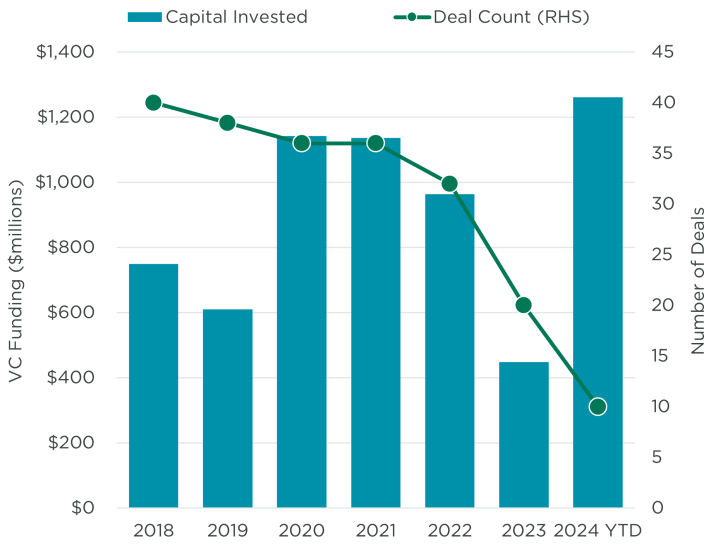
Source: EY analysis, Evaluate Pharma (September 2023)

- Nearly 200 drugs are facing patent expirations through 2030, with major blockbuster drugs at risk, including Merck & Co's Keytruda, which will expire in 2026.
- The loss of revenue is estimated at nearly $300 billion for drugs expiring between 2025 through 2028. The large number of patent expirations will make it difficult for pharmaceutical (pharma) companies to find replacements immediately. Therefore, strategies to replace this revenue loss include:
    - Implementation of AI to speed up drug discovery, clinical trials and production.
    - The acquisition of drug and therapies through mergers and acquisitions (M&A). Based on a recent EY report, the biopharma industry had approximately $1.5 trillion available at the end of the first quarter of 2024, giving the sector significant capital for M&A deals.

Key Takeaway: The pharma industry will continue to make strategic investments in AI and M&A to shore up the drug discovery pipeline and make up for the significant loss of exclusivity in the next five years.

Drug Discovery Innovation Through AI

AI-Powered Drug Discovery Venture Capital Funding



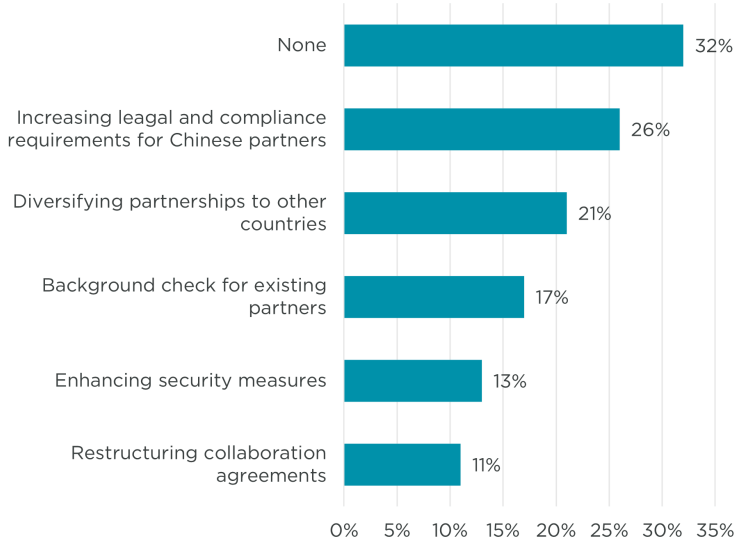
Source: PitchBook Data, Inc.; *Data has not been reviewed by PitchBook analysts; YTD as of June 2024; RHS=Right Hand Side

- The potential implications of AI on drug discovery is making waves in the life sciences sector. Venture capital (VC) funding for AI companies focused on drug discovery has accelerated, and as of midyear 2024, totaled more than any individual year.
- VC is not the only funding source driving AI advancements; the pharma industry is also making substantial investments into AI applications. Many companies have already integrated AI in their current research and development (R&D) plans. According to a recent Evaluate survey, about 270 companies are implementing AI solutions in their drug discovery efforts.
- AI has the potential to enhance the lifecycle of drug discovery from ideation to production. Some benefits to the industry include:
    - Faster drug development
    - Cost savings that free up funds for further R&D
    - Growth in both the number and quality of drugs

Key Takeaway: The fusion of drug discovery and AI has already begun and is in its early stages. AI has the potential to revolutionize the next generation of drugs and serve as a bridge to the upcoming patent cliff.

Implications of the Biosecure Act

Strategic Adjustments Made in Response to the U.S. Biosecure Act



Source: L.E.K. 2024 Global Survey on Impact of U.S. BIOSECURE Act; Based on 73 responses from Biopharma, CRO/CDMO and Investors

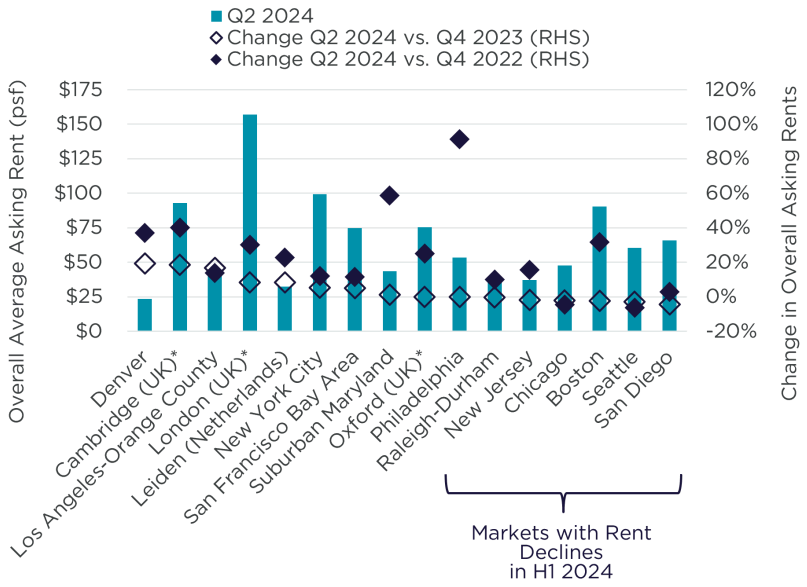
- The proposed Biosecure Act plans to restrict which foreign companies can do business with pharma companies that receive U.S. funding. Since most global pharma companies have contracts from the U.S. government, this legislation will have far-reaching impacts on the pharma industry and its supply chains.
- Global consulting firm L.E.K.'s survey of life sciences companies found that 68% of respondents have begun making strategic adjustments in response to the Biosecure Act. The survey also found that 26% of respondents have begun to evaluate options outside of China.
- The immediate impact of the Biosecure Act is the diminished confidence in Chinese companies, although only a few have been named in the proposed legislation. Longer-term impacts of moving operations away from current partners will require significant time and money from pharma companies, but it may also present opportunities for other countries.

Key Takeaway: The Biosecure Act was recently passed by the U.S. House of Representatives and is now headed to the Senate. The life sciences sector must begin preparing for its eventual passage and the potential impact on the pharma supply chain.

CUSHMAN & WAKEFIELD

Leasing Market Fundamentals

Rent Growth Slows Across Most Markets



* Rents adjusted to reflect occupier costs of office to lab conversion

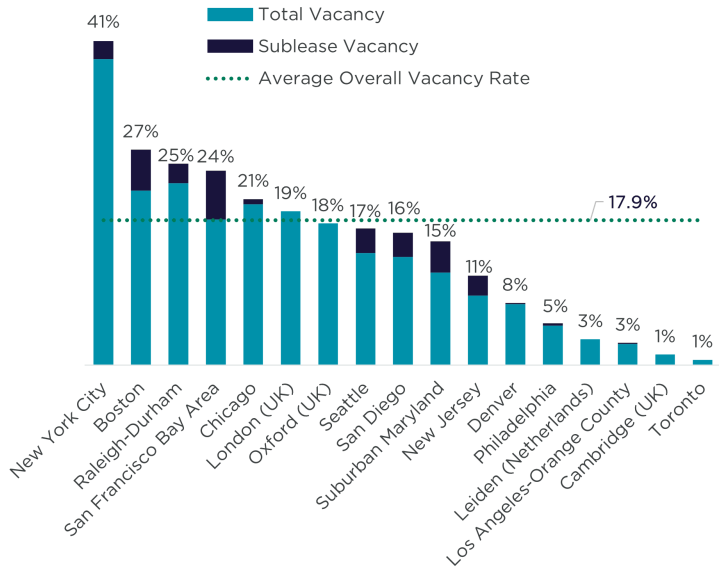
Source: Cushman & Wakefield Research; RHS=Right Hand Side

- Overall asking rent growth has softened from year-end 2023 levels to the second quarter of 2024. Growth remained positive at an average of 4% across the markets represented in this chart. Asking rents are still 24% higher in the second quarter of 2024 when compared to rents from the fourth quarter of 2022.
- Despite the deceleration in asking rents, three markets posted strong double-digit rent growth from the fourth quarter of 2023 to the second quarter of 2024: Denver (+19%), Cambridge, UK (+18%), and Los Angeles-Orange County (+17%).
- Asking rents declined in the second quarter of 2024 vs. Q4 2023 in five of the 16 markets: San Diego (-4.5%), Seattle (-2.9%), Boston (-2.5%), Chicago (-2.1%) and New Jersey (-1.9%).
- The increase in available vacant sublease space in many of these markets has had an impact on asking rents, as most of this space is typically priced lower than direct space.

Key Takeaway: Softer demand and an increase in vacant sublease space has translated to lower asking rents in some markets. However, the strong appetite for highly amenitized, newly constructed class A space is expected push asking rents higher as a significant amount of new space delivers in the sector through 2025.

Upward Pressure on Vacancy Rate Continues

Direct and Sublease Vacancy by Market



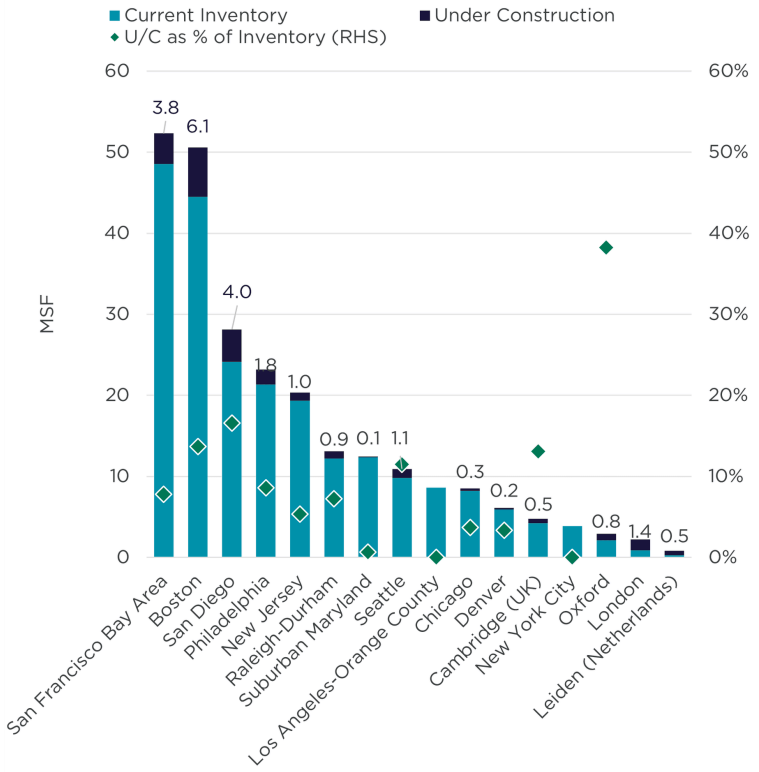
Source: Cushman & Wakefield Research

- Total vacancy rate increased 350 basis points (bps) from the fourth quarter of 2023 to the second quarter of 2024 to 17.9%. Although the life sciences vacancy rate has increased significantly in the last couple of years, it is still below the current U.S. office vacancy rate of 20.5%.
- Several factors are placing upward pressure on vacancy rates, including a recent influx of vacant new construction completions and an increase in vacant sublease space.
- The sublease vacancy grew 110 bps on a YOY basis to 3.5%, adding an additional 2.9 million square feet (msf) of space to the markets for a total of 7.7 msf of vacant sublease space.
- Total net absorption was negative for both the first and second quarters of 2024 in the U.S. Four of the 12 U.S. markets posted positive absorption for the first half of 2024, including Boston, Chicago, Denver and Los Angeles-Orange County.

Key Takeaway: The total market vacancy rate has increased due to the influx of vacant sublease space and some new construction projects delivering vacant. This trend should start winding down in 2025 as the life sciences construction pipeline contracts and occupiers absorb some of the current vacancy.

Inventory Growth Will Slow in the Near Term

Current Inventory and Under Construction



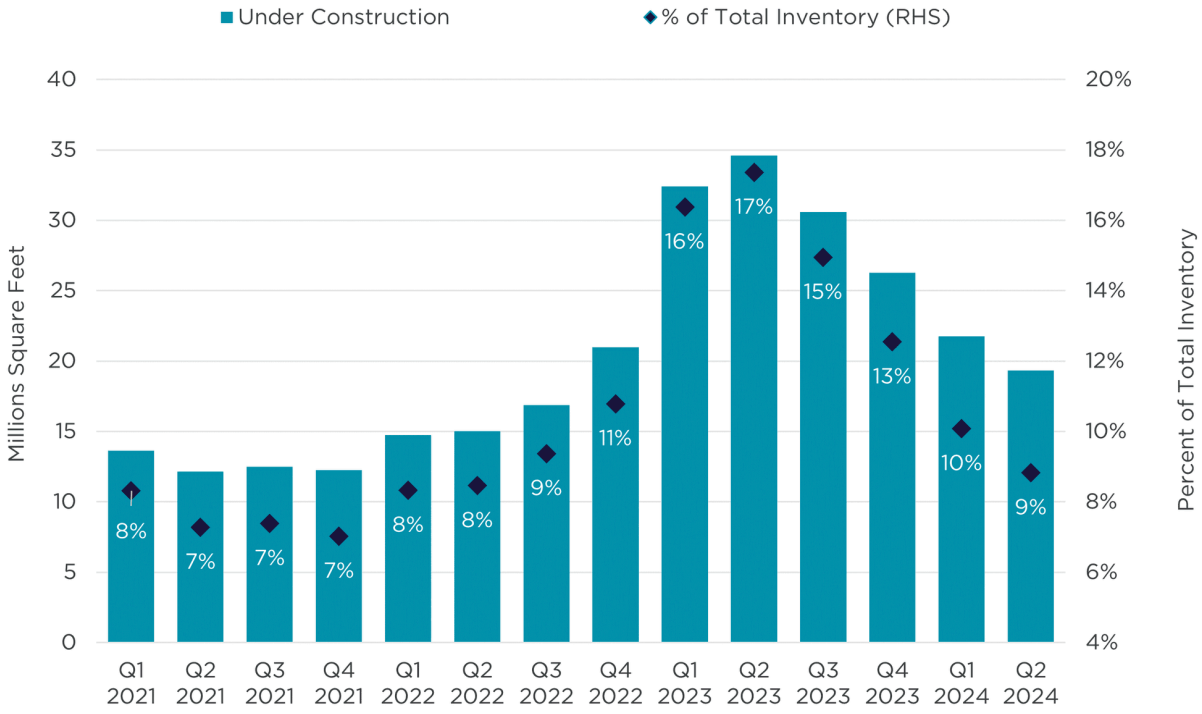
Source: Cushman & Wakefield Research

- Inventory growth is expected to slow in U.S. markets in the next couple of years. Inventory under construction totaled 17% a year ago in the second quarter of 2023, dropping nearly half to the current 8.8% of inventory under construction. It is expected to soften further as the construction pipeline continues to contract.
- Among the 16 markets, Boston has the most robust construction pipeline, with just over 6 msf of projects under construction. However, Boston's pipeline has decreased significantly and is currently less than half the 15 msf under construction from a year ago.
- Construction is stronger in emerging European markets. Projects under construction in the UK total 38% of current inventory, with London poised to nearly triple its inventory through the current construction pipeline. Likewise, Leiden, Netherlands, will more than double its current inventory.

Key Takeaway: The total market vacancy rate has increased due to the influx of vacant sublease space and some new construction projects delivering vacant. This trend should start winding down in 2025 as the life sciences construction pipeline contracts and occupiers absorb some of the current vacancy.

Construction Pipeline Continues to Contract

Inventory Under Construction



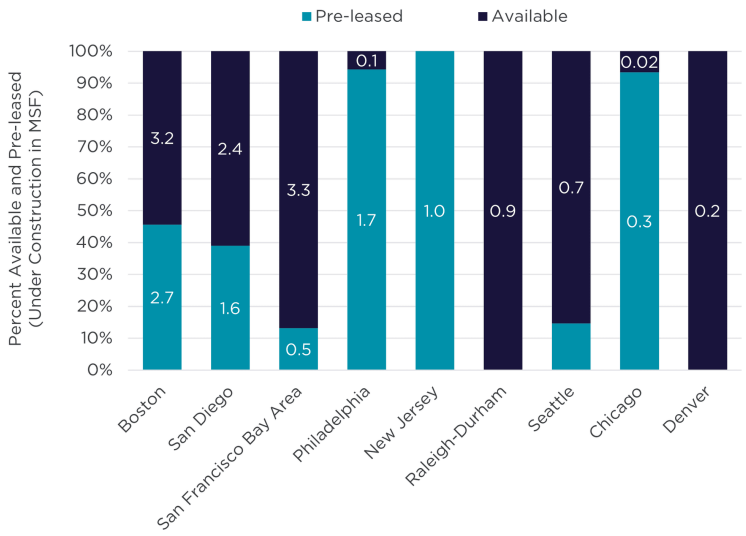
Source: Cushman & Wakefield Research

- Quarterly life sciences construction activity in the U.S. continued to contract through midyear 2024, slowing down for the last four quarters.
- Inventory under construction totaled 8.8% as of the second quarter of 2024, nearly half the construction activity from a year ago in the second quarter of 2023.
- Softening demand for space, coupled with a substantial number of deliveries expected to deliver vacant in the next 12 months, have dampened construction activity.

Key Takeaway: Construction of new life sciences space has declined in the last 12 months. We do not anticipate significant new construction activity until existing projects, and projects under construction, are leased.

Nearly 19 MSF of New Inventory Will Be Added in the U.S. by 2025

Expected Construction Completions: US Markets 2024-2025



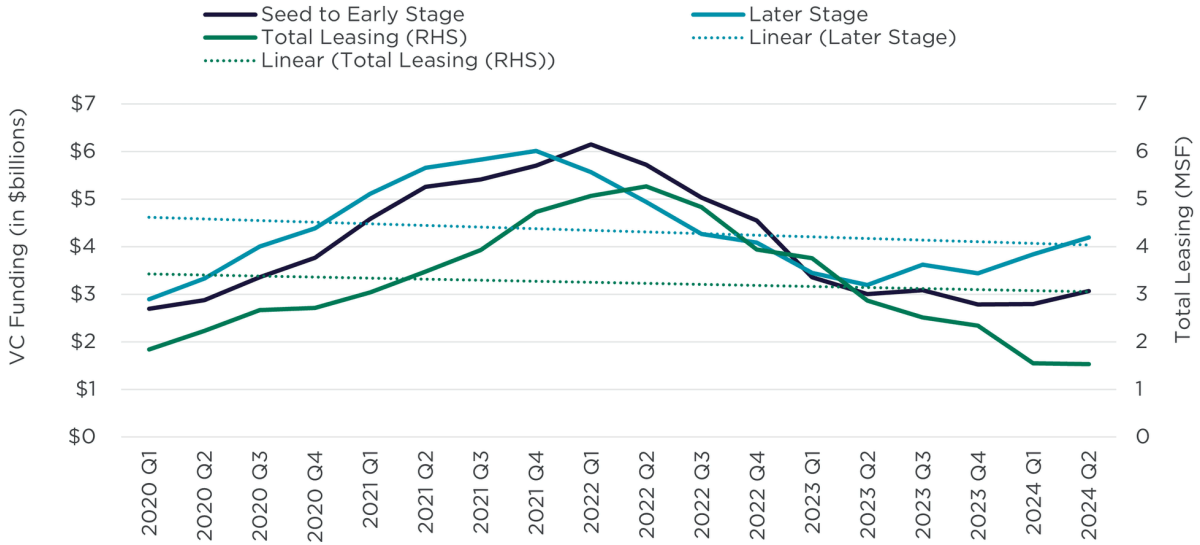
Source: Cushman & Wakefield Research

- Construction completions of nearly 19 msf through 2025 will increase the current inventory by 8.8%.
- Of these expected construction completions, approximately 42% is currently preleased. The remaining 58% will either deliver vacant or be absorbed by current tenants in the market (TIM).
- Boston is expected to add the greatest amount of new space through 2025, with deliveries expected to total nearly 6 msf, representing 96% of its total construction pipeline. This means that the bulk of Boston's pipeline will deliver by year-end 2025, and construction projects beyond 2025 have slowed.
- There has also been a shift in the type of projects in the construction pipeline. Nearly 27% of the projects delivering in 2024 are preleased, meaning most space is being built as speculative (spec). For projects delivering in 2025, over 58% are preleased, indicating that the pipeline is comprised of mostly build-to-suit (BTS) projects rather than spec.

Key Takeaway: The shift from spec construction to BTS will allow vacant inventory to work its way through the leasing cycle.

Venture Capital Funding and Leasing Activity Are Closely Aligned

Four-Quarter Rolling Average



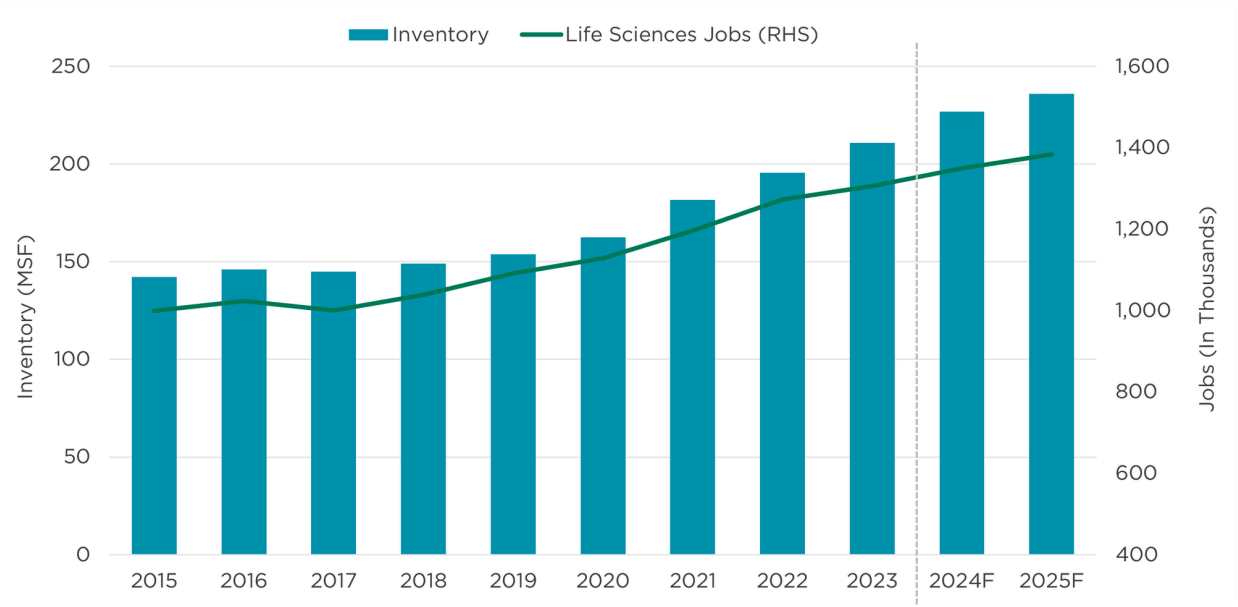
Source: PitchBook Data, Inc.; *Data has not been reviewed by PitchBook analysts, Cushman & Wakefield Research; RHS=Right Hand Side

- There is a strong correlation between VC funding for life sciences companies and total leasing activity in the U.S. Significant increases in funding often align with higher leasing activity, suggesting that as VC capital flows into the market, leasing activity tends to rise. Conversely, when VC capital contracts, leasing activity typically follows suit.
- During the last few quarters, there has been an inverse relationship between capital raised and space leased. One reason for this is that companies currently raising capital are generally in the late stages of development, with the funds raised primarily allocated to clinical trials.

Key Takeaway: Significant inflows of VC in the sector spurs growth in leasing activity. Funding appears to have hit bottom and may continue accelerating in 2025, which will likely lead to more leasing activity.

U.S. Life Sciences Inventory Growth Follows Job Growth Trajectory

US Life Sciences Job and Inventory Growth



Source: Lightcast, Cushman & Wakefield Research

- Life sciences inventory has grown 5.1% annually since 2015 to keep pace with employment growth of 3.3% annually over the same period.
- Through 2025, life sciences inventory is expected to grow an average of 5.8% annually, and employment is expected to grow an additional 3.2% annually.
- As the construction pipeline contracts in the U.S., inventory growth and employment growth should be more closely aligned in the future.

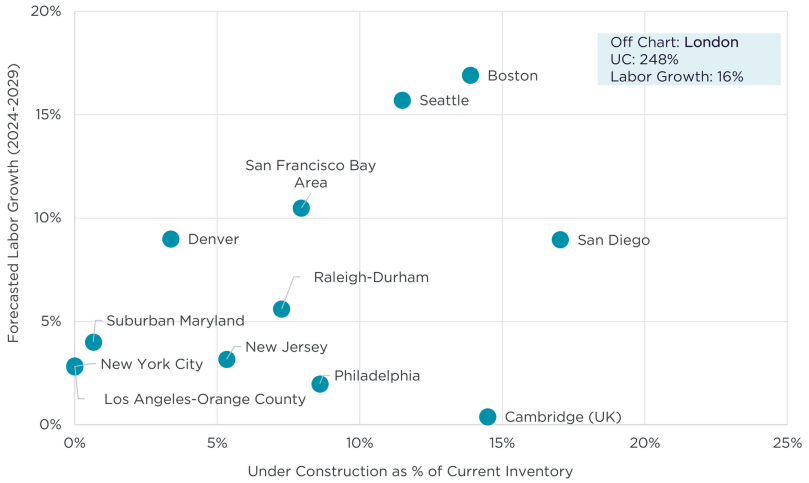
Key Takeaway: Inventory growth has followed the path of job growth and will adjust proportionately to changes in the labor market.

CUSHMAN & WAKEFIELD

Labor

Strong Employment Growth Drives Construction Activity

Projected Growth in Labor Pool and Lab Inventory



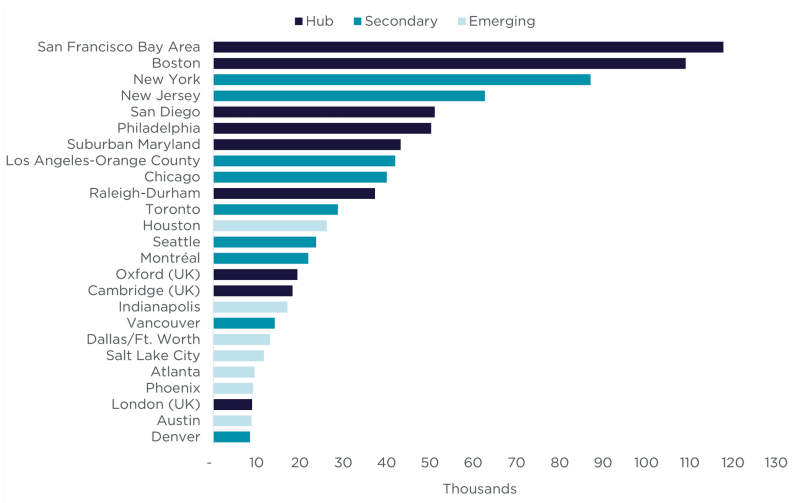
Source: Cushman & Wakefield Research

- Strong life sciences employment growth is expected in the next five years across many markets.
- The two markets with the largest construction pipelines—Boston and the San Francisco Bay Area—also expect double-digit employment growth in the next five years.
- Through 2029, Boston's life sciences talent pool is expected to grow an additional 17%. The current inventory-to-talent ratio for Boston is 402 sf per employee. The employment forecast means that over 7 msf is needed to accommodate new talent in Boston. The current pipeline of 6 msf and vacant space in the market should accommodate this growth.
- The San Francisco Bay Area inventory-to-talent ratio is 404 sf per employee. To support an anticipated 11% employment growth through 2029, an additional 5 msf will be needed. This demand can be met by the current 4 msf pipeline and the vacant space in the market.

Key Takeaway: Labor growth through the next five years will remain robust, and the current construction activity should readily accommodate this demand.

Hub and Secondary Markets Have the Largest Employment Base

Life Sciences Total Employment by Market (MSA), 2024



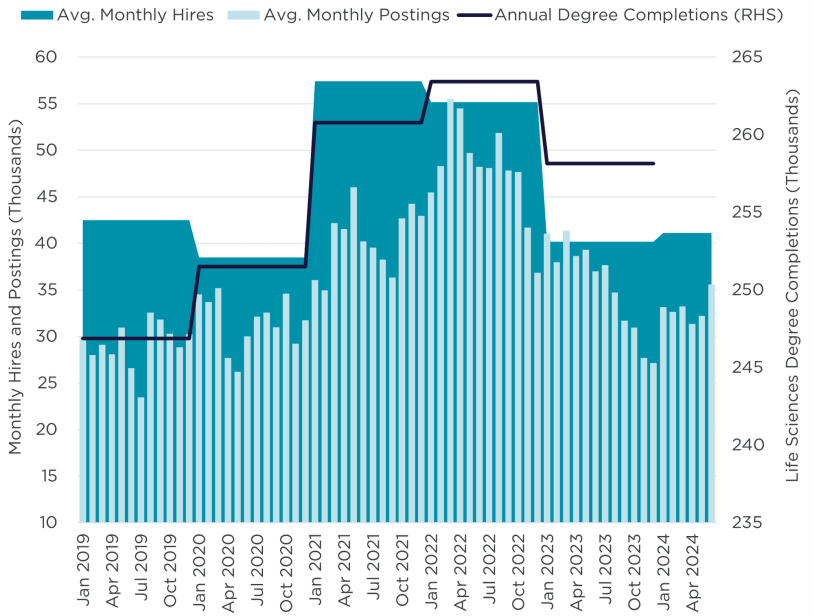
Source: Lightcast

- Life sciences employment is concentrated in the top 10 markets, which account for 69% of life sciences employment.
- Cushman & Wakefield defines a hub market as typically having a large employment base and significant lab and cGMP inventory. All six hub markets rank in the top 10 for employment, along with secondary markets like New York, New Jersey, Los Angeles-Orange County and Chicago.
- Life sciences employment growth has been robust in all markets over the last five years. Notably, emerging markets experienced the strongest growth (29%), followed by hub markets (27%) and secondary markets (16%).
- Looking forward, the employment forecast calls for growth to decelerate over the next five years but remains positive. Emerging markets are forecast to grow 10%, followed by hub markets at 9.8% and secondary markets at 4%.

Key Takeaway: Major life sciences employment hubs will continue to be drivers of life sciences and lab real estate. Watch for large secondary markets (e.g., New York, New Jersey, Los Angeles-Orange County and Chicago) to also be growth spots for life sciences in the coming years.

Recalibration of the Life Sciences Labor Market Continues

US Life Sciences Job Postings Decline After Post- Pandemic Peak



Source: Lightcast

- Life sciences job postings increased through midyear 2024 after falling in the second half of 2023. However, posting and hiring activity lags 2022 levels.
- On a 12-month basis, job postings over the last 12 months were 24% slower than the previous 12 months, as hirings outpaced job postings by 26%.
- The slowdown in postings indicates that employers were more likely to fill open positions in the last 12 months than the previous two years. However, current job postings have an intensity ratio of 3-to-1, meaning each unique job is posted an average of three times. This highlights continued challenges in staffing certain positions.
- The number of students earning life sciences degrees has grown 4.6% since 2019. While not all graduates will pursue careers in the sector, this growth expands the pool of skilled talent.

Key Takeaway: Slower hiring and selective layoffs may present hiring opportunities for growing companies.

Filling Some Positions Remains Challenging

Top 20 Markets – Job Postings 1H 2024

City	Total Postings	Unique Postings	Median Posting Duration
Boston-Cambridge, MA*	12,811	4,072	25 days
New York, NY	9,420	2,812	24 days
Houston, TX	8,048	2,781	23 days
San Diego, CA*	6,917	2,072	24 days
Los Angeles, CA	9,639	2,036	26 days
Suburban Maryland*	6,202	1,989	24 days
Philadelphia, PA	[illegible]	[illegible]	[illegible]

Open full table in browser:

https://insights.cushmanwakefield.com/story/h1-2024-life-sciences-update/page/4/4

*Hub Market

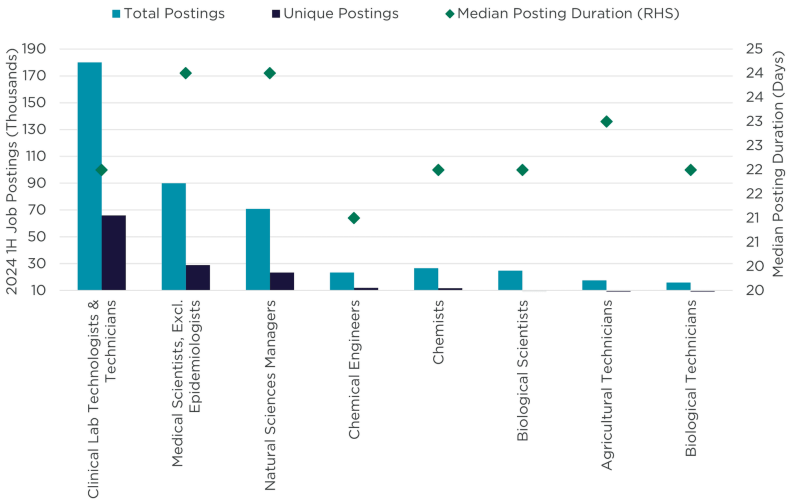
Source: Lightcast

- Despite the decrease in hirings, finding talent to fill certain positions remains challenging in today's labor market. In some markets, employers must post job openings up to five times to fill specific roles.
- The Boston-Cambridge market had the most unique postings, meaning that companies were looking to fill over 4,000 jobs in the first half of 2024. These jobs were posted an average of three times, reflecting the difficulty in filling some of these positions.
- Notably, Los Angeles had over 2,000 unique job postings, but the jobs were posted an average of five times each, more than in any other market.

Key Takeaway: Finding highly skilled talent for open positions remains challenging, even as the labor market loosens.

Employers Search for Specific Talent

Top U.S. Life Sciences Occupations



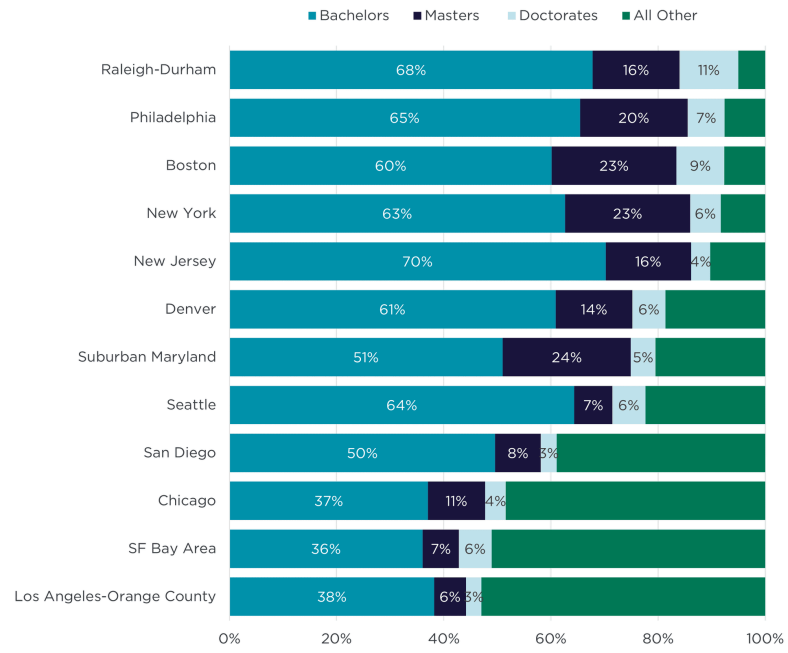
Source: Lightcast

- Half of the job openings were focused on two occupations: clinical laboratory technologists and technicians, and medical scientists.
- There were just over 66,000 job openings for clinical lab technologist and technicians during the first half of 2024. However, each position was posted an average of three times, highlighting the difficulty of filling these roles.
- Both medical scientists and natural science manager jobs also had an average intensity ratio of 3-to-1, but they also had a longer median posting duration of 24 days.
- Other key trends among employers:
  - The top five posted job titles were laboratory technician, medical laboratory technician, medical laboratory scientist, laboratory assistant and process engineer.
  - The top five skills requested were biology, chemistry, medical laboratory, laboratory equipment and laboratory testing.
  - Three-quarters of postings requested that applicants have a bachelor's degree or higher.

Key Takeaway: Talent with skills and qualifications that fit high-demand occupations is needed to bridge the hiring gap.

Highly Educated Talent is Necessary for Most Life Sciences Occupations

Percent of Higher Education Degree Completions, 2019-2023



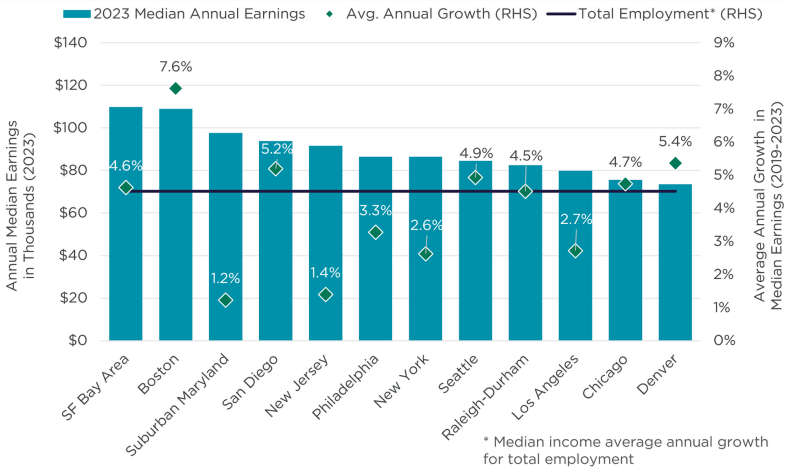
Source: Lightcast

- A high composition of higher education degrees in a market provides a significant advantage to employers seeking highly educated talent pools.
- Raleigh-Durham, Philadelphia and Boston continue to boast highly educated workforces, with over 92% of degree completions in each market between 2019 to 2023 being at the bachelor's level or higher. Among all markets, Raleigh-Durham has the highest concentration of doctorate degree completions, and suburban Maryland has the highest concentration of master's degree completions.
- In terms of absolute number of degree completions, the New York MSA has the greatest number of bachelor's, master's and doctorate degree completions.

Key Takeaway: With nearly three-quarters of life sciences job postings requiring applicants with a bachelor's degree or higher, finding talent with the right set of skills requires employers to focus on markets with highly educated talent pools.

Wage Growth Accelerated in 2023 But Lags National Growth Rate

Life Sciences Occupations: Annual Median Earnings and Growth by MSA



Source: Lightcast; RHS=Right Hand Side

- Annual median earnings for life sciences occupations averaged $89,200 across hub and secondary markets in 2023. While median earnings grew by 4% annually between 2019 and 2023, this rate lags behind the national average of 4.5% during the same period. However, compared to the national average median earnings of $48,300, life sciences labor is much costlier.
- Earnings are highest in the San Francisco Bay Area, where the cost-of-living (COL) index is 135. Wages have grown faster than the national average, at 4.6% per year. Boston also has a high cost of labor, with annual growth of 7.6% in earnings and a COL index of 132.
- Denver has the lowest median earnings of $73,500 per year, however, wages have grown faster at 5.4% annually since 2019.
- Wages have shown slow growth in suburban Maryland, growing only 1.2% per year since 2019, slower than both the national average and hub and secondary markets.

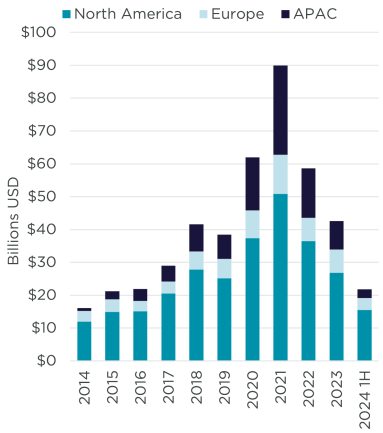
Key Takeaway: The cost of labor is significantly higher in the life sciences sector, but wage growth is slower than other major employment groups.

CUSHMAN & WAKEFIELD

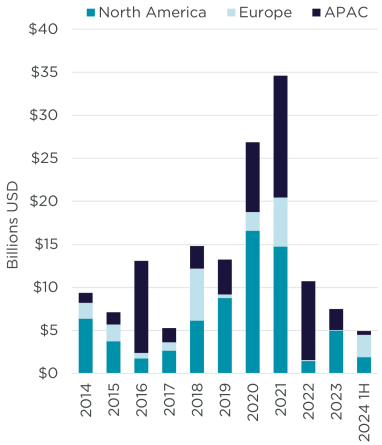
Global Funding

Global Funding Levels Flat YOY

Venture Capital



Public Offerings



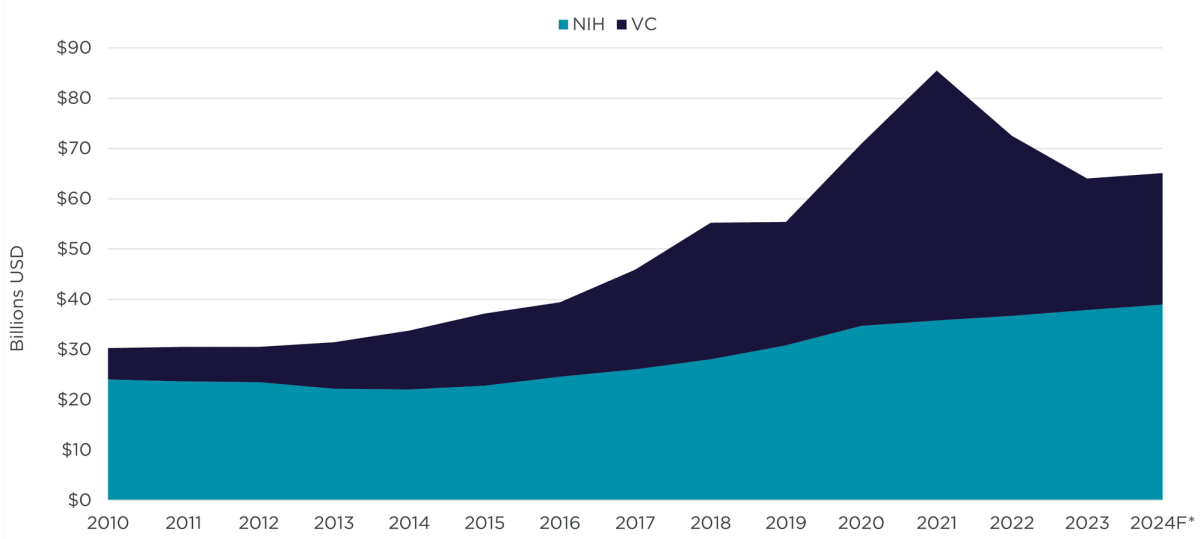
Source: PitchBook Data, Inc.; *Data has not been reviewed by PitchBook analysts

- Despite an enthusiastic start to 2024, global funding levels were flat during the first half of 2024 when compared to the first half of 2023. Global life sciences funding in 2024, including VC and IPOs, totaled nearly $26.7 billion, in line with the $26.8 billion from the first half of 2023.
- Europe's share of funding increased this year, accounting for 23% of capital raised compared to 15% or less in the two previous years. In contrast, APAC's share of funding sits at 12%, down 22% from its three-year average.
- In April, Xaira Therapeutics, a U.S.-based biotech company that uses AI and machine learning for drug discovery, secured a $1 billion first-round investment, marking the largest single VC investment this year. After a flurry of IPO announcements early in 2024, including those from Galderma, CG Oncology and Kyverna in the first quarter, IPO activity slowed in the second quarter. Total IPO volume was flat on a YOY basis and should equal or exceed 2023 levels at the end of 2024.

Key Takeaway: Global life sciences funding in 2024 looks a lot like 2023. Potential interest rate cuts in the second half of the year could spur additional investment in the sector.

U.S. VC Funding Is Supplemented by Growing NIH Funding

Total Annual US Funding Over Time



*2024 forecast based on flat budget projections for 2024 NIH funding and flat VC deal volume

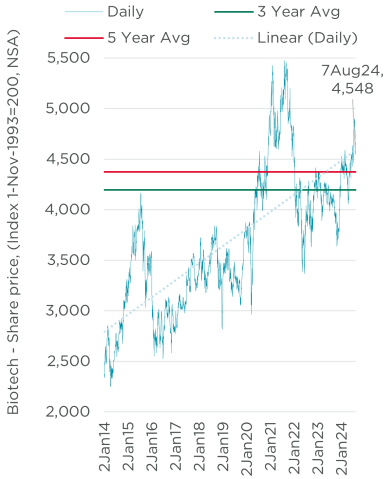
Source: U.S. National Institutes of Health, Cushman & Wakefield Research

- U.S. government funding focused on research and development continues to increase amid a challenging VC funding environment. Combined funding for 2024 should continue to outpace pre-pandemic years.
- For fiscal year 2024, the NIH proposed a budget of $51 billion, the bulk of which will go toward R&D grants. Most NIH grants are allocated to the public sector, including hospitals, research institutes and research universities.
- NIH allocations to for-profit companies have averaged 7% since 2010. NIH funding totaled $17.6 billion through midyear 2024, with 5% (or $858 million) allocated to for-profit recipients.

Key Takeaway: NIH allocations to for-profit companies have increased steadily over time, providing an additional source of funding for the life sciences sector.

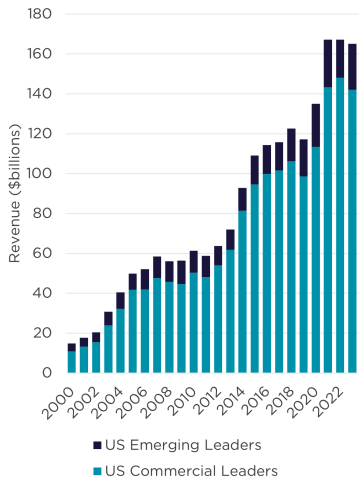
Biotech Pricing Edges Higher

Share Prices Ticked Up Mid-Year 2024



Source: The Nasdaq Stock Market, Inc. (NASDAQ), Cushman & Wakefield Research

U.S. Public Biotech Company Revenues, 2000-2023



Source: EY analysis 2024, Cushman & Wakefield Research

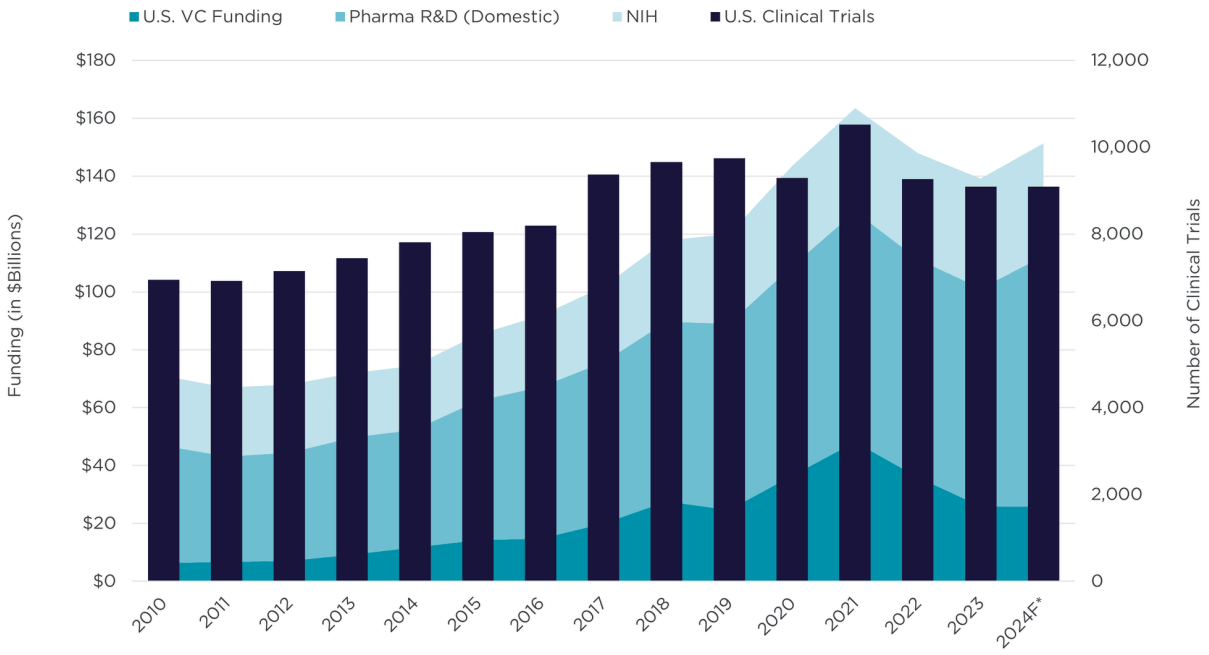
Note: Commercial leaders are companies with revenues at or above $500 million.

- Biotech stocks receded in April 2024 from a strong start at the beginning of the year. However, this drop was short-lived, and pricing has exceeded its three- and five-year averages, as well as its linear long-term trend.
- This recent pricing increase could continue into the second half of 2024, as increased expectations of interest rate cuts could spur additional investment in the sector.
- Public biotech revenue fell slightly to over $165 billion in 2023, a 1% drop YOY.
- Commercial leaders dominate revenue and on average account for 83% of total annual revenue over the last 23 years.
- In 2023, commercial leader revenue share totaled 86%, with a YOY drop of 4.1%. Emerging leaders had a 20% increase in revenue YOY.

Key Takeaway: Interest rate cuts should be positively received by the industry. While interest rates are expected to remain higher for longer, the onset of cuts is expected to improve sentiment and potentially result in increased investor activity.

Various Funding Sources Drive Clinical Trials in the U.S.

Funding by Source and Clinical Trials by Year of Initiation



Source: Clinicaltrials.gov, Pitchbook, NIH, Statista

- Although the sector started the year with momentum, 2024 has generally been the same as 2023. Sluggish VC funding means that clinical trials were muted, and as of June 2024, just over 4,400 trials had been initiated, a 7.2% drop from the same period in 2023.
- Improvements in the processes for clinical trials are expected in the near term, as many companies deploy AI solutions to enhance trials. With these enhancements, the number of trials may drop further as efficiencies improve.

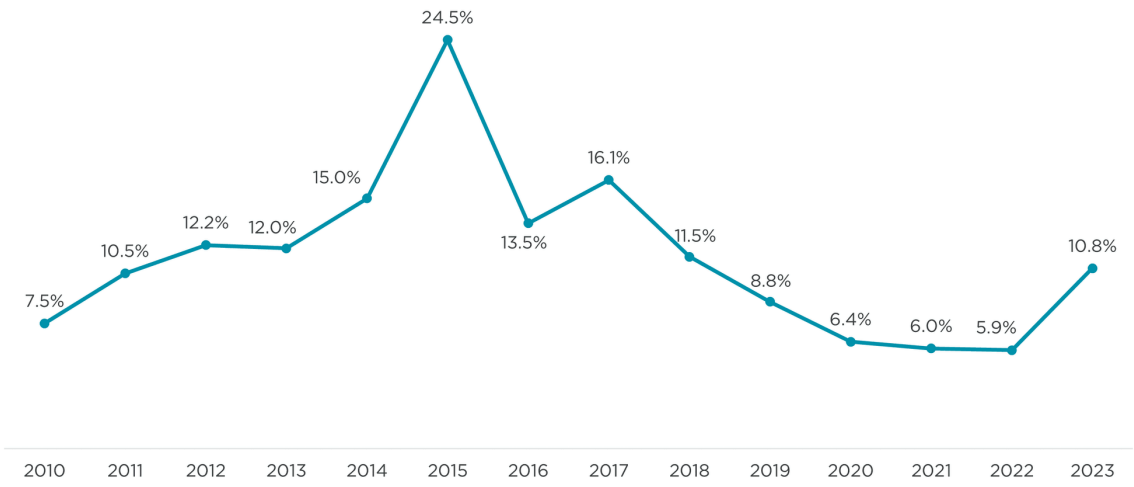
Key Takeaway: AI efficiencies in clinical trials have the potential to revolutionize the industry.

CUSHMAN & WAKEFIELD

Clinical Trials Key Growth Driver

The Value Add of Artificial Intelligence

R&D Composite Success Rate Phase 1 to Filing

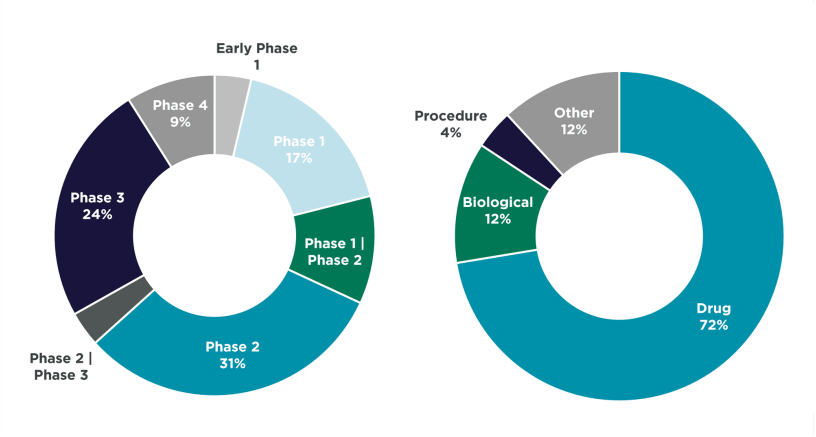


Source: IQVIA

Key Takeaway: AI is revolutionizing the life sciences industry by accelerating drug discovery, enhancing precision medicine and optimizing operational efficiency.

- AI implementation in clinical trials is expected to improve efficiencies throughout the clinical trial lifecycle.
- Cost improvements: Many clinical trials exceed time and costs; AI is expected to improve both.
- Improvements in patient recruitment are expected to significantly enhance the identification of appropriate patients, partly through the use of digital twins.
- The R&D composite success rate, based on IQVIA data, was 11% in 2023, an improvement over 2022; however, AI can improve operational efficiencies, leading to increased composite success rates.
- AI can also help companies navigate the regulatory environment. Implementation of AI by life sciences firms has resulted in the automation of the compliance process, allowing companies to maintain standards and ensure quality management.

Most Active Clinical Trials are Drug Related



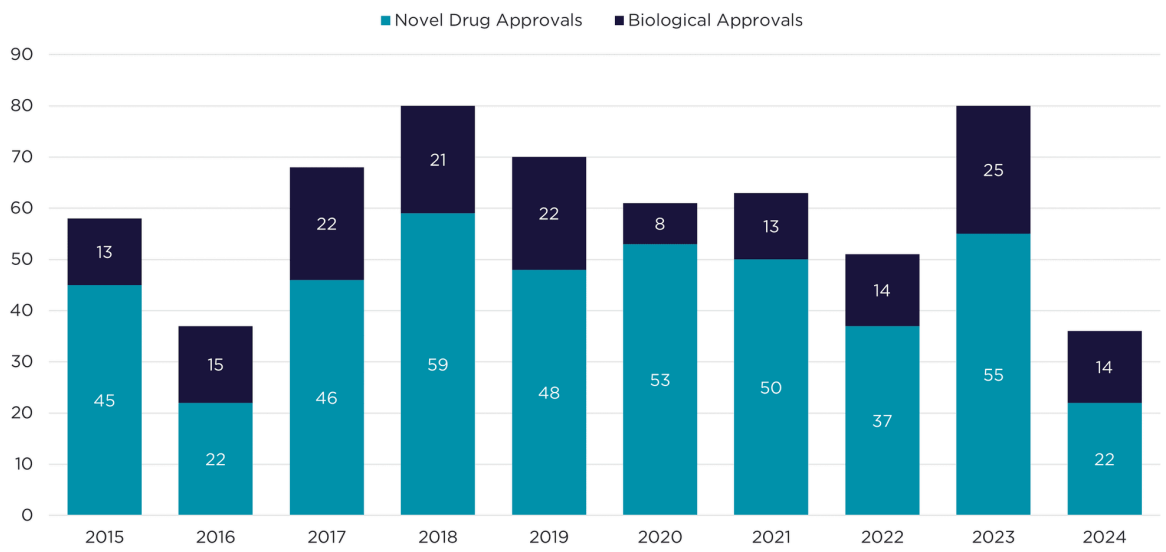
Source: Clinicaltrials.gov, *Unique Clinical Trials in the United States, Canada, United Kingdom, & Germany

- Halfway through 2024, most ongoing clinical trials are focused on drug-related interventions, followed by biological interventions at 12%. Drug trials test new medications, compare different doses or combinations of existing drugs, whereas biological-related interventions, such as vaccines, are derived from living organisms. Clinical staff, facility requirements and necessary lab equipment often differ depending on the trial type and the intervention being studied.
- After successfully completing discovery and design, followed by preclinical studies, the drug then enters Phase 1 of a clinical trial, where it is evaluated for safety and dosages.
- In Phase 2, the intervention is evaluated for efficacy and side effects, which can necessitate hundreds of patients.
- Phase 3 clinical trials are typically the most expensive, have the longest duration, and may require several thousand participants.
- Pending FDA approval, sponsors can design clinical trials that combine two phases to streamline drug development and reduce time and resources needed.

Key Takeaway: As the investigational product progresses through each phase, requirements for participants, staff and clinical space increase.

FDA Approvals on Pace to Reach Prior Peaks

FDA Drug and Biological Approvals



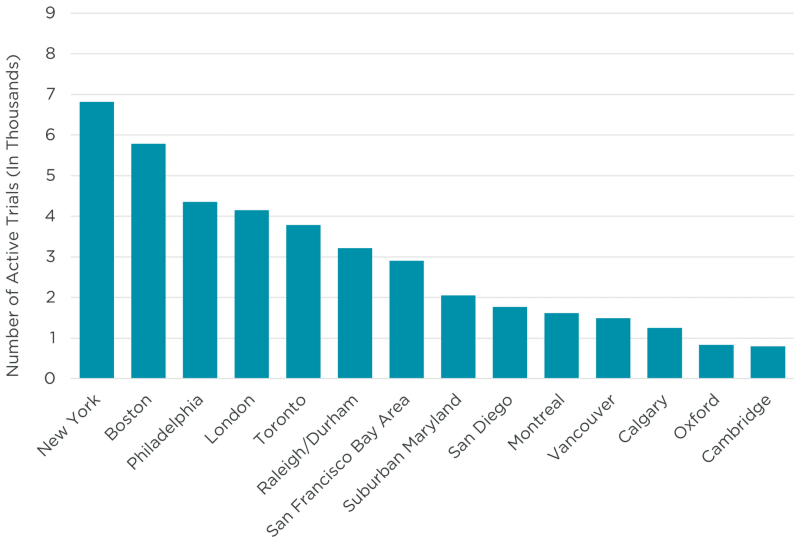
Source: U.S. Food and Drug Administration

Key Takeaway: FDA approvals provide several benefits to the life sciences sector, including boosting investor enthusiasm and validating innovative technologies and methodologies often used in drug development.

- After reaching a five-year high in 2023, drug and biological approvals reached 36 approvals combined through the first half of 2024.
- Despite approvals for novel drugs lagging last year's pace, biological approvals are on track to hit a new peak.
- Drug approvals are influenced by several factors, such as the complexity of drugs under development and scientific advances in understanding diseases and their targets.
- Once a drug is approved by the FDA, it can be marketed and distributed to healthcare providers and patients. This new cash flow enables a company to invest in additional lab space and R&D for projects in the pipeline. To meet increased production needs, manufacturers often need additional space to produce the product.

Site Selection Is Key to Successful Clinical Trials

Active Clinical Trials by Market



Source: Clinicaltrials.gov

- Choosing the right site is vital for the success and efficiency of a clinical trial. Inadequate site selection can lead to poor-quality data, elevated costs and prolonged timelines.
- To mitigate these risks, sponsors seek sites with a proven track record of success. They look for an experienced and well-trained staff, a large patient population and access to top-tier facilities, hospitals and research institutions.
- Despite being in the early stages of development and far from initiating clinical trials, companies often consider the necessary infrastructure for these trials when selecting laboratory space. Trial sites in proximity to a firm's existing footprint offers several benefits, including:
    - Enhanced communication and coordination between the research and clinical teams
    - Improved monitoring and oversight
    - Resource efficiency in allocation of staff and equipment
    - Familiarity with regulatory standards
    - Facilitated patient recruitment, as firms leverage their relationship with local healthcare networks

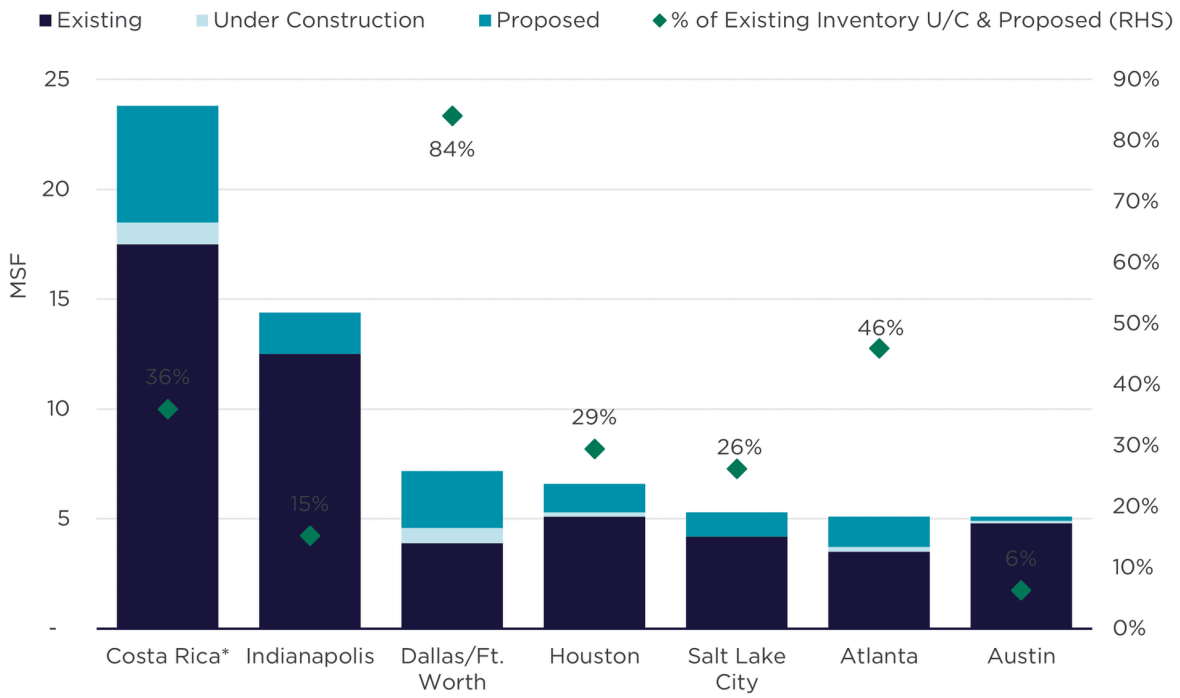
Key Takeaway: Site selection plays a vital role in the success of a clinical trial. Numerous ongoing trials in a market are indicative of its life sciences infrastructure and the value firms place on it.

CUSHMAN & WAKEFIELD

Emerging Markets

What Makes an Emerging Market?

Growing Inventory



Source: Cushman & Wakefield Research

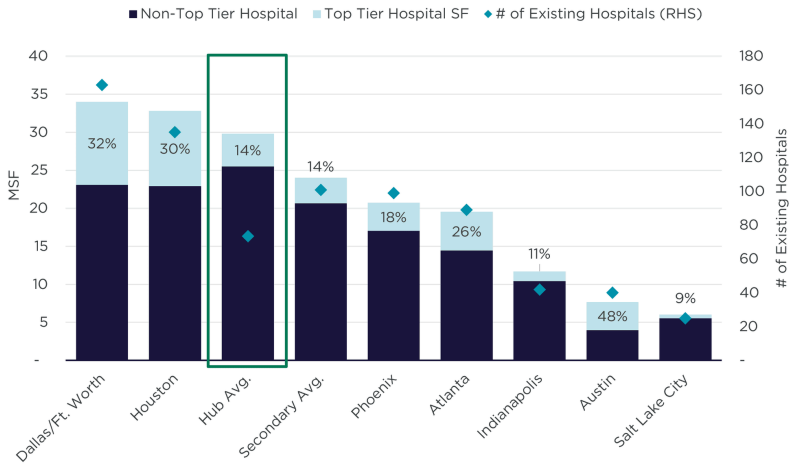
*Inventory is manufacturing

- Expanding inventory can facilitate growth for life science companies in emerging markets. As firms gain more access to advanced laboratories and research facilities, they can use this enhanced infrastructure to accelerate their development processes.
- Increasing supply levels confirm the growing momentum behind the life sciences sector in emerging markets. Additional access to space also helps these markets maintain cost-advantages compared to rental rates in hub metros.

Key Takeaway: The inventory pipeline reflects the growing enthusiasm of the life sciences sector within a market.

What Makes an Emerging Market?

Access to a Healthcare Ecosystem



*Hospitals considered top tier are those designated as 4- or 5-star buildings by Costar

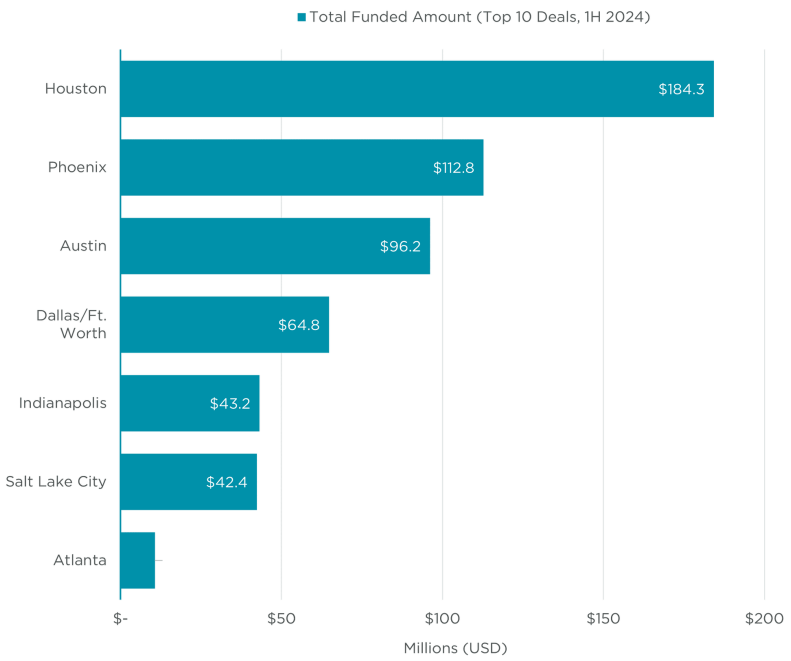
- Healthcare providers, research institutions and universities help formulate an attractive life sciences market by providing several benefits such as:
    - Collaboration and innovation.
    - A steady stream of talent.
    - Improved access to patient populations critical for clinical trials

- Medical professionals have direct access to patients and possess a high level of trust and credibility, which significantly boosts patient enrollment in clinical trials. This helps mitigate low patient participation, which often hinders clinical trials and delays drug development.
- According to a report by the SAS Institute, enrollment strategies using healthcare providers and pharmacies were the most effective in recruiting patients.

Key Takeaway: A strong research and healthcare network within a market enhances innovation and reduces risks of delays in clinical trials.

What Makes an Emerging Market?

Public and Private Fund Attraction



Source: Pitchbook

- The inflow of public funding through grants, tax incentives and development projects in emerging markets drives infrastructure expansion and fosters a flourishing life sciences ecosystem. This funding also plays a valuable role in propelling early-stage projects that may be too risky for private investors.
- Private investment is also critical for life sciences companies. By funding R&D efforts, covering clinical trial costs and developing the necessary infrastructure to commercialize drugs, private funding plays a vital role in the evolution of early-stage research to a market-ready product. This investment is especially pivotal for startups and smaller firms, which are often prevalent in emerging markets and lack the financial resources of larger companies.

Key Takeaway: Public and private funding fuels growth in emerging markets by facilitating an attractive life sciences ecosystem, propelling startups and pushing research initiatives from initial development to commercialization.

What Makes an Emerging Market?

High Growth in Employment

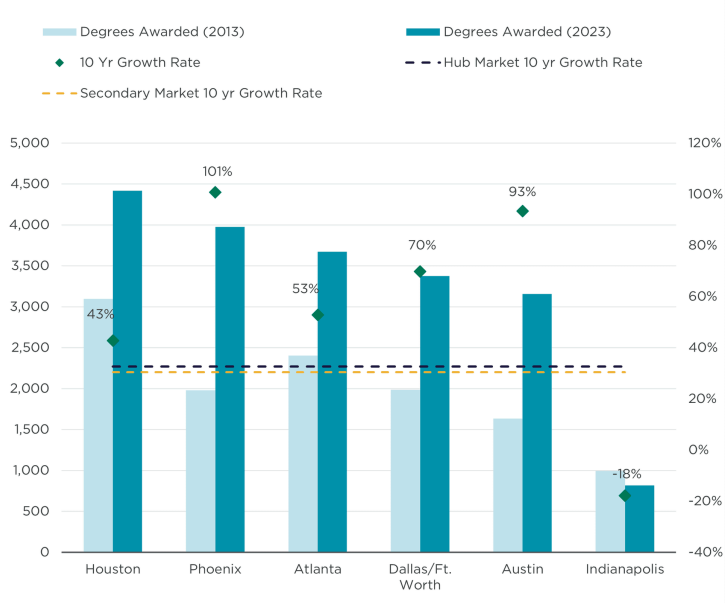
Source: Lightcast

- While emerging markets often have a shallow depth of specialized life sciences labor, they offer several talent attraction advantages compared to larger hub markets.
- Emerging markets are attractive to researchers, scientists and industry experts who are often willing to relocate for lower costs of living. Not only does this offer a talent advantage for firms in emerging markets, but it also reduces elevated salary costs.
- The presence of mega-sized pharmaceutical companies in these markets is also drastically reduced, which offers smaller firms a better shot at landing top talent.
- Firms in emerging markets can also leverage an untapped talent pool of science, technology, engineering and mathematics professionals who can provide skilled labor at competitive rates.

Key Takeaway: Employment growth confirms an emerging market's ability to fulfill the talent requirements of life sciences companies, often at a reduced cost.

What Makes an Emerging Market?

Growth in Bio-Degree Awards



Source: Lightcast

- Robust growth in life sciences degrees demonstrates the momentum a market has captured in the life sciences sector. Universities, where life sciences companies actively recruit, are seeing higher enrollment, affirming that students believe these institutions and markets provide valuable pathways into the life sciences field.
- The influx of new graduates attracts life sciences companies seeking talented, educated young professionals to join their ranks. This creates a virtuous cycle, where top students are drawn to regions with promising employment prospects, and companies in these areas increase their hiring efforts to secure the best candidates.
- As the life sciences student body continues to grow, the university must increase investments in resources such as lab space, research facilities and space for more faculty. These enhancements foster a dynamic research environment, attracting life sciences companies to collaborate with academic researchers.
- Despite a drop in life sciences degrees in Indianapolis, Indiana University announced plans to invest over $250 million to enhance the school's life sciences infrastructure. This investment aims to boost enrollment and enhance the university's research capabilities.

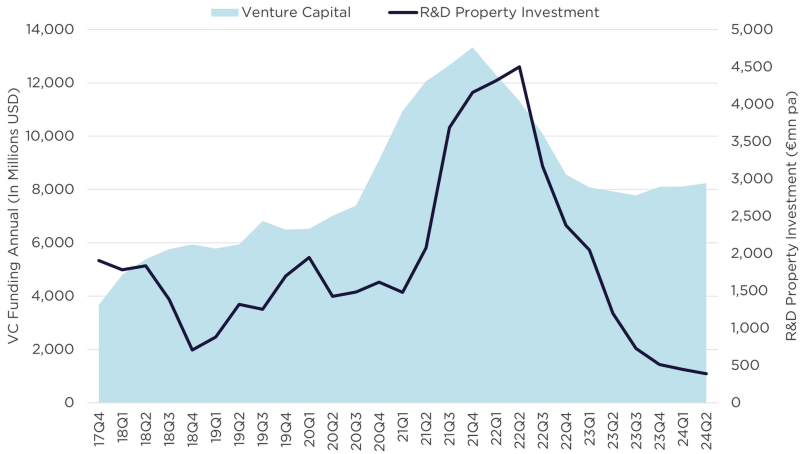
Key Takeaway: Elevated degrees provide firms with an influx of young talent, bolster the life sciences infrastructure, and boost public and private sector collaboration.

CUSHMAN & WAKEFIELD

Europe

The Funding Market Has Firmed

Venture Capital Life Science Funding and Real Estate Investment



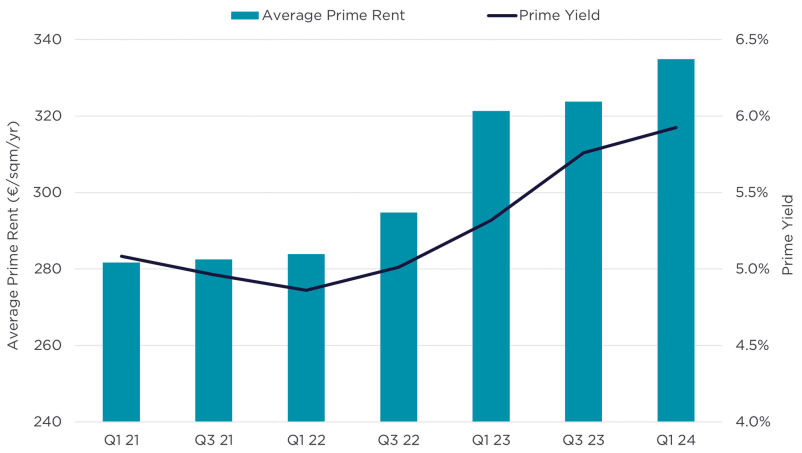
Source: Pitchbook, RCA, Cushman & Wakefield

- European Life Sciences VC funding rose 4% in the first half of the year, but the number of deals declined by 28% as investors focused on bigger deals.
- Life sciences funding outgrew the wider VC market over the year, taking an 11.2% market share vs. 10.8% a year ago.
- The UK, Switzerland and France led the way, accounting for 61% of VC funding in the past year, while the strongest growth was seen in Norway, followed by the UK and Ireland.
- Signs of a stabilization in the funding environment are yet to be reflected in the real estate investment market, with investment in R&D assets down 67% in the past year to 391 million euros.
- Geographical trends have varied, but all markets are down. The UK and Germany remain the largest markets overall, followed by France, the Netherlands and Spain.
- The R&D sector underperformed the wider property investment market again, with its market share dropping to just 0.2%.

Key Takeaway: Recent conditions have been challenging, but the outlook has improved. With medical advances accelerating, new treatments emerging and public sector support strong, activity and interest in the sector is set to increase in the months ahead.

Real Estate Values Stabilizing

R&D Real Estate Values in Europe



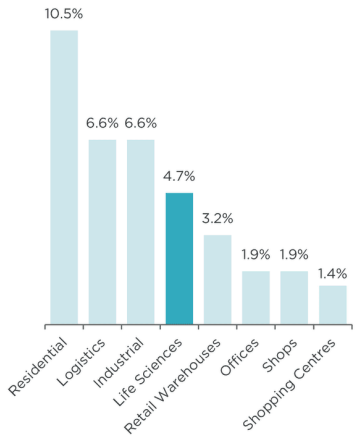
Source: RCA, Cushman & Wakefield

- Life Sciences markets across Europe have been typified by the start of a stabilization in yield increases and good rental growth.
- Rents for lab-enabled space increased by 4.7% at the end of the first quarter of 2024 compared to gains of 5.9% for CBD office space and 3.8% for decentralized offices in the same locations. These gains have been led by Norway, the UK, Germany, France and Sweden.
- At the same time, yields have started to stabilize after strong outward moves last year, as the sector caught up with the earlier decompression in the wider office market. Yields have increased 108 bp on average over the past two years, compared to 155 bp in the CBD office market.

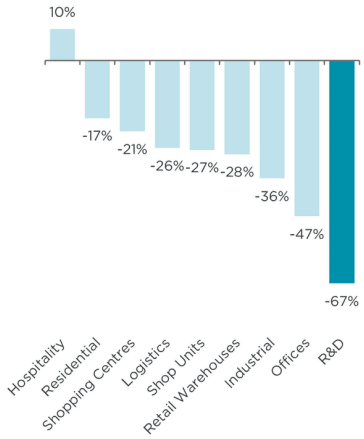
Key Takeaway: With yield increases outweighing rental growth, there was a slight fall in average capital values of 5.5%. However, yield increases remain less than in other parts of the office market. As a result, capital performance has been more resilient, with CBD offices seeing a 10.1% decline.

Life Sciences vs. Other Sectors

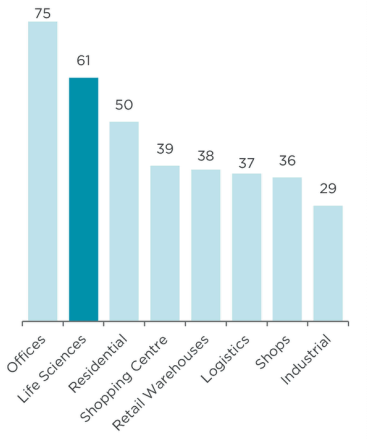
Rental Growth
(Western Europe, year to Q2 24, % pa)



Investment Volumes
(Change, all Europe, Yr to Q2 24)



Yield Change
(Western Europe, year to Q2 24, bp)



Source: Cushman & Wakefield, RCA

- Lab-enabled life sciences offices posted significant rental growth in the past year, but also a marked slump in liquidity and a major yield rerating.
- The best performing markets, in terms of investment volumes, have been hotels and PBSA , as well as niche operational sectors such as self storage and data centers.
- In the life sciences sector, active demand from occupiers and investors has softened, and the market is hindered by a shortage of modern, sustainable property in most major European clusters. This scarcity has led to sustained rental growth for the best space, while creating barriers to market activity.
- This trend will change, as development activity increases in response to growing public sector, investor and VC activity in recent years. An increase in space delivery is expected in the next one or two years, particularly in the UK and the Netherlands. Life sciences businesses will have more high-quality space options, which will boost activity and further develop the sector in Europe.

Key Takeaway: The market is maturing, with greater demand to lease than buy and more awareness of what is “best in class.” The definition of “best” continues to evolve, both in terms of location and function, with a recognition that the ecosystem needs a range of space types to promote businesses at different stages of growth.

Trends Ahead

Occupier Demand

Activity will be driven by the development of new treatment areas and the acceleration of clinical trials, which will boost demand for lab, testing and production spaces. The increased integration of AI and technology will increase the pace of development and place greater emphasis on modern property that accommodates new ways of working and features embedded technology.

Corporate Trends

A mix of consolidation, M&A and partnering can be expected in the short term, leading to changing patterns of supply and demand. Partnering and the search for new, innovative startups will reinforce existing clustering, but the search for supply chain resilience and resulting reshoring could potentially put more emphasis on new areas.

Investor Demand

Appetite to allocate to the sector remains strong, but there has been unease about pricing and uncertainty about when to commit. This is likely to ease as investors see funding and occupier confidence improve. We expect increased demand for passive investment partners to develop new projects in a market with more expensive financing and higher construction costs.

- Occupier confidence now improving
- New supply to boost activity in H2
- UK to lead but leading clusters all more active where they have the right supply
- Rental growth to slow but to remain above inflation
- Investment pricing now at a low
- Investment volumes to rise by Q4 2024

CUSHMAN & WAKEFIELD

Appendix

Appendix: Glossary of Terms and Data Definitions

NIH funding data downloaded from U.S. National Institutes of Health website. Cushman & Wakefield assigned funding recipients to specific markets based upon the address listed in the NIH data. In most cases, the NIH market represents the MSA and/or greater market area.

Private equity venture capital and public offering data provided by PitchBook. *Data has not been reviewed by PitchBook analysts. Market totals based upon MSAs with the following exceptions:

- New Jersey includes the entire state.
- New York City includes the five boroughs.
- Raleigh-Durham includes Raleigh and Durham MSAs.
- San Francisco Bay Area includes San Francisco,Oakland and San Jose MSAs.
- Canada and UK markets represent the cities.

Clinical trials data downloaded from U.S. National Library of Medicine for both privately and publicly funded trials globally. The data only included trials with the following recruitment status: not yet recruiting, recruiting, enrolling by invitation and active-not recruiting. Markets based on MSAs with the following exceptions:

- New Jersey includes the entire state.
- Raleigh-Durham includes Raleigh and Durham MSAs.
- San Francisco Bay Area includes San Francisco, Oakland and San Jose MSAs.
- Canada and UK markets represent the cities.
- Rents and vacancies are calculated overall (including direct and sublease space).

U.S. employment data is calculated at the MSA level with the following exceptions:

- New Jersey includes the entire state.
- New York City includes New York, Kings and Queens counties.
- Raleigh-Durham includes Raleigh and Durham MSAs.
- San Francisco Bay Area includes San Francisco San Francisco/ Oakland and San Jose MSAs.
- Canada and UK markets represent the cities.
- Rents and vacancies are calculated overall (including direct and sublease space).

U.S. employment data is calculated at the MSA level with the following exceptions:

- New Jersey includes the entire state.
- New York City includes New York, Kings and Queens counties.
- Raleigh-Durham includes Raleigh and Durham MSAs.
- San Francisco Bay Area includes both the San Francisco/Oakland and San Jose MSAs.

Canada employment data calculated at the CMA level.

UK employment data calculated at the county level.

U.S. employment data calculated using six life sciences industries (sorted by NAICS code)

- 325412 - Pharmaceutical Preparation Manufacturing
- 325414 - Biological Product (except Diagnostic) Manufacturing
- 541380 - Testing Laboratories
- 541713 - Research and Development in Nanotechnology
- 541714 - Research and Development in Biotechnology (except Nanobiotechnology)
- 541715 - Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)

Appendix: Glossary of Terms and Data Definitions

Canada employment data calculated using two life sciences industries (sorted by NAICS code)

- 3254 - Pharmaceutical and medicine manufacturing
- 5417 - Scientific research and development services

- UK employment data calculated using four life science industries (sorted by SIC code)
- 2110 - Manufacture of Basic Pharmaceutical Products
- 2120 - Manufacture of Pharmaceutical Preparations
- 7211 - Research and Experimental Development on Biotechnology
- 7219 - Other Research and Experimental Development on Natural Sciences and Engineering

U.S. job postings and hires based upon 20 different occupations (sorted by SOC code).

- 11-9121 - Natural Sciences Managers
- 17-2031 - Bioengineers and Biomedical Engineers
- 17-2041 - Chemical Engineers
- 19-1011 - Animal Scientists
- 19-1012 - Food Scientists and Technologists
- 19-1013 - Soil and Plant Scientists
- 19-1021 - Biochemists and Biophysicists
- 19-1022 - Microbiologists
- 19-1023 - Zoologists and Wildlife Biologists
- 19-1029 - Biological Scientists, All Other
- 19-1041 - Epidemiologists
- 19-1042 - Medical Scientists, Except Epidemiologists
- 19-1099 - Life Scientists, All Other
- 19-2031 - Chemists
- 19-4012 - Agricultural Technicians
- 19-4013 - Food Science Technicians
- 19-4021 - Biological Technicians
- 19-4031 - Chemical Technicians
- 19-4099 - Life, Physical, and Social Science Technicians, All Other
- 29-2018 - Clinical Laboratory Technologists and Technicians

Canada job postings and hires based upon five different occupations (sorted by NOC code).

- 2112 - Chemists
- 2121 - Biologists and related scientists
- 2134 - Chemical engineers
- 2211 - Chemical technologists and technicians
- 2221 - Biological technologists and technicians
- 3211 - Medical laboratory technologists

UK job postings and hires based upon 6 different occupations (sorted by SOC code).

- 2111 - Chemical Scientists
- 2112 - Biological Scientists and Biochemists
- 2113 - Physical Scientists
- 3119 - Science, Engineering and Production Technicians n.e.c.
- 3212 - Medical laboratory technologists and pathologists' assistants
- 3217 - Pharmaceutical Technicians
- 3218 - Medical and Dental Technicians

U.S. degree completions based upon 129 different programs offered across various institutions.

Canada degree completions based upon 20 different programs offered across various institutions.

CUSHMAN & WAKEFIELD

Market Summaries

Americas

HUB MARKETS

Boston

Philadelphia

Raleigh-Durham

San Diego

San Francisco Bay Area

Suburban Maryland (I-270 Corridor)

PRIMARY MARKETS

Chicago

Denver

Los Angeles & Orange County

New Jersey

New York

Seattle

Montreal

Toronto

Vancouver

EMERGING MARKETS

Atlanta

Austin

Dallas/Ft. Worth

Houston

Indianapolis

Phoenix

Salt Lake City

Costa Rica

Europe

Belgium

France: Paris

Germany: Berlin

Germany: Munich

Germany: Rhine-Neckar Region

Italy: Milan

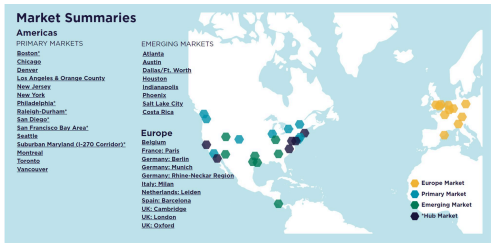
Netherlands: Leiden

Spain: Barcelona

UK: Cambridge

UK: London

UK: Oxford



VIEW MARKET SUMMARY MAP

CUSHMAN & WAKEFIELD

About Cushman & Wakefield

About Cushman & Wakefield

Cushman & Wakefield (NYSE: CWK) is a leading global commercial real estate services firm for property owners and occupiers with approximately 52,000 employees in nearly 400 offices and 60 countries. In 2023, the firm reported revenue of $9.5 billion across its core services of property, facilities and project management, leasing, capital markets, and valuation and other services. It also receives numerous industry and business accolades for its award-winning culture and commitment to Diversity, Equity and Inclusion (DEI), sustainability and more. For additional information, visit www.cushmanwakefield.com.

Authors

Sandy Romero
Research Manager
Global Research
+1 212 713 6970
sandy.romero@cushwake.com

David Hutchings
International Partner
Head of Investment Strategy
EMEA Capital Markets
+44 (0) 20 7152 5029
david.hutchings@cushwake.com

Ethan Tribble
Research Analyst
Alternatives & Practice Groups
+1 832 474 7555
ethan.tribble@cushwake.com

David C. Smith
Head of Americas Insights
Global Research
+1 404 853 5310
david.smith4@cushwake.com