A Strategic Plan to Ensure Long-Term Economic Prosperity in Dublin:

Navigating in Today's Constantly Evolving Headwinds




Performed for:

City of Dublin
Economic Development Division

Performed by:

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TECONOMY PARTNERS LLC

Innovating Tomorrow's Economic Landscape

TEConomy Partners, LLC is a global leader in research, analysis, and strategy for innovation-based economic development. Today, we're helping nations, states, regions, universities, and industries blueprint their future and translate knowledge into prosperity.

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Setting the Context

In today's global, knowledge-based economy, a region's economic performance is shaped by several core factors that include:

- The structure of the region's economy;
- The key economic drivers located within the region; and
- The competitiveness of the region's core business climate.

The past and present performance as well as the projected future trajectory of a region's economy are shaped by economic generators and catalysts. Economic generators are the core industry and public sectors that drive a region's economy. Economic catalysts are the "agents of change" that affect the performance of a region's economy. These must be analyzed and assessed to understand the factors that have and will shape the performance of a region.

The leadership of the City of Dublin has demonstrated a deep appreciation and understanding of these economic principles. Seeking to develop a strategy to advance the community's already vibrant economy, the City of Dublin engaged Battelle's Technology Partnership Practice (now TEConomy Partners, LLC) in 2011 to develop a Cluster-based Economic Development Strategy and Action Plan. The Plan evaluated the economy of Dublin, the presence of clusters of industry activity upon which future growth could be focused and outlined a series of recommended strategies and actions to help Dublin sustain its competitiveness into the future.

Based on the initial recommendations, the City of Dublin has worked to implement many of the strategies outlined in the cluster study. In 2019, the city re-engaged with TEConomy to update the initial strategic plan through a set of quantitative analyses and a situational analysis that leveraged interviews and focus groups with local industry stakeholders. Key findings included:

- Dublin's economic vitality is primarily driven by the presence of large anchor companies that provide a strong industrial employment base.
- Dublin experienced steady employment growth during the latest economic expansion, which has allowed it to keep pace with the Greater Columbus Region and has aligned it with the region's specialized strengths in specific industry clusters related to corporate headquarters, information technology, finance and insurance, and business support services.
- Dublin's highly educated population functions as one of its key assets helping build the city's reputation as a residential destination for the region's skilled workforce.
- Dublin has maintained its position over time as a preferred residential destination with a high quality of place due to high quality schools, significant investments in public infrastructure, quality public services, and a high-value housing stock.

However, that report also noted that each of the attributes that have driven Dublin's past success also exposes the city to risks that can jeopardize the future growth trajectory in the face of new disruptive socioeconomic headwinds.

Beginning in 2020, the City of Dublin again engaged TEConomy to provide yearly updates to the comprehensive set of quantitative inputs that underly the key recommendations of the economic development strategy. These updates are designed to ensure the City of Dublin's leadership is able to leverage the latest available data to examine ongoing trends and their implications for continued implementation of the vision of the economic development strategy. The latest quantitative update, conducted in Q4 2021 (see Appendix A), underscores the findings of previous reports, in particular the need to reexamine the implications of the previously noted attributes that have driven Dublin's historical growth.

Recognizing the dramatic shifts that occurred as a result of the global pandemic as well as the future shifts that will likely occur as a result of Intel's $20 billion investment in the region, the City of Dublin recognized the need for current, enhanced intelligence related to business dynamic factors impacting its community. These shifts in combination with changing workforce dynamics have exposed potential risks of disruptive change that include:

- An aging stock of commercial office space in conjunction with key anchor tenants re-evaluating physical space needs in light of shifts in certain key industries towards hybrid and remote work models due to the ongoing pandemic.
- Changing workforce dynamics and residential preferences in conjunction with a limited supply of accessible housing stock that can continue to attract a highly skilled workforce.
- Rapid growth in the Greater Columbus Region's economy and population that puts pressure on established commuting patterns and employment destinations, particularly with respect to the buildout of peer benchmark communities and corresponding increases in industry attraction efforts that compete with Dublin's profile as a destination community.

As a result, there is an opportunity to reexamine the city's economic development strategy in light of these recent trends. A critical evaluation of the strategy's goals and ongoing implementation is especially timely given new opportunities that continue to develop both in the city as well as throughout the region, including the major medical care facility expansions from Ohio State, Mount Carmel, and OhioHealth as well as Dublin's ongoing proximity to the Transportation Research Center (TRC) and its related connected and autonomous vehicle efforts along the Route 33 Corridor in addition to the development of the Beta District. Exciting new developments such as the recent announcement of Intel's investment in the region in a $20 billion chip fabrication facility (and eventual expansion to potentially up to a $100 billion buildout over the next decade) are also creating new economic development opportunities that Dublin must be prepared to meet.

To this end, TEConomy undertook a comprehensive update driven by both qualitative and quantitative inputs that provide the basis for refining the strategies outlined in the 2019 Strategy, thereby helping to ensure the city is positioned for growth in coming years. The examination and update to the Strategic Plan seeks to address the gaps and barriers that will need to be overcome in order to enhance the region's economic drivers and position the City of Dublin to capitalize on additional economic opportunities.

Headwinds Driving the Need for Dublin's Updated Economic Development Strategy

Evaluating the Disruptive Trends and Economic Growth Opportunities Facing Dublin in the Wake of the Pandemic

Since the strategic plan's last major update in 2019, a number of transformational trends have impacted economies at all levels – national, state, regional, and local. At the forefront of creating new economic headwinds was the impact of the Covid-19 pandemic, which served both as a highly disruptive force on business operations as well as a massive accelerator of ongoing trends in the digitalization of work. As the nation's economy continues to recover from the impacts of the pandemic, employers at regional and local levels have found themselves confronting additional factors that challenge established trends in economic growth including a historically competitive and supply-constrained labor market, rising inflation, and changing needs from businesses for site locations due to new models of work.

Four key disruptive trends were identified in the previous strategic plan that created economic risk for the City of Dublin, with the potential to impact economic development strategy, demographics, and the nature of work. In the wake of the pandemic and subsequent economic impacts on local economies, there is a need to re-evaluate these factors' ongoing impact on economic development strategy and be responsive to emerging trends that could impact Dublin's growth. An updated perspective on each of the disruptive trends and their evolution since 2019 are discussed below.

1. The Rise of Mixed-Use Urban Development in Nurturing Knowledge Industries: Building on Successful Growth to Establish New Mixed-Use Nodes and Adaptive Reuse

The 2019 strategy identified the rising importance of mixed-use urban development as a key pillar of modern local economic development (cited in signature work conducted by the Brookings Institute, the Urban Land Institute, and the NAIOP Research Foundation). Although the pandemic had acute disruptive impacts on the vibrancy and value proposition of mixed-use development due to closures of retail and service industries, demand for these spaces has largely recovered over the past several years and they remain a key component of place-based development policy. A recent Forbes article citing the ongoing investment in large scale mixed-use development projects notes that:

> *Even when compared to trophy properties and new construction, office tenants at mixed-use developments pay on average 24.7 percent more at a mixed-use property, according to JLL research. This makes perfect sense as the experiential workplace explodes in popularity. But it doesn't stop at the office. Multifamily buildings can benefit from shorter lease-ups and rent premiums due to the immediate availability of jam-packed amenities. Workers, residents, travelers and the community are demanding an elevated setting for productivity, leisure and culture, and mixed-use development is a solid retort.*[1]

[1] *Billion-Dollar Mixed-Use Developments Demand Attention*, Mark Zettl, Forbes, Feb 28, 2023.

The ongoing demand for mixed-use, high density development nodes, still often referred to as "live-work-play" environments, has contributed to significant gains for local economies that have embraced their role as anchor assets. A 2022 Q4 assessment of creative and mixed-use office stock by JLL noted that they not only outperformed other real estate classes in off-core submarkets, but that "*occupiers are increasingly prioritizing experiential factors and location context, driving resilience in demand for creative office assets and office within mixed-use projects, which have generated almost 9.0 million s.f. of positive net absorption across asset classes since the second half of 2021*."[2] At the same time, evidence has continued to show that traditional place-based attraction efforts which primarily take the form of business tax incentives are not as cost-effective as public services to businesses as well as investment in creating vibrant labor stocks of skilled workers[3], both of which are addressed through expansion of "nodes" or "districts" of high-density mixed-use development.

As a result of ongoing financial success, appeal to regional workforces, and consistent demand from businesses, the concept of "cities within cities" grounded by mixed-use anchors are continuing to drive major growth opportunities that are attracting large scale projects from key employers.[4] At the same time, demand for traditional office space is expected to slow in 2023 amidst changing employer preferences and economic uncertainty. NAIOP's latest office space demand forecast from Q4 2022 notes that:

> *The national office market absorbed 6.6 million square feet during the second and third quarters of 2022, but the vacancy rate continued its climb to 17.1 percent, the highest level since the third quarter of 1993. The completion of new office space outpaced absorption. A deeper look into the numbers reveals an appetite specifically for high-quality office buildings, which may support leasing activity in newly completed buildings despite continued weakness across the office sector. This flight to quality is most likely driven by tenant preferences for flexibility and the desire to attract and retain talent.*
>
> *The mere threat of a recession has caused tenants to take a defensive posture and become more cautious when renewing leases, with many instead choosing to move to a smaller, newer and more flexible footprint. Moreover, the large supply of space available for sublease weakens rental rates and contributes to lower net absorption.* [5]

The combination of high demand for vibrant mixed-use spaces and slowing demand for office space has created a dynamic where certain types of development are critical to attracting and retaining employers and workforce, especially given further trends in the changing preferences of workers noted below. The Urban Land Institute and PwC's 2023 Emerging Trends in Real Estate report summarizes the impacts of these two trends:

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[2] *Creative and mixed-use offices outperform as tenants target vibrancy*, JLL Snapshot, Jacob Rowden, November 15, 2022.

[3] Bartik, Timothy J. 2020. "Place-Based Policy: An Essay in Two Parts." Policy Paper No. 2020-021. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research. https://doi.org/10.17848/pol2020-021

[4] *Tomorrow's Communities Are Smart And Urban, Where Everything Acts As A Concept*, Jennifer Castenson, Forbes, Aug 9, 2021.

[5] *NAIOP Office Space Demand Forecast, Fourth Quarter 2022*, NAIOP Research Foundation, November 2022.

> *"Companies should make the workplace a destination instead of an obligation," said a consultant at an architecture firm. This phenomenon is driving a bifurcation in performance between class A offices and class B/C offices. Demand for new buildings with the latest environmental standards and the newest amenities remains strong, while older buildings that lack desired amenities are losing ground.*[6]

For Dublin, the changing demand for real estate stock and attractiveness of mixed-use environments present a major opportunity to build on the success of the city's signature mixed-used development, Bridge Park. The ongoing buildout of the development has continued to generate significant economic activity, positive accolades, and emulation from other suburbs in the Greater Columbus region, with nearly $600 million in investment to date.[7] The success of Dublin's investment in the project reflects the larger demand trends noted above, and there is now a need for additional mixed-use development projects throughout key nodes within the city to address potential risks from other areas of legacy office stock.

Conversations with local industry stakeholders confirm Bridge Park is critical to Dublin's attractiveness as a site location for businesses, but continued emphasis on development can appear to present a risk at a time when more companies are adopting hybrid and remote work models that reduce the need for traditional office space. Although seemingly contradictory, mixed-use developments incorporating amenities are now even more critical to site location decisions for companies seeking to establish "destination" offices that support hybrid work models, since "live-work-play" environments increase the value proposition of travel to offices for in-person work for employees. There is still a demand for in-person space to serve as an anchor for company operations and support in-person meeting needs, but with current demand focused on newer, smaller spaces in attractive mixed-use commercial districts. Conversely, remote work trends will continue to devalue traditional office parks without these amenities, since companies will be more reluctant to invest in real estate that may deter employees who are considering remote work options.

An additional noteworthy trend for Dublin to keep in mind is the increasing ability to leverage legacy office buildings towards new adaptive reuse, in particular within the life science, medical office, and multi-family context. The NAIOP Research Foundation notes the increasing conversion of legacy office stock to these building types in response to declines in office utilization during the pandemic and more favorable market conditions for these other segments.[8] For Dublin, this trend serves to address emerging demand in healthcare and life sciences industries while also serving as a potential outlet for addressing demand for housing stock.

2. The Shifting Preferences Among the Modern High-Skilled Workforce: Disruptive Impacts of New Working Models and the Role of the Digital Workforce as a City Asset

The pandemic conditions, in combination with very tight labor market conditions for skilled talent, have caused significant changes in workforce dynamics since the previous strategic update in 2019. A 2021

[6] *Emerging Trends in Real Estate 2023*, Urban Land Institute and PwC.
[7] *A neighborhood to envy — and replicate*, Columbus Business First, John Bush, Mar 3, 2023.
[8] *New Uses for Office Buildings: Life Science, Medical and Multifamily Conversions*, NAIOP Research Foundation, Emil Malizia, March 2022.

McKinsey report on the future of work notes three large scale trends that emerged as a result of the pandemic and which are still in the process of reshaping the workforce[9]:

- *Remote work and virtual meetings are likely to continue, albeit less intensely than at the pandemic's peak.*
- *COVID-19 may propel faster adoption of automation and AI, especially in work arenas with high physical proximity.*
- *The mix of occupations may shift, with little job growth in low-wage occupations.*

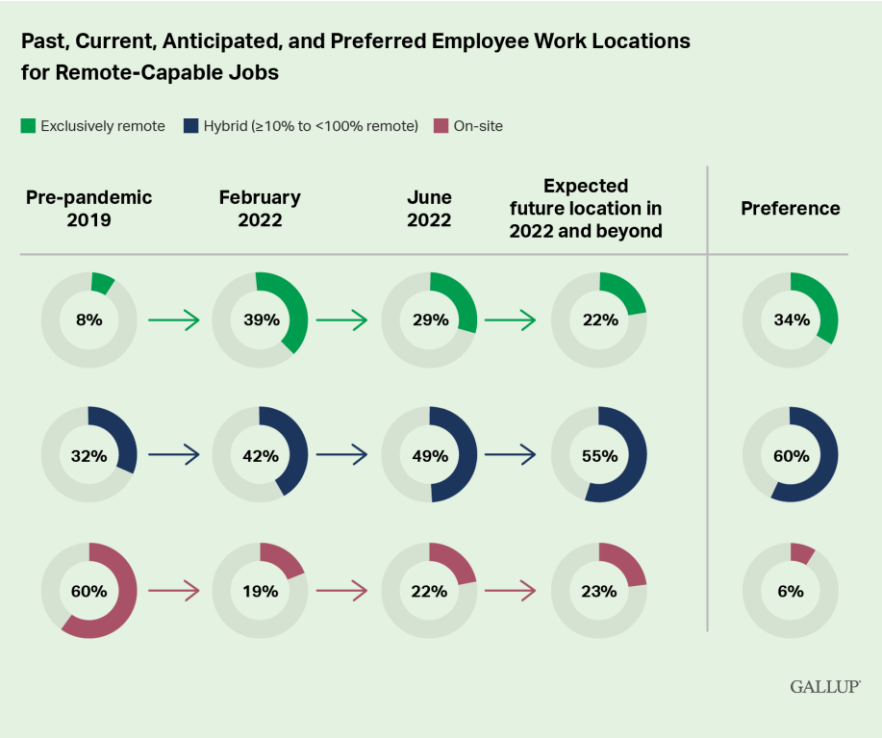
Many other studies affirm that the impact of these trends is anticipated to concentrate even more job growth in high-skills jobs roles with hybrid working models, which has significant implications for regional and local economic development strategy in both industry targeting as well as workforce development.

In addition, the digitalization of industries and work processes across all industries that was already taking place is expected to continue at a rapid pace. According to the World Economic Forum's latest report on the future of work, technology adoption is expected to be the primary factor driving organizational change over the coming years. Their analyses identify technology and computing-related skills as being the fastest expanding job roles across a variety of industry sectors and business types, with disruptive impacts causing a structural labor market churn of 23 percent of jobs over the next 5 years and an estimated 6 in 10 workers requiring training before 2027 to incorporate new skills, with a focus on digital and analytical reskilling.[10]

These significant changes highlight the importance of cultivating a "thick" labor market for local economies—that is, a high concentration of skilled workers aligned with areas in high demand by the market to build resilience to the ongoing impacts of broader disruptions. As noted in previous data updates for Dublin, the city's industry base remains concentrated in information technology and business services sectors that are likely to be at the heart of disruptive trends, while at the same time the city's high quality of place makes it an attractive residential destination for workers in these industries (particularly those with hybrid or remote work models). Ongoing data about remote and hybrid work trends suggests that shifts in behavior during the pandemic are likely to have permanent effects, with one Gallup study suggesting that 55 percent of workers expect hybrid work arrangements to persist into the future (see Figure 1).

[9] *What is the future of work?* McKinsey & Company, Jan 2023.
[10] *The Future of Jobs Report 2023*, World Economic Forum, April 2023.

Figure 1. Gallup Study Results on Remote Work Trends in 2022



Source: Returning to the Office: The Current, Preferred and Future State of Remote Work, Gallup, August 2022

The confluence of digitization, new working models, and worker preference trends means that Dublin needs to both attract the locations which anchor a business' hybrid operations while at the same time cultivating the thick labor market through growing its residential worker population, which is highly desirable for businesses to locate in proximity to. Regional development economists who study Midwestern cities note that this often takes the form of a "chicken and egg problem": "*If you don't have many high-tech firms or high-tech workers, you can't attract high-tech workers because you have no high-tech firms, and you can't attract high-tech firms because there are no high-tech workers*."[11]

This dynamic re-emphasizes the role of "tech" talent—the broad set of occupations encompassing both traditional IT jobs as well as data and analytics and advanced computing and electronics expertise—as a key differentiator for local economies to address both sides of this balance by attracting businesses as well as further growth of the skilled worker population across the industry mix. The anticipated demand for tech workers is expected to span all industries as tech-enabled applications and services are further adopted, including in industry sectors such as services, healthcare, education, amenities, and infrastructure that are traditionally more "low tech." As a result, regional and local talent attraction strategies will need to refocus around attracting and retaining tech and other high digital skills talent bases even in the face of declining office location employment and legacy IT services industry clusters.

[11] *The Fresh Economic Development Strategy Emerging in the Midwest*, Route Fifty, Sharon O'Malley, December 2022.

A 2022 BCG study on the world's leading tech hubs notes that there are a variety of short and long-term "levers" that regions can employ to attract both the supply and demand for digital talent in the face of this dynamic, including:

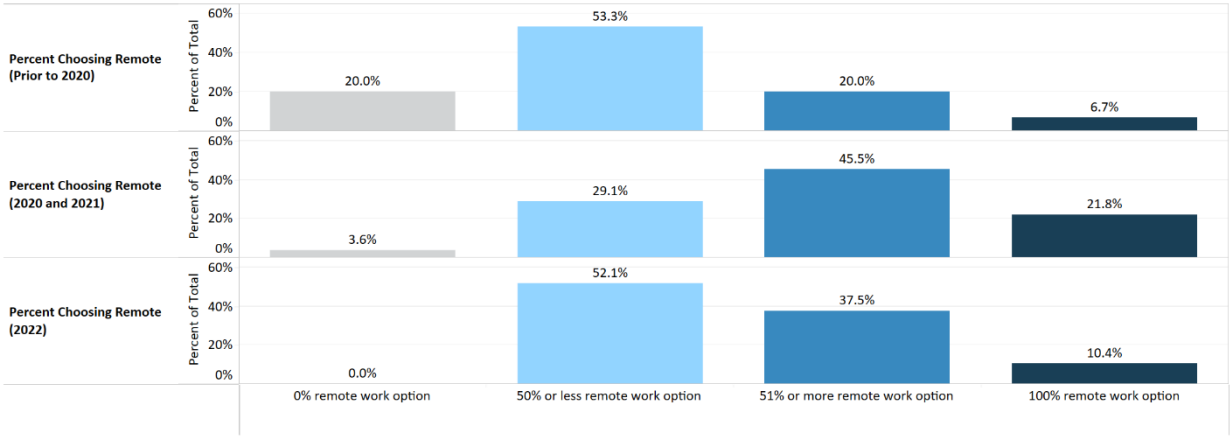
- Short term actions such marketing and brand enhancements aimed at tech talent and financial incentives for individuals to attract and retain tech-skilled residents
- Medium term actions such as corporate tax and R&D incentives, attraction of anchor companies employing high levels of tech talent, and government support for workforce development and entrepreneurial ecosystems
- Longer term actions such as regulatory support for companies in key industry sectors, continued investment in lifestyle amenities, formation of industry ecosystem support organizations, and attraction of higher education and R&D institute site locations that can serve as anchors for talent

Regional and local policymakers are taking action using variations of these policies to aggressively recruit these workforces in hopes of competing for company site location decisions, while state and federal lawmakers are considering additional investment in tech workforce development in the wake of significant new funding for regional technology and innovation hubs.[12] **The economic multiplier effect of these high wage jobs and their ability to create clusters of industry activity have led many developers to consider a robust tech workforce part of the "new critical city infrastructure."**[13] The reach of tech as a critical enabler of local economic growth also extends far beyond large software and services company locations: "*Ninety-three percent of today's small business owners report using at least one type of technology platform to help run their business, with the average owner utilizing three different platforms. Of those, 85 percent report that technology platforms helped to get their business up and running, and 94 percent report that technology helps them run their business more efficiently*."[14]

For Dublin, there is a key need to attract a base of tech workers to help ensure the city's future ability to both attract modern business operations as well as provide future ready workers for existing industry anchors. Results from a survey of Dublin's industry leaders (See Appendix B) confirm that trends in working models have shifted since the pandemic in favor of hybrid work models (Figure 2), reflecting new preferences that the city must incorporate into attraction and retention efforts, particularly for tech talent who often have increased access to remote work options.

[12] Regional Technology and Innovation Hubs (Tech Hubs) Program, US Economic Development Administration, accessed at: https://www.eda.gov/funding/programs/regional-technology-and-innovation-hubs.
[13] *New Critical City Infrastructure: A Tech Workforce*, Forbes Real Estate, Jennfier Castenson, April 2022.
[14] *New Study Shows Technology Platforms Critical to Small Business Growth*, US Chamber of Commerce, August 2, 2022.

Figure 2. Remote Work Preferences of Workers at Dublin Companies, Pre- and Post-pandemic Time Periods



Source: TEConomy Analysis of Dublin Economic Development Survey Results

Although Dublin has retained a significant footprint of IT and computing sector companies, the city must continue to take efforts to attract both established and emerging companies focused on tech-enabled products and services across a variety of industry sectors and seek to leverage its highly educated population as a key asset. Similarly, these headwinds indicate the need to attract and root a new generation of tech talent in the city to seed future growth in the face of new developments in the regional economy and the ongoing importance of access to skilled labor in company site location decisions despite the prevalence of remote work. One challenge the city will need to address is the lower availability of residential housing stock accessible to and aligned with entry and mid-career tech talent to anchor the future talent supply, with a recent housing study completed by Urban Partners noting that the combination of aging population and lower vacancy rates has created a difficult dynamic for new homebuyers.

The combination of shifting workforce dynamics, the need for tech talent to bridge the transition to digital operations across industries, and new working models accelerated by the pandemic presents one of the largest potential impacts to Dublin's future growth trajectory, particularly in the face of other peer communities positioning themselves to respond to these trends. The city will need to take bold action to align itself with the next phase of growth for the Central Ohio region.

3. The Changing Nature of Industry Clustering and Supply Chains: Evolution of the Central Ohio Industry Base

The previous Dublin strategy identified several major factors influencing the nature of how industries cluster and integrate with their supply chains, including the importance of collaborative industry and innovation ecosystems, access to entrepreneurial ecosystems and investment capital, and proximity to talent pipelines that supply skilled workers. These headwinds are still highly relevant today, with many of these factors now taking on an even greater importance due to the space demand and workforce dynamics noted above.

Industry cluster-based development initiatives have been re-elevated in the public policy sphere in recent years due to significant federal spending aimed at influencing growth of targeted industries. Headlined by $1 billion in grant funding through the EDA's Build Back Better Regional Challenge

(BBBRC)[15] and the nearly $53 billion bipartisan CHIPS and Science Act of 2022,[16] ambitious federal investments aimed at bolstering regional and local industrial and technology capacities have placed cluster-based growth strategies at the forefront of economic development at the regional and local level. The Brookings Institute reflects on these massive investments in industry clusters in its 2022 update on the future place-based economic development policy[17]:

> *Over the long run, regional economies grow and decline based on their ability to specialize in high-value industries and evolve those specializations over time. Industry clusters—groups of firms that gain a competitive advantage through proximity and interdependence in areas such as talent and innovation—can be a compelling strategic concept, especially for communities that have struggled through economic decline.*
>
> *A clear body of evidence showing that firms and regions benefit from clustering has led to widespread adoption of cluster-oriented activities within the economic development field. Yet these cluster-based economic development initiatives must contend with many forces outside of local control. Macroeconomic and technological forces have caused industries and technologies to emerge, grow, and then decline, only to be replaced by new, emergent technologies.*

Perhaps more importantly for regional and local stakeholders like those in Dublin, they also note:

> *How regional leaders can best accelerate and capture the benefits of clustering is not always straightforward, but several factors likely matter. The ability of regions to support the creation of young, high-growth firms seems to be particularly important, as these are the vehicles for innovation and the quality job creation that results. Institutions and infrastructure matter as well; a region's schools, universities, and research centers influence the quality of workers and the amount of local innovation, while a region's physical and digital infrastructure shapes how workers connect with businesses and how businesses connect with each other. And the networking, information exchange, and collective action enabled by civic institutions—such as chambers of commerce, business leadership organizations, and industry associations—can shape a region's resilience to shocks by galvanizing and activating leadership networks to address shared challenges.*

The affirmation of cluster-based economic development at all levels of public policy highlights the ongoing importance of creating a region's industrial identity through this lens, with Dublin at the epicenter of several major cluster-based development headwinds.

The Greater Columbus region is poised for major growth after the decision by Intel in 2022 to locate two chip fabrication facilities in New Albany, totaling approximately $20 billion in investment with direct employment of 3,000 jobs at the facilities and an additional 7,000 construction jobs over the course of

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[15] $1B Build Back Better Regional Challenge, US EDA, accessed at: https://www.eda.gov/funding/programs/american-rescue-plan/build-back-better

[16] FACT SHEET: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China, US White House, accessed at: https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china/

[17] *The future of place-based economic policy: Early insights from the Build Back Better Regional Challenge*, Brookings Institute report, November 2022.

the facility buildout. These facilities are also "*expected to attract dozens of ecosystem partners and suppliers needed to provide local support for Intel's operations – from semiconductor equipment and materials suppliers to a range of service providers*" which will occupy an adjacent 500-acre technology park.[18] The new factories are expected to support Intel's next-generation chipsets and a focus on innovative process technologies. Various educational and workforce development stakeholders are already taking action to address the need for new workers and anticipating the buildout of a large new manufacturing industry cluster[19] which has the potential to alter the region's growth trajectory for decades. Dublin must be prepared to play a role in this industry's explosive growth potential, and has taken steps through a semiconductor supply chain feasibility study to begin developing its strategy.

In addition, an existing regional industry cluster initiative has been underway and will continue to have high relevance to technology-based economic development. The Northwest 33 Council of Governments, which includes Dublin, Marysville, Union County and the Marysville-Union County Port Authority, created the Beta District high-tech region that follows the US-33 corridor. Focused on transportation technologies and smart mobility infrastructure, the "living laboratory" allows for demonstration, testing, and industry support for transportation manufacturers, logistics, and public infrastructure sectors. Leveraging this asset and its proximity to major manufacturing operations in Marysville will be critical to expanding into new future-facing markets for Dublin.

A newly emerging cluster for Dublin also highlights the headwinds driving the city's cluster-based development potential. Spurred by rapid expansion of its hospital and medical sector relative to the previous strategy update, the city now has the potential to build on a newly forming cluster in allied health. With the $161 million Wexner Medical Center Outpatient Care facility opened in 2022, the $20 million expansion of OhioHealth Dublin Methodist, and construction of Mount Carmel's new $250 million hospital, the city has seen significant expansion activity that is likely to continue as the region consolidates its healthcare systems and expands into rural and remote medicine. The clinical anchors in the region can also serve to attract biomedical research and technology services companies, as well as healthcare management companies which are increasingly driven by tech applications.

These examples highlight the evolving nature of industry clusters in the region and the need for a responsive strategy from local policymakers to identify target industries and the demand drivers that influence their location decisions. As the region continues to expand into additional tech-enabled products and services, Dublin will need to position itself around a distinct economic identity in order to compete with peer communities for opportunities.

4. The Need for Ongoing Investment in Maintaining Strong Local Economies: Role of Amenities and Infrastructure in Driving Business Dynamism

Despite ongoing economic and demographic change, the case for ongoing investment in local quality of life remains strong. Amidst declining population growth, remote work trends, and hollowing out of traditional industry bases, many Midwestern cities are turning to incentives designed to attract people

[18] Intel Announces Next US Site with Landmark Investment in Ohio, Intel Press Release, Jan 2022, accessed at: https://www.intel.com/content/www/us/en/newsroom/news/intel-announces-next-us-site-landmark-investment-ohio.html#gs.xrby2b

[19] *With high-tech manufacturing plants promising good jobs in Ohio, workforce developers race to get ready*, Brookings Institute Report, January 2023.

based on quality of life attributes such as school systems, access to public services, and opportunities for recreation.[20] With competition from peer communities continuing to accelerate, particularly in light of some of the aforementioned economic and workforce trends, cities will increasingly need to sell their lifestyle "brand" through investment in amenities and infrastructure.

This shift in policy has taken root gradually over the past decade, where "*the emerging focus on attracting people who can provide the foundation for a solid workforce in the region stands in contrast to other approaches to economic development, which can often prioritize policies like tax breaks for companies to build factories or warehouses*."[21] However, the pandemic and the subsequent recovery have highlighted stark divisions between communities with the quality of life "capital" to remain resilient and attract new investment versus those who increasingly cannot attract new industry bases. In a 2022 policy paper, the Brookings Institute highlights this distinction:

> *While incentives-driven business attraction remains one part of local economic development, numerous studies have found that it has not solved many of today's local economic challenges. Rather, an increasing number of local leaders are going beyond measures of job growth to instead prioritize job quality, productivity, income growth, or other qualify-of-life measures, especially in smaller communities where job creation is not a realistic objective.*
>
> *To achieve these broader aims, leaders are moving away from singularly focused transactions and toward more holistic, integrated approaches. This includes investments in strategic initiatives such as helping existing firms and industries grow, innovate, and develop diverse talent; creating an inclusive, homegrown entrepreneurship ecosystem; rebuilding Main Streets, downtowns, or other neighborhood corridors as flywheels for broader market-based growth and wealth creation; and centering talent and housing affordability in economic competitiveness and inclusion. Finally, both regional and community actors are investing in good governance by bringing local leaders and institutions together to solve problems and create the conditions in which workers, families, businesses, and other key partners are willing and able to stay and invest in the community.*[22]

As highlighted in the key metrics assessing quality of place in the updated strategic assessment (See Appendix A), Dublin has continued its longstanding investment in maintaining its high quality of place, and as a result is better positioned than many communities to undertake more ambitious economic development activities. The city's school systems and residential neighborhoods remain in high demand, while the preservation of recreational and green spaces and increasing buildout of walkable infrastructure into new development remain priorities for high skills workers. The city has also continued to place a high priority on public safety and maintaining its legacy infrastructure.

However, if it wants to maintain its desirable position Dublin will need to approach ongoing community reinvestment in a tactical manner that accounts for the ways in which its business and amenities districts have aged over time as well as the changing population dynamics driving broader

[20] *The Fresh Economic Development Strategy Emerging in the Midwest*, Route Fifty, Sharon O'Malley, December 28, 2022.
[21] Ibid.
[22] *Making local economies prosperous and resilient: The case for a modern Economic Development Administration*, Brookings Institute, June 2022.

socioeconomic shifts. As the city seeks to expand to support buildout on its perimeter, there is a significant risk of the city "hollowing out" around its legacy office parks and business assets if revitalization efforts are not also targeted there to redevelop aging office stock. Investment in new types of amenities such as residential fiber connectivity and improved public transit to supplement existing quality of life advantages may also become key differentiators against peer communities. As it begins to face pressure from other suburbs in the region due to high levels of population expansion and development across the region, the city will need to continually assess its regulatory climate and adopt best practices that attract businesses and new population.

Another key risk to the city's ongoing relevance as the Greater Columbus region expands is its housing stock composition and shortages in both supply and vacancy turnover. The city will need to find ways to expand housing access for skilled talent seeking to locate in the region if it wants to attract attention from businesses in STEM and tech-intensive industries. Also, significant declines in Dublin's service industry workforce during pandemic have not yet been recouped by growth during the recovery, with evidence that changing trends in commuting and proximity to place of employment may act as barriers to them returning in the absence of affordable housing options and access to the city's amenities. The lack of available resident workforce could serve as barrier to expansion of new industries such as healthcare services and the growth of service amenities industries to support new development.

While Dublin remains one of the leading communities in the Greater Columbus region, future growth in the face of disruptive headwinds is not assured and the city will need to remain focused on creating a high quality of place while also exploring new ways to expand access to the city's lifestyle.

Implications for Dublin's Economic Development Trajectory: A Renewed Call to Action

As noted in the headwinds outlined above, Dublin faces a rapidly changing industry environment, new types of demand for space, a changing workforce, and a confluence of other factors that has been rapidly accelerated by the pandemic and its aftermath. Several key thematic implications for the city's economic development emerge:

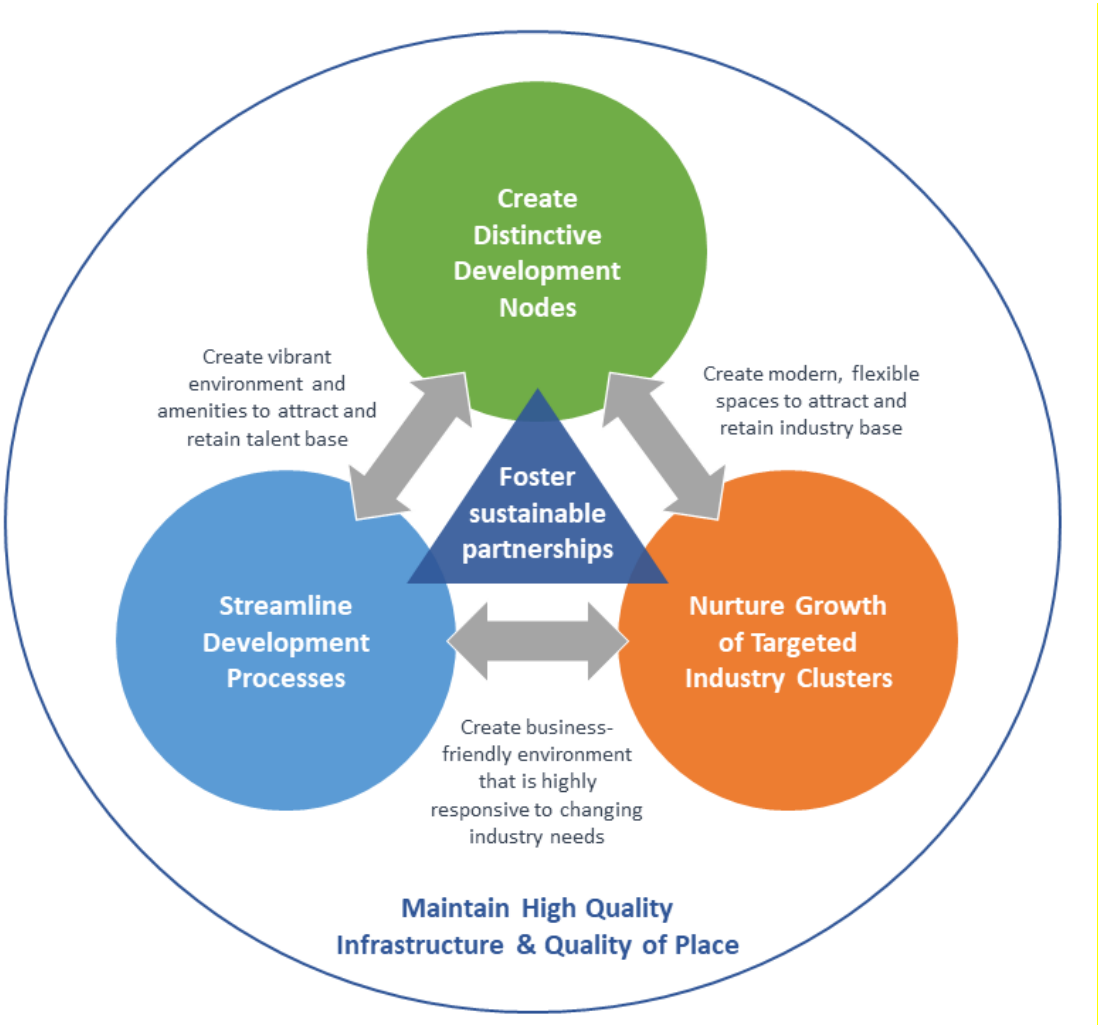
- Transformative economic development changes are occurring in the Great Columbus Region that are likely to impact the trajectory of its communities for decades to come, and Dublin should be prepared to capture its share of this opportunity to secure its economic future. The city should leverage its role as a geographic midpoint between new semiconductor facilities, established transportation manufacturing operations, and downtown financial and business services industries to establish a bold new identity as a hub for high end electronics systems R&D, integration, testing, and value-added technology services. Industry attraction can seek to target infrastructure and transportation systems integration and tech applications to complement existing strengths, but also expand into healthcare technologies and services leveraging the growth in new healthcare facilities.
    - The city has already begun to evaluate the feasibility of attracting semiconductor supplier companies, and should expand this work to consider additional support segments such as electronics design, testing, and integration firms

- Trends in remote and hybrid work are likely to persist and will have real impacts on Dublin's ability to attract traditional large-scale office park developments. The city must recognize that its resident workforce is a civic and economic development asset and focus its efforts on attracting this workforce by focusing on key amenities.
- The success of the Bridge Park development and its critical role as a business attraction asset are indicative of continuing demand for signature mixed-use developments that can serve as industry ecosystem anchors. The city should explore the redevelopment of legacy real estate stock into additional mixed-use nodes to support further centers of activity designed to attract businesses and talent in order to avoid a "hollowing out" of its business park base and build a more resilient portfolio of companies.
- The city has continued to maintain its desirability through sustained investment in quality of place amenities and infrastructure. Dublin will need to maintain this commitment, but also navigate the need for expanding access to its economy and infrastructure in order to enable expansion of its economy and remain attractive to businesses. The city should continue to explore development of new higher density housing stock integrated into mixed-use developments.

Updating Dublin's Economic Development Strategy

Dublin's economic development mandate has not changed since 2019; however, the urgency upon which it must be implemented has accelerated. The key facets of Dublin's economic development ecosystem that will help ensure future economic vitality can still be graphically depicted as a wholistic and integrated set of key principles (see Figure 3).

Figure 3. Key Facets of Dublin's Economic Development Strategy



Source: TEConomy Partners, LLC.

Driven by an acceleration of the economic headwinds outlined in the previous section, the City of Dublin must focus its economic development efforts on the following strategies:

- Create distinctive development nodes to meet 21st Century industrial demand for vibrant physical space while maintaining Dublin's high quality of place standards. This in turn will

create the modern, flexible spaces that will attract and retain not only a vibrant industrial base, but also the talent pool industry requires.

- Make Dublin's development processes more transparent and predictable thereby reducing uncertainty. This in turn will create a business-friendly environment that is highly responsive to changing industrial needs.
- Nurture growth of targeted industry clusters through proactive attraction and business retention/expansion activities. This will help ensure that Dublin's economy is positioned for future economic growth by making sure that cutting-edge industries and the talent they require find Dublin to be an attractive, business-friendly environment upon which to anchor their success.
- Foster sustainable partnerships to catalyze value-added collaborations. The entire economic development strategy is predicated on the city's ability to foster value-added collaborations among industry, academia, and the government and non-profit sectors.

It is also important to point out that ***no economic development strategy can be successful unless the underpinning foundational assets of a community, its high-quality infrastructure and quality of place assets, are not only maintained but further enhanced.*** While it is not the intent of this study to address infrastructure and quality of place assets, such as roadways, services, and school systems, the ability of Dublin to maintain its high standards in these areas is paramount to the success of any economic development effort.

Based on the quantitative and qualitative findings derived from the analysis, the following updated strategic plan has been designed to meet the needs of industry, capitalize on Dublin's comparative assets, and help position the city for continued economic growth. The tactics to pursue under each action were identified in close consultation with the City's Economic Development team to ensure the greatest relevancy to Dublin's specific situation.

Strategy 1: Create Distinctive Development Nodes to Meet 21st Century Industrial Demand for Vibrant Physical Space while Maintaining Dublin's High Quality of Place Standards

Rationale

The headwinds outlined in this update as well as the economic development strategy from 2019 both confirm the importance of modern, place-based development as a key economic development strategy tool that addresses both business and talent attraction needs. Demographics, workplace trends, and return on investment are all continuing to align in favor of modern development nodes anchored by mixed-use districts.

Several ongoing trends, as outlined by major central Ohio developer the Robert Weiler Company in 2021[23], are continuing to make a strong case for mixed-use development:

[23] *6 Mixed-Use Development Trends*, The Robert Weiler Company, 2021, accessed at: https://www.rweiler.com/blog/mixed-use-development-trends/

- **Continuing urbanization of suburbs**, driven by population expansion and rent premiums for proximity to town centers and amenities across both younger and older generations
- **Ongoing changes to lifestyles in the working-age population**, with an emphasis on proximity to work and minimal commuting times
- **Increasing demand for rental units**, reflected by housing supply constraints and changing attitudes towards home ownership versus lifestyle preferences
- **Emergence of co-working spaces,** which help address the demand for destination offices amidst declining full-time office footprints
- **Tax revenue potential,** where mixed-use development outperforms single use properties due to cost efficiencies and lower land usage
- **Focus on sustainability** from CRE investors to help de-risk portfolios going forward

The most recent National Association of Realtors survey confirms many of these preferences, in particular the alignment between older and younger generations on development that minimizes commute times and maximizes walkability.[24] A recent 2023 McKinsey study also notes that the financial and real estate climate and market incentives may further accelerate the demand for new types of mixed-use development:

> *It goes without saying that the COVID-19 pandemic upended where and how the world uses spaces. In some regions, office attendance is still dramatically lower than it was before the pandemic; in the United States, for example, it hovers at around 50 percent. Consumers have returned to brick-and-mortar stores but are shopping closer to home. Greater expectations for same- or next-day shipping have increased demand for industrial square footage near the places where people live and work.*
>
> *Perhaps even more transformative than altered demand is the fact that occupiers have a new set of needs, beyond what real estate companies have traditionally provided. Hybrid work and omnichannel sales require that landlords supply creative physical designs, as well as innovative services and solutions. Tenants, lenders, and other stakeholders increasingly look for buildings that play a role in fighting climate change. Digital sophistication has become essential to help real estate players act more quickly and make wiser decisions, to enable emissions reporting, and to track and analyze how space is used.*
>
> *Complicating the panorama is the fact that after a decade-long growth market, capitalization (cap) rates have expanded across sectors. Interest rate hikes, combined with higher inflation in many parts of the world, have dramatically altered the financing costs and expected returns for owners, developers, and managers.*
>
> *Inflation and uncertainty about the direction of the global economy have made housing significantly less affordable, made gaining access to credit even more difficult in emerging markets, and created a challenging fundraising, deal-making, and return-generating*

[24] NAR 2020 Community and Transportation Preference Survey, National Association of Realtors, 2020.

> *environment for real estate investors and operators. Those who invest in and operate real estate as they did five years ago may underperform and lose share.*[25]

The dynamics at play have created the need for new types of development activity. Evidence from demand for space at Bridge Park and the importance of the signature mixed-use asset as a key employer destination reaffirms that further expansion of this development can help to improve the city's competitive position. Moreover, some of the largest development investments taking place across the nation to meet the needs of major tech and services companies are leveraging flagship mixed-use projects as the centerpiece of economic development activities.

Companies will create additional layers of demand for modern spaces as they evolve to changing conditions. The case of cloud services company DropBox can serve as an illustrative example of shifting employer attitudes towards real estate in the wake of the pandemic:

> *Dropbox tailored its real-estate solution to these goals. Instead of abandoning all of its office space, it converted some of its former offices into Dropbox Studios used for collaborative work, team events, and training. It optimized the existing spaces for collaboration by removing most desks and creating conference rooms with flexible wall systems and movable furniture so that spaces can increase or shrink depending on need. In some cases, Dropbox cut the amount of square footage it leases. In Dublin, it moved to a new location built from the ground up for collaborative experiences. The new space includes a café, where employees can connect and recharge over free espressos and cappuccinos, and immersive technology for videoconferencing, intended to level the playing field between on-site and remote participants.*[26]

Dublin has many similar cloud and technology services companies which are likely to respond to changing real estate needs in ways that require access to redeveloped spaces located in key development nodes. Cardinal Health, one of the city's largest tenants, has adopted a similar remote and hybrid-first approach to its workforce and real estate needs:

> *Because of the adoption of hybrid work, Cardinal is redesigning and renovating its Dublin headquarters on Emerald Parkway to have fewer individual cubicles and more common and collaborative space, he said. In the Fall, the company exited a 400,000-square-foot second Dublin building on Rings Road because the HQ is big enough to accommodate those who still report to the office.*[27]

While the pivot many companies are making requires lower overall space footprints, at the same time it provides more significant destination office anchors and allows regions to attract new resident workers. However, this does mean that ongoing development, redevelopment, and adaptive reuse of existing real estate stock to create meaningful mixed-use nodes will become an imperative to attract and retain companies in tech and business-intensive industries.

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[25] *Six new imperatives for real estate players*, McKinsey article, March 7, 2023.
[26] *Workplace real estate in the COVID-19 era: From cost center to competitive advantage*, McKinsey article, May 24, 2022.
[27] *Cardinal Health CEO says the company can avoid layoff trend*, Columbus Business First, Feb. 2023.

Dublin can now take the next steps in building out a modern environment through actions to expand and connect new mixed-use district nodes, an approach which many city centers outside of urban cores are taking to help create interconnected series of placemaking assets across a broader city landscape. New models of industry-centric placemaking are combining distinctive development nodes to create ecosystems centered around targeted industries as opposed to discrete development projects, an approach Dublin can utilize to build around its existing strengths and allocate resources in a cost-effective way towards high impact placemaking.

Actions to Pursue

To create distinctive development nodes to meet 21st Century industry demand for vibrant physical space, Dublin should focus on the following four actions:

- Continue to build on the momentum of **Bridge Park/Bridge Street District;**
- Move the **West Innovation District** forward by setting the conditions for development attractive to the targeted industry clusters;
- Focus efforts to redevelop the **Dublin Corporate Area/legacy office parks** and provide additional points of connection to alternative living/retail space; and
- **Connect development nodes** through deployment of transportation and mobility technologies and serve as suburban test bed.

Action 1: Continue to build on the Momentum of Bridge Park/Bridge Street District

Recognizing the headwinds previously identified, the City of Dublin has been on the cutting-edge of modern development in recognizing that people want choices, urbanism, and walkable communities. The Bridge Street District, anchored by Bridge Park, is Dublin's response to these trends. The 1,100 acres provide alternative development choices for Dublin's residents and corporate citizens as well as expands and enhances the unique attributes of destinations such as Historic Dublin.

It is critical that the City of Dublin continue to build on the momentum of Bridge Park by fully developing the Bridge Street District. Tactics to pursue in the continued build-out include the following opportunities:

- Pursue two additional Class A office buildings by obtaining commitments from developers and approval by City Council by 2024 with construction occurring by 2025.
- Immediately adjacent to the Bridge Street District, market the city-owned land along Emerald Parkway (near Riverside Drive) and develop a new office project.
- Plan and program the Snouffer Road intersection improvement.
- Redevelop 5/3 Bank office site at Sawmill Road and West Dublin-Granville Road.
- Focus attraction efforts on high-growth companies being incubated elsewhere in the region that are seeking urban-like environments with ability to scale (related to Strategy 3, Action 3).
- Ensure the Bridge Street District development node retains its "cool" factor by incorporating recreational amenities, adhering to landscape architecture standards, and collaborating with the Dublin Arts Council to incorporate public displays of art throughout the District.

- Undertake the SR-161 Corridor study to understand how to continue to build upon/leverage the development/momentum of Bridge Park.
- Target unique amenities to the region, including signature hotel and conference center.
- Redevelop the Dublin Village site to allow for additional mixed-use development.

Action 2: Move the West Innovation District Forward by Setting the Conditions for Development Attractive to the Targeted Industry Clusters

In partnership with academic and institutional partners, the City of Dublin has concentrated significant investment in the West Innovation District over the past decade. As part of this effort, important projects have been addressed to establish infrastructure for future development that is particularly attractive to both the targeted mobility and healthcare industry clusters.

It is critical that the City of Dublin move the West Innovation District forward by setting the conditions for development attractive to the targeted industry clusters. Tactics needed to leverage the opportunities that are present within the West Innovation District include the following:

- Execute the build-out of the balance of city-owned property associated with the OSU-Medical Center investment.
- Leverage city-owned and OU-owned land to build-out OU Dublin Campus.
- Pursue research investments/partnerships with both OU and OSU around key industry clusters (related to Strategy 3, Action 2).
- Complete construction of the US 33/Post Road Interchange.
- Pursue the relocation of Eiterman Road.
- Purchase strategic tracts of land for future economic development deals through further land acquisition, including focusing on access to rail as an economic asset. This should include:
    - Undertaking a West Dublin Passenger Rail Station Area Planning Study and Vision Plan.
    - Incorporating land acquired on western border into planning strategies.
- Build on success of Crosby Court flex space.

Action 3: Focus Efforts to Redevelop the Dublin Corporate Area/Legacy Office Parks and Provide Additional Points of Connection to Alternative Living/Retail Space

As Central Ohio's first office park community, Dublin has an older building inventory. The core of Dublin's commercial building stock dates to the 1980s and 90s. Other more recently developed communities in the region are able to offer more modern buildings at competitive pricing. Consideration must be given to how this older inventory can be redeveloped to fit 21st century demands.

The Dublin Corporate Area Plan (DCAP) was adopted as part of the Dublin Community Plan in September 2018 and provides guidance for future development and redevelopment. The DCAP area is approximately 1,000 acres and includes all legacy office parks within the Metro Office, Blazer Research, and Emerald Corporate business districts and the Frantz Road corridor.

The intent of DCAP is to encourage and facilitate new investment and redevelopment of commercial properties in the planning area, as these business districts have and will continue to serve as a key corporate base for the City of Dublin. To ensure that these areas remain vibrant as these "legacy" office parks mature, DCAP included the following key principles:

- Encourage a variety of land uses, focusing on needed amenities to serve workers, nearby hotel visitors, and residents.
- Apply placemaking principles to encourage vitality within the district.
- Use formal and informal open spaces as organizational and focal elements for new development and redevelopment.
- Support integrated infill residential development at key locations in support of office development.
- Mitigate negative impacts of new development on adjacent neighborhoods.
- Position the planning area as a well-connected district (both walkable and bikeable) with service and recreational amenities (open spaces) to facilitate opportunities for community interaction.

It is critical that the City of Dublin focus efforts to redevelop the Dublin Corporate Area/Legacy Office Parks and provide additional points of connection to alternative living/retail space. Tactics to pursue in the redevelopment efforts include the following opportunities:

- Implement the Dublin Corporate Area Plan (DCAP):
    - Implement best practices around mixed-use, higher-density development that combine structured parking, variety of housing types, retail, dining and walk-to-work office space.
    - Partner with the property owners for the redevelopment of the Metro Center frontage consistent with the Dublin Corporate Area Plan along Frantz Road as a catalyst for redevelopment of Metro Center.
- Continue innovation and technology cluster attraction efforts with emphasis on talent pipeline and access to Dublink.
- Consider the use of a Community Reinvestment Area (CRA)/abatement area to redevelop legacy office parks.
- Work with the property owner on the potential repositioning (i.e., rezone, mixed-use, utility issues) of the land on the far south end of the former Ashland campus.

Action 4: Connect Development Nodes through Deployment of Transportation and Mobility Technologies and Serve as a Suburban Test Bed

The City of Dublin has made significant strides to improve mobility options for residents, visitors, and the workforce. The purpose of these efforts is to provide access to a range of transportation options to connect more people to more places. It is critical that the City of Dublin build on these efforts by connecting the envisioned development nodes through deployment of transportation technologies

while serving as a suburban pilot/test bed for these mobility technologies. Tactics to pursue in the deployment of transportation and mobility technologies include the following opportunities:

- Pursue transportation and mobility connectivity to integrate DCAP with surrounding areas.
- Leverage proximity to 33 Smart Corridor and Beta District and Smart Columbus to build out autonomous/connected "Smart" infrastructure as a beta/testing platform for R&D.
    - Attract firms/technologies to beta test on the City of Dublin's and 33 Corridor's "smart infrastructure".
    - Determine next generation of Beta District and 33 Smart Corridor technology and initiatives.
- Explore the creation of a regular circulator shuttle during normal business hours that travels from the West Innovation District through the Dublin Corporate Area to the Bridge Street District (similar to CBUS/Mobility Plan in progress).
- Continue to ensure biking/pedestrian walkability of future developments, particularly within and connecting the three identified development nodes.
- Consider the West Innovation District a place for a future passenger rail and Hyperloop stop.
- Create a Smart Corridor R&D facility in West Innovation District on city and/or university-owned land (Could be part of RFI referenced under Strategy 1 Action 2).
- Study and integrate with the MORPC and COTA corridor studies/initiatives.
- Consider multi-jurisdictional opportunities regarding East/West regional transit.
- Continue to support the linkage of the Northwest Corridor through the efforts of the Transportation Research Center (TRC) and its related connected and autonomous vehicle efforts along the Route 33 Corridor in addition to the development of the Beta District.
- Continue marketing and expanding the Dublin Connector service.

Strategy 2: Make Dublin's Development Processes More Transparent and Predictable Thereby Reducing Uncertainty

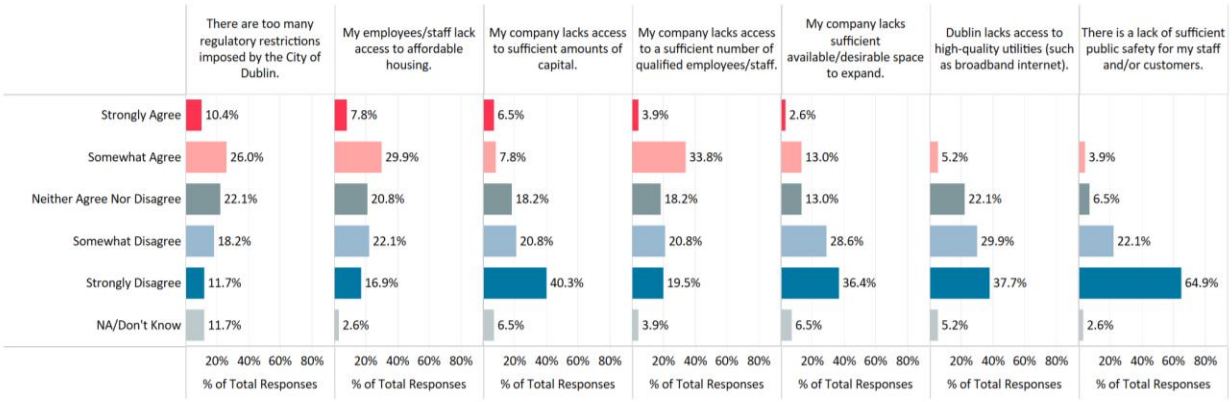
Rationale

The economic development strategy from 2019 outlined in detail the case that attracting and retaining value-added business enterprises is highly competitive, and the ability to grow and scale such companies within a region is extremely difficult. For a city to be a competitive location for attracting and retaining industrial drivers, it must ensure that its government policies, procedures, regulations, and codes are encouraging rather than discouraging investment.

In gathering input for the 2019 economic development strategy, business leaders indicated that there is a perception that Dublin can be a difficult and expensive place to do business. While efforts have been undertaken since then to streamline the process, results from a recent survey confirm that Dublin's regulatory environment is still of primary concern to its business leaders, falling only one percentage point behind lack of qualified employees and housing as the greatest barrier to company growth (Figure

4). In follow-up questions, business leaders expressed concern over the lack of transparency of decision making as well as the predictability and timeliness of decisions, all of which increase costs to conduct business in Dublin. While Dublin's stringent design, planning, and zoning standards have contributed to Dublin maintaining a high "quality of place" in the face of rapid growth, others note that there are a number of equally attractive communities in the region that are viewed as easier to work collaboratively with on business development initiatives.

Figure 4. Current Barriers to Growth for Dublin Companies



Source: TEConomy Analysis of Dublin Economic Development Survey Results

It is critical that the City of Dublin evaluate its development processes to identify opportunities to be more transparent and predictable thereby reducing uncertainty. This will require that the city clearly articulate the type of development being sought, and then have the wherewithal to adhere to the stated vision/plan for development.

Actions to Pursue

In order to identify opportunities to streamline and make a more predictable development process thereby reducing uncertainty, Dublin should focus on the following two actions:

- **Foster understanding and predictability** regarding the type of development being sought and adhere to the stated vision/plan for development; and

Action 5: Foster Understanding and Predictability Regarding the Type of Development being Sought and Adhere to the Stated Vision/Plan for Development

As a result of its reputation within the business community, it is critical that the City of Dublin streamline and make more predictable its development processes thereby reducing uncertainty. Tactics to pursue to foster understanding and predictability include the following:

- Validate Council's commitment to the following area plans:
    - Dublin Corporate Area Plan (DCAP)
    - West Innovation District (WID)
    - Bridge Street District (BSD)

- Update the Community Plan:
    - Reaffirm overarching Vision section
    - Update Community Character and Environment and Fiscal Analysis sections
- Articulate Council's vision to Council/Board/Members/Staff:
    - Conduct joint training for Board and Commission members and staff clearly articulating vision/responsibilities/purview
    - Ensure that development plans are adhered to and policies are followed routinely.
- Explore additional opportunities for innovative/expedited Visioning Process involving Council, Board/Members, staff, developers, and land owners similar to 2022 DCAP Visioning Process.
- Ensure that as new hires come on board as part of the economic development leadership staff they are connecting with industry leadership on a regular basis (Strategy 4, Action 10).

Strategy 3: Nurture the Growth of Targeted Industry Clusters through Proactive Attraction and Business Retention/Expansion Activities

Rationale

Dublin has long recognized the value of cluster-based economic development strategies, and TEConomy recommended in its 2019 strategic plan that Dublin continue to pursue best practices centered around targeted industry sectors. The Brookings Institute notes in their broad re-examination of cluster-based economic development strategy in 2018[28] that successful cluster initiatives have five key traits:

- They are focused on establishing a robust ecosystem, not quick job gains;
- They are industry-driven, university-fueled, government-funded;
- They place a collective big bet on a unique opportunity;
- They are championed by passionate, dedicated leaders, typically within industry; and,
- They are anchored by a physical center.

The City of Dublin's major industries continue to meet several of these criteria, and coupled with targeted growth initiatives that address gaps the ongoing potential of cluster-based economic development for the city can yield significant growth if properly executed.

While the successes of cluster-based strategies validate its importance in guiding policy, Brookings also notes that cluster growth is a dynamic and complex process:

> *In his book, The Keys to the City, Michael Storper posits that the regions that manage to continually benefit from agglomeration throughout these cycles do so by effectively specializing, adapting, and respecializing. While there is still no consensus among economists about what conditions best allow for this, there are a few hints. Regions need to specialize to drive productivity, but successful regions seem to specialize in a certain way. Rather than specializing in a single industry, regions that experience robust job growth tend to have a presence of economic activities that are related enough to allow for effective specialization but offer enough*

[28] *Rethinking Cluster Initiatives*, Brookings Metropolitan Policy Program, July 2018.

variety that they can evolve into new industries and activities should the old ones experience decline. For example, Detroit's decline was both attributable to the decline of the auto industry and the lack of a new growth industry to replace it. Silicon Valley, on the other hand, has experienced many cycles of industrial decline (e.g., computer manufacturing, semiconductors, etc.), yet has always found a new but related set of activities that generate the next growth cycle (e.g., software development, artificial intelligence, etc.).[29]

In light of the disruptive trends highlighted in previous sections, Dublin may find itself at a point in time where adaptive respecialization and a renewed focus on key industries is needed to mitigate risks from broader regional and macroeconomic trends. Brookings acknowledges that the impact of the pandemic and broader socioeconomic trends have introduced several new factors for consideration in cluster-based development since 2018, including addressing economic inequality, targeting clusters at global challenges such as climate change, leveraging urban-rural linkages to better compete with "superstar" metros, and leveraging new analytical approaches to optimize around a specific set of clusters rather than more generic ones.[30]

As the city's clusters continue to evolve due to ongoing trends in the broader macroeconomy as well as changing conditions in the local environment, it is critical that Dublin continue to emphasize creating broader cluster ecosystems rather than pursuing single opportunities in isolation. The city remains home to several specialized bases of industry employment, but recent uncertainty in the traditional office markets in combination with emerging new growth opportunities across the Greater Columbus region has created some instability in the clusters that have historically grounded the city's strategic outlook. Understanding the way that the city's clusters continue to shift towards new end markets and actively deploying solutions to target cluster development will be critical for Dublin in the coming years to help mitigate risk as well as capture significant shares of growth in new markets.

Actions to Pursue

In order to nurture growth of targeted industry clusters through proactive attraction and business retention and expansion activities, Dublin should focus on the following three actions:

- **Enhance existing economic development efforts;**
- **Focus** the Economic Development Team's efforts **on key industry clusters**; and
- **Capture** a larger portion of the Greater Columbus Region's scaling/**high-growth companies.**

Action 6: Enhance Existing Economic Development Efforts

Local governments that have put the most effort and resources into spurring local growth have generated significant results and an impactful bang for the public's dollar. As more people come to understand the connection between public policy and economic prosperity, it is important to understand that enhanced economic development efforts that engage a broad constituency of thought leaders can have significant impact on a region's economy. For example, educational institutions, who

[29] Ibid.

[30] A new federal grant should make regional leaders rethink their industry clusters, Brookings Institute article, September 2021.

will nurture and teach the children of those we hope to attract, is critical to drawing in and retaining the young families an economy needs to grow.

The critical role local decision-makers play in creating fertile and sustainable economic development can't be overstated. It's incumbent on them—in the fierce competition across the globe for economic growth—to double down on the policies and strategies that work, eliminate those that make the city less attractive to business development, and build the infrastructure needed to keep it growing.

It is critical that the City of Dublin enhance existing economic development efforts. Tactics to pursue to enhance economic development efforts include the following:

- Advance collaboration/partnerships among industry, academia, and government to advance economic development.
- Work with the Dublin City Schools on the growth of its academy programs by finding industry and university partners for additional physical spaces and training opportunities.
- Train the City Leadership Team to conduct business retention and expansion visits.
- Have the City Leadership Team visit with the Top 10 largest companies and key industry cluster firms annually.
- Understand/be creative in the types of incentives that can be leveraged, for example:
    - Performance
    - Infrastructure
    - TIFs
    - Land
    - Fiber optics
    - Grants – relocation, renovation, LEED, technology, etc.
    - Entrepreneurial Services
    - PACE
    - Community Reinvestment Area
    - Federal grants for mobility/smart technology/beta test sites.
- Provide staffing to ensure a minimum of 250 business retention and expansion visits can be conducted annually.

Action 7: Focus the Economic Development Team's Efforts on Key Industry Clusters

As noted in the 2019 economic development strategy, the city's industrial base has historically strong industrial specializations that create opportunities related to expansion, attraction, and supply chain development. However, future growth is not assured in the midst of disruptive headwinds. As a result, city's economic development efforts need to be organized to most effectively engage and focus on the needs and opportunities of evolving and newly emerging industry clusters. Re-examining the city's clusters affirms the need for advancing an integrated economic development approach for each targeted industry cluster that focuses broadly on retention and expansion, business attraction, and new company formation, and is tailored to maximize the opportunities presented by each specific industry cluster's position in the global marketplace.

In the 2019 economic development strategy, TEConomy identified the set of regional industry clusters driving the Greater Columbus Regional economy and their presence within Dublin's industry footprint. This prior identification formed an important foundation and knowledge base for updating the region's and City of Dublin's industry cluster analysis, and also highlighted several key clusters where Dublin had both competitive advantages and strategic opportunities for expansion:

- IT and Computer Services
- Medical Biosciences and Healthcare Services
- Mobility Technologies

Over the course of the pandemic, these and many of the city's other clusters saw significant declines which have been partially offset by the recovery from the pandemic (for full discussion of employment trends, see data analyses of cluster economic performance in Appendix A). At the same time, clusters that remain highly specialized in the region such as Corporate Headquarters, Business Support Services, and Finance & Insurance are at highest risk of being disrupted by new technologies, workforce trends, and hybrid working models. Compounding the situation is a broader sense of economic uncertainty amidst high inflation rates and pullback from major employer job and investment activity due to macroeconomic recessionary warning signs.

The city now has a strong case for refocusing its targeted industry attraction around this set of opportunities to help build resilience to ongoing trends as well as bolster its existing cluster strengths. Based on an updated analysis of the comprehensive picture of the region's and city's industry clusters, several potential targets emerge as opportunities for a renewed cluster strategy:

- **IT & Computer Services**, which remains a specialized industry in the city despite the impacts of remote work models and is critical to maintaining the city's workforce relevance in industry attraction efforts. The city should pursue mid-size and emerging IT and tech services companies (such as local company Expedient) with smaller physical space needs and seek to co-locate them with other destination offices in mixed-use districts to increase the dynamism of the cluster. Similarly, the city can seek to increase its resident workforce in this space to bolster business attraction, including remote workers seeking to access Dublin's lifestyle advantages.
- **Medical Biosciences & Healthcare Services,** an emerging cluster centered around allied health opportunities and anchored by large developments and expansion of hospital and clinical services, which can serve as a link to rural communities to the city's west as well as grow an ecosystem of healthcare technology and services providers locating in proximity to major clinical operations.
- **Electronics & Mobility Systems Design & Engineering,** which can leverage the city's historical cluster strength in R&D and engineering services and proximity to mobility innovation assets to capture upstream technical services providers for the new semiconductor industry in addition to high value-added engineering services and systems integrators in the mobility industry. This cluster can leverage smaller footprint light manufacturing and flex space that the city is better equipped to provide in a land-constrained environment, and functions in a complementary role to other clusters by diversifying the city's industry base across additional advanced industries.
- **Destination Office Locations for Tech-Enabled Products and Services**, an evolution and aggregation of the Corporate Headquarters, Business Support Services, and Finance and

Insurance Industries which seeks to attract "destination" office hubs for hybrid work companies supported by mixed-use business districts. The city should seek to attract companies in tech-enabled applications (such as companies providing tech-enabled business services like Updox) that are less likely to be disrupted by ongoing trends and which can serve to attract resident workers with digital skills.

Further detail on recent activity in these clusters as well as potential actions for consideration as part of a cluster-based economic development strategy are discussed below.

IT & Computer Services

Dublin is already home to a specialized cohort of IT and computer services companies, and this cluster has historically been a critical component of Dublin's industry base. The cluster employs nearly 3,900 workers as of the end of 2021, and Dublin is home to nearly 19 percent of the Greater Columbus Region's workforce in this space which drives a very high employment specialization. While the industry faced declines during the pandemic, a rebound in growth in 2021 shows that the sector has nearly recovered with recent trends at the metro level indicating strong regional growth for 2022 (see Table 1).

Table 1. Performance of Dublin's IT & Computer Services Industry Cluster

Dublin Industry Clusters	Empl., 2021	Location Quotient, 2021	Dublin Avg. Annual Employment Change				U.S. Avg. Annual Employment Change			
			2014-17	2017-20	2020-21	2017-21	2014-17	2017-20	2020-21	2017-21
IT & Computer Services	3,851	**2.30**	6.0%	-3.9%	2.7%	-2.3%	5.5%	4.4%	6.1%	5.1%

Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data for ZIP codes 43016, 43017; QCEW via Lightcast data release 2022.4

In the 2019 strategy, TEConomy noted this cluster's immense importance as the enabler of digitalization of all types of industries, driving new technology sectors and attracting high growth companies. The headwinds noted above confirm that this sector is still a critical enabler of future growth for Dublin across all its industries, as well as a core anchor for the tech worker labor force the deploys modern digital and software skills. Notably, Dublin saw major growth in software developer positions across all industries, with a 29 percent increase in jobs to over 1.6k workers in these roles over the 2017-2021 period, a rate that matched the Greater Columbus region's growth and exceeded national growth.

Companies are increasingly focused on providing front- and back-end turnkey services to other industries to enable many of their core business functions as digital integration continues to increase. Key applications areas continuing to see growth nationally and regionally include:

- Cloud services and web and data hosting (including data centers), where Dublin is already home to several leading companies.

- Software-as-a-Service (SaaS) Products serving a variety of industries, focused primarily on process automation and data analytics functions in end market applications such as business support functions, financial services, healthcare services, logistics, and consumer retail operations.
- High performance computing services, led by providers of "virtual" computing power to do back-end data processing for applications and services but also including configuration, installation, and maintenance of computer clusters and other business IT infrastructure.
- Networking and connectivity systems, often deployed within Internet of Things (IoT) devices and connected infrastructure via specialized providers who do primary assembly and integration work.

Despite the increasing role of remote work within this industry cluster, Dublin continues to employ a major share of talent that will continue to be critical to long-term growth. However, as noted across several of the disruptive impacts outlined in previous sections, the continued presence of the industry and the ability to attract a residential workforce with industry-ready skills is not assured amidst a highly competitive labor market and major tech companies growing in peer communities. In order to help continue to root this cluster in Dublin and build resilience to risks, tactics that the city could pursue include the following ideas:

- Develop a renewed industry attraction and retention strategy for IT and computer services firms, as well as other "tech" applications firms, designed to attract small and mid-sized anchor office locations to mixed-use development nodes across the city. This strategy would recognize the growing competitiveness of peer communities across the Greater Columbus region and work in complement to redevelopment and adaptive reuse efforts to create site locations and amenities that are most in demand from IT and computer services companies, particularly small and emerging companies with high growth potential.
- Deploy a parallel initiative aimed at a renewed "tech" resident workforce attraction to mitigate risks to the "hollowing out" of Dublin's high skills IT and computing workers due to population demographics shifts, intense competition from other peer communities, and to serve as a core pillar of company attraction to the city for destination office locations. This strategy would employ a multi-faceted approach to skilled tech worker attraction, including increasing access to housing for early career tech workers, buildout of mixed-use nodes providing amenities, and branding initiatives designed to capture talent flows from the Columbus region's urban core to outlying suburban communities.
- Build on Dublin's valuable fiber infrastructure in the Dublink network to expand low latency, high performance connectivity across the city, and build out full coverage of residential fiber networks to build a strong workforce attraction asset for resident workers in tech industries.

Medical Biosciences & Healthcare Services

While Dublin has recently begun to see increased development activity around major healthcare services industries through projects from Ohio State Wexner Medical Center, Dublin Methodist, and Mount Carmel, employment growth in this space has yet to offset significant declines in the healthcare workforce during the pandemic as of the end of 2021 (Table 2). This is due in part to broader national labor supply concerns for the healthcare industry, as facilities attempt to grapple with high worker turnover and mitigate challenging working conditions. Moving forward, Dublin's efforts to grow this

cluster could bear significant fruit if the city can build out clusters of specialty healthcare services providers and other healthcare business support around major development projects, especially given the presence of Ohio University's medical campus and potential access to healthcare markets in rural areas northwest of the city.

Table 2. Performance of Dublin's Medical Biosciences and Healthcare Services Industry Cluster

Dublin Industry Clusters	Empl., 2021	Location Quotient, 2021	Dublin Avg. Annual Employment Change				U.S. Avg. Annual Employment Change			
			2014-17	2017-20	2020-21	2017-21	2014-17	2017-20	2020-21	2017-21
Medical Biosciences & Healthcare Services	2,955	0.72	-0.1%	-1.4%	0.0%	-1.0%	2.6%	1.4%	1.8%	1.5%

Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data for ZIP codes 43016, 43017; QCEW via Lightcast data release 2022.4

Since other parts of the Greater Columbus region already boast significant clinical research hubs, Dublin's strategy in this industry cluster has evolved into an opportunity to capture population and allied health demand from regional residents. This concept leverages healthcare "ecosystems" to provide physical hubs where patients can receive a variety of services ranging from primary care to diagnostic services to specialty treatment all in one geographic location, with ongoing patient care needs supported by digital health technologies including telemedicine, wearable monitoring, and other distance healthcare applications. The integrated nature of these ecosystems means that digital health applications in patient data management, payment and reimbursement processing, and clinical decision support systems are also critical components, which can attract additional industry presence focused on those services. The result is an end-to-end healthcare ecosystem of a variety of different healthcare providers and services companies managing patient outcomes through value-based care.

Dublin has the opportunity to leverage its recent activity towards becoming a regional healthcare ecosystem serving the US-33 corridor (and potentially beyond). Existing hospitals and specialty care providers provide a significant backbone to build on, centered around the physical anchor of the medical campus. Economic development strategy can target supporting digital health services providers as well as specialty diagnostic clinics and labs to help build out this ecosystem, and site them in proximity to existing and emerging developments. However, a key need to create economic value from a healthcare ecosystem will be finding sufficient labor to staff operations; amidst a challenging healthcare labor market and changing commuting preferences for workers in these labor segments, the city will need to take action to ensure that allied healthcare workers have access to housing in proximity to major provider locations.

In order to help ensure that recent growth continues to build momentum in Dublin, tactics that the city could pursue include the following ideas:

- Continue to support buildout of major healthcare delivery sites anchored around the medical campus district, including targeted attraction of secondary healthcare suppliers and services that can cluster in proximity to large care delivery locations and anchor additional bases of employment to create allied health ecosystems.
- Emphasize the value proposition of the region to digital health and healthcare services tech companies, and aggressively target small- and mid-sized companies in this space with attraction efforts to appropriately developed site locations in proximity to major hospitals and outpatient care facilities.
- Continue to explore opportunities to attract R&D and innovation activities in gerontology/aging science as well as remote/rural health through public-private partnerships to build on the base of industry activity and align with patient population needs.
- Explore ways to increase accessibility to high-density housing in proximity to major care facilities for allied health workers to improve opportunities to meet labor demand in the face of changing commuting patterns.

Electronics & Mobility Systems Design & Engineering

Although not as sizable as other major clusters, Dublin's R&D and engineering services sector is a key differentiator for the city as it considers the next generation of opportunities that are poised to transform the Greater Columbus region. Despite declines in job growth during the pandemic, the sector still remains highly specialized and totaled nearly 1.4k jobs in 2021, anchored by major engineering services and transportation systems firms as well as companies specializing in materials and food science as well as laboratory services (Table 3). The existing cluster can help position the region to pursue new strategic opportunities in two key areas that leverage systems engineering as well as R&D and testing: electronics systems, driven by the buildout of Intel's semiconductor industry cluster in the Greater Columbus region as well as mobility and transportation systems, driven by ongoing activity based around the US-33 Smart Mobility Corridor and proximity to major automotive manufacturing operations in Marysville. Both these areas present opportunities for the city to re-specialize and evolve the existing industry base, and are complemented by synergies with the IT and Computer Services cluster which serves as a key services supplier to both industry focus areas.

Table 3. Performance of Dublin's R&D and Engineering Services Industry Cluster

Dublin Industry Clusters	Empl., 2021	Location Quotient, 2021	Dublin Avg. Annual Employment Change				U.S. Avg. Annual Employment Change			
			2014-17	2017-20	2020-21	2017-21	2014-17	2017-20	2020-21	2017-21
R&D & Engineering Services	1,373	**1.68**	6.2%	-5.4%	-0.4%	-4.1%	-0.3%	2.0%	3.2%	2.4%

Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data for ZIP codes 43016, 43017; QCEW via Lightcast data release 2022.4

As noted in the headwinds sections, the investment by Intel in its production operations in New Albany and the subsequent attraction of major supplier clusters will present major opportunities for the city to capture new types of industry that are aligned with forward-looking growth. Dublin has recognized the magnitude of this opportunity and worked to undertake a semiconductor positioning study in conjunction with Newmark Consulting. The results of this study, summarized in Figure 5, note that the city is best positioned to attract office, lab, flex, and some light industrial development associated with the semiconductor industry and its suppliers.

Figure 5. Planning District Assessments for Semiconductor Investment from Newmark Positioning Study

Area	Office	Lab	Flex	Light Industrial	Heavy Industrial
Blazer Research District	●●●	●●●	●●	●	DQ
Bridge Street District	●●●	●	●	DQ	DQ
Emerald Corporate District	●●●	●●●	●●	●	DQ
Metro Office District	●●	●	●	●	DQ
Perimeter Commerce District	●●●	●●	●	●	DQ
Shier Rings Techflex District	●●●	●●●	●●●	●●	DQ
West Innovation District	●●●	●●●	●●●	●●	DQ
Potential Annexation Lands	●●	●●●	●●●	●●●	●●●
Sum of Suitability Scores:	**22**	**19**	**16**	**11**	**3**

DQ = Disqualified. Land use not suitable for district development based on discussions with City of Dublin Planning and Economic Development.

Source: Newmark Semiconductor Positioning Study performed for City of Dublin

TEConomy is in agreement with the analysis put forward in the Newmark study, and would further note that Dublin is well-positioned to attract value-added upstream microelectronics R&D and design services that align with its existing base of skilled talent, its specialized R&D and Engineering services cluster, and lower need for large land use requirements.

Similarly, the State of Ohio and in particular the Greater Columbus region is positioned amongst a group of midwestern states making significant investments in transportation and mobility systems innovation. This activity includes not only traditional vehicle manufacturing sectors, but is also focused on implementing vehicle systems connectivity and modern transportation infrastructure backed by advanced analytics platforms. DriveOhio, the Ohio Department of Transportation's initiative seeking to coordinate innovation activity and assets in this space, notes that the current portfolio of activity includes automated vehicle, connected vehicle, electric vehicle, and advanced air mobility efforts, all applications areas with high future growth potential. Dublin has also recognized the importance of this sector as a future driver of growth through its participation in the Beta District, which places emphasis on using infrastructure and testing assets to enable a "living laboratory" for piloting new transportation projects. As with semiconductors, the city can work to target high value-added upstream systems engineering companies engaged in the design, R&D, and integration work for transportation and mobility systems that can leverage the existing R&D and Engineering Services cluster and grow the footprint of activity in this space over time, as well as continue to attract projects that emerge through the evolution of Columbus' investments from the US DOT Smart City Challenge award in 2016. This area also benefits from the presence of a complementary IT and Computer Services cluster that can provide infrastructure and services to engineering firms testing and deploying mobility systems.

In order to help ensure that Dublin can capture new opportunities in these future-facing cluster specializations, tactics that the city could pursue include the following ideas:

- Utilize the analysis highlighted in the Newmark Semiconductor Positioning Study to position the city to attract high value-added upstream R&D, design, and engineering opportunities related to the growth of the semiconductor industry in the region over the next decade.
- Continue to pursue opportunities through the Beta District and DriveOhio that build awareness of the smart mobility opportunity and attract small and mid-sized mobility systems engineering services firms developing innovative products and services.
- Seek to redevelop land in key districts such as the Blazer Research, Metro Office, Emerald Corporate, and Shier Rings Techflex Districts to better serve the needs of small to mid-size systems engineering companies, and seek to root clusters of emerging companies in these spaces within hubs with shared access to relevant assets (e.g., connectivity, power, etc.).
- Work with Emerald Campus and other educational and training partners to develop workforce skills-building, reskilling, and upskilling programs targeted at advanced mobility systems and semiconductor design and production to build the city's brand as a workforce development hub in these applications areas.

Destination Office Locations for Tech-Enabled Products and Services

Dublin is still home to significant groups of companies with headquarters and branch offices across a number of key industry clusters, including formal corporate headquarters, business support services, finance and insurance services, and creative and design industries. Despite their sizable employment footprint and current specializations, mixed performance over the last several years and the many potential risks of disruption outlined in the headwinds facing the city make investment in targeting these industries with traditional development projects an uncertain proposition (Table 4).

Table 4. Performance of Dublin's Industry Clusters Aligned with Traditional Office Needs

Dublin Industry Clusters	Empl. 2021	Location Quotient 2021	Dublin Avg. Annual Employment Change				U.S. Avg. Annual Emp Change			
			2014-17	2017-20	2020-21	2017-21	2014-17	2017-20	2020-21	2017-21
Business Support Services	2,878	**2.31**	-0.9%	0.5%	-0.3%	0.3%	3.5%	0.9%	4.2%	1.7%
Corporate HQs/Managing Offices	4,481	**2.87**	-5.0%	6.4%	-1.3%	4.4%	1.9%	0.6%	1.1%	0.7%
Creative & Design Industries	791	**2.08**	4.1%	-5.9%	2.4%	-3.9%	2.1%	-2.5%	2.8%	-1.2%
Finance & Insurance	4,179	**1.42**	-11.2%	2.5%	-4.5%	0.7%	1.6%	0.8%	1.7%	1.0%

Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data for ZIP codes 43016, 43017; QCEW via Lightcast data release 2022.4

Greater Columbus is home to a rapidly growing tech market, backed by significant VC investment. To attract the next generation of growing companies and compete for high growth startups advancing cutting edge technology, Dublin should seek to attract "destination" offices for major tech companies in the region as well as root clusters of anchor office sites for emerging companies within mixed-use business districts. To minimize the risk of disruption, the city can target both mature and emerging companies advancing tech-enabled applications that leverage in-demand skills and technology platforms. In addition to those noted above, several key industry verticals where the Greater Columbus region has advanced tech-enabled products and services in recent years include:

- FinTech, InsurTech, Marketing & Sales Tech, and Other Financial Services and Business Support Services Tech
- Business Process Automation
- Healthtech and Healthcare Services Software, and
- Enterprise Management and Human Resources Software.

Dublin is already home to several leading companies in these spaces with tech-enabled solutions, including Epiq, Corvel, Updox, and Veeva amongst many others. However, as noted in the discussion of disruptive trends, the real estate needs of these companies as well as the environment demanded by their workforces are rapidly changing. The city also needs to continue to attract emerging companies and entrepreneurs with high growth potential that can anchor the next generation of tenant companies in the city's major commercial districts, and is facing stiff competition from other peer communities across the region to attract tech-focused firms.

To address risks of disruption from new trends in industries that have traditionally help to anchor Dublin's demand for office space, tactics that the Economic Development Administrator could pursue include the following ideas:

- Pursue a business attraction campaign targeted at smaller footprint, tech-oriented companies that can help mitigate risk of disruption to the city's established corporate base.
- Implement a redevelopment campaign for Dublin's legacy office park stock designed to upgrade the aging office spaces and align them with the needs of tech-focused companies seeking destination offices for hybrid workforces. This should include the use of mixed-use nodes and other modern amenities, and targeting of space and infrastructure needs for companies that are advancing digital or tech-enabled solutions.
- Explore development of signature coworking or "on-demand" office projects in conjunction with new amenities that can serve as a vibrant "destination" for residential remote workers and can help mitigate risks from increasing adoption of remote work models for traditional office parks.
- Explore the potential to attract a site location for a major venture capital investment entity, tech incubator or accelerator, or other signature assets that can serve to better anchor an entrepreneurial ecosystem in the city's commercial districts and mitigate risks of relying on attracting emerging firms from other locations.
- Examine incentives and investments being deployed by peer communities to attract emerging tech-based companies to competitively benchmark Dublin's position and inform strategy.

Action 8: Capture a Larger Portion of the Greater Columbus Region's Scaling/High-Growth Companies

As Action 8 outlined, the economic vitality of Dublin depends, in part, upon its capacity to foster the formation of new entrepreneurial-led businesses and sustain their growth as they scale-up and generate new, high-paying jobs in the community. Entrepreneurially led start-ups targeted on traded sector activities are needed to sustain economic growth. As a result, it is critical that the City of Dublin capture a larger portion of the Greater Columbus Region's scaling/ high-growth companies. As previously noted, the Greater Columbus Region has become one of top metropolitan areas in the nation for scaling young companies, demonstrating the growth of its entrepreneurial culture and resources. Tactics to pursue to capture these firms in Dublin include the following:

- As firms outgrow existing incubation space elsewhere in the Greater Columbus Region, leverage Dublin's live/work/play developments (Strategy 1) to attract scaling firms thereby further diversifying Dublin's economy.
- Work with the regional entrepreneurial ecosystem (Rev1, One Columbus, JobsOhio, and area venture capital firms) to identify/access these scaling firms.
- Monitor and work to attract international R&D locations in key industry clusters.
- Develop additional building inventory suitable for scaling firms that require space to grow into (See Strategy 1).
- Continue to promote the start-up community in Dublin by leveraging the various co-working spaces in Dublin, such as Brickhouse Blue and CoHatch, and also determining the relevancy and future focus/efforts of the DEC.
- Leverage Dublin's IT infrastructure capabilities:
    - Promote Dublink as a competitive/cost saving advantage by developing a new targeted education campaign on the benefits of Dublink.
    - Increase Dublink capacity and availability to commercial buildings.

Strategy 4: Foster Sustainable Partnerships to Catalyze Value-Added Collaborations

Rationale

It is not by mistake that Strategy 4 was placed in the center of the Venn Diagram as depicted in Figure 3. The first three updated strategies will require public-private partnerships in order to be successfully implemented, and the tactics described throughout the first three strategies call out numerous areas in which collaborations will be required. However, effective public-private partnerships are so critical in developing a robust economic development ecosystem that it is worth calling specific attention to a stand-alone strategy with recommended actions and tactics to ensure successful implementation.

Networking between industry representatives, academia, and the public and non-profit sectors has been a proven staple of economic development for many regions. Whether formalized through collaborative institutions, through general industry technology councils, or more ad hoc informal efforts, there should be little doubt that regular contact and dialog between industry, academia, and the public and non-profit sectors can be the spark that leads to broad transformative initiatives. During the qualitative

interviews, a number of industry leaders discussed the fact that they did not feel that there was the opportunity to network with other members of the industrial community or with city leaders. When asked if they would take part in such activities if venues were offered, they indicated they would welcome the opportunity.

Raising awareness and building relationships is a foundational building block for establishing stronger collaborations between industry, academia, and the public and non-profit sectors. However, many regions lack the reproducible and sustainable mechanisms that allow academic, private, and public organizations to learn about each other's approaches and capabilities. All too often, organizational silos exist that limit how the private sector, academia, and the public and non-profit sectors understand the opportunities for engagement and collaboration with one another.

Regions that are viewed as having a value-added networking/connectivity culture, often have the presence of the following attributes:

- Face-to-face exchange of ideas and synergies that lead to the development of solutions;
- Recognition of the importance of diversity;
- Intrinsic belief that ideas only get better when they are openly discussed and considered by a mix of people;
- Recognition that large scale and sustainable economic growth is the product of collaboration; and
- Pursuit of value-added collaborative teams rather than the lone thought-leader.

Regions that are viewed as having a culture that promotes and fosters cooperation and collaboration to solve its most pressing issues have the presence of the following assets:

- "Pride of place" – strong commitment to region, desire to see region prosper, belonging to a place they want to live, including social networking focused on community-building;
- Regional positivism (able to see opportunity in challenges) and proactive preparation for inevitable change-creating greater resilience within the community; and
- Collaborative environment, including collaborations between:
    - Larger and smaller companies;
    - Public, private, and philanthropic sectors;
    - Academia and industry;
    - "Old" and "New" sources of wealth within the region;
    - Engagement in cross-fertilization for innovation, problem solving and creation by participants from different business groups, industrial sectors and fields of science/engineering.

Actions to Pursue

In addition to the numerous partnership that are referenced in Strategies 1, 2, and 3, in order to foster effective partnerships to catalyze value-added collaborations, Dublin should also focus on the following two specific actions:

- **Connect** industry leadership with city leadership on a regular basis; and
- **Establish more effective industry networks** to better connect local companies to each other and to the broader community as well as better connect the public and non-profit sectors to one another and to industry.

Action 9: Connect Industry Leadership with City Leadership on a Regular Basis

The need for a cultural mindset that promotes connections, cooperation, and collaboration is rooted in a number of related challenges:

- Problems often cannot be solved within organizationally defined boundaries, and decisions made by one individual/organization/municipality can have adverse impacts on others.
- Many problems/issues are too large or complex for any one individual, organization, or unit of government to address. Issues such as economic development, broadband connectivity, and preservation of the quality of life in the region are examples of challenges that require cooperation and collaboration.
- As organization and municipal budgets are strained and programs suspended or curtailed, cooperative program delivery schemes that provide for the coordination of services and the pooling of resources become more important. Long-term and area-wide planning for the delivery and combining of these services become critical in the task of maintaining services by improving the efficiency of delivery and cost-effectiveness through economies of scale. Regional entities are prime venues for discussing, planning, and implementing such area wide solutions.

As a result, it is imperative that efforts are undertaken that connect public-private thought leaders, which in turn promotes economic growth and community prosperity for all.

It is critical that the City of Dublin connect industry leadership with city leadership on a regular basis. Tactics to pursue to make these connections include the following:

- Conduct semi-annual Industry Roundtable events hosted by City Council to create dialogues to ensure continuous process improvements.
- Conduct semi-annual Developer and Commercial Real Estate Brokerage Roundtable events to create dialogues to ensure continuous process improvements regarding services offered, development processes, permit processes, etc.

Action 10: Establish more Effective Industry Networks to Better Connect Local Companies to Each Other and to the Broader Community as well as Better Connect the Public and Non-Profit Sectors to One Another and to Industry

Industry leaders from large, medium, and small companies articulated a lack of connection between one another as well as with elected and appointed city leaders. They expressed a desire to:

- Better network with one another to understand common needs/supply chains/talent development and acquisition, and
- Better connect with city leaders to be able to articulate common visions/desires/needs.

Dublin's economic development efforts can be further strengthened by establishing effective industry networks that better connect local companies to each other and to the broader community, thereby helping to:

- Identify common needs through dialogue with companies, and then focus on shaping ways to provide more common services, such as addressing talent pipeline assistance, access to markets, business service gaps, regulatory issues, etc.
- Provide guidance for economic development staff on cluster-based development.
- Serve as the portal/coordinated effort for attraction and expansion opportunities to ensure that seamless and unified information and services are provided.
- Target out-of-state supply-chain and strategic partners of existing Dublin firms who are seeking to expand or make business location decisions and therefore would be targets for business recruitment efforts and help existing firms by filling supply chain gaps by locating in the region.
- Aggregate and then address an industry cluster's education, training, and workforce needs to impact curriculum, program development, and experiential learning with K-12 and higher-education institutions, helping education institutions by offering pools of skills needed to be addressed.
- Stay abreast of emerging business issues, including federal regulatory changes, legislative issues, foreign trade issues, etc. and providing a base for common education and advocacy with elected officials and others.
- Develop branding/marketing strategies focused on pro-active outreach marketing for each of the targeted industry clusters.

It is critical that the City of Dublin establish more effective networks to better connect local companies to each other and to the broader community as well as better connect the public and non-profit sectors to one another and to industry. Tactics to pursue to make these networks more effective include the following:

- Establish formal industry networking groups with dedicated events with the goal of enhancing regular local business community interactions.
- Actively pursue opportunities to host regional innovation-related events at leading Dublin industries or establishments to increase awareness of the city and highlight local industry.
- Support and attend Chamber (Business After Hours, Leadership Dublin, Dublin Corporate Challenge, Chamber Board, golf outings, etc.) and other business organizations' events (JASCO, AIABG, Chinese Chamber, Korean Chamber, Hispanic Chamber, Union County Chamber, HDBA, NAIOP, Women in Tech, Black Tech, etc.)
- Leverage and work with other regional economic development initiatives led through organizations such as JobsOhio, One Columbus, and MORPC.
- Better connect businesses to the community through:
    - Volunteer efforts;
    - Philanthropy;

- Event Marketing and sponsorship;
- Internships;
- Adopt a park, natural space, or recreation programs;
- Workforce initiatives aimed at development, attraction, and retention;
- Corporate wellness programs.

Implementation

It is unrealistic to assume that all actions can be implemented immediately, nor that they all hold the same level of priority in terms of their impact on the future economic growth of the city. Table 5 clearly identifies for each strategy the critical pathway and the recommended timing of each action.

For the classification of critical pathway:

- Essential for those actions that are essential for the success of the strategy;
- Significant for those actions that can make a major impact in advancing the strategy; and
- Important for those actions that can contribute to the success of the strategy.

For the classification of timing:

- Immediate actions are those that should be undertaken within the first six months;
- Short-term actions are those to be undertaken in the first year; and
- Medium-term actions are those to be implemented in the one- to three-year period.

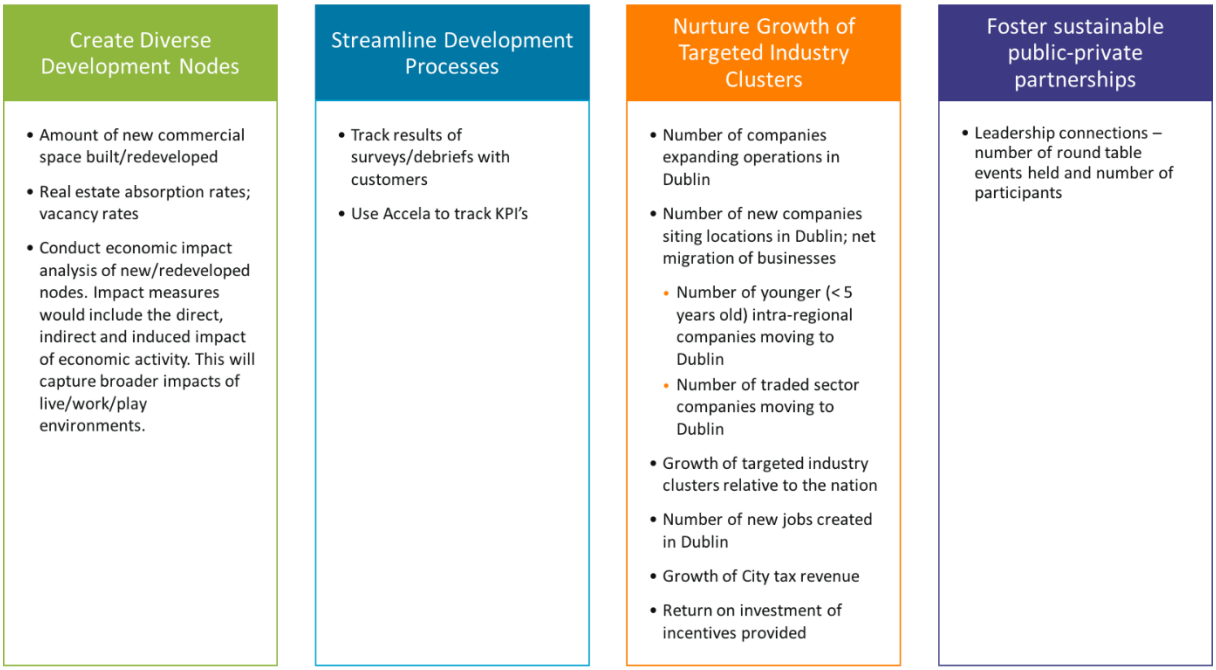
Table 5: Strategic Priorities/Implementation Timeline

Strategy/Action	Critical Pathway	Timing
Strategy 1: Create distinctive development nodes to meet 21st Century industrial demand for vibrant physical space while maintaining Dublin's high quality of place standards		
Continue to build on the momentum of Bridge Park/Bridge Street District	Essential	Immediate
Move the West Innovation District forward by setting the conditions for development	Essential	Short-term
Focus efforts to redevelop the Dublin Corporate Area/legacy office parks	Essential	Short-term
Connect development nodes through deployment of transportation and mobility technologies	Important	Medium-term

Strategy 2: Make Dublin's Development Processes More Transparent and Predictable Thereby Reducing Uncertainty		
Foster understanding and predictability regarding development being sought	Essential	Immediate
Strategy 3: Nurture growth of targeted industry clusters through proactive attraction and business retention/expansion activities		
Enhance existing economic development efforts	Significant	Short-term
Focus Economic Development Team's efforts on key industry clusters	Significant	Short-term
Capture larger portion of Greater Columbus Region's scaling/high-growth companies	Significant	Mid-term
Strategy 4: Foster sustainable partnerships to catalyze value-added collaborations		
Connect industrial leadership with city leadership	Important	Immediate
Establish more effective networks	Important	Short-term

Furthermore, it will be critical that progress made towards implementing the actions be measured over time as well as the impact of the actions on the overall economy so that the strategic plan can be modified in order to ensure its maximum impact. Figure 6 provides recommended measures of success for each strategy.

Figure 6. Strategic Measures of Success



Source: TEConomy Partners, LLC.

Conclusion

The City of Dublin has faced dramatic shifts resulting from the global pandemic that have exposed potential risks of disruptive change that include:

- An aging stock of commercial office space in conjunction with key anchor tenants re-evaluating physical space needs in light of shifts in certain key industries towards hybrid and remote work models due to the ongoing pandemic.
- Changing workforce dynamics and residential preferences in conjunction with a limited supply of accessible housing stock that can continue to attract a highly skilled workforce.
- Rapid growth in the Greater Columbus Region's economy and population that puts pressure on established commuting patterns and employment destinations, particularly with respect to the buildout of peer benchmark communities and corresponding increases in industry attraction efforts that compete with Dublin's profile as a destination community.

At the same time, Dublin faces new opportunities that continue to develop both in the city as well as throughout the region including the major medical care facility expansions from Ohio State, Mount Carmel, and OhioHealth and Dublin's ongoing proximity to the Transportation Research Center (TRC) and its related connected and autonomous vehicle efforts along the Route 33 Corridor in addition to the development of the Beta District.. Exciting new developments such as the recent announcement of Intel's investment in the region in a $20 billion chip fabrication facility (and eventual expansion to potentially up to a $100 billion buildout over the next decade) are also creating new economic development opportunities that Dublin must be prepared to meet.

Recognizing these seismic shifts since the 2019 Economic Development Strategy was released, this comprehensive update, driven by both qualitative and quantitative inputs, provides the basis for refining the city's strategy thereby helping to ensure Dublin is positioned for growth in coming years. Dublin's Updated Economic Development Strategy reinforces the need for 4 strategies and an associated set of 10 actions to focus the city's efforts on the following:

- Creating distinctive development nodes to meet 21st Century industrial demand for vibrant physical space while maintaining Dublin's high quality of place standards. This in turn will create the modern, flexible spaces that will attract and retain not only a vibrant industrial base but also the talent industry requires.
- Streamlining and making more predictable development processes thereby reducing uncertainty. This in turn will create a business-friendly environment that is highly responsive to changing industrial needs.
- Nurturing growth of targeted industry clusters through proactive attraction and business retention/expansion activities. This will help ensure that Dublin's economy is positioned for future economic growth by ensuring that cutting-edge industries and the talent they require find Dublin to be an attractive, business-friendly environment upon which to anchor their success.

- Fostering sustainable partnerships to catalyze value-added collaborations. The entire economic development strategy is predicated on the city's ability to foster value-added collaborations among industry, academia, and the government and non-profit sectors.

The updated strategic plan has been designed to capitalize on Dublin's comparative assets and help position the city to navigate the changing economic landscape. By working together, the opportunity for the City of Dublin to grow its economic base and increase community prosperity is substantial. If successful, it is expected that what will emerge are multiple public-private partnerships that will advance the city for the coming decades.

Appendix A:
Dublin's Economic, Talent, Innovation, and Demographic Indicators

TECONOMY PARTNERS LLC

Overview of Data Update

- Project Scope: *"provide a comprehensive set of quantitative inputs, that when coupled with additional qualitative analysis, will offer the basis for helping to refine the strategies outlined in Dublin's current economic development strategy."*
- Data update is presented across key tasks highlighted in TEConomy's statement of work:
  - **Section 1: Update of Greater Columbus Industry Clusters**
  - **Section 2: Updates to Dublin's Economic Performance and Workforce Data**
    - Section 2.1: Updates to Dublin's Industry Clusters and Business Dynamics
    - Section 2.2: Regional Benchmarking of Industry Clusters
    - Section 2.3: Dublin's Workforce and Talent Indicators
  - **Section 3: Recent Developments in Dublin's Industrial Innovation Activity**
  - **Section 4: Update of Dublin's Socioeconomic and Demographic Profile**

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Setting the Context for Local Economic Analysis: The Challenges of Leveraging Highly Localized Economic Data

- The city of Dublin is primarily defined by two zip codes, but the accuracy of zip code-level economic data is constrained by a number of factors:
  - **Zip codes are not official geographies** used by federal and state agencies that publish economic data and are primarily used by the USPS for mail distribution.
  - Highly localized economic data such as the data available at the zip code level **is often subject to limitations in coverage, suppression of detailed industry data, and reporting time lags.**
  - Third-party data sources on individual establishments and employment (sometimes called "micro firm" level data) **often suffer from data quality issues and require extensive cleaning and validation.**
  - Estimation and imputation methods to generate complete zip code data **are often highly sensitive to methodology assumptions and changes in the underlying federal data.**

Setting the Context for Local Economic Analysis: The Challenges of Leveraging Highly Localized Economic Data (cont.)

- **Given these limitations, all zip code employment data are fundamentally estimates** – the key difference between various sources is the methodologies they use and the limitations in coverage and level of detail.
- **Data generated and maintained by local tax departments and business registers will always represent the most accurate way to monitor and analyze the dynamics of local economies.**
  - However, this assumes well-established data structures are in place to track detailed information about industry sectors and other relevant firm and employment characteristics.

Changes to Background Data Used to Estimate Zip Code-Level Economic Metrics Since the Last Update

- TEConomy's prior analyses of Dublin's economic position and dynamics leveraged best available data sources that provided zip code-level estimates of employment and establishments.
  - However, changes to the underlying methodologies in both the federal reporting as well as the methodology used by 3rd party data providers has brought to light some shortcomings in the methodology used to develop those estimates.
- As a result of these identified data shortcomings, TEConomy has developed and employed an improved estimation methodology to better capture Dublin's local economic dynamics.
  - Despite reflecting a more accurate picture of local economic conditions, this change means that results for this update are not directly comparable to the statistics shown in prior updates.
  - **Please note - overall key findings and strategic recommendations from previous assessments have not fundamentally changed as a result of this shift in methodology.**

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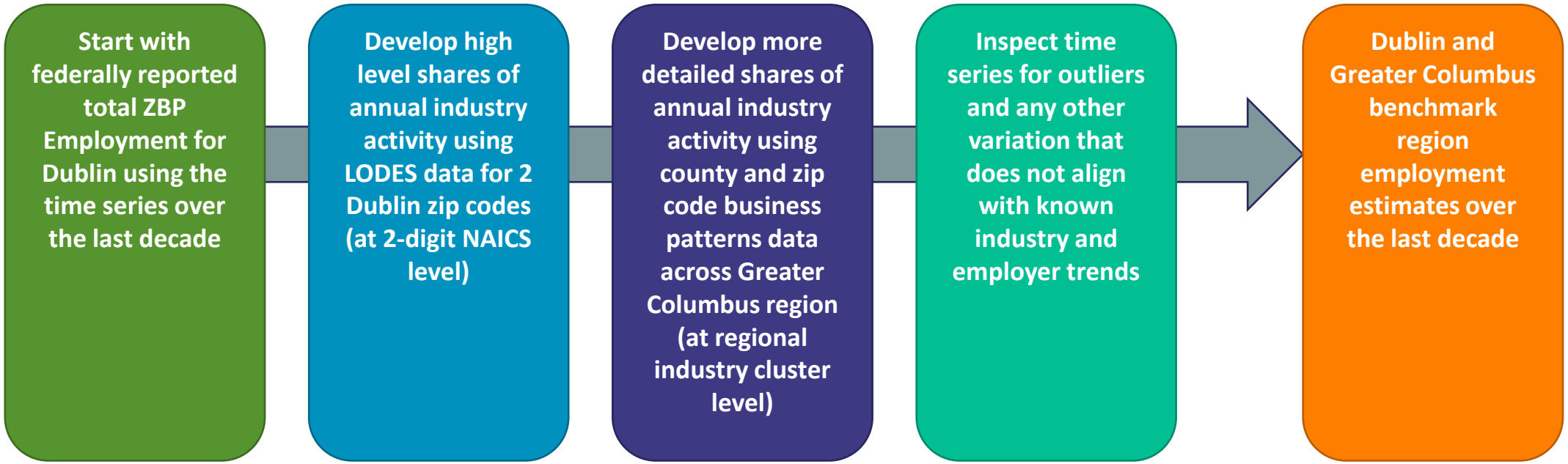
TEConomy's Updated Approach to Estimating Zip Code-Level Employment Trends

- To best estimate zip code level economic activity for this quantitative update, TEConomy employed an approach that leverages both of the best available federal data sources on zip code level employment: Census Zip Code Business Patterns (ZBP) and Census LEHD LODES Data (see subsequent slides for more detailed explanations of these sources).



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County Level Data: Census of Employment & Wages (CEW), LightCast Data

Where Do the Data Come From?

- Fully disclosed annual employment and income data is available at the U.S., state, and county level based on the Bureau of Labor Statistics Covered Employment and Wages (CEW) data series. State employment services departments collect the base data and pass it to the U.S. Department of Labor as part of the Unemployment Insurance Program.
- Some data in this series are non-disclosed at local levels to protect privacy. LightCast (formerly Emsi), a well-known provider of labor market analytics products for economic developers, adjusts the non-disclosed elements in these data via an imputation process that provides a full set of industry and employment data for economic modeling.
- Latest year available: 2021

Key Strengths

- Highly reputable data product that relies directly on mainstay economic data released by BLS.
- Ability to track employment, wages, and overall establishments over time by detailed industry codes.

Key Limitations

- BLS data are only available at county geography levels, and a change to Lightcast zip code employment estimation recently introduced high variability into zip-level data.
- Does not allow for more detailed business dynamics analysis such as new business starts, business closings, and migrations.

Zip Code Level Data: County Business Patterns (and associated Zip Code Business Patterns) Data

Where Do the Data Come From?

- County Business Patterns (CBP) is an annual series that provides subnational economic data by industry on the number of establishments, employment during the week of March 12, first quarter payroll, and annual payroll.
- Statistics are available on establishments at the U.S. level and by State, County, Metropolitan/Micropolitan Statistical Area (MSA), Combined Statistical Area (CSA), ZIP code, and Congressional District levels.
- CBP basic data items are extracted from the Business Register (BR), a database of all known single and multi-establishment employer companies maintained and updated by the U.S. Census Bureau. CBP data are processed through various automated and analytical edits to remove anomalies, validate geographic coding, addresses, and industry classification.
- Latest year available: 2020

Key Strengths

- Well-known federal data source used for a wide variety of analyses of economic activity.
- Zip code level employment data allow for more localized estimates of economic activity by detailed industry and occupation.
- Provides establishment counts in addition to employment.

Key Limitations

- Requires projection of 2021 data since CBP data releases lag and latest year available is 2020.
- Detailed NAICS industry codes often contain suppression, and a key change in reporting in 2017 that introduced broader suppression of data at detailed geography levels
  - *"Beginning with reference year 2017, a cell is only published if it contains three or more establishments. In all other cases, the cell is not included in the release (i.e., it is dropped from publication)"*
  - Often limited to 2-digit NAICS industry estimates to leverage highest quality data

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Zip Code Level Data: LEHD Origin-Destination Employment Statistics (LODES) Data

Where Do the Data Come From?

- The Longitudinal Employer-Household Dynamics (LEHD) program is part of the Center for Economic Studies at the U.S. Census Bureau where states agree to share Unemployment Insurance earnings data and the Quarterly Census of Employment and Wages (QCEW) data with the Census Bureau through the Local Employment Dynamics Partnership framework.
- LODES is "a partially synthetic dataset that describes geographic patterns of jobs by their employment locations and residential locations as well as the connections between the two locations" that leverages the LEHD program data to produce zip and census tract-specific estimates of resident and nonresident workers.

Latest year available: 2019

Key Strengths

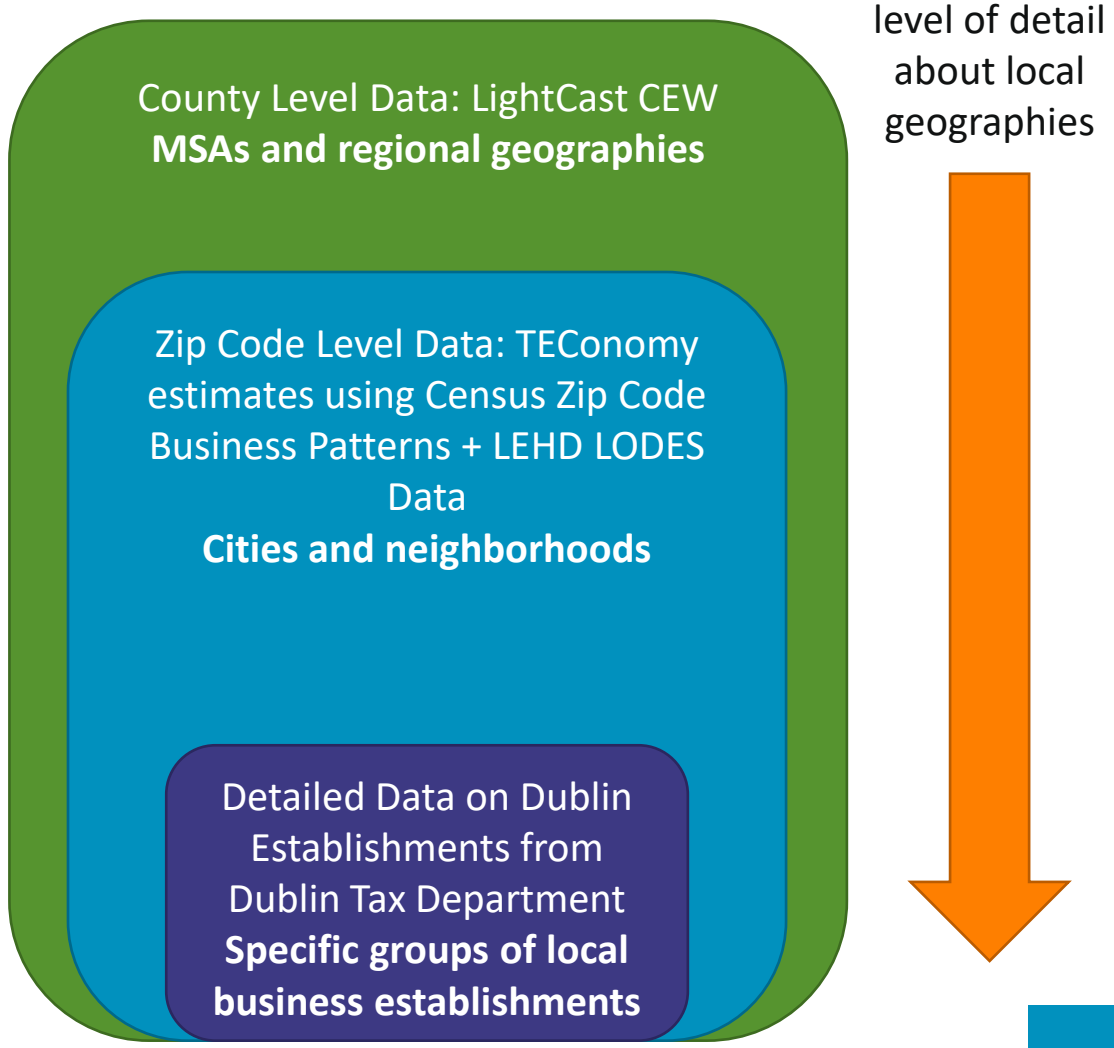
- Federal data source often used for analyses of local economic activity and commuting patterns.
- Census tract level employment data allow for highly localized estimates of resident and nonresident worker levels.
- Provides highly specific geographic context for broad industry sectors and establishment types.

Key Limitations

- Requires projection of 2020 and 2021 data since data releases lag and latest year available is 2019.
- Industry data is limited to broad 2-digit NAICS sector level so analyses of detailed or customized groupings of sectors requires further estimation of employment levels.
- Some state-year combinations of data are not available due to historical unavailability (not relevant to Dublin context).

Recap of Broader Methodology for Evaluating Dublin's Economic Landscape Using Updated Data

- In addition to local employment data, TEConomy utilizes a variety of economic indicator databases to build a comprehensive picture of a region's relative performance and strengths.
- These databases each have specific strengths, limitations, and reporting contexts – the various narratives of Dublin's economic activity shown across databases informs a broader "consensus" view on insights that can inform strategic planning.
  - Relying on a collection of data sources rather than any single source allows for a more robust analysis and helps fill in limitations/gaps in individual datasets.
- Economic databases are often defined by the level of detailed geography they produce estimates for – can aggregate up to higher level geographies, but not straightforward to divide down to more detailed geographies.



Examining Dublin's Economic Landscape Through the Lens of Various Data Sources

- Using the various data sources, TEConomy's analysis can "triangulate" toward strategic insights by looking across the narratives each data source is showing to generate conclusions.
  - Use mainstay county-level CEW data (via LightCast) to look at Greater Columbus trends to ground the broader economic narrative for the region over the last decade.
  - Use well-verified zip code data from CBP to examine higher level Dublin economic conditions and employment trends across more aggregate industries to show the recent economic narrative of the city.
  - Use statistical estimation methods to estimate employment in key regional clusters from the combination of zip code data, county-level data, and other federal data sources at the zip code level for Dublin as well as other zip code-defined benchmark regions.

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Key Takeaways from Dublin's Economic Data Update

Each section highlights these trends in further detail, but at a high level several narratives emerge from the data.

- In the wake of the acute impacts of the pandemic, the **Columbus MSA's industry base has begun to recover, growing by 3.8% from 2020 to 2021.**
- **While Dublin has also experienced a rebound, growing at 1.4% from 2020 to 2021, its recovery has been more mixed and overshadowed by the emergence of risks to its established industry base.**
  - While several of Dublin's industries aligned with regional clusters were more resilient to declines experienced during the pandemic, recovery has been uneven and more modest.
  - Highlighting the cumulative impact of these dynamics across the entire 2017-2021 period, most of Dublin's industries aligned with regional clusters have experienced lower growth relative to regional and national trends.
  - Emerging workforce trends and declining emphasis on large office space locations present risks to Dublin's key specialized industry clusters, which have traditionally been anchored by large employment footprint headquarters and business services operations.

Key Takeaways from Dublin's Economic Data Update, cont.

Each section highlights these trends in further detail, but at a high level several narratives emerge from the data.

- Dublin continues to remain a regional leader in traded industry jobs and overall base of employment relative to other benchmark communities in Greater Columbus, **but has begun to be outpaced by some benchmark communities in growth across key industry sectors.**
  - Quality of place indicators remain high and the region is still anchored by several highly specialized industries with major employment footprints despite flatter recent growth.
  - Some evidence of emerging base of small and mid-sized companies in key technology industries that have the potential to drive future growth.
- Forward-looking perspective presents several risks as well as potential opportunities against the backdrop of a highly dynamic and growing regional economy.
  - **The IT workforce remains critical to the city's competitiveness, but some evidence that Dublin is losing ground in growing this segment of workers.**
  - **Emergence of healthcare workforce and ongoing demand presents a potential growth opportunity.**
  - **New opportunities emerging for retaining scaling tech businesses and capturing a portion of the regional electronics industry buildout.**
  - **Risk of disruption to Dublin's established industry base due to changing workplace models, socioeconomic and demographic shifts, and increasing competition from other regional communities.**

Section 1: Updating Greater Columbus Regional Industry Cluster Analysis

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Key Findings from Updates to Columbus' Regional Industry Cluster Profile

- The pandemic caused **significant declines in the Greater Columbus economy in 2020, which led to a cumulative increase of just 0.3% in employment over the 2017-2021 time period.**
- **However, the region showed evidence of a significant recovery over the 2020-2021 period, nearly matching national job growth rates across the entire private sector.**
  - Several industry clusters such as Freight Transportation, Distribution, & Logistics as well as Creative & Design Industries significantly outpaced recent national growth in the last year.
  - Other major traded clusters such as Finance & Insurance, Medical Biosciences & Healthcare Services, IT & Computer Services, and R&D & Engineering Services have not recovered as quickly as the nation.
- The impact of the pandemic was felt across many segments of the economy, although many industry clusters experienced stronger growth in the 2020-2021 period than the 2017-2020 period.
  - Three clusters (Freight Transportation, Distribution & Logistics; Tourism, Entertainment, and Arts; and Creative & Design Industries) grew at a faster rate than the average of all industries over the most recent one-year period.

Key Findings from Updates to Columbus' Regional Industry Cluster Profile (cont.)

- Despite the impacts of the pandemic, **the Greater Columbus region has maintained highly specialized industry footprints in several clusters** including:
  - Freight Transportation, Distribution, and Logistics (106k employees, 10.5% average annual growth 2017-2021)
  - Finance and Insurance (59k employees, -0.6% average annual growth 2017-2021)
  - Corporate HQs/Managing Offices (37k employees, 0.0% average annual growth 2017-2021)
  - Automotive Manufacturing (14k employees, -2.1% average annual growth 2017-2021)
- TEConomy continues to track the evolution of the industry base, and examined whether any additional regional clusters have begun to emerge:
  - The Instrumentation & Electronic Products Manufacturing cluster is now included in analyses to establish performance in this area prior to completion of the Intel semiconductor plant.
  - While not yet a driver of significant regional activity, this cluster and its suppliers are expected to play an increasingly important role in the Greater Columbus Region's future economic trajectory.

TEConomy's Approach to Identifying Industry Clusters

- **Focus on Region's "Traded" Industries:**
  - Traded industries bring new wealth/income into the region by serving markets reaching beyond Greater Columbus' and Dublin's own residents and businesses.
- **Defining Industry Clusters:**
  - Tailor definition of industry clusters to how industries in each regional economy relate to one another:
    - Some industry clusters share a common market that they serve.
    - Others are based more on shared "know-how" such as in life sciences or IT.
- **Identify Clusters of Comparative Advantage/Strength:**
  - Examine industries at most detailed levels; enables understanding specific activities and targeting based on size, concentration/specialization and recent trends.
  - Consider regional supply chain relationships.
  - Refine analysis based upon specific activities of leading firms leveraging corporate databases, company websites, and direct outreach to understand products, services, applied technologies.

The Greater Columbus Region Remains a Hub for Several Large and Specialized Industry Clusters Through 2021

The Columbus region has maintained high specializations in Corporate HQs/Managing Offices, Automotive Manufacturing, Finance and Insurance, and Freight TDL, though employment growth in these clusters generally lags the nation in the most recent period

Summary Employment Metrics for Greater Columbus Regional Industry Clusters, 2010-2021

Greater Columbus Industry Clusters	Estab., 2021	Empl., 2021	Location Quotient, 2021	Greater Columbus Avg. Annual Employment Change				U.S. Avg. Annual Employment Change			
				2010-17*	2017-20	2020-21	2017-21	2010-17*	2017-20	2020-21	2017-21
Total Private Sector	52,717	873,702	1.00	2.7%	-0.8%	3.8%	0.3%	2.2%	-1.2%	4.1%	0.1%
Freight Transportation, Distribution, & Logistics	4,577	106,109	**1.47**	2.8%	10.1%	8.9%	10.5%	2.3%	1.6%	4.7%	2.4%
Finance & Insurance	3,312	58,873	**1.35**	1.9%	0.2%	-3.0%	-0.6%	1.1%	0.8%	1.7%	1.0%
Medical Biosciences and Healthcare Services	1,237	52,717	0.90	4.6%	-0.6%	0.8%	-0.3%	1.8%	1.4%	1.8%	1.5%
Residential Healthcare Services	1,014	37,723	1.17	2.0%	-0.5%	-3.0%	-1.1%	1.8%	-0.4%	-3.5%	-1.1%
Corporate HQs/Managing Offices	443	36,925	**2.21**	3.4%	-0.1%	0.1%	0.0%	2.7%	0.6%	1.1%	0.7%
IT & Computer Services	3,166	20,740	0.82	1.6%	0.0%	2.2%	0.5%	5.8%	4.4%	6.1%	5.1%
Business Support Services	2,036	20,304	0.93	1.6%	-1.0%	-1.2%	-1.0%	3.9%	0.9%	4.2%	1.7%
Tourism, Entertainment, and Arts	850	14,708	0.70	4.5%	-8.1%	9.1%	-4.4%	2.3%	-9.0%	11.9%	-4.6%
Automotive Manufacturing	98	13,636	**1.43**	0.0%	-2.9%	0.4%	-2.1%	4.8%	-2.3%	6.9%	-0.1%
R&D & Engineering Services	755	11,671	0.93	1.1%	0.1%	2.0%	0.6%	0.7%	2.0%	3.2%	2.4%
Creative & Design Industries	881	6,754	1.08	-0.3%	-1.8%	4.9%	-0.2%	2.7%	-2.5%	2.8%	-1.2%
Instrumentation & Electronic Products Manufacturing	91	3,693	0.51	1.6%	-2.4%	-12.4%	-4.7%	-0.6%	0.4%	-0.6%	0.1%

*Note: Employment trends for 2 clusters—Corporate HQs and IT & Computer Services—are from 2012-17 due to the reclassification of a large regional employer from 2011-12.
Location quotients shown in bold font represent "specialized" industry concentrations greater than or equal to 1.20.
Source: TEConomy's analysis of U.S. Bureau of Labor Statistics, QCEW data via Lightcast data release 2022.4.

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How to Read Industry Cluster Profiles

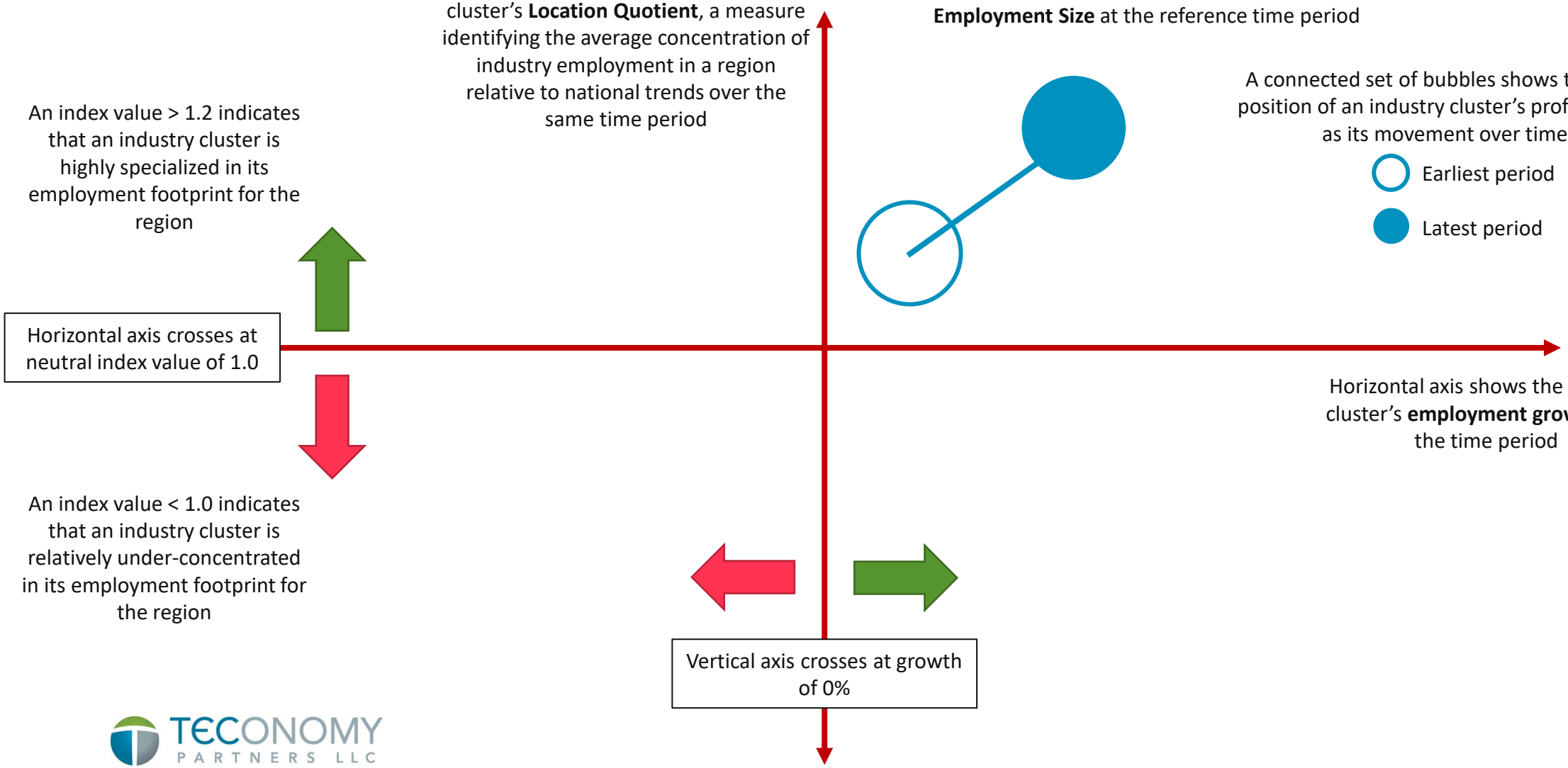
Vertical axis shows the industry cluster's **Location Quotient**, a measure identifying the average concentration of industry employment in a region relative to national trends over the same time period

Bubble size indicates an industry cluster's **Employment Size** at the reference time period

A connected set of bubbles shows the latest position of an industry cluster's profile as well as its movement over time:

- Earliest period
- Latest period

An index value > 1.2 indicates that an industry cluster is highly specialized in its employment footprint for the region



Horizontal axis crosses at neutral index value of 1.0

Horizontal axis shows the industry cluster's **employment growth** over the time period

An index value < 1.0 indicates that an industry cluster is relatively under-concentrated in its employment footprint for the region

Vertical axis crosses at growth of 0%

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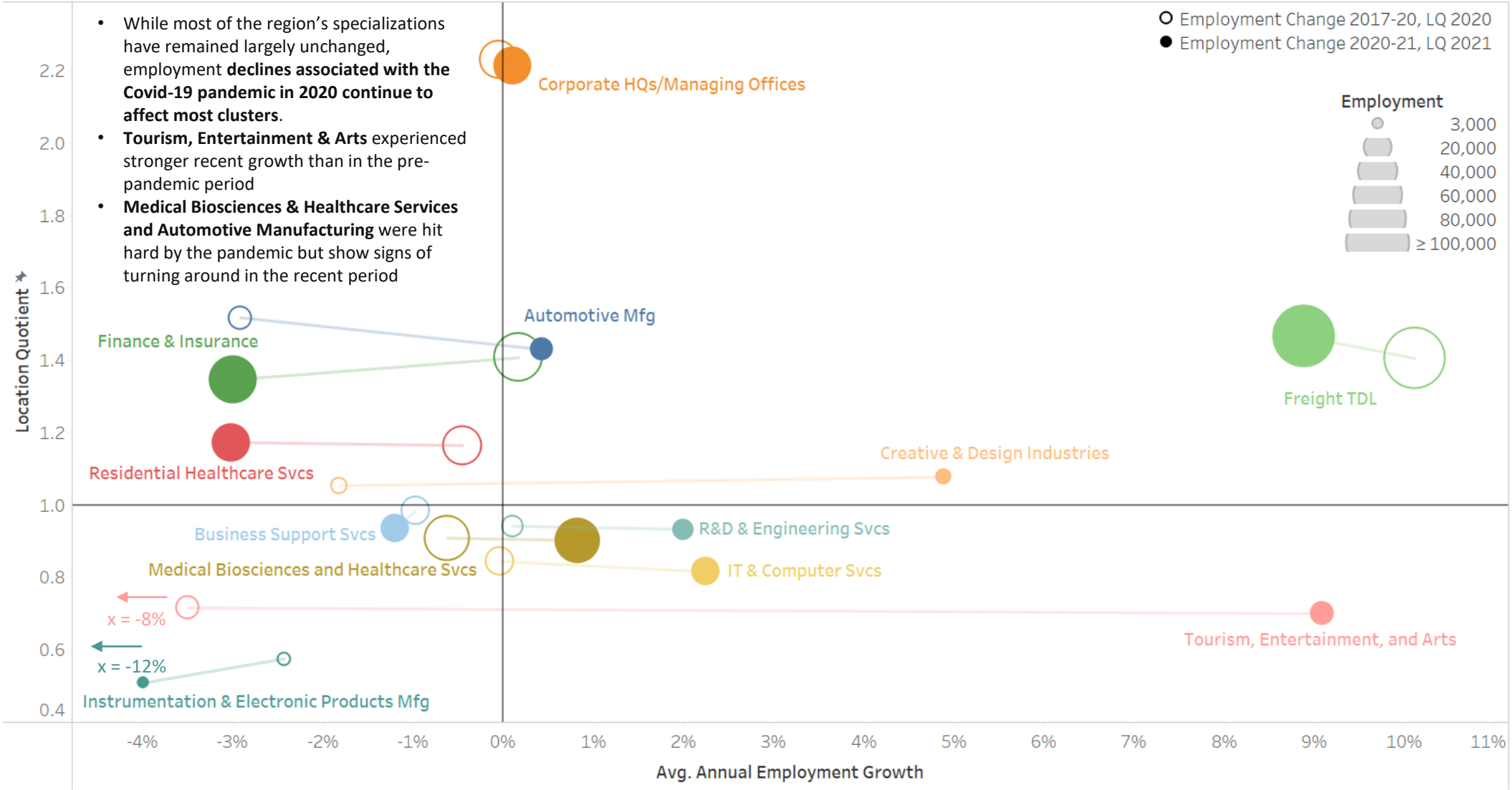
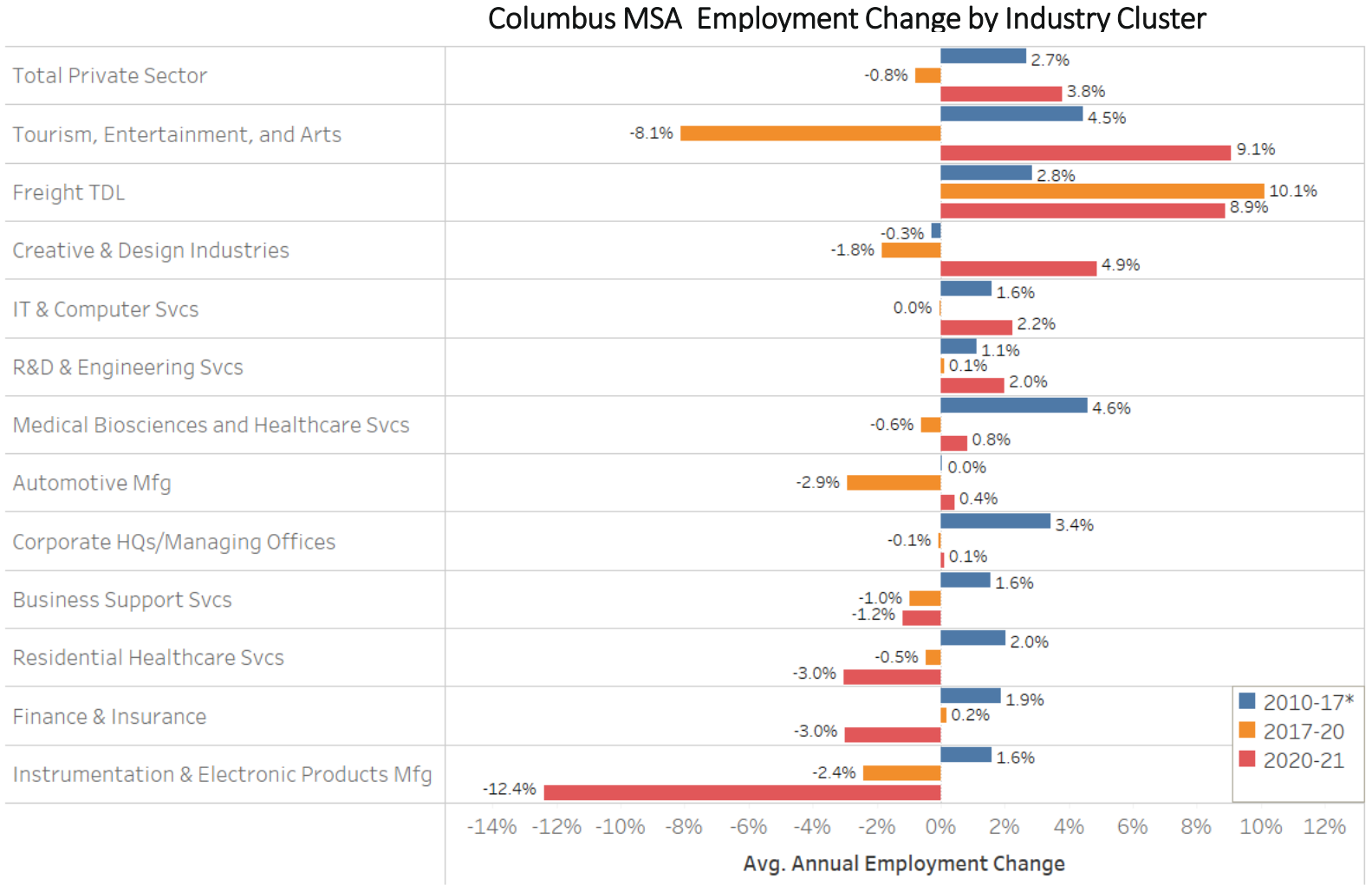
Position of Greater Columbus Industry Clusters Across the 2017-2020 & 2020-2021 Time Periods



Source: TEConomy's analysis of U.S. Bureau of Labor Statistics, QCEW data via Lightcast data release 2022.4.

Several of Columbus' Major Industry Clusters Experience Higher Growth in the Most Recent Year Compared to the Period Ending in 2020, Although Some Sectors Have Not Yet Rebounded From Pandemic Impacts

- At the end of 2021, eight industry clusters are experiencing flat or positive growth
- However, only three clusters experienced employment growth greater than that across all industries



*Note: Employment trends for 2 clusters—Corporate HQs and IT & Computer Services—are from 2012-17 due to the reclassification of a large regional employer from 2011-12.
**Smaller manufacturing clusters that were not added to the set of regional clusters in this update experienced similar declines over the period
Source: TEConomy's analysis of U.S. Bureau of Labor Statistics, QCEW data via Lightcast data release 2022.4.

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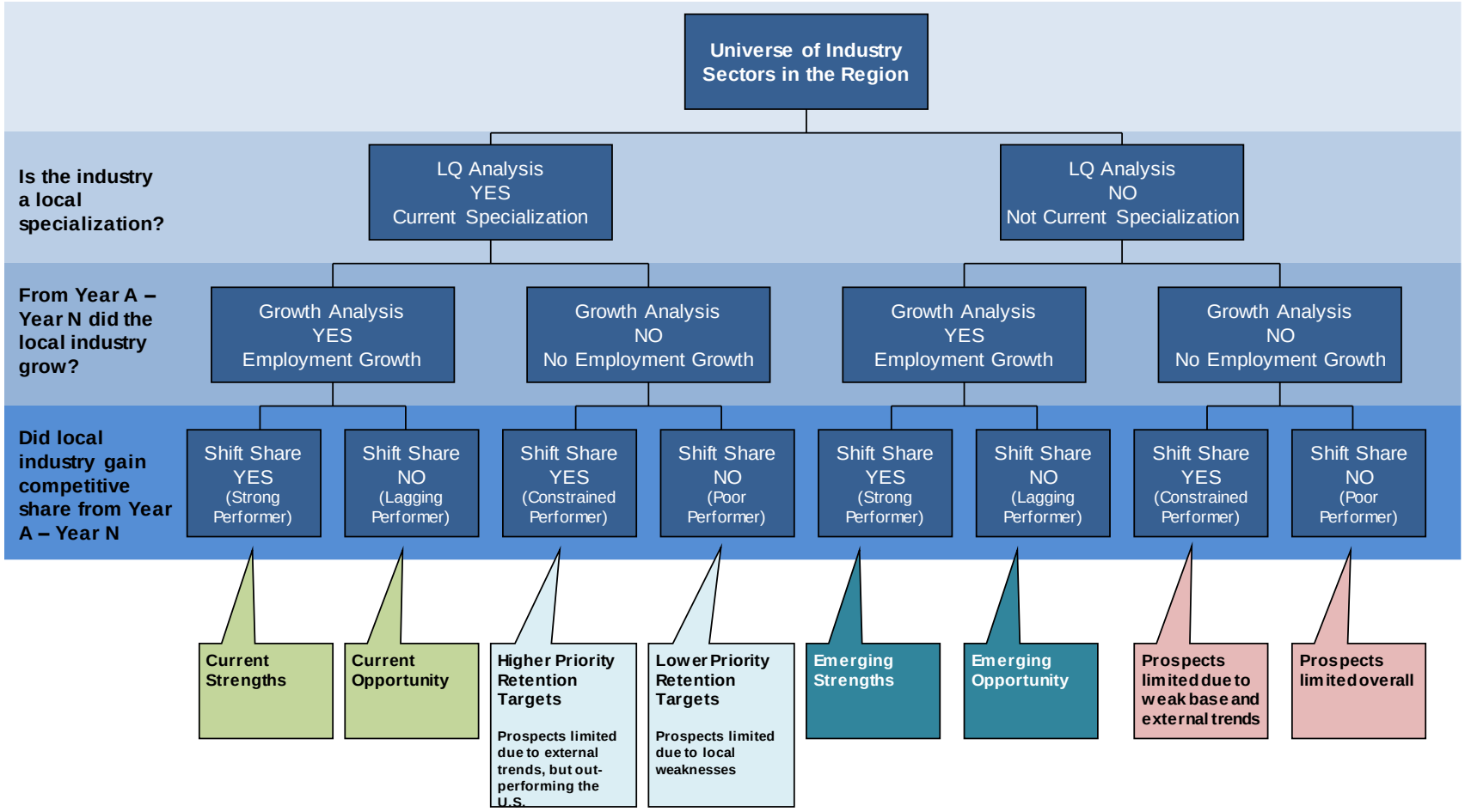
Recap of Industry Targeting Analysis Decision Tree Approach

With average employment growth increasing in the year following impacts of the Covid-19 pandemic, the industry targeting approach is applied to the full 2017-2021 period. Some industry clusters have shown signs of significant recovery, while others continue to show a diminished competitive position relative to national trends. Continued analysis of cluster performance will consider the context of national recovery.



Summary of Greater Columbus Industry Cluster Analysis

Regional Cluster	Estab., 2021	Empl., 2021	Estab. Change, 2017-2021	Empl. Change, 2017-2021	Average Wage Change, 2017-2021	GRP Change, 2017-2021	Cluster Storyline, 2017-2021	Pre-Pandemic Cluster Position (Targeting Decision Tree, 2017-2019)	Recent Cluster Growth (2020-2021)
Total Private Sector	52,717	873,702	13.7%	1.3%	19.4%	20.0%		-	-
Freight Transportation, Distribution, & Logistics	4,577	106,109	11.5%	41.9%	7.7%	32.2%	Ongoing specialization and continuing growth levels continuing beyond the acute impacts of the pandemic point to the cluster remaining a major economic driver for the region	**Current Strength**	Above average, exceeds U.S.
Finance & Insurance	3,312	58,873	5.8%	-2.5%	20.3%	20.1%	Major employment base for the region, but potential weakening of competitive position in recent years	**Current Strength**	Declining, lags U.S.
Medical Biosciences and Healthcare Services	1,237	52,717	46.8%	-1.0%	14.9%	28.6%	Cluster continuing to show the effects of the pandemic on overall employment, but ongoing growth being driven by expansion of new medical facilities across the region	Emerging Strength	Below average, lags U.S.
Residential Healthcare Services	1,014	37,723	8.4%	-4.3%	22.8%	11.7%	Continuing to show impacts of pandemic on workforce, but represents major emerging need for aging populations	Emerging Opportunity	Declining, exceeds U.S.
Corporate Headquarters/Managing Offices	443	36,925	16.2%	-0.1%	17.2%	15.3%	Remains a large, specialized industry for the region that anchors economic activity in the region, but risk of disruption from changing workforce trends in the wake of pandemic	**Current Strength**	Below average, lags U.S.
IT & Computer Services	3,166	20,740	46.4%	2.1%	23.1%	30.5%	Lack of regional specialization and lower growth relative to the nation remain challenges, but some evidence of scale-up business activity and investment suggest future opportunities	Emerging Opportunity	Below average, lags U.S.

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Cluster Growth Greater Than U.S.
Cluster Growth Positive, But Not Greater Than Overall U.S.
Cluster Decline

Source: TEConomy's analysis of U.S. Bureau of Labor Statistics, QCEW data via Lightcast data release 2022.4.

Summary of Greater Columbus Industry Cluster Analysis

Regional Cluster	Estab., 2021	Empl., 2021	Estab. Change, 2017-2021	Empl. Change, 2017-2021	Average Wage Change, 2017-2021	GRP Change, 2017-2021	Cluster Storyline, 2017-2021	Pre-Pandemic Cluster Position (Targeting Decision Tree, 2017-2019)	Recent Cluster Growth (2020-2021)
Total Private Sector	52,717	873,702	13.7%	1.3%	19.4%	20.0%		-	-
Business Support Services	2,036	20,304	18.8%	-4.1%	27.5%	12.6%	Legacy industry cluster with uncertain future in wake of pandemic shifts in workplace models; increasing establishments with decreasing employment continue to suggest adaption or startup emergence	Emerging Opportunity	Declining, lags U.S.
Tourism, Entertainment, and Arts	850	14,708	15.1%	-17.5%	25.1%	-10.5%	Some improvement from major declines experienced as a result of pandemic impacts, but recovery ongoing	Emerging Strength	Above average, lags U.S.
Automotive Manufacturing	98	13,636	-4.6%	-8.4%	1.5%	3.4%	Declining employment footprint at small set of large operations even before pandemic impacts despite overall specialization	Lower Priority Retention Target	Below average, lags U.S.
R&D & Engineering Services	755	11,671	14.8%	2.3%	10.6%	12.5%	Increasing establishments with middling growth suggests some diversification may be occurring, potential for expansion to serve specialized electronics and materials supply chain growth	Emerging Strength	Below average, lags U.S.
Creative & Design Industries	881	6,754	21.9%	-0.8%	20.4%	3.7%	Higher establishment and wage growth with a smaller and declining industry base indicate specialized service providers have had success; however, not easy to scale for future growth	Limited Prospects	Above average, exceeds U.S.
Instrumentation & Electronic Products Manufacturing	91	3,693	0.0%	-18.8%	9.3%	-5.3%	Employment declines and flat establishment growth demonstrate weak comparative position in an industry currently, but new regional manufacturing operations represent paradigm shift in industry base	Limited Prospects	Below average, lags U.S.

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Cluster Growth Greater Than U.S.
Cluster Growth Positive, But Not Greater Than Overall U.S.
Cluster Decline

Source: TEConomy's analysis of U.S. Bureau of Labor Statistics, QCEW data via Lightcast data release 2022.4.

Section 2: Updates to Dublin's Economic Performance and Workforce Data

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Section 2.1: Updates to Dublin's Industry Clusters and Business Dynamics

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Key Findings from Dublin's Industry Cluster Profile and Business Dynamics Update

- Pandemic-related employment declines in 2020 continue to have impacts on the local economy's growth rates despite widespread improvement in 2021.
  - From 2017 to 2021, Dublin's total employment base grew by an estimated 1.2% compared to 9.3% in the Greater Columbus region and 8.6% nationally.
- **Several of Dublin's industries aligned with regional clusters were more resilient to declines experienced during the pandemic, but recovery has been modest.**
  - Even in clusters where recent positive growth has offset pandemic impacts, Dublin's recent growth has largely been outpaced by the region and the nation in 2021.
- In spite of recent lackluster growth trends, **Dublin continues to host a set of sizeable and highly specialized industry clusters that drive its local economy**:
  - Corporate HQ/Managing Offices (4.5k employees)
  - Finance and Insurance (4.2k employees)
  - IT & Computer Services (3.9k employees, 2.7% growth 2020-21)
  - Business Support Services (2.9k employees)
  - R&D & Engineering services (1.4k employees)

Key Findings from Dublin's Industry Cluster Profile and Business Dynamics Update (cont.)

- Trends in total Dublin business dynamics show **the city continues to outpace the broader Columbus region in its overall establishment growth trend with some signs of business dynamism:**
  - Mix of industry sectors represented in business establishments has remained fairly consistent over the last decade.
  - Some evidence that small businesses are gaining in their share of overall establishments over time.
  - Based on estimates derived from the city's tax department data, Dublin business formation rates appear to remain well above county, state, and national levels despite a sharp decline after 2016.
- **Several large employment industry clusters in Dublin appear to be at significant risk of disruptive impacts in coming years** given uncertainty around trends in remote and virtual work and declining demand for office space development.
  - However, these risks may be offset by expanding healthcare industry cluster and broader growth impacts of new regional semiconductor manufacturing operations if Dublin can position itself competitively in these spaces.

Summary Employment Metrics for Dublin Across Regional Industry Clusters

Dublin Industry Clusters	Empl., 2021	Location Quotient, 2021	Dublin Avg. Annual Employment Change				U.S. Avg. Annual Employment Change			
			2014-17	2017-20	2020-21	2017-21	2014-17	2017-20	2020-21	2017-21
Total, All Industries	60,455	1.00	-0.1%	0.0%	1.4%	0.3%	2.0%	-1.2%	4.1%	0.1%
Business Support Services	2,878	**2.31**	-0.9%	0.5%	-0.3%	0.3%	3.5%	0.9%	4.2%	1.7%
Corporate HQs/Managing Offices	4,481	**2.87**	-5.0%	6.4%	-1.3%	4.4%	1.9%	0.6%	1.1%	0.7%
Creative & Design Industries	791	**2.08**	4.1%	-5.9%	2.4%	-3.9%	2.1%	-2.5%	2.8%	-1.2%
Finance & Insurance	4,179	**1.42**	-11.2%	2.5%	-4.5%	0.7%	1.6%	0.8%	1.7%	1.0%
Freight Transportation, Dist., & Logistics	2,903	0.68	4.5%	-5.2%	0.4%	-3.8%	2.1%	1.6%	4.7%	2.4%
IT & Computer Services	3,851	**2.30**	6.0%	-3.9%	2.7%	-2.3%	5.5%	4.4%	6.1%	5.1%
Medical Biosciences and Healthcare Services	2,955	0.72	-0.1%	-1.4%	0.0%	-1.0%	2.6%	1.4%	1.8%	1.5%
R&D & Engineering Services	1,373	**1.68**	6.2%	-5.4%	-0.4%	-4.1%	-0.3%	2.0%	3.2%	2.4%
Residential Healthcare Services	1,150	0.54	-3.2%	9.2%	1.6%	7.4%	1.6%	-0.4%	-3.5%	-1.1%
Tourism, Entertainment, and Arts	1,295	0.87	0.7%	-1.8%	4.4%	-0.3%	2.3%	-9.0%	11.9%	-4.6%

Note: Automotive Manufacturing is not shown here due to limited size/presence in Dublin.
Location quotients shown in bold font represent "specialized" industry concentrations greater than or equal to 1.20.
Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data for ZIP codes 43016, 43017; QCEW via Lightcast data release 2022.4

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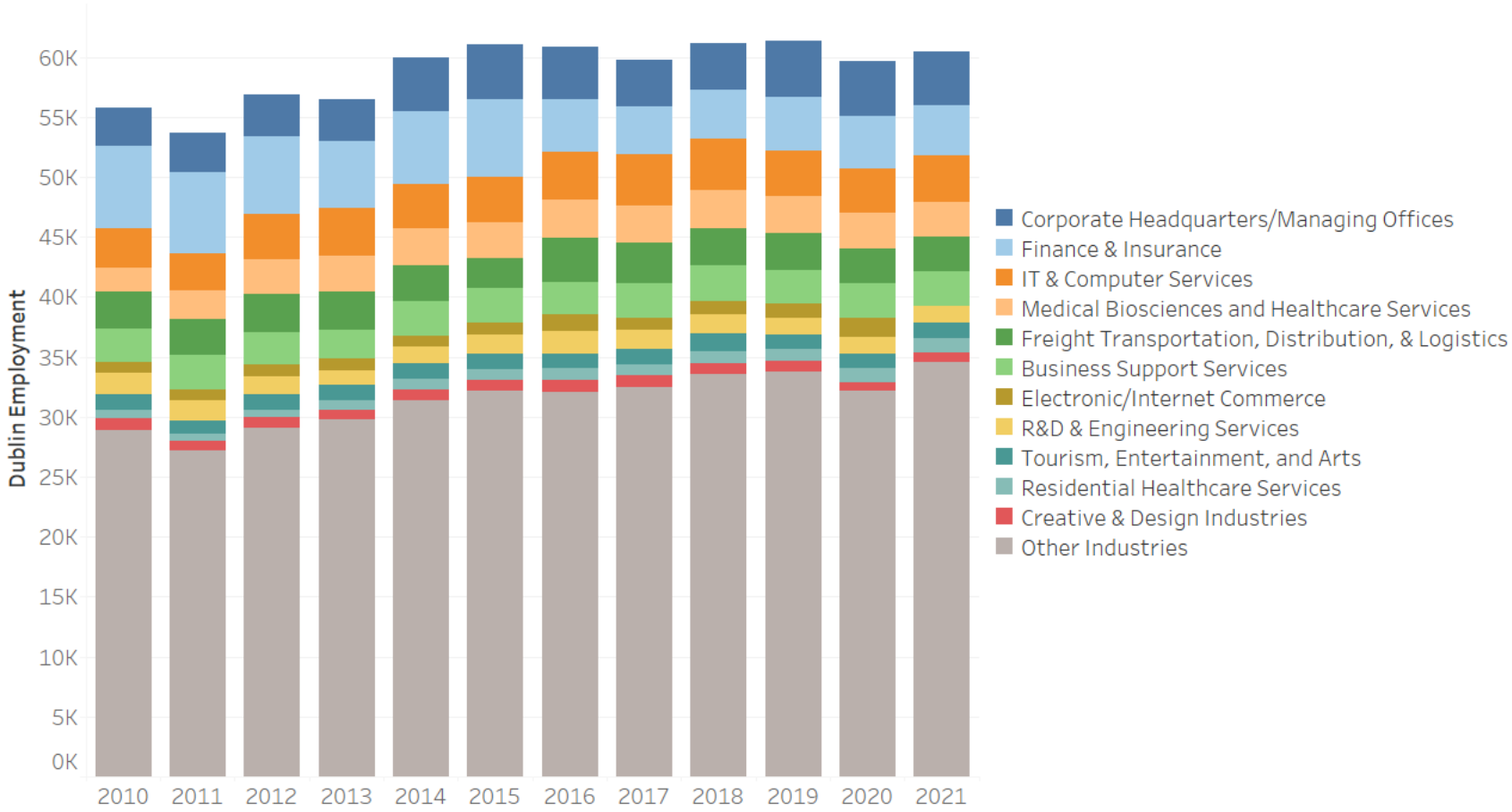
Dublin's Regional Industry Clusters Were More Resilient to Declines Experienced During the Pandemic in 2020, but Recent Growth of These Industries in 2021 Was Relatively Flat

- Recovery in industry clusters has been limited: employment in key industries declined by 0.2% from 2020 to 2021, while growth for all other industries was 2.6% over the same period.
- The share of total Dublin employment comprised by the industry clusters fell from 44% in 2020 to 43% in 2021.

City of Dublin Employment by Industry Cluster, 2010-2021



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data for ZIP codes 43016, 43017

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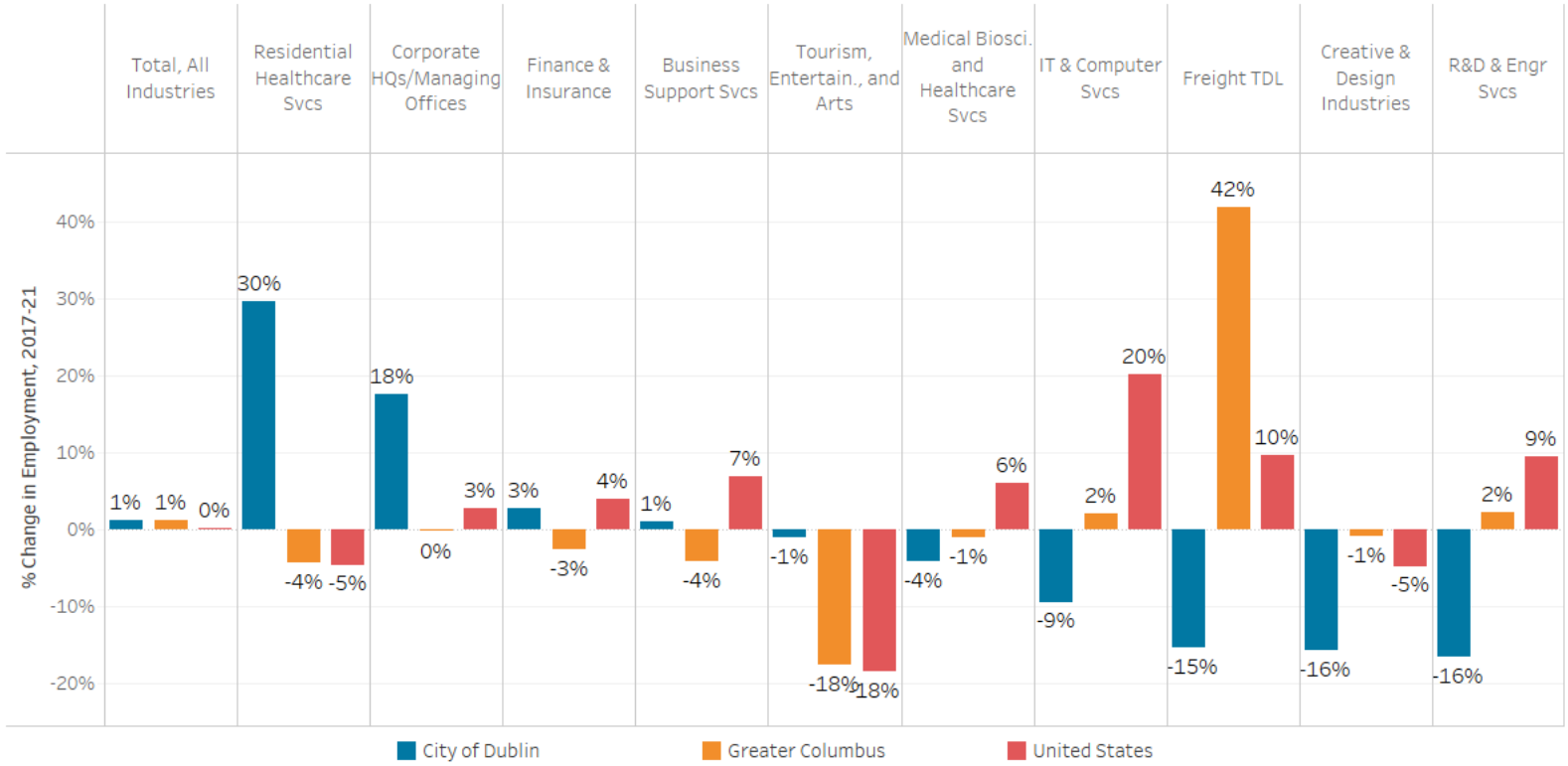
Most Dublin Clusters Have Experienced Lower Growth than Regional and National Trends Over the 2017-2021 Time Period

- Both Residential Healthcare Services and Corporate HQs/Managing Offices outpaced regional and national growth while other clusters lagged.

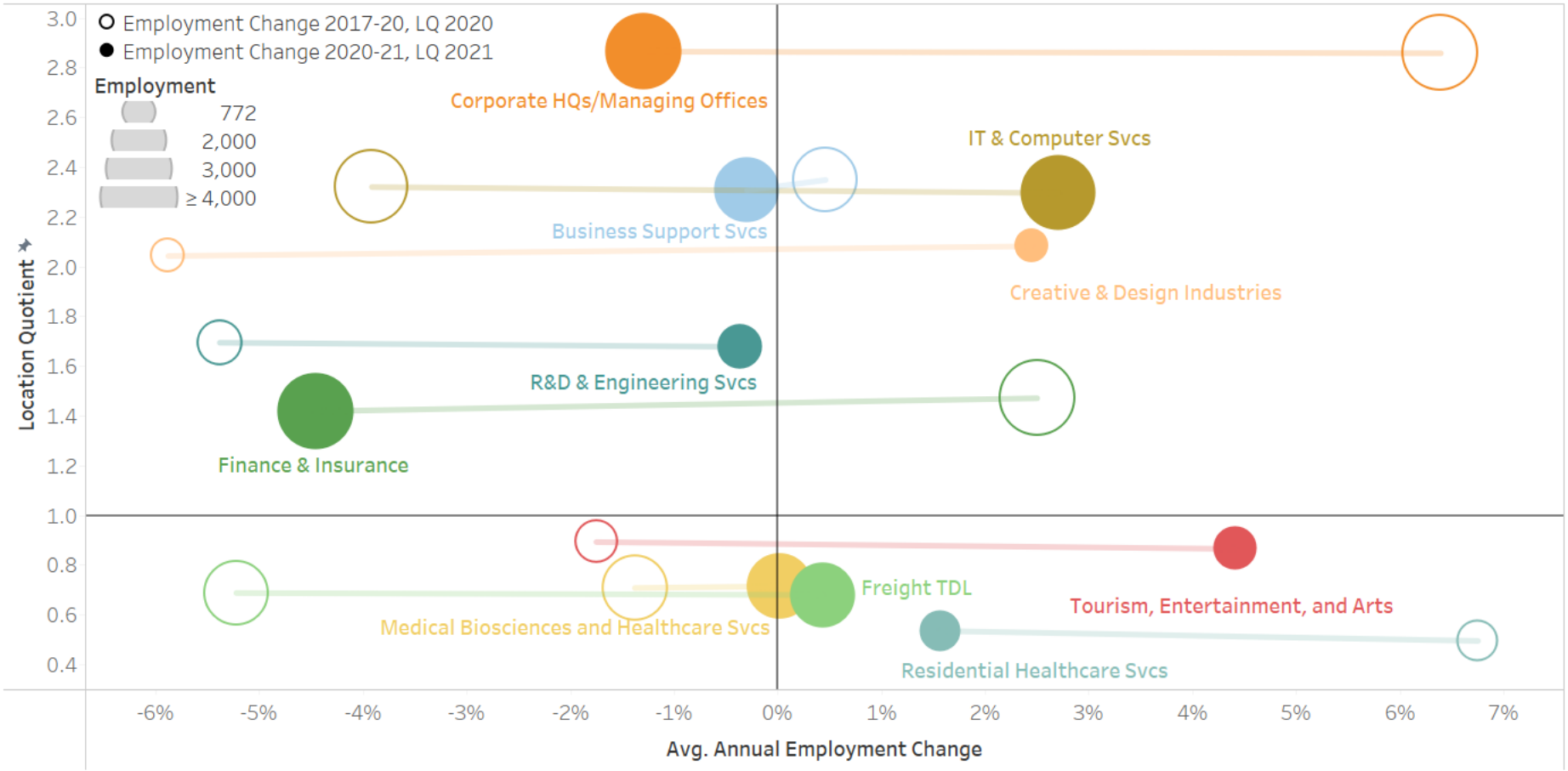
Regional Employment Trends Among the Industry Clusters, 2017-21



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data; QCEW via Lightcast data release 2022.4

Growth Rates in Several Clusters Suggest That Initial Recovery From Pandemic Impacts Has Been Limited, Although Specializations Remain Similar to Pre-Pandemic Years

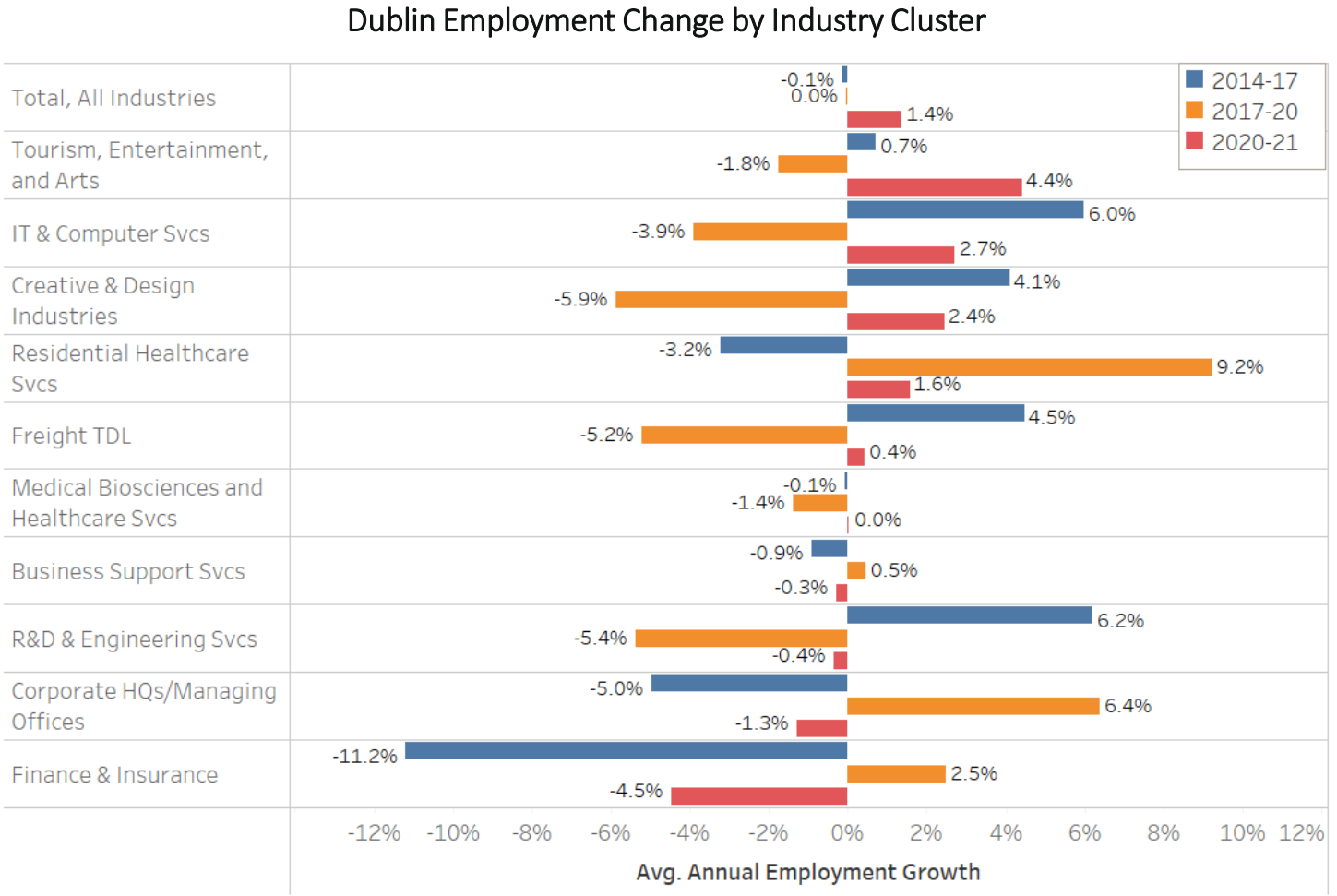
Position of City of Dublin Industry Clusters, 2021



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

Employment Growth in Most Industry Clusters has Rebounded After the Pandemic Impacts of 2020, Though Growth in Many Key Clusters Lags That of Regional Average

- Several of the city's clusters fared better than average when compared to Dublin's total private sector declines between 2020 and 2021:
  - Tourism, Entertainment, and Arts
  - IT & Computer Services
  - Creative & Design Industries
  - Residential Healthcare Services
- Freight Transportation, Distribution, and Logistics also grew but at a slower than average pace.



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

Specific Industries Within Dublin That Show Strongest Growth From 2020 Include Transportation and Warehousing; Health Care and Social Assistance; and Arts, Entertainment, and Recreation

Several other key industries, like Professional, Scientific, and Technical Services and Wholesale Trade experienced lower growth rates.

Job Change in Broad Industry Sectors, 2020-2021

Broad Industry Sectors	Traded Sector?	Presence of Regional Clusters	Dublin, 2020-21	Columbus MSA, 2020-21
Health Care and Social Assistance		Medical Biosci. and Healthcare Svcs; Residential Healthcare Svcs	433 (5.1%)	2,711 (2.0%)
Professional, Scientific, and Technical Services	yes	Business Support Svcs; Creative & Design Industries; Freight TDL; IT & Computer Svcs; R&D & Engineering Svcs	153 (1.8%)	2,257 (3.7%)
Administrative and Support and Waste Management and Remediation Services		Business Support Svcs; Freight TDL	296 (4.3%)	2,587 (3.9%)
Retail Trade		Creative & Design Industries	-23 (-0.3%)	3,001 (3.1%)
Accommodation and Food Services		Tourism, Entertainment, and Arts	145 (3.2%)	7,225 (9.4%)
Management of Companies and Enterprises	yes	Corporate HQs/Managing Offices	-59 (-1.3%)	37 (0.1%)
Finance and Insurance	yes	Finance & Insurance	-195 (-4.5%)	-1,823 (-3.0%)
Information	yes	IT & Computer Services; Tourism, Entertainment, and Arts	33 (0.9%)	112 (0.8%)
Wholesale Trade	yes	Freight TDL; Medical Biosci. and Healthcare Svcs	41 (1.3%)	82 (0.2%)
Educational Services		Creative & Design Industries	39 (1.8%)	430 (3.2%)
Construction			45 (3.8%)	1,241 (3.0%)
Arts, Entertainment, and Recreation		Tourism, Entertainment, and Arts	61 (5.2%)	1,389 (11.4%)
Manufacturing	yes	Medical Biosci. and Healthcare Svcs	6 (0.6%)	2,143 (3.1%)
Transportation and Warehousing	yes	Freight TDL	57 (7.9%)	7,904 (10.8%)

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Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data; QCEW via Lightcast data release 2022.4

Summary of Dublin Industry Cluster Analysis

Regional Cluster	Empl., 2021	% of Columbus MSA Empl., 2021	Empl. Change, 2017-2021	Cluster Storyline, 2017-2021	Pre-Pandemic Cluster Position (Targeting Decision Tree, 2017-2019)	Recent Cluster Growth (2020-2021)
Total Private Sector	60,455	6.3%	1.2%		-	-
Business Support Services	2,878	12.4%	1.1%	Highly specialized employment base for Dublin, but ongoing declines and reliance on large footprint office spaces represents significant risk to long term growth	Lower Priority Retention Target	Below average, declining faster than Cbus MSA
Corporate HQs/Managing Offices	4,481	12.5%	17.6%	Cluster remains highly specialized in the region, although post-pandemic job declines amidst a broader national expansion of remote/virtual work may be a warning signal for the city given the outsized employment concentration	**Current Strength**	Below average, declining faster than Cbus MSA
Creative & Design Industries	791	15.7%	-15.6%	Cluster experienced a fairly high rate of job loss due to the pandemic, and outlook remains negative despite some recent improvement	Lower Priority Retention Target	Above average, growing slower than Cbus MSA
Finance & Insurance	4,179	5.9%	2.7%	Remains a high employment and highly specialized cluster in Dublin; positive growth into 2020 offset somewhat by declines in 2021, shares similar risk of disruption from remote work trends	**Current Strength**	Below average, declining faster than Cbus MSA

Cluster Growth Greater Than U.S.
Cluster Growth Positive, But Not Greater Than Overall U.S.
Cluster Decline

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Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

Summary of Dublin Industry Cluster Analysis (2)

Regional Cluster	Empl., 2021	% of Columbus MSA Empl., 2021	Empl. Change, 2017-2021	Cluster Storyline, 2017-2021	Pre-Pandemic Cluster Position (Targeting Decision Tree, 2017-2019)	Recent Cluster Growth (2020-2021)
Total Private Sector	60,455	6.3%	1.2%		-	-
Freight Transportation, Dist., & Logistics	2,903	3.0%	-15.3%	Pandemic losses have not yet been offset by a return to growth; cluster remains unspecialized, and the region remains at a low share of the cluster footprint across the broader Columbus MSA	Limited Prospects	Below average, growing slower than Cbus MSA
IT & Computer Services	3,851	18.5%	-9.4%	Strong growth in 2021 has offset some of the declines faced during the pandemic, but growth still falls short of pre-pandemic rates; high demand across the region for workforce may present a challenge for competitive position	Lower Priority Retention Target	Above average, growing slower than Cbus MSA
Medical Biosciences & Healthcare Services	2,955	4.3%	-4.1%	Recent top line growth has been limited after pandemic-related declines, but buildout of new medical facilities complexes has increased healthcare workforce and created significant demand for further employment growth that could drive a new industry strength for the city	Limited Prospects	Below average, growing slower than Cbus MSA
R&D & Engineering Services	1,373	11.8%	-16.5%	Employment remains specialized in the region despite recent declines, though growth potential is high with ongoing proximity to transportation research and manufacturing as well as imminent growth of electronics supply chain industry in the region	Lower Priority Retention Target	Below average, declining faster than Cbus MSA
Tourism, Ent., & Arts	1,295	9.0%	-1.1%	Recent growth suggests strong recovery in the post-pandemic period	Limited Prospects	Above average, growing slower than Cbus MSA

Cluster Growth Greater Than U.S.
Cluster Growth Positive, But Not Greater Than Overall U.S.
Cluster Decline

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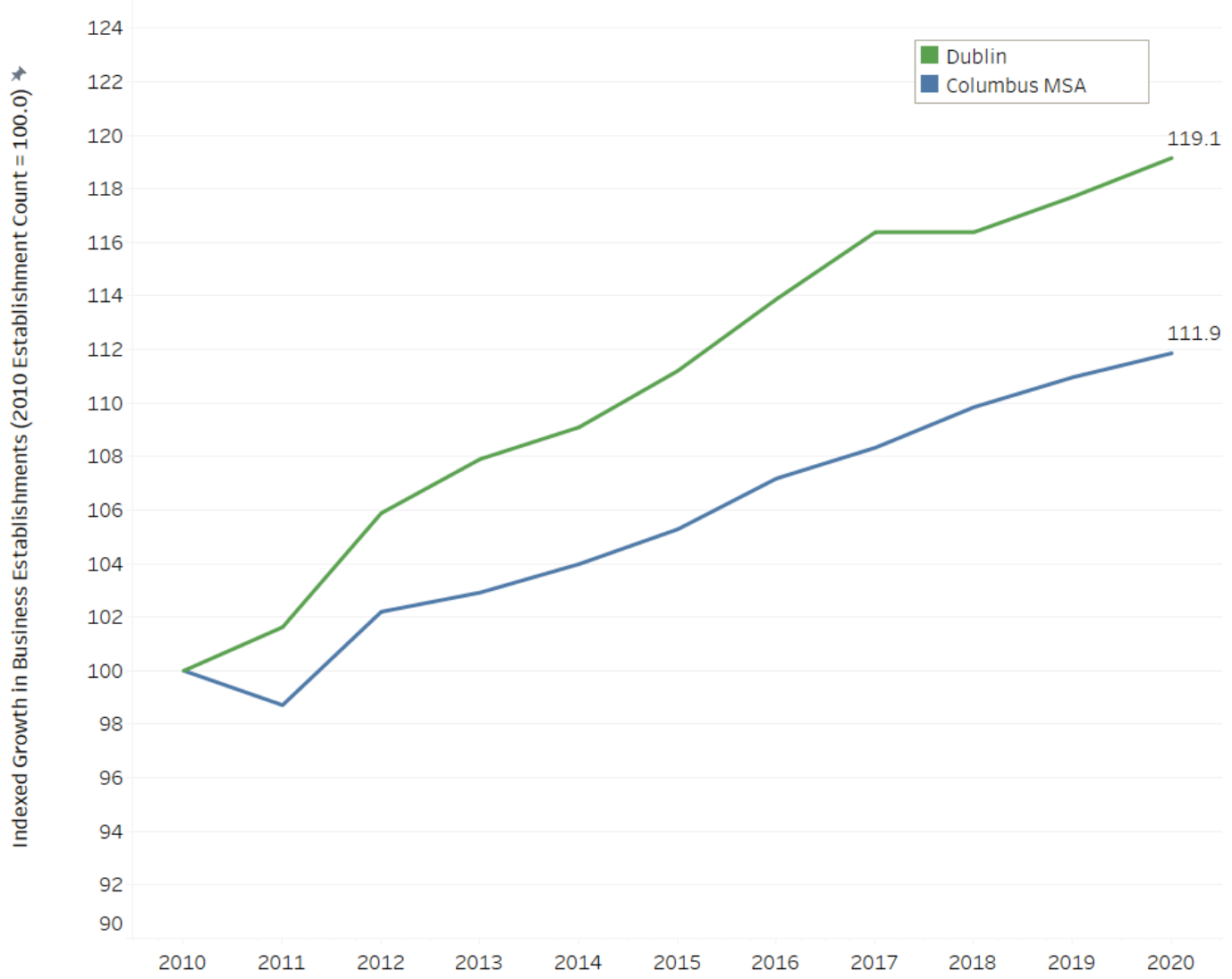
Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

Measuring Dublin's Establishment-Level Business Dynamics Trends

- In addition to higher level employment trends, it is also important to track establishment level business dynamics patterns that give another perspective on the vibrancy of Dublin's business environment.
  - Helps give indication of whether Dublin is attracting and retaining a robust ecosystem of business operations beyond just employment footprints.
- New business creation is important for any local economy. However, nationally, a small share of firms account for a disproportionate share of economic output and employment. **These firms tend to be in traded industries, which are highly aligned with the regional industry clusters emphasized in Dublin's economic development strategy**.
  - Creating positive business dynamics patterns with respect to these industries is key to generating long term sustainable economic growth.
- Establishment data sources like County Business Patterns often do not provide detailed business dynamism measures at the zip code level, but overall patterns can give an indication of how Dublin is growing its base of businesses.
  - Overall trends in high level industry sectors used to show how the mix of businesses is evolving.
  - Information from the city's tax department on new business filings can be used to approximate a measure of new business formation for comparison to regional trends.
  - Note: data limited to 2010-2020 time period of latest available establishment estimates from CBP.

Dublin's Base of Business Establishments Has Continued to Expand Over the Past Decade, Outpacing Regional Growth

- Despite plateau in growth from 2017-2018, the city continues to outpace the broader Columbus region in its overall establishment growth trend.



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

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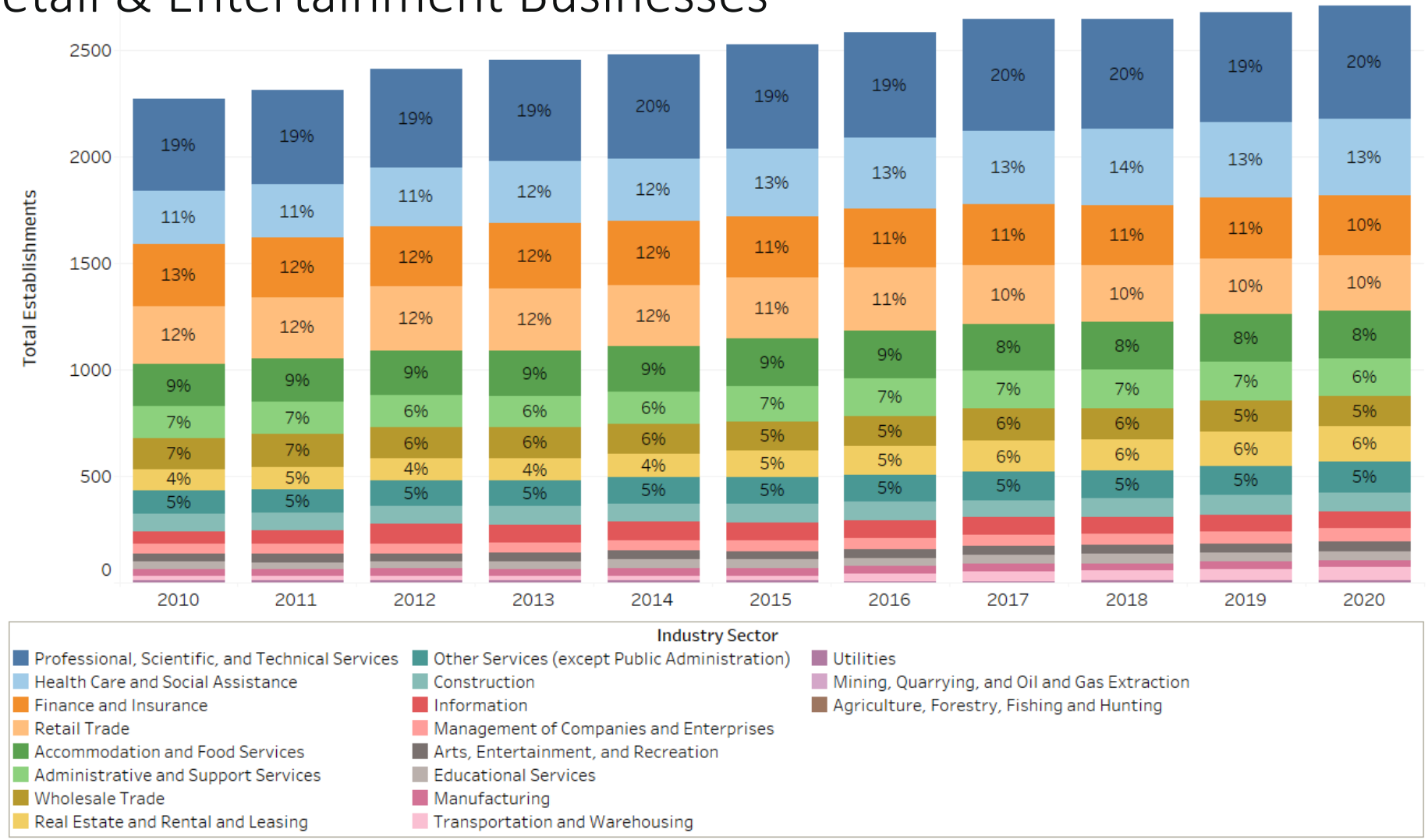
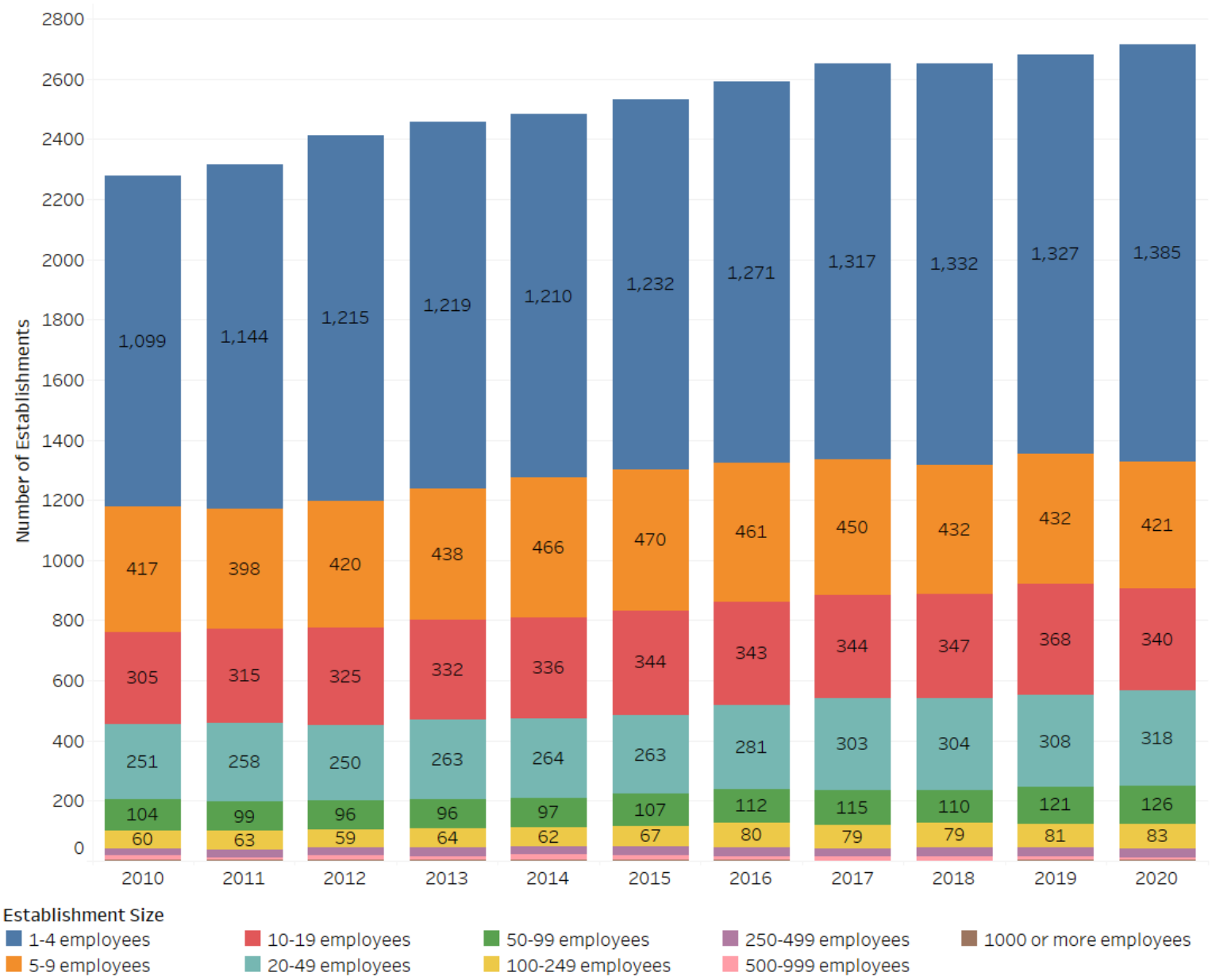
Dublin Business Establishments Have Largely Maintained a Consistent Mix Over Time, Grounded by Professional, Healthcare, & Financial Services as Well as Retail & Entertainment Businesses



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

Some Evidence for an Expanding Share of Small Businesses in Dublin Over Time

- Businesses of 5 or fewer employees made up 48% of all establishments in 2010 compared to 50% in 2017 and 51% in 2020.
- Several key mid-sized business segments have also increased in share over time.



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

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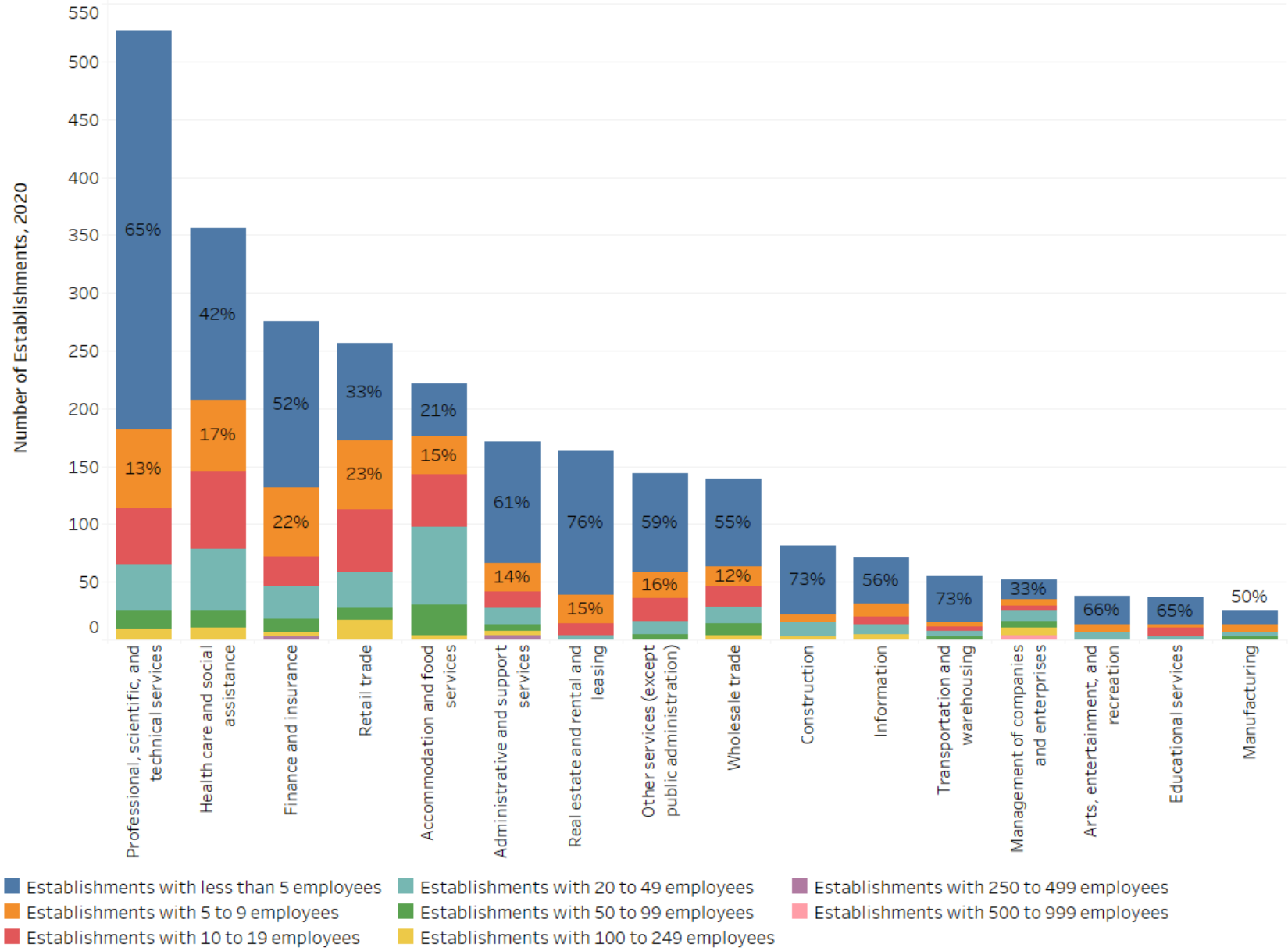
Small Businesses Make Up a High Volume of Overall Establishments in Several of Dublin's Key Industry Sectors in 2020

- Small businesses with fewer than 10 employees make up a disproportionate share of establishments in:
  - Professional, scientific, and technical services
  - Finance and insurance
  - Administrative and support services
  - Real estate and rental leasing
- However, these establishments still tend to collectively drive low employment shares relative to large anchor companies in these sectors.



Source: TEConomy analysis of U.S. Census Bureau's County Business Patterns data

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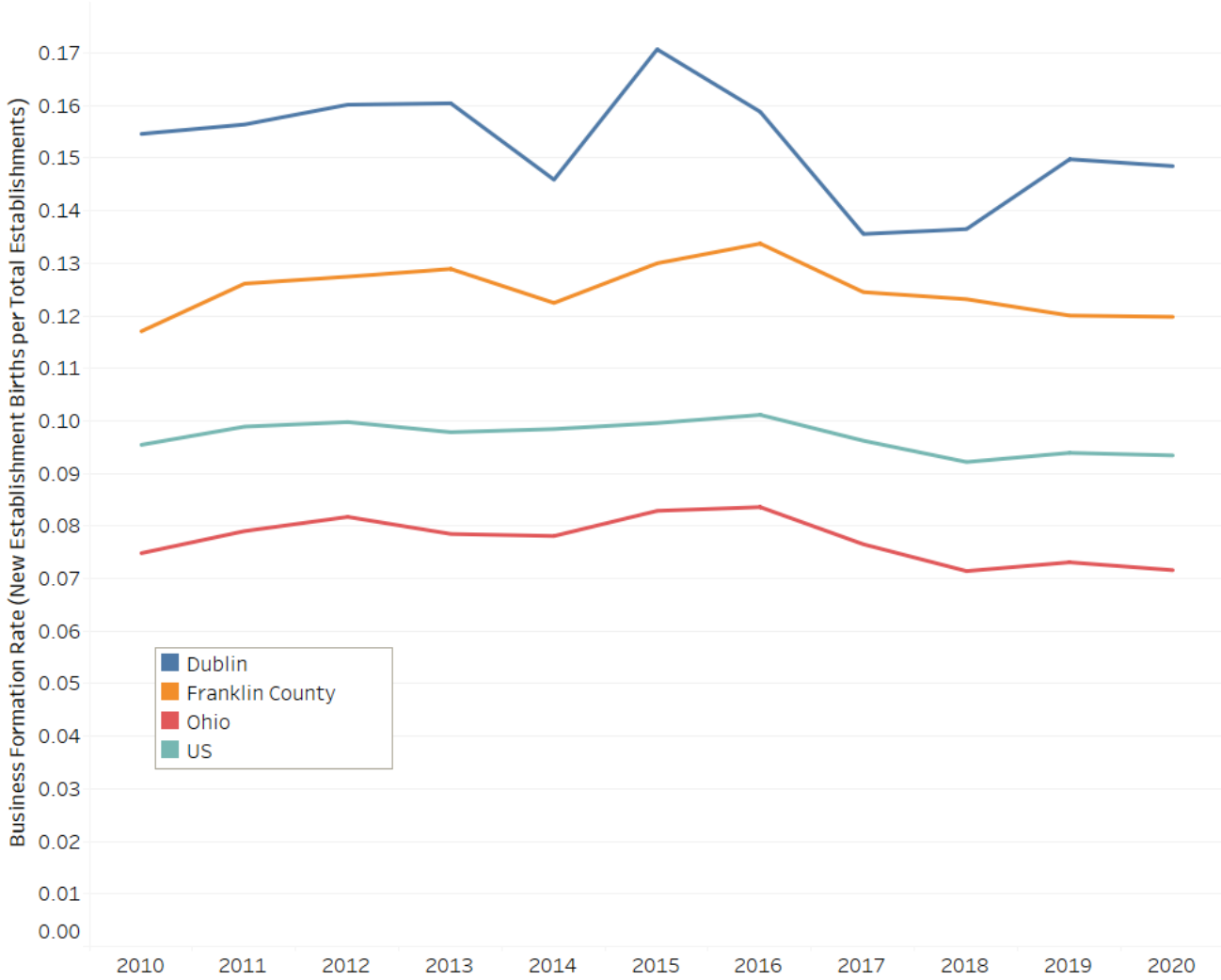
Dublin's New Business Establishment Formation Rates Appear to Exceed Broader Regional Trends Despite a Drop Off in Activity Since 2016

- New business formation rates for Dublin were estimated from city tax department data on new business filings:
  - Includes all businesses with greater than one employee in city data; TEConomy cannot verify the coverage of tax department data relative to other data sources.
  - Census data on new business formation available for Franklin county as well the state and nation.
- Dublin business formation rates experienced a sharp decline after 2016, but remains well above county, state, and national business formation rates.



Source: TEConomy analysis of U.S. Census Bureau's Business Dynamics Statistics; analysis of Dublin Tax Dept. data

Section 2.2: Regional Benchmarking of Industry Clusters

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Key Findings from Dublin's Industry Cluster Position Benchmarking Update

- **Dublin remains a leader in the level of traded industry jobs and overall base of employment relative to benchmark communities in the region, but has lost ground in terms of the proportion of jobs in traded industries.**
- Dublin's recent employment growth rates are fairly flat, while other benchmark communities have gained ground since pandemic declines.
- Several key regional clusters represent competitive strengths for Dublin:
  - Business Support Services and IT & Computer Services, where Dublin has large and specialized bases of employment.
  - R&D and Engineering Services, where Dublin remains a high-volume employer, specialized leader amongst benchmark communities.
  - Medical Biosciences and Healthcare Services, where Dublin remains a leading high-volume employer amongst benchmark communities.
- While still a specialized industry, **Dublin's recent performance in Corporate HQ/Managing Offices suggests weaker recovery in the 2020-2021 period.**

Intra-Regional Benchmark Communities for Assessment

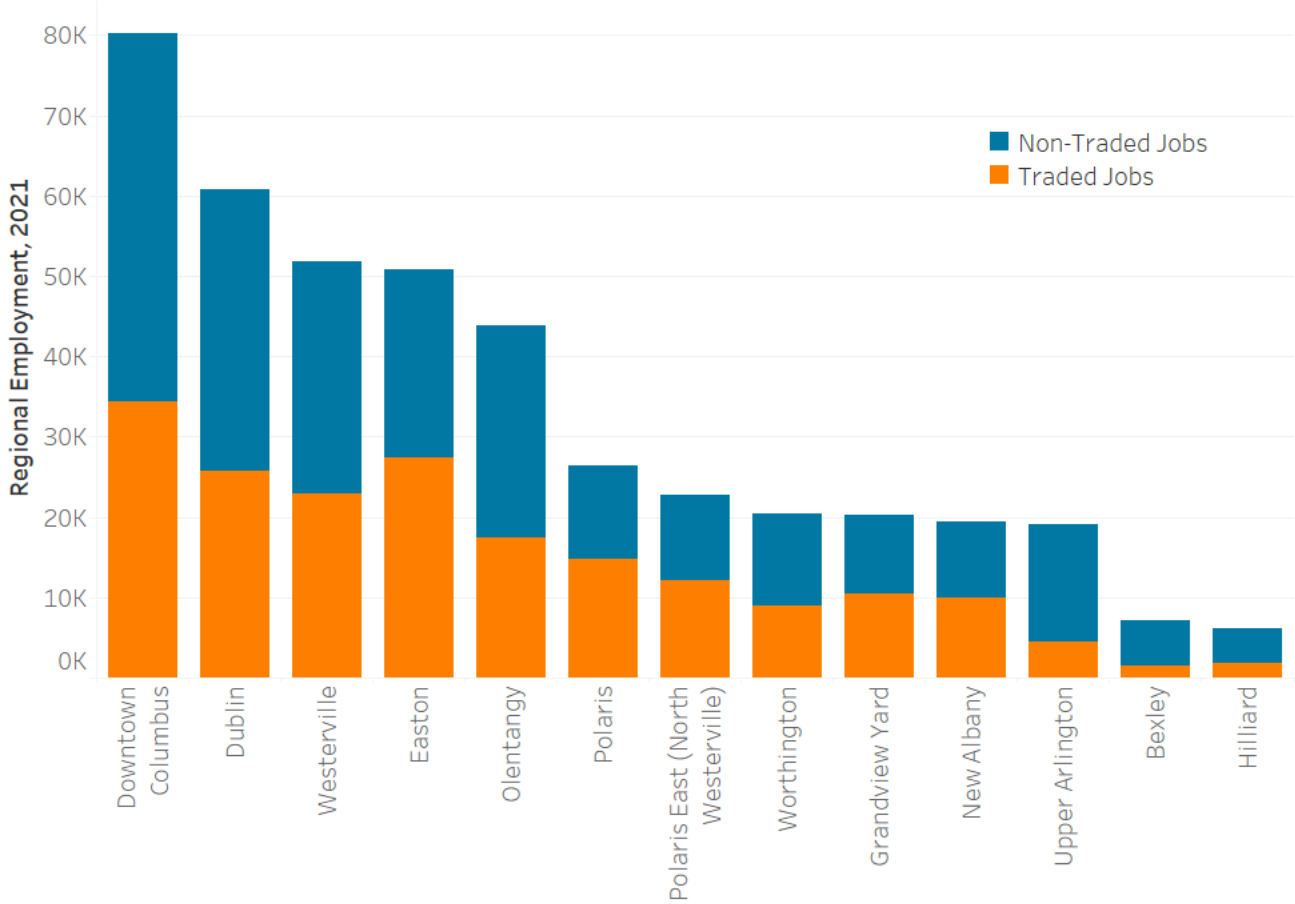
- Benchmarking analysis was originally developed to better understand how Dublin is positioned and performing relative to selected comparison communities within the Greater Columbus region.
- Twelve benchmark communities were identified in the previous studies for comparative analysis across industry cluster employment trends and positioning in “quality of life” industries.

Benchmark Region	Zip Codes Included in Region
Bexley	43209
Downtown Columbus	43215
Easton	43219
Grandview Yard	43212
Hilliard	43206
New Albany	43054
Olentangy	43035, 43065, 43240
Polaris	43240
Polaris East (North Westerville)	43082
Upper Arlington	43220, 43221
Westerville	43081, 43082, 43086
Worthington	43085

Dublin Remains a Regional Leader In Traded Sector Employment

- Continuing the trends observed in earlier reports, Dublin remains a leader in overall base employment relative to benchmark communities, but the city's proportion of jobs in traded sectors has fallen below that of several other regions.

Employment Composition of Dublin and Regional Benchmarks in 2021



*Traded industries concentrate locally but sell products or services across geographic regions and in the global market as opposed to non-traded industries, which are driven more by providing goods and services to local populations. These firms account for a disproportionate share of economic output and employment nationally.
Source: TEConomy analysis of Census County Business Patterns data

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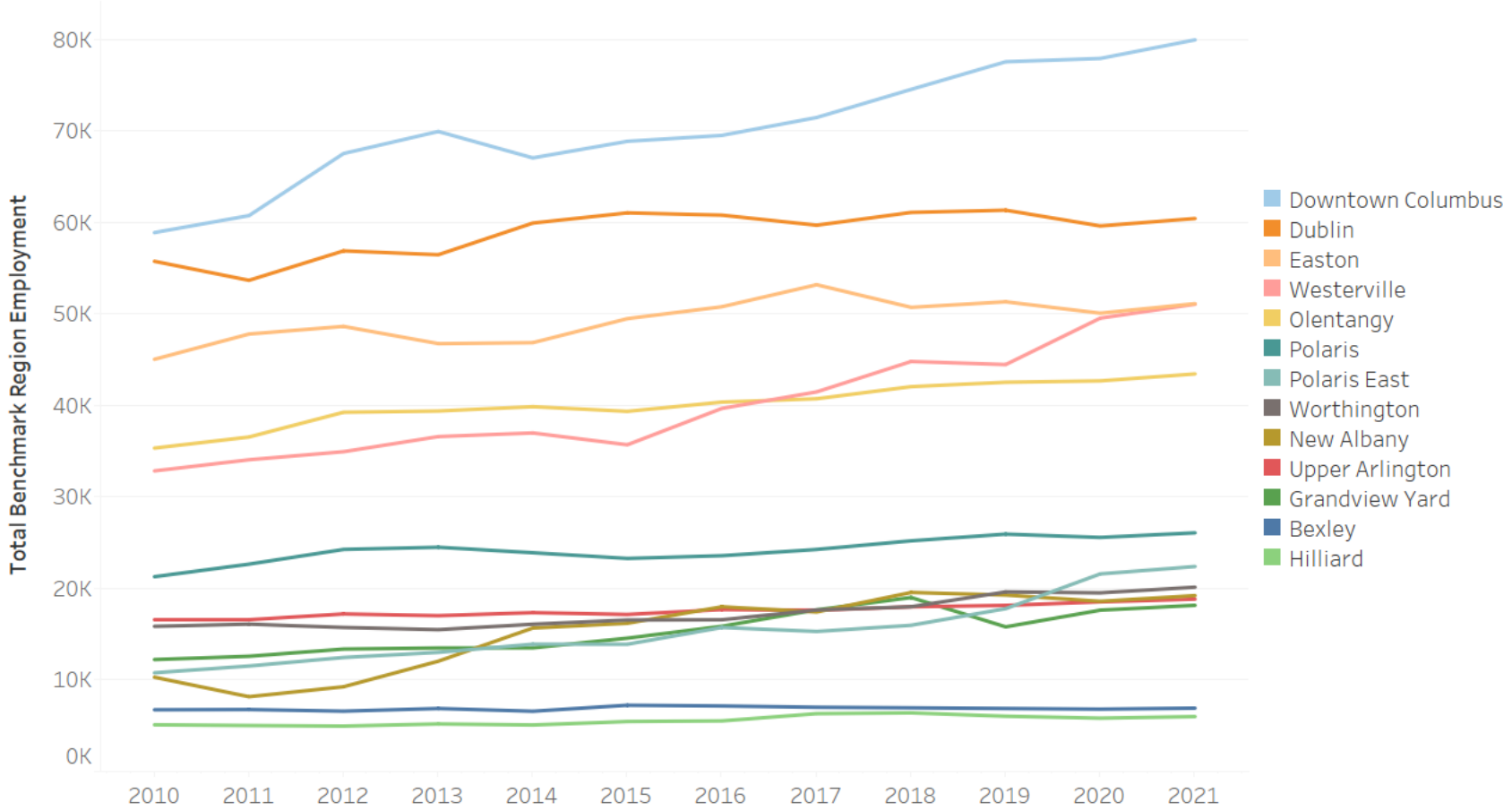
With Some Exceptions, Benchmark Regions Have Largely Remained Along Similar Growth Trajectories; Most Regions Have Experienced a Rebound in 2020-2021 Growth Rates After the Pandemic

Dublin's recent growth trends have flattened, with several other regions seeing stronger growth since 2017.

Total Employment Growth Trends in Dublin and Regional Benchmarks, 2010-2021



Source: TEConomy analysis of Census County Business Patterns data

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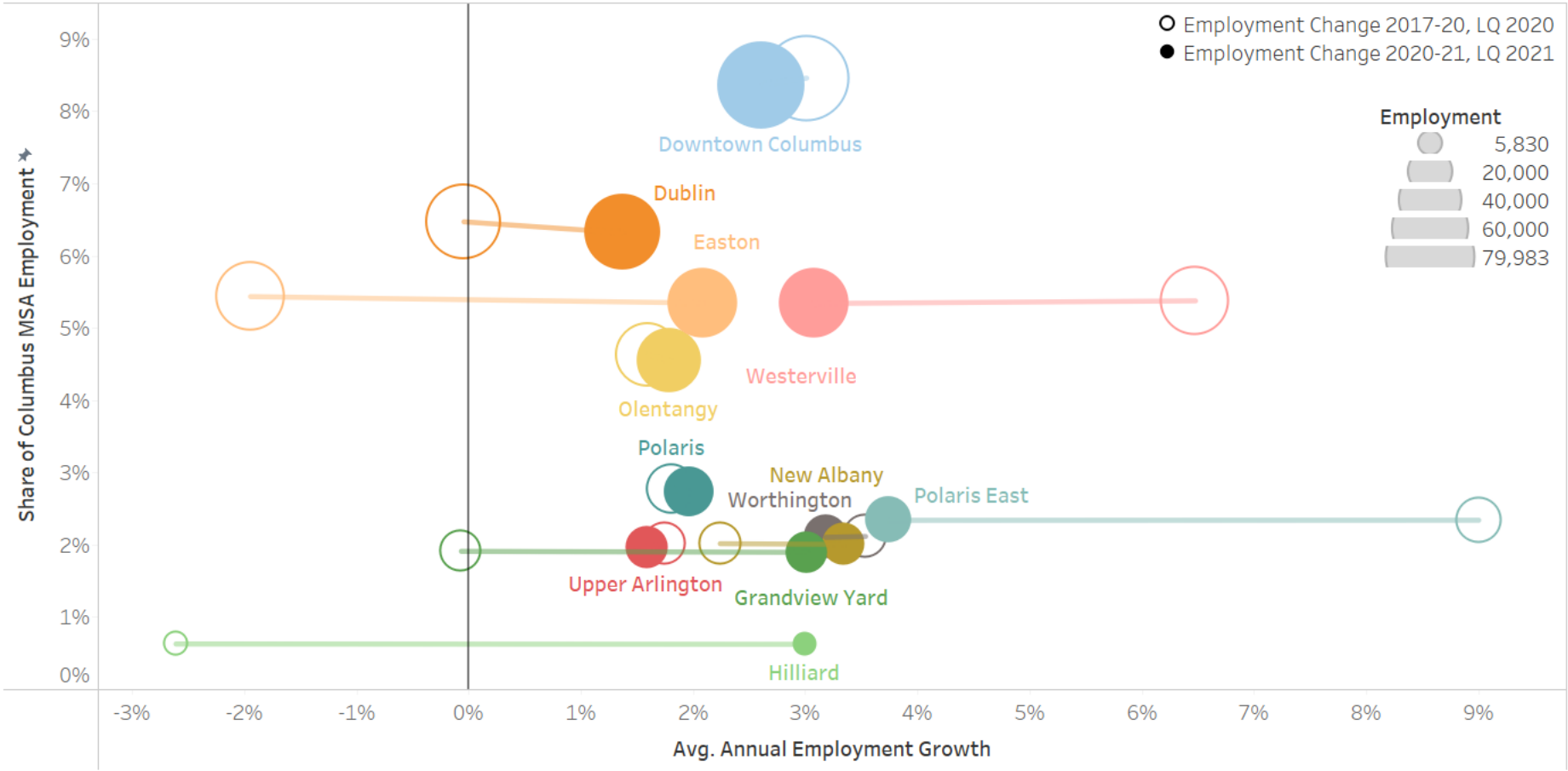
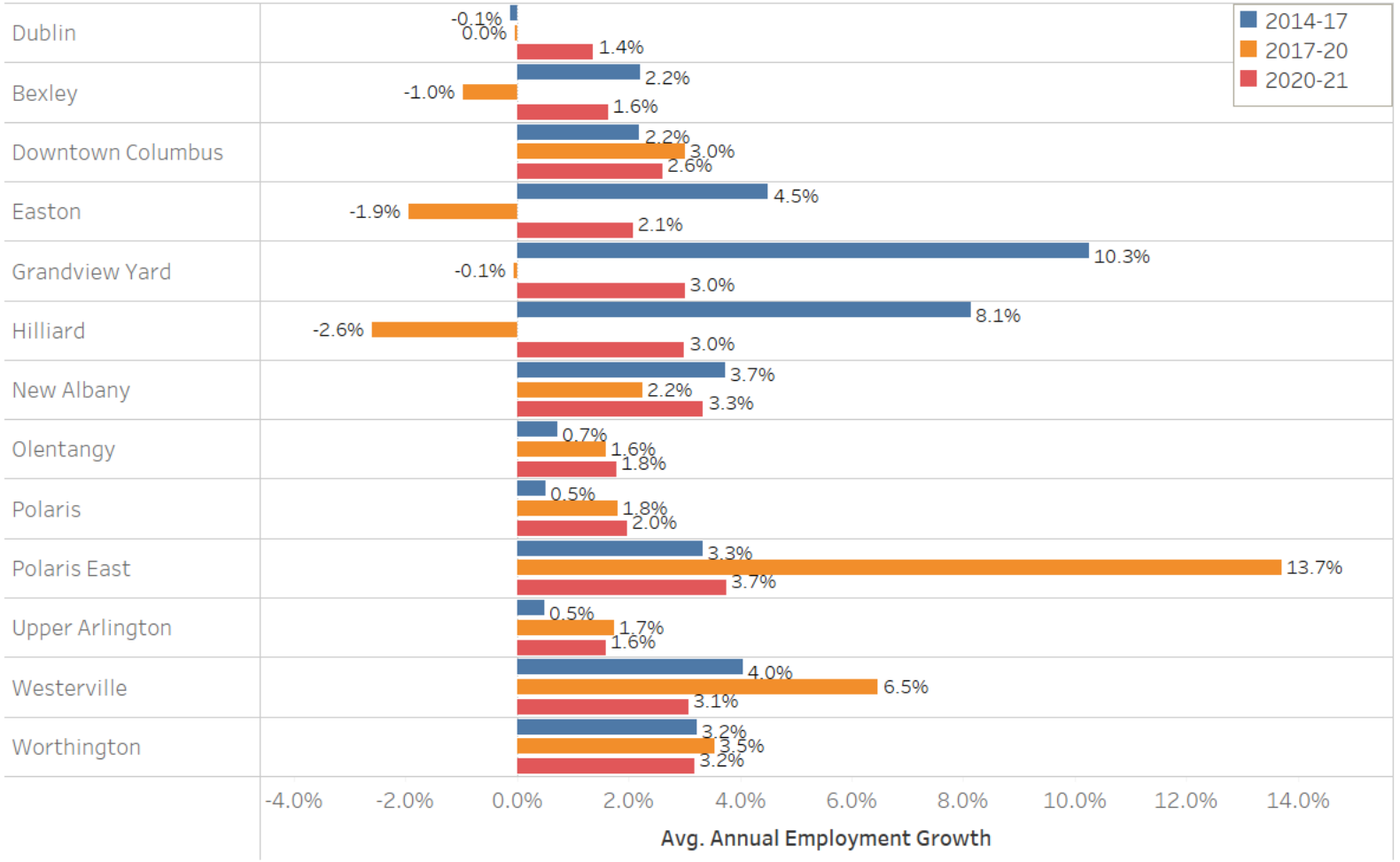
Total Employment Growth Profiles of Benchmark Regions

Dublin experienced a strong rebound in average annual growth in the 2020-2021 period, however Dublin's recent growth in total employment lags that of all benchmark communities.



Source: TEConomy analysis of Census County Business Patterns data

Trends in Total Employment Show Signs of Recovery in Most Communities Following the Pandemic



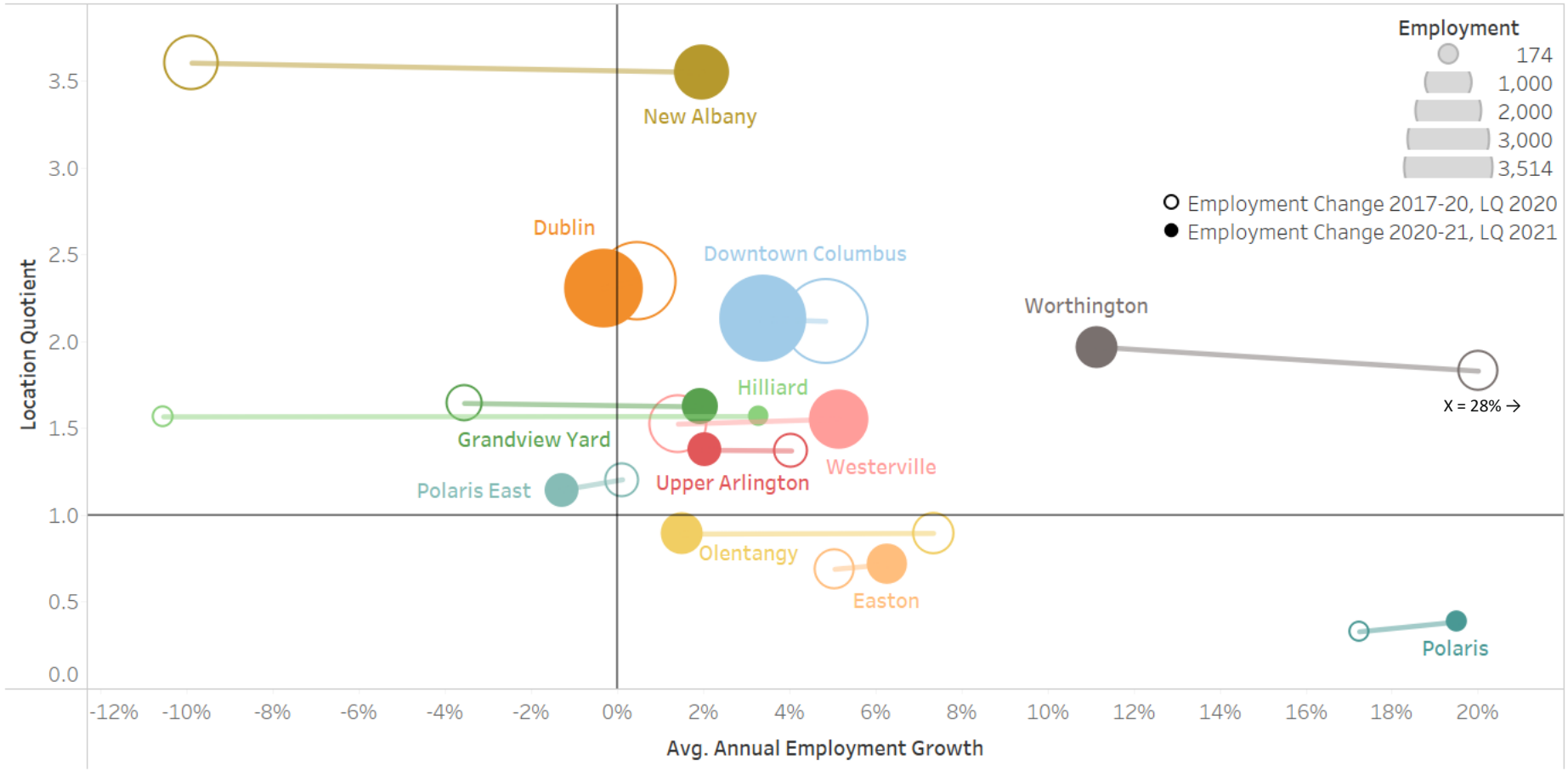
Source: TEConomy analysis of Census County Business Patterns data

Summary of Intra-Regional Benchmark Cluster Employment Profiles

Regional Cluster	Dublin's Relative Position During 2017-2021 Period
Business Support Services	There has been little change in the relative position of communities with a sizable base in this cluster. New Albany remains the most highly specialized.
Corporate HQ/Managing Offices	Dublin's employment declines from 2020-2021 are in line with other sizable communities, although some have experienced growth in recent years.
Finance & Insurance	With lower specialization and recent employment declines, Dublin's position in this cluster remains comparatively delicate.
Freight & TDL	Aside from Easton, most regions have experienced low specialization and/or weaker growth.
IT & Computer Services	Dublin's strong position has experienced a rebound in 2020-2021 growth, maintaining the city's comparative advantages in this cluster.
Medical Biosciences & Healthcare	While Downtown Columbus is more highly concentrated than average in this cluster, the other benchmark communities retain low specializations despite some strong employment growth in the 2020-2021 period.
R&D & Engineering Services	Dublin's specialization in this cluster remains high despite employment declines in the recent periods. Most benchmark communities have experienced stronger growth in 2020-2021.

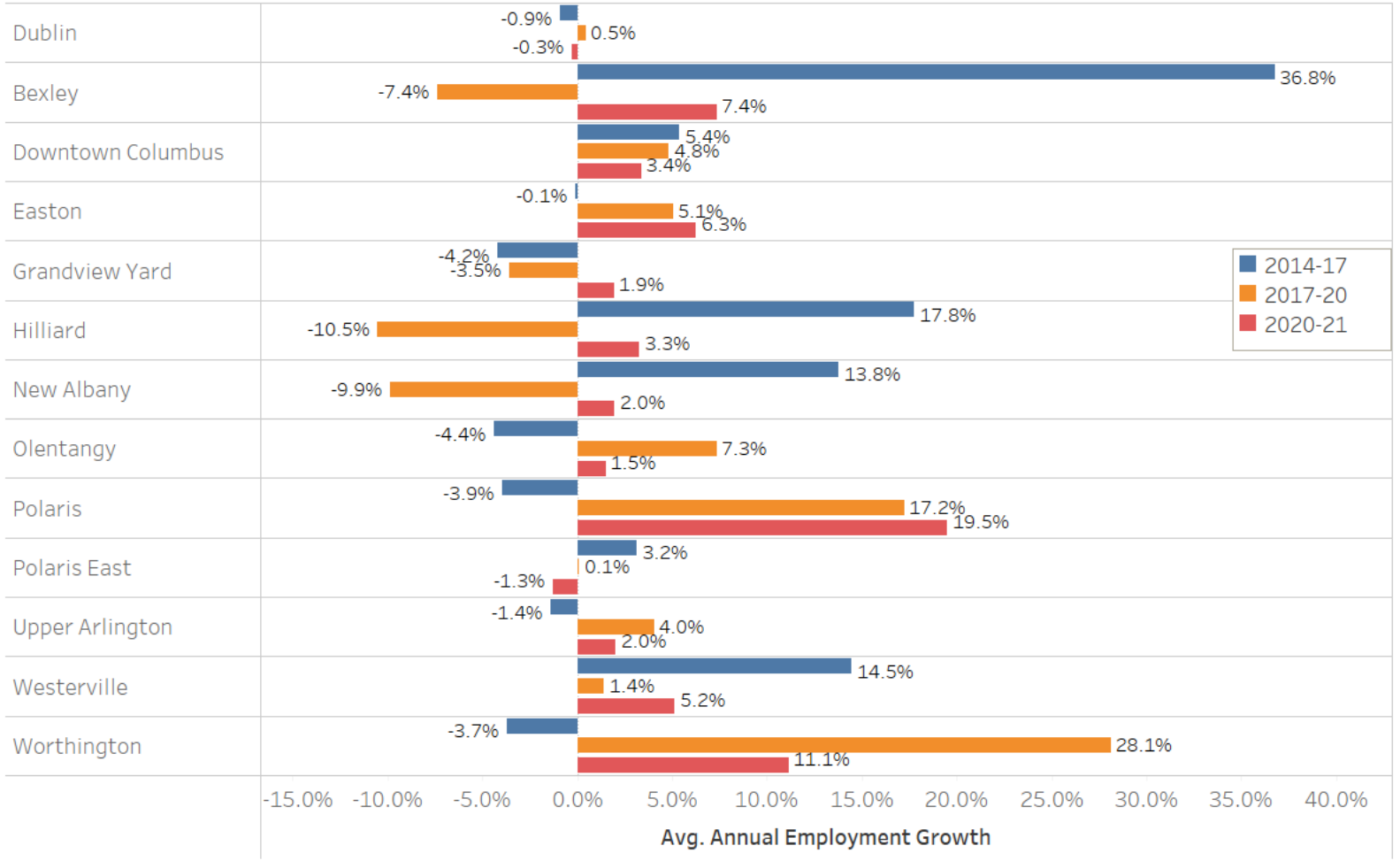
Business Support Services Cluster Employment in Benchmark Regions

New Albany remains the most highly specialized region in this cluster, but Dublin also has a high specialization. Dublin's growth rates have remained fairly steady over time compared to other regions.



Source: TEConomy analysis of Census County Business Patterns data

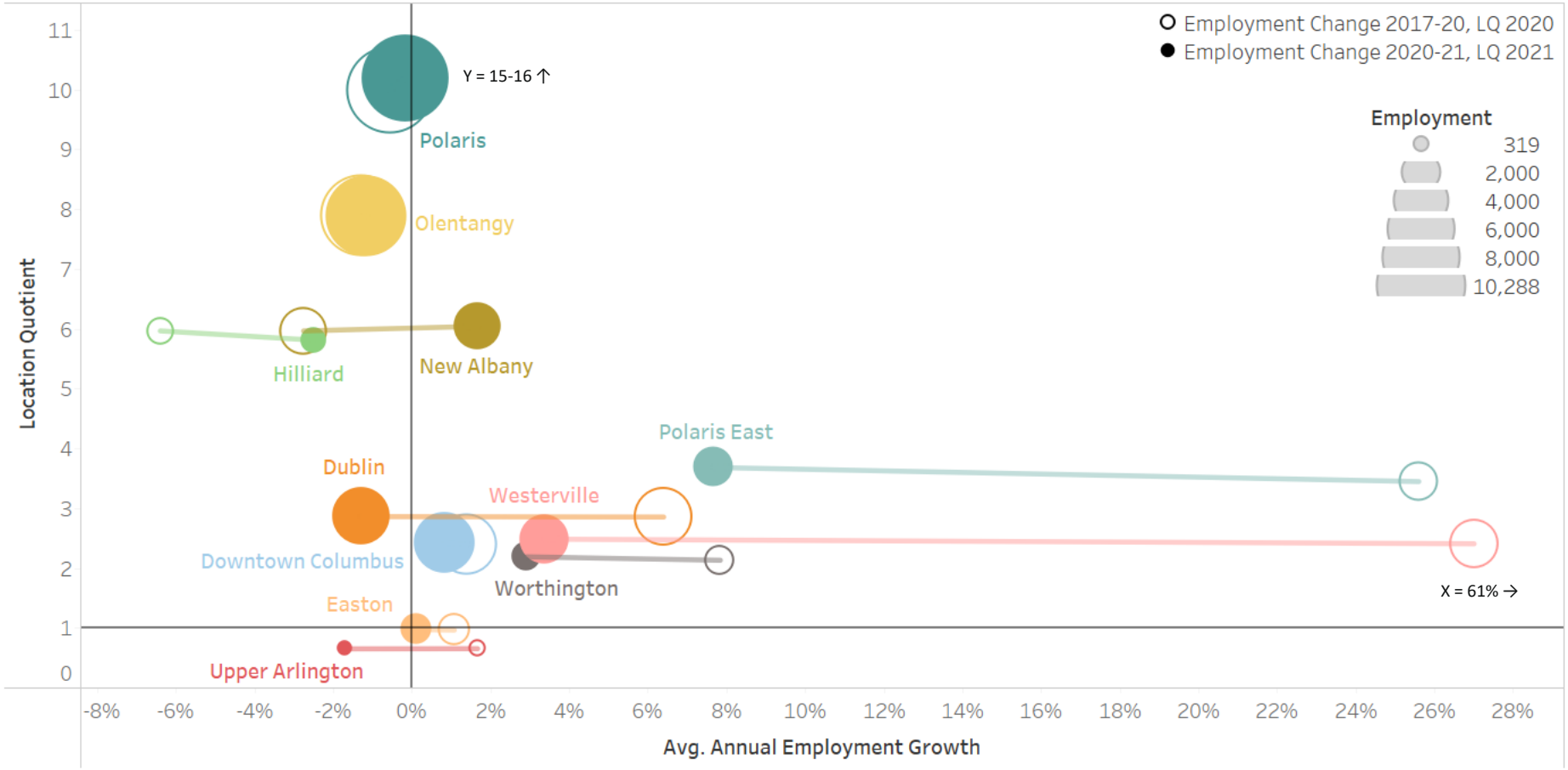
Benchmark Regions: Growth in Business Support Services Cluster Employment



Source: TEConomy analysis of Census County Business Patterns data

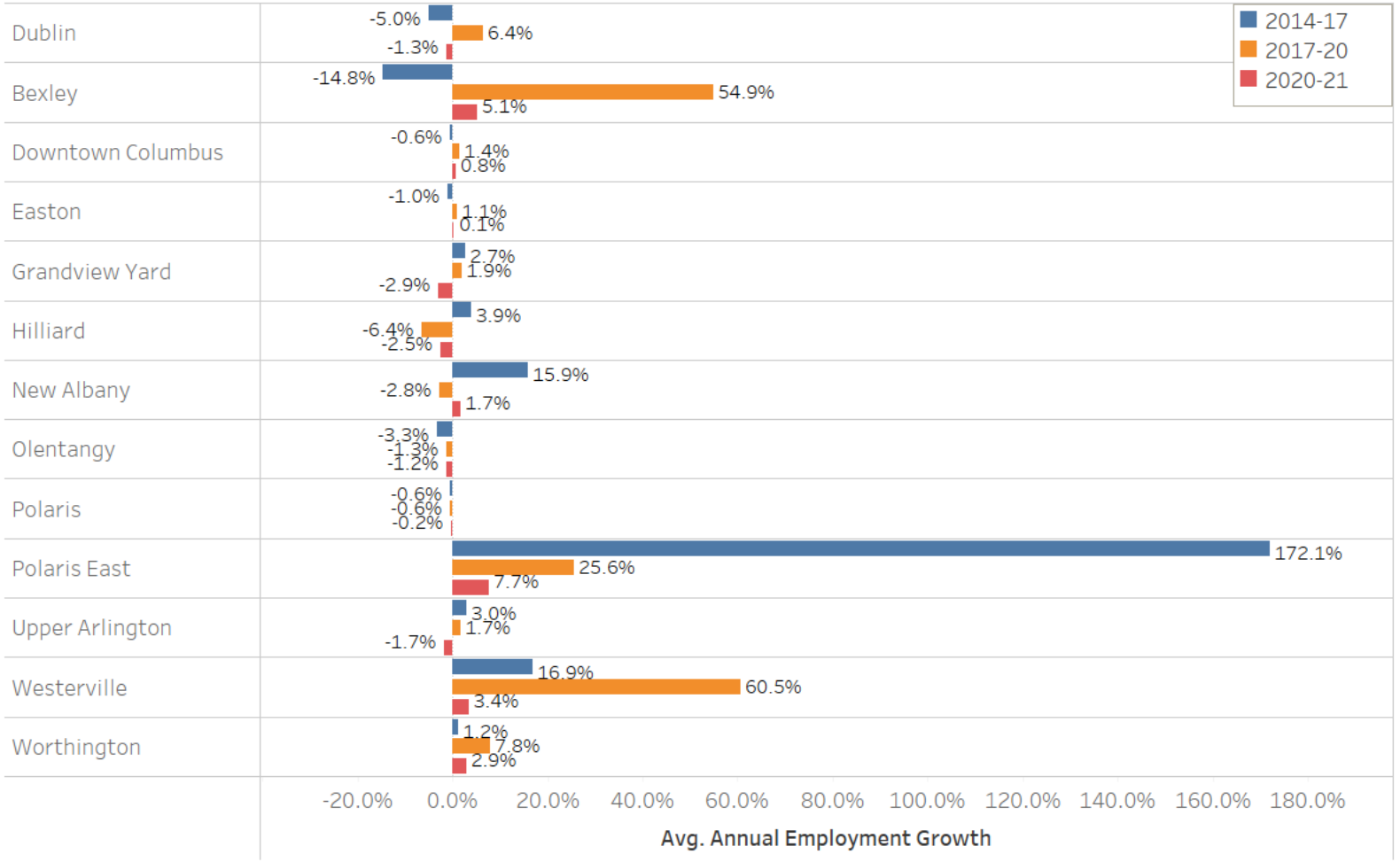
Corporate HQ/Managing Offices Cluster Employment in Benchmark Regions

While Dublin is highly specialized in this cluster with a sizable employment base, several other regions have higher location quotients, and some have greater employment. Dublin's growth over the 2020-21 period is comparable to several other regions.



Source: TEConomy analysis of Census County Business Patterns data

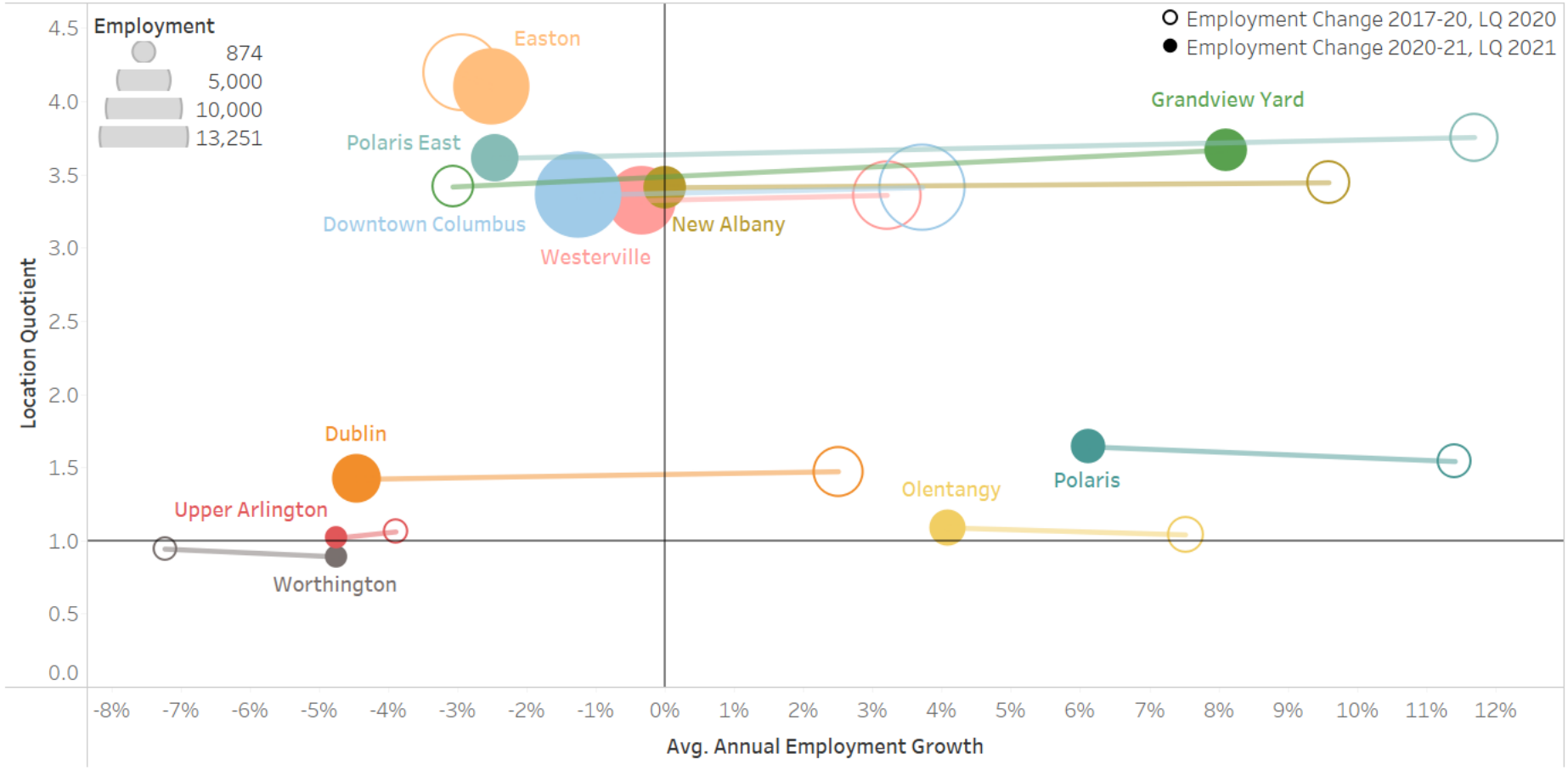
Benchmark Regions: Growth in Corporate HQ/Managing Offices Cluster Employment



Source: TEConomy analysis of Census County Business Patterns data

Finance and Insurance Cluster Employment in Benchmark Regions

Dublin remains specialized in this cluster, but a majority of the other regions show greater specialization. Dulbin's job decline from 2020-21 is notable as other regions with sizable employment have experienced slower rates of decline or outright growth.



Source: TEConomy analysis of Census County Business Patterns data

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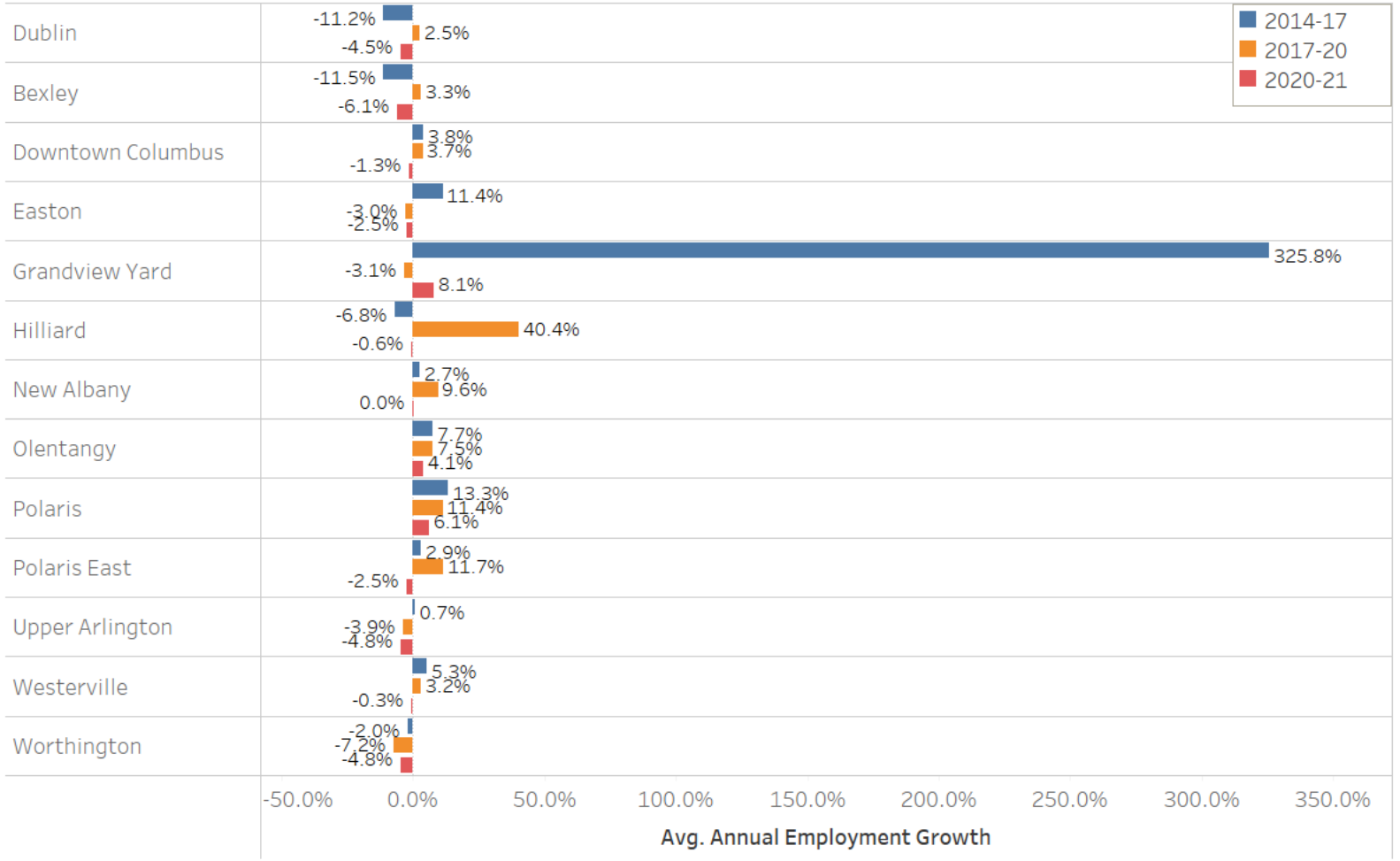
Benchmark Regions: Growth in Finance and Insurance Cluster Employment



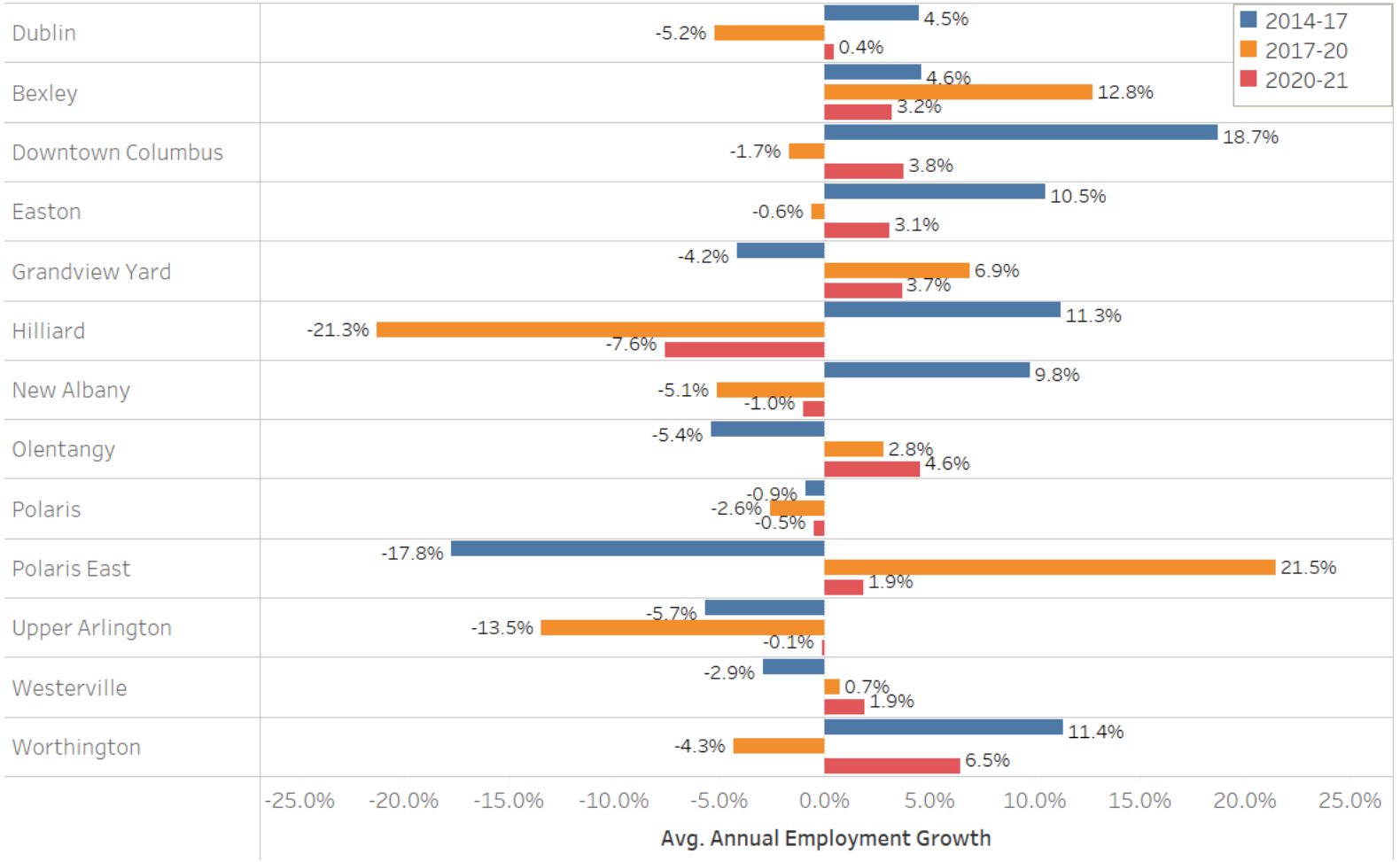
Source: TEConomy analysis of Census County Business Patterns data

Freight TDL Cluster Employment in Benchmark Regions

Dublin's low concentration in this cluster is similar to that of most other regions, although Dublin's low growth from 2020-21 is weaker than most others. Easton is the only region that is highly specialized in this cluster, and also retains the largest employment base.

Source: TEConomy analysis of Census County Business Patterns data

Benchmark Regions: Growth in Freight TDL Cluster Employment



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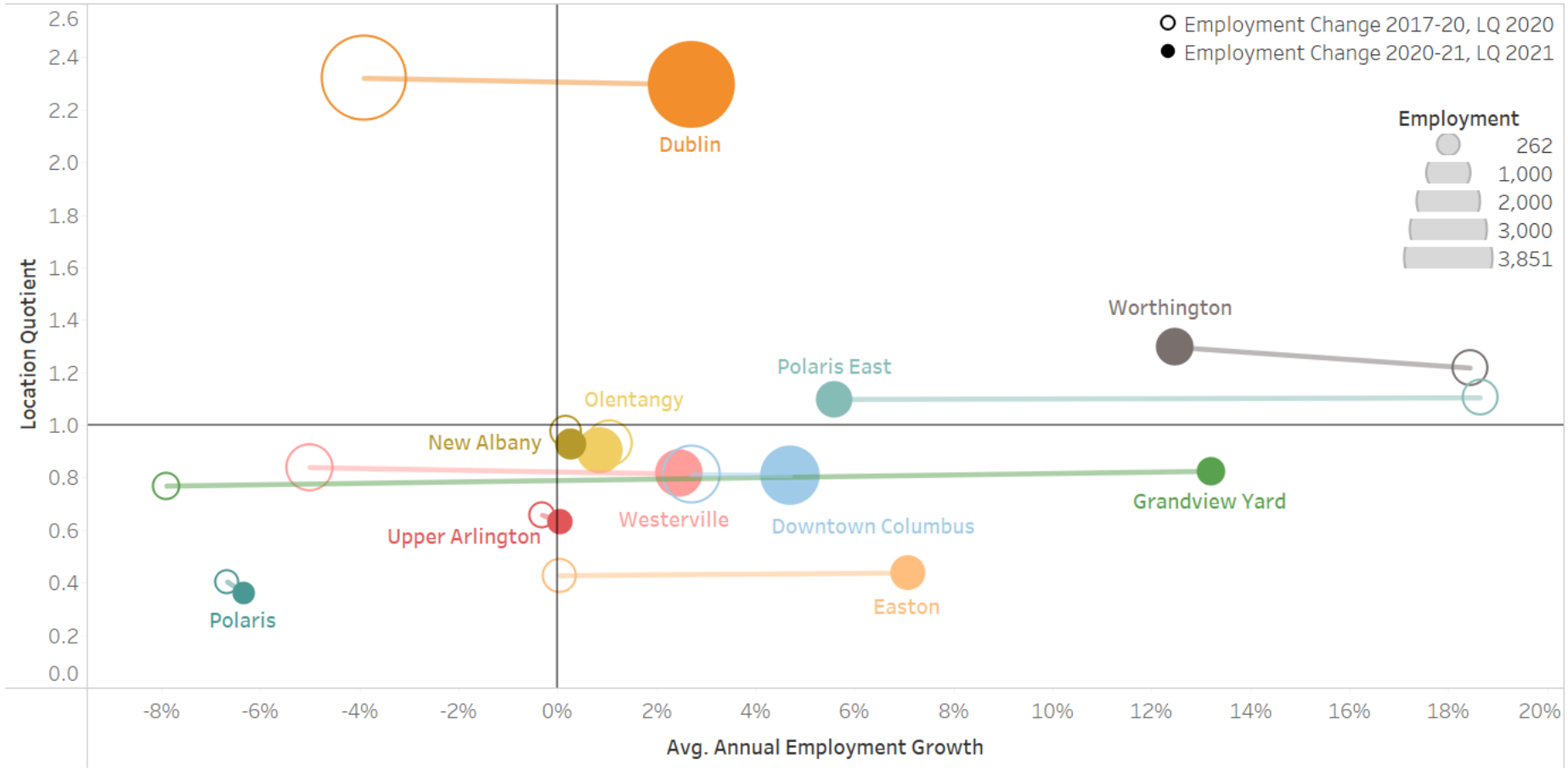
Source: TEConomy analysis of Census County Business Patterns data

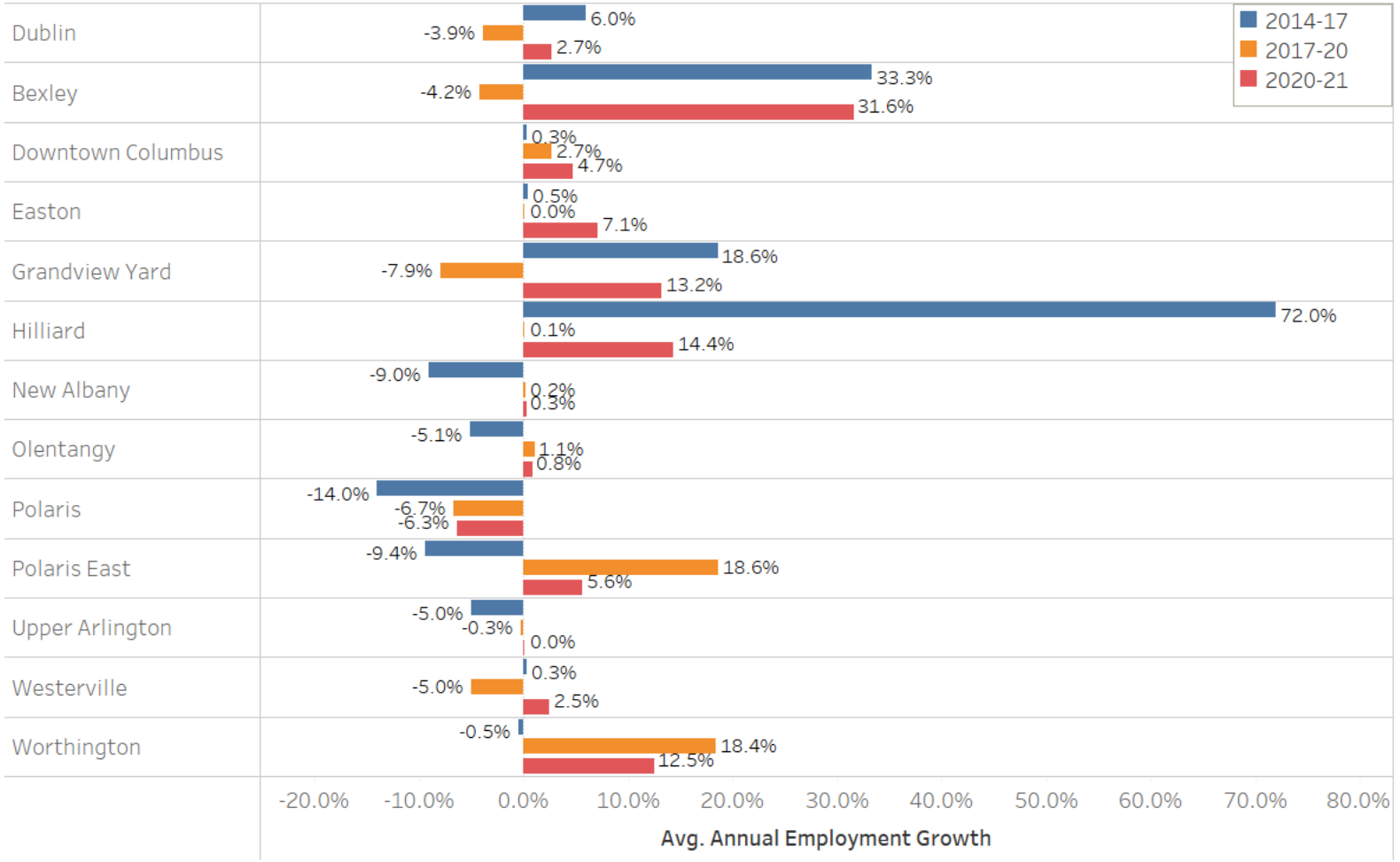
IT and Computer Services Cluster Employment in Benchmark Regions

Dublin's specialization in this cluster has declined in the recent periods, although it remains the only region to have a location quotient above 1.20 and a sizable employment base. Positive growth from 2020-21 is steady but falls short of other regions.



Source: TEConomy analysis of Census County Business Patterns data

Benchmark Regions: Growth in IT and Computer Services Cluster Employment



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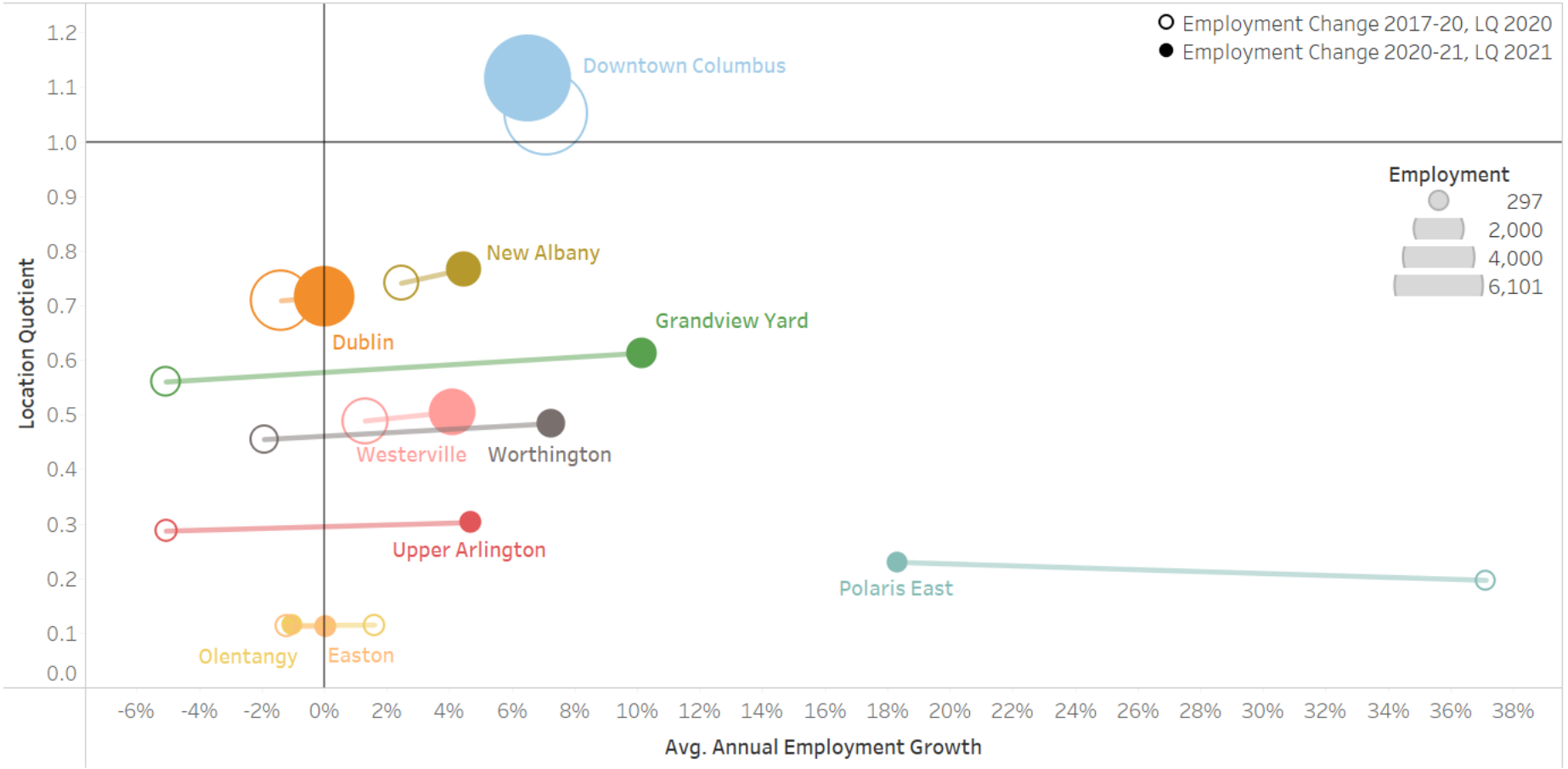
Source: TEConomy analysis of Census County Business Patterns data

Medical Biosciences and Healthcare Cluster Employment in Benchmark Regions

Dublin and Downtown Columbus remain only significant benchmark communities in biosciences space, though Dublin's growth in each period has lagged that of Downtown Columbus.



Source: TEConomy analysis of Census County Business Patterns data

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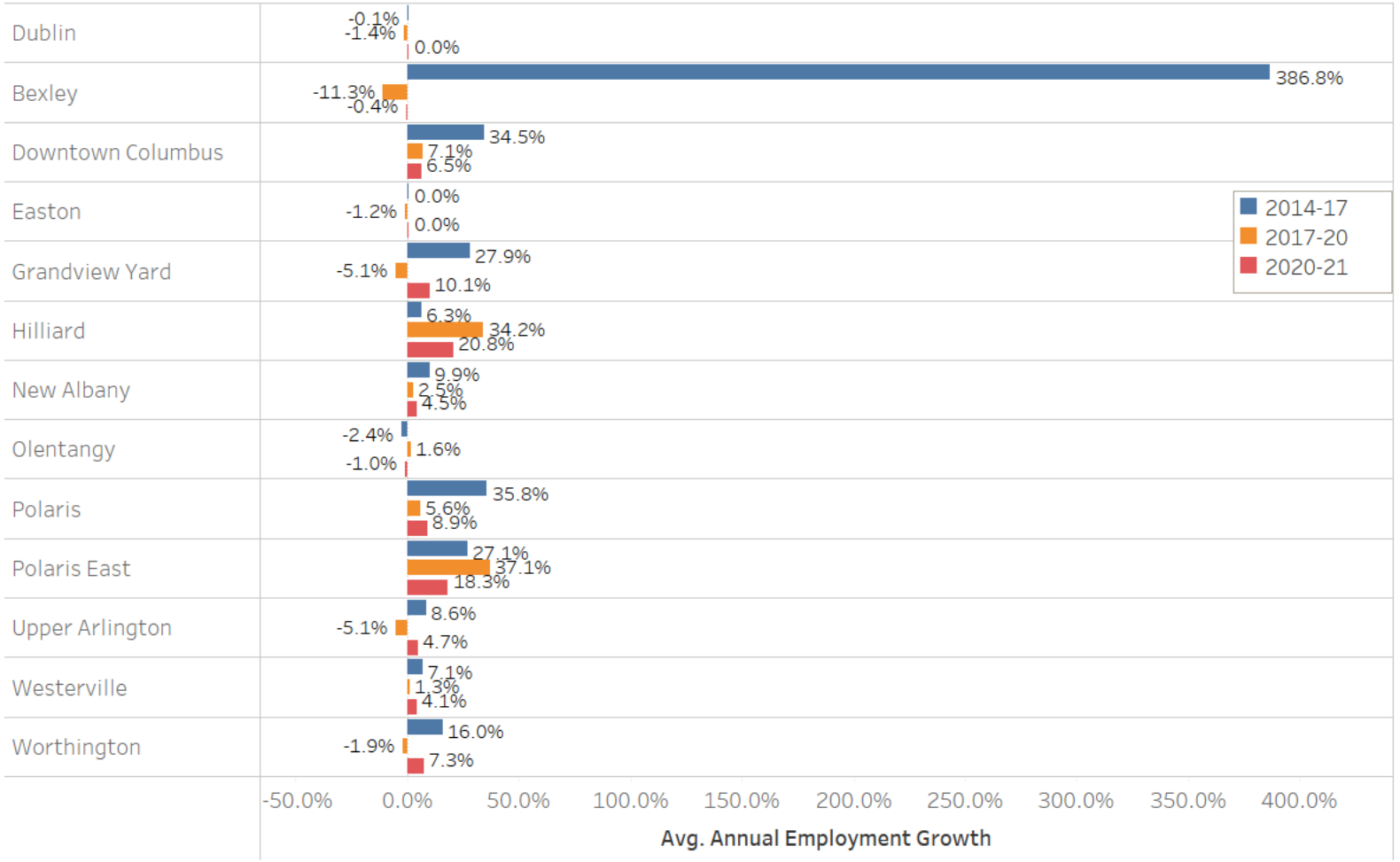
Benchmark Regions: Growth in Medical Biosciences and Healthcare Cluster Employment



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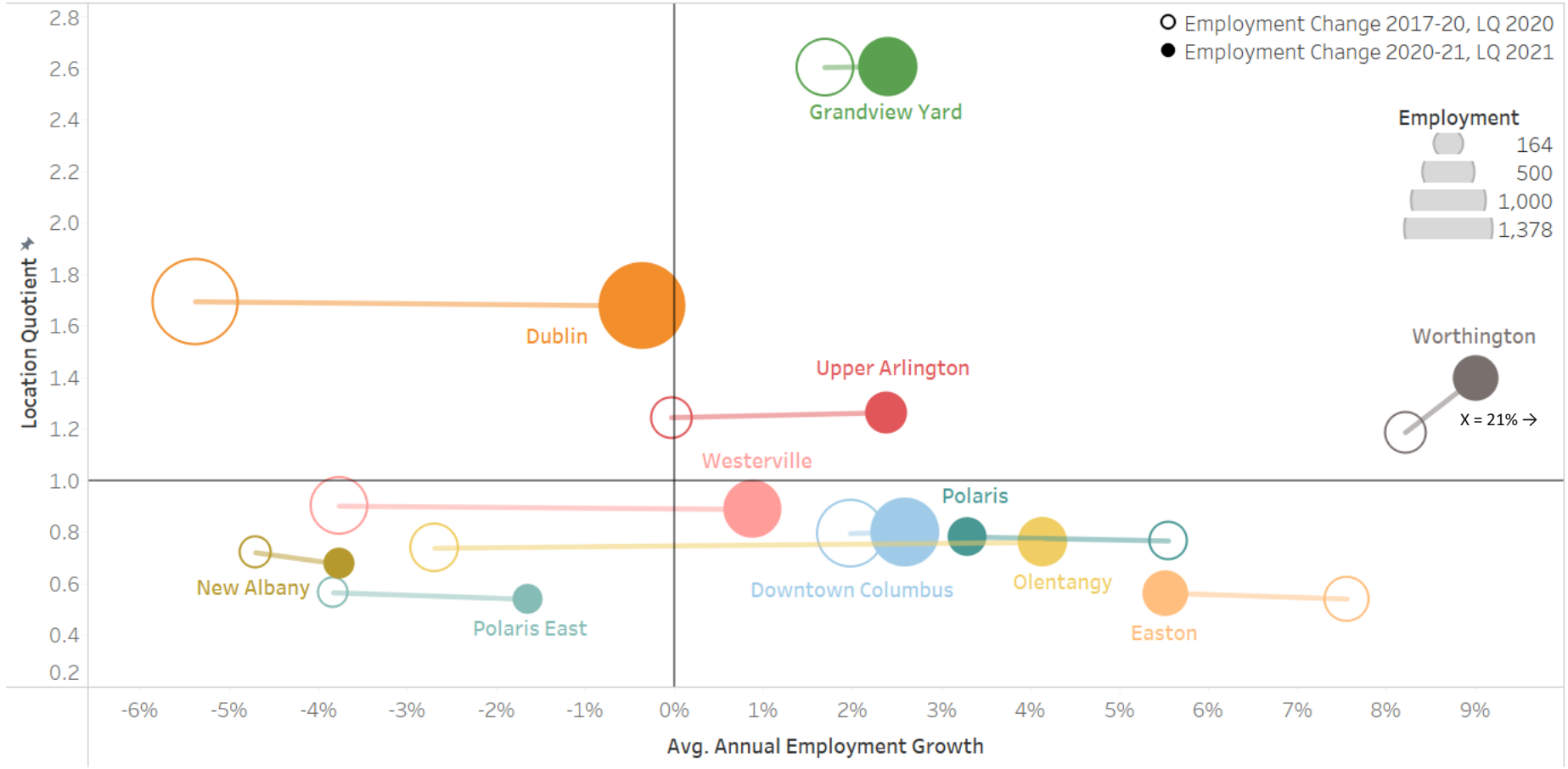
Source: TEConomy analysis of Census County Business Patterns data

R&D and Engineering Services Cluster Employment in Benchmark Regions

While Grandview Yard is the most highly specialized region in this cluster, Dublin's high LQ and large employment base make it comparatively strong. Dublin's recent growth rate suggest an improvement over pandemic declines.



Source: TEConomy analysis of Census County Business Patterns data

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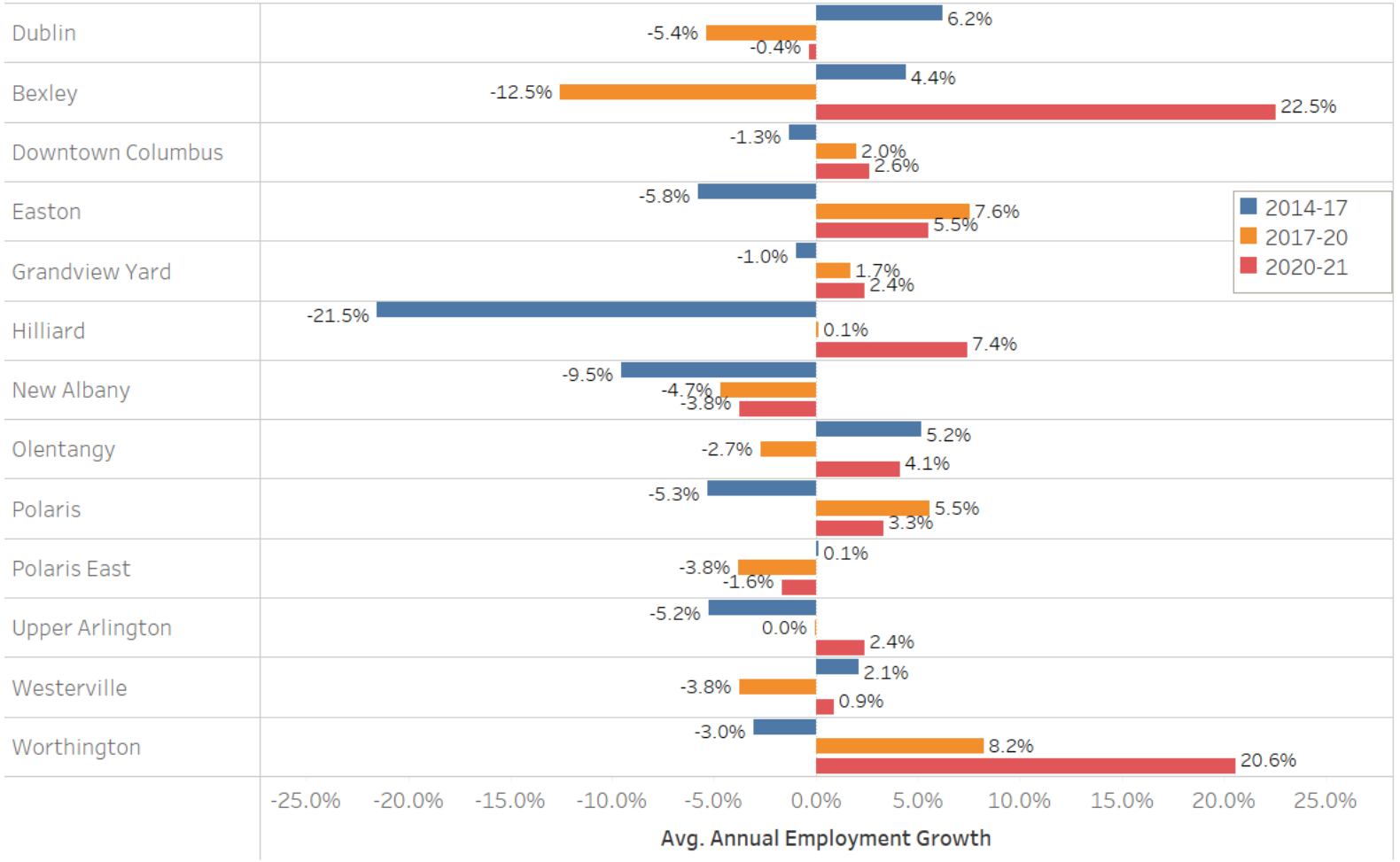
Benchmark Regions: Growth in R&D and Engineering Cluster Employment



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Source: TEConomy analysis of Census County Business Patterns data

Detailed Summary of Employment Change by Cluster and Benchmark Community Between 2020 and 2021

Community	Total, All Industries	Business Support Services	Corporate Headquarters/Managing Offices	Creative & Design Industries	Finance & Insurance	Freight Transportation, Distribution, & Logistics
Dublin	816 (1.4%)	-9 (-0.3%)	-59 (-1.3%)	19 (2.4%)	-195 (-4.5%)	12 (0.4%)
Bexley	111 (1.6%)	6 (7.4%)	1 (5.1%)	6 (12.7%)	-9 (-6.1%)	12 (3.2%)
Downtown Columbus	2,034 (2.6%)	115 (3.4%)	41 (0.8%)	47 (2.8%)	-167 (-1.3%)	64 (3.8%)
Easton	1,043 (2.1%)	45 (6.3%)	1 (0.1%)	13 (9.4%)	-263 (-2.5%)	204 (3.1%)
Grandview Yard	531 (3%)	12 (1.9%)	-6 (-2.9%)	11 (3.1%)	243 (8.1%)	31 (3.7%)
Hilliard	175 (3%)	6 (3.3%)	-23 (-2.5%)	9 (10.5%)	-1 (-0.6%)	-3 (-7.6%)
New Albany	621 (3.3%)	27 (2%)	50 (1.7%)	15 (7.2%)	0 (0%)	-14 (-1%)
Olentangy	764 (1.8%)	12 (1.5%)	-103 (-1.2%)	15 (4%)	90 (4.1%)	45 (4.6%)
Polaris	503 (2%)	34 (19.5%)	-18 (-0.2%)	9 (7.2%)	120 (6.1%)	-1 (-0.5%)
Polaris East	809 (3.7%)	-7 (-1.3%)	152 (7.7%)	2 (0.8%)	-100 (-2.5%)	17 (1.9%)
Upper Arlington	294 (1.6%)	11 (2%)	-6 (-1.7%)	37 (10%)	-47 (-4.8%)	0 (0%)
Westerville	1,524 (3.1%)	80 (5.2%)	107 (3.4%)	12 (2.8%)	-28 (-0.3%)	33 (1.9%)
Worthington	621 (3.2%)	82 (11.1%)	32 (2.9%)	43 (10.4%)	-44 (-4.8%)	49 (6.5%)

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Source: TEConomy analysis of Census County Business Patterns data

Detailed Summary of Employment Change by Cluster and Benchmark Community Between 2020 and 2021

Community	Total, All Industries	IT & Computer Services	Medical Biosciences and Healthcare Services	R&D & Engineering Services	Residential Healthcare Services	Tourism, Entertainment, and Arts
Dublin	816 (1.4%)	101 (2.7%)	0 (0%)	-5 (-0.4%)	18 (1.6%)	55 (4.4%)
Bexley	111 (1.6%)	6 (31.6%)	0 (0%)	2 (22.5%)	-20 (-4.2%)	4 (3.5%)
Downtown Columbus	2,034 (2.6%)	81 (4.7%)	372 (6.5%)	22 (2.6%)	86 (4.2%)	143 (7.8%)
Easton	1,043 (2.1%)	41 (7.1%)	0 (0%)	20 (5.5%)	-34 (-4.9%)	5 (0.7%)
Grandview Yard	531 (3%)	48 (13.2%)	70 (10.1%)	15 (2.4%)	-14 (-4.2%)	-3 (-2%)
Hilliard	175 (3%)	7 (14.4%)	9 (20.8%)	0 (0%)	38 (9.6%)	2 (2.5%)
New Albany	621 (3.3%)	1 (0.3%)	43 (4.5%)	-7 (-3.8%)	2 (5.6%)	40 (7.8%)
Olentangy	764 (1.8%)	9 (0.8%)	-4 (-1%)	18 (4.1%)	140 (34.7%)	77 (7%)
Polaris	503 (2%)	-18 (-6.3%)	5 (8.9%)	9 (3.3%)	0 (0%)	64 (10%)
Polaris East	809 (3.7%)	36 (5.6%)	54 (18.3%)	-3 (-1.6%)	117 (24.5%)	42 (8.3%)
Upper Arlington	294 (1.6%)	0 (0%)	17 (4.7%)	7 (2.4%)	-15 (-1.8%)	19 (7.3%)
Westerville	1,524 (3.1%)	28 (2.5%)	69 (4.1%)	5 (0.9%)	255 (14.2%)	23 (4.6%)
Worthington	621 (3.2%)	80 (12.5%)	45 (7.3%)	65 (20.6%)	-29 (-3.2%)	6 (4.6%)

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Source: TEConomy analysis of Census County Business Patterns data

Section 2.3: Dublin's Workforce and Talent Indicators

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Key Findings from Dublin's Workforce and Talent Indicators Update

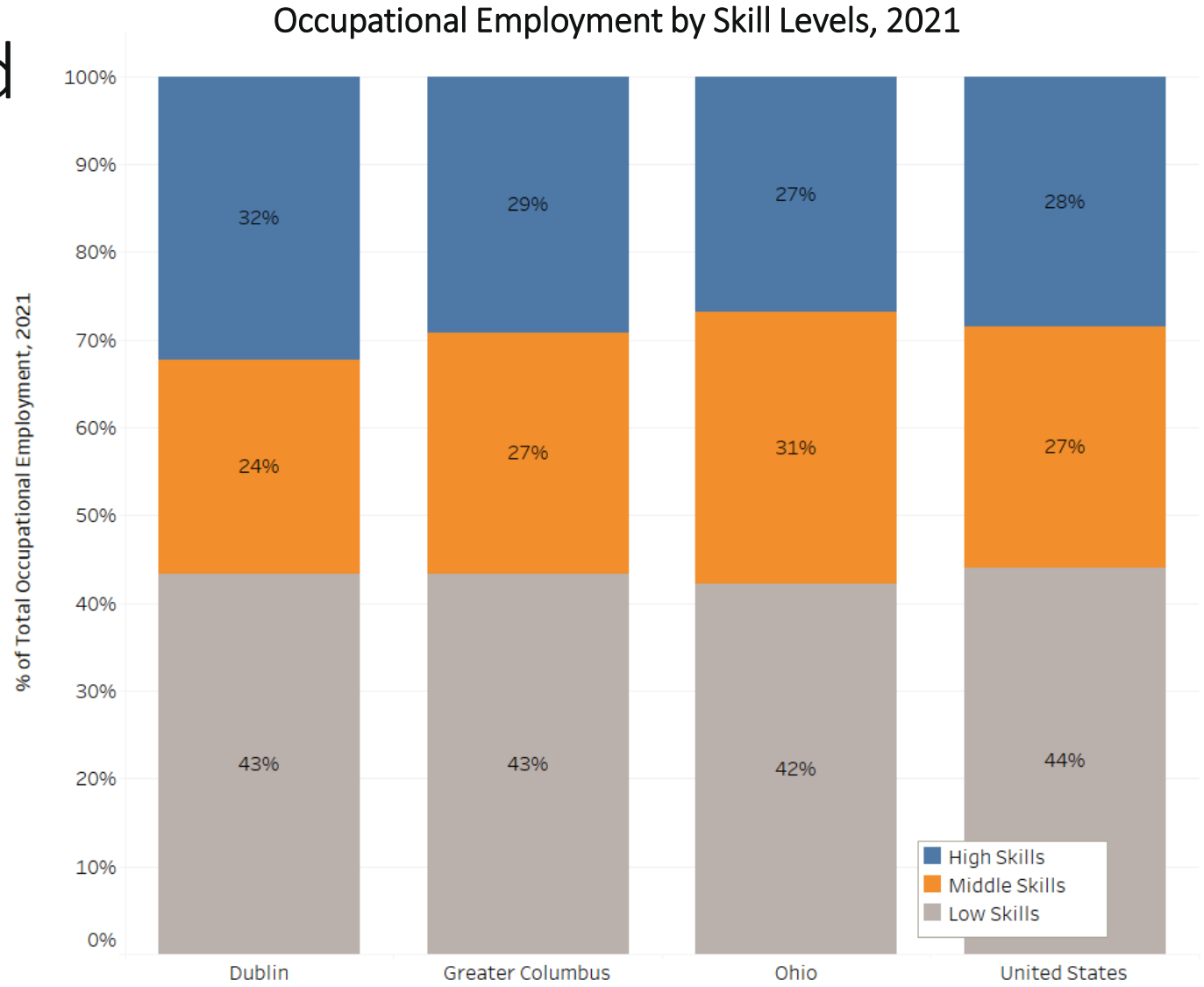
- Dublin continues to employ a higher proportion of highly skilled workers (generally requiring Bachelor's and higher degrees) relative to both the Greater Columbus region and national trends, but this gap has narrowed since the previous assessment and may reflect broader acceleration of growth across the Greater Columbus region.
- High demand occupations in the region over the 2017-2021 period include:
  - Software developers and other key IT roles, management and business support, education, and healthcare services in the high skills segment.
  - Sales representatives, technicians, administrative support, healthcare support, and computer support in the middle skills segment.
  - Customer service and home health and personal care aides in the low skills segment.
- **STEM workers in Dublin's employment base remain highly concentrated in computing and IT occupations, but Dublin is showing signs of not keeping pace in growing and retaining this critical base of workers.**
  - Ongoing importance of digital skills, regional market forces, and cross-cutting local demand continue to affirm the need for growing this workforce segment to meet the needs of all industries and maintain the city's competitive position.
- **Emergence of healthcare industry as a major driver of recent job postings activity confirms the potential of the new industry cluster as a workforce driver.**
- Industries that were hardest hit by pandemic conditions are still exhibiting high demand, highlighting potential risks to recovery driven by workforce constraints particularly in the service industry.

Categorizing Dublin's Occupation Skills Demand Categories

- Three broad categories of occupations by typical entry-level educational, experience requirements:
  - **High-Skilled Occupations:** Generally requiring Bachelor's & Higher degrees
  - **Middle-Skilled Occupations:** Requiring significant education, experience, and/or training beyond high school but less than a Bachelor's*, includes:
    - High School Diploma + Moderate to Long-Term On-the-job Training
    - High School Diploma + Apprenticeship
    - Postsecondary non-degree award
    - Some College, no degree
    - Associate's Degree
  - **Low-Skilled Occupations:** Generally requiring less than a high school diploma or a diploma and only short-term training, includes:
    - Less than a High School Diploma
    - High School Diploma + Short-term On-the-job Training

Dublin Continues to Be Driven by a Highly Skilled Workforce

- Dublin continues to employ a higher proportion of high skilled workers relative to both the Greater Columbus region and national trends, but this advantage has begun to diminish over time.
- Since the last update, the level of high skills talent has slightly lost share, but it is unclear if this represents a true decrease within the employment base or the impact of remote work on site location employment.



Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

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High Skilled, "High Demand" Occupations in Dublin

Represents those occupations where growth has outpaced Dublin's overall growth since 2017 (1.3%), and outpaced the nation

- High demand for software developers and other key IT roles indicates ongoing importance of tech talent.
- Management occupations, business support, healthcare services, and education workers remain in high demand.
- Nursing and medical services occupations continue to represent potential opportunity to build healthcare workforce to serve new local businesses.

High Skilled Occupations (at least 150 employees in 2021)	**Dublin 2021 Jobs**	**Dublin % Change 2017-2021**	**Columbus MSA % Change, 2017-2021**	**US % Change 2017-2021**
Software Developers	1,649	29%	29%	26%
General and Operations Managers	1,331	60%	55%	35%
Registered Nurses	1,245	13%	6%	4%
Management Analysts	634	30%	28%	17%
Human Resources Specialists	630	50%	39%	31%
Business Operations Specialists, All Other	495	108%	49%	69%
Postsecondary Teachers	408	30%	-1%	-3%
Network and Computer Systems Administrators	284	10%	11%	-15%
Sales Managers	261	33%	28%	24%
Medical and Health Services Managers	193	29%	17%	25%
Secondary School Teachers, Except Special and Career/Technical Education	183	65%	26%	2%
Graphic Designers	182	9%	13%	-5%
Software Quality Assurance Analysts and Testers	180	27%	28%	26%
Administrative Services Managers	154	27%	25%	21%
Coaches and Scouts	151	6%	-11%	-13%

Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

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Middle Skilled, "High Demand" Occupations in Dublin

Represents those occupations where growth has outpaced Dublin's overall growth since 2017 (1.3%), and outpaced the nation

- Sales representatives, technicians, administrative support, healthcare, and computer support occupations are driving demand for middle skilled workers.
- Heavy presence of healthcare-related clinical and business support roles speaks to recent growth of this workforce in the city.

Middle Skilled Occupations (at least 150 employees in 2021)	**Dublin 2021 Jobs**	**Dublin % Change 2017-2021**	**Columbus MSA % Change, 2017-2021**	**US % Change 2017-2021**
Bookkeeping, Accounting, and Auditing Clerks	908	24%	19%	-1%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	813	17%	27%	-10%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	744	5%	-2%	4%
Computer User Support Specialists	633	27%	28%	7%
Nursing Assistants	540	9%	1%	-10%
Maintenance and Repair Workers, General	530	22%	15%	6%
Miscellaneous Assemblers and Fabricators	493	18%	12%	3%
Heavy and Tractor-Trailer Truck Drivers	442	27%	35%	9%
Licensed Practical and Licensed Vocational Nurses	344	6%	-4%	-10%
Billing and Posting Clerks	327	12%	3%	-9%
Medical Assistants	314	39%	23%	12%
Automotive Service Technicians and Mechanics	232	17%	11%	-1%
Preschool Teachers, Except Special Education	213	9%	-4%	-2%
Computer Network Support Specialists	208	16%	12%	-5%
Pharmacy Technicians	190	14%	11%	6%
Teaching Assistants, Except Postsecondary	188	16%	21%	-6%
Inspectors, Testers, Sorters, Samplers, and Weighers	186	6%	15%	3%
Web and Digital Interface Designers	157	70%	68%	34%

Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

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Low Skilled, "High Demand" Occupations in Dublin

Represents those occupations where growth has outpaced Dublin's overall growth since 2017 (1.3%), and outpaced the nation

- Rebound in demand for customer service occupations throughout recent recovery from pandemic is driving growth in low skilled occupations.
- Large increase in home health and personal care aides reflects potential expansion of residential healthcare services and medical facilities.

Low Skilled Occupations (at least 150 employees in 2021)	Dublin 2021 Jobs	Dublin % Change 2017-2021	Columbus MSA % Change, 2017-2021	US % Change 2017-2021
Customer Service Representatives	2,409	11%	10%	1%
Home Health and Personal Care Aides	1,565	27%	11%	16%
Cashiers	1,304	11%	8%	-6%
First-Line Supervisors of Office and Administrative Support Workers	696	10%	10%	0%
Receptionists and Information Clerks	597	27%	16%	-2%
Landscaping and Groundskeeping Workers	573	6%	-3%	-1%
Security Guards	550	20%	9%	-4%
Cooks, Restaurant	518	20%	12%	-2%
First-Line Supervisors of Food Preparation and Serving Workers	493	23%	16%	15%
Cooks, Fast Food	419	155%	137%	54%
Driver/Sales Workers	352	69%	78%	13%
Bartenders	215	16%	12%	-15%
Telemarketers	210	38%	22%	-28%
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	193	62%	63%	39%
First-Line Supervisors of Mechanics, Installers, and Repairers	190	20%	14%	14%
Property, Real Estate, and Community Association Managers	174	89%	64%	27%
Cooks, Institution and Cafeteria	168	40%	28%	-1%
Amusement and Recreation Attendants	157	43%	28%	-12%
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	150	2%	-6%	-17%

Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

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Further Insights into the Recovery from Pandemic Within Dublin Occupational Employment from 2020-2021

- Recent trends in occupational employment highlight mixed recovery from pandemic workforce declines:
  - Modest growth in low-skilled customer service occupations have not offset large declines experienced in these segments from 2019-2020
  - Further decline in transportation and logistics occupations compound pandemic job losses
  - Larger increases in management and financial services jobs, but smaller changes throughout other occupational segments
- Growth in middle skills jobs across several occupational segments is potential sign of nascent diversification of workforce

Change in Employment in Dublin's Largest Occupational Segments by Skills Level, 2020-2021
(% change within segment and skills level)

Occupational Segment	Dublin Employment, 2021	Change in High Skills Employment, 2020-2021	Change in Middle Skills Employment, 2020-2021	Change in Low Skills Employment, 2020-2021
Sales, Office, & Administrative	15,904	-84	156	-24
Healthcare	6,699	90	123	102
Business & Financial	6,006	**312**	-54	
Food Services	4,684		2	7
Transportation & Materials Moving	4,514	-1	94	-95
Computing & IT	4,395	74	135	
Management	4,086	**478**	13	59
Building & Grounds Services	2,068		7	60
Production	2,000		58	-4
Installation, Maintenance & Repair	1,969		-21	9
Education & Knowledge Workers	1,562	64	20	4
Community, Social Services & Legal	1,347	8	-1	-8
Arts, Entertainment & Media	1,298	-38	21	-16
Engineering & Architecture	1,146	-70	-4	
Service Occupations	1,117		0	94
Construction & Extraction	1,089		31	-3
Protective Services	750		23	38
Math & Statistics	218	-1		
Scientists	212	-12		
Social Science	108	3	0	
Scientific Technicians	104	-18	11	

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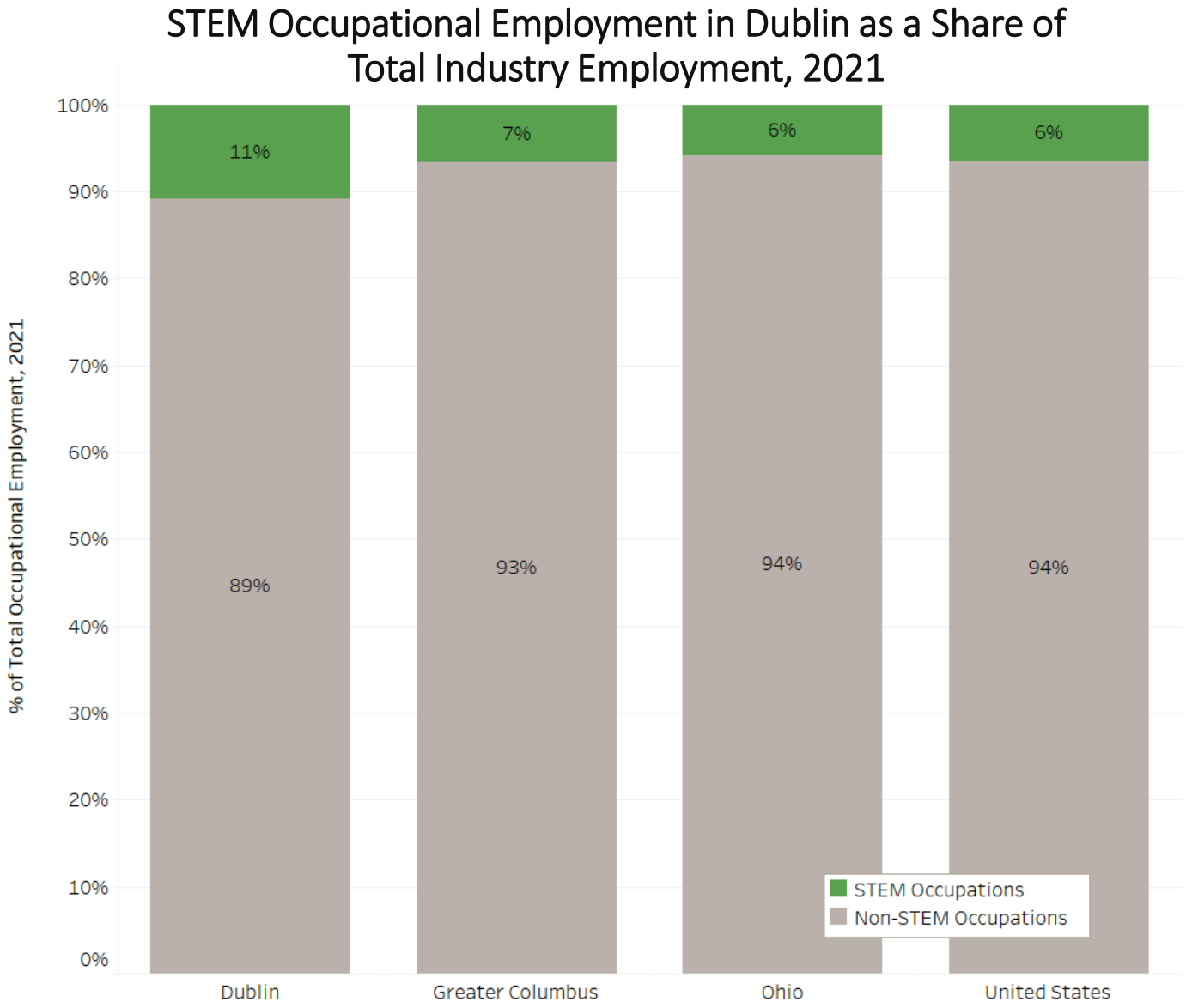
Note: all cells where 2020-2021 change was greater than 50 employees highlighted; changes of over 200 jobs bolded.
Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

Dublin Continues to Employ Higher Levels of STEM Talent Within its Economy Relative to the Surrounding Region as well as the Nation

- However, this represents a slight decline (1%) from Dublin's historical shares of STEM talent (other regions have also remained relatively unchanged in their overall STEM shares over time).



Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

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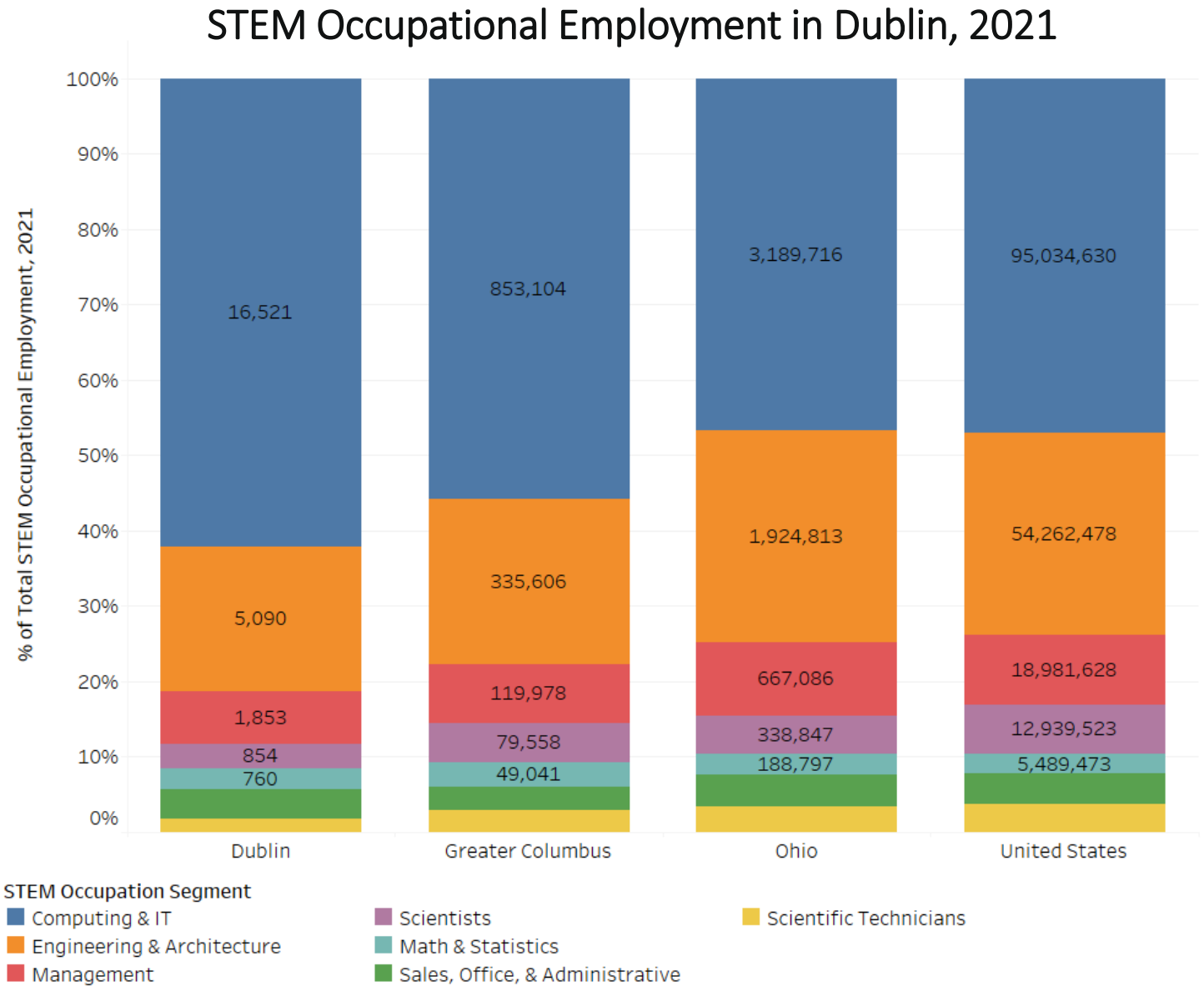
STEM Employment in Dublin Remains Overwhelmingly Focused in the Computing & IT Segment, Even Relative to the Broader Columbus MSA

- As evidenced by overall demand for tech talent, this segment still remains a critical occupational category to retain and grow to enable cross-cutting strength across industry clusters.



Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

Note: STEM jobs defined by US BLS as science, technology, engineering, and math (STEM) occupations which include computer and mathematical, architecture and engineering, and life and physical science occupations, as well as managerial and postsecondary teaching occupations related to these functional areas and sales occupations requiring scientific or technical knowledge at the postsecondary level.

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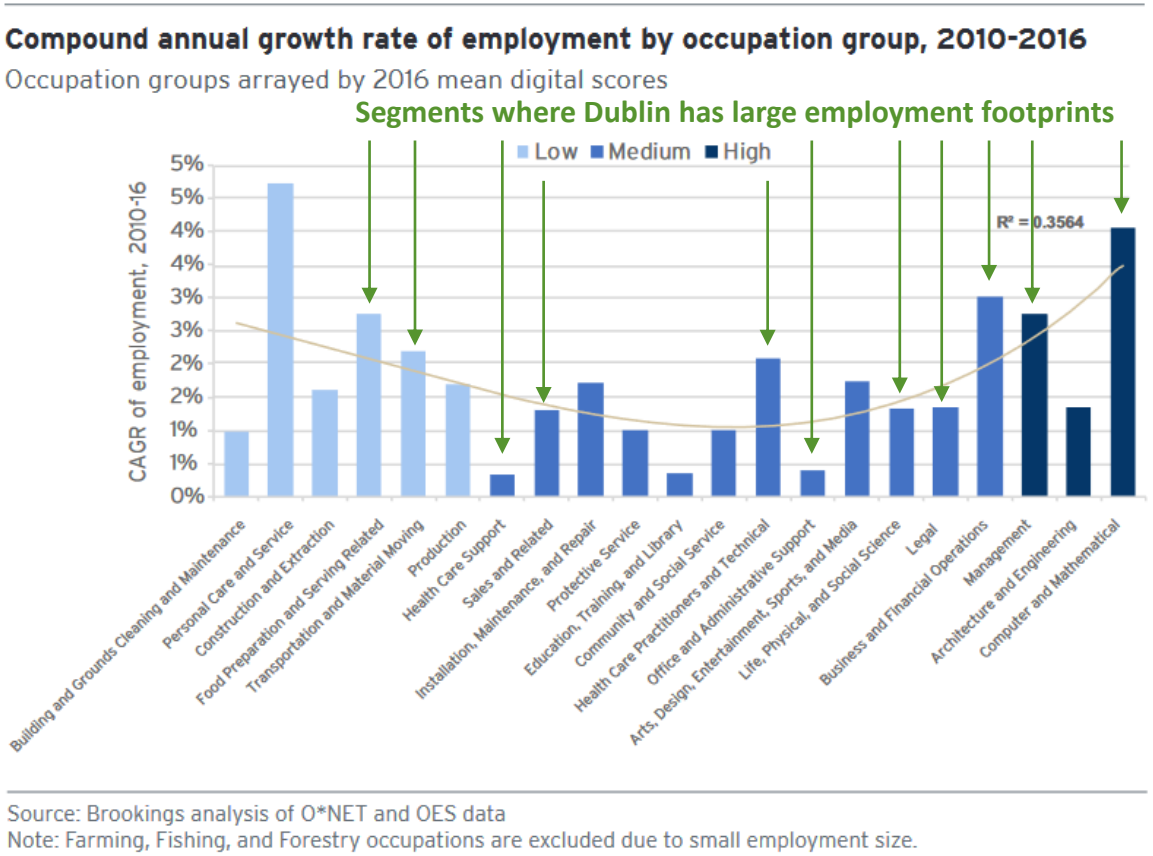
Highlighting the Importance of IT Talent within STEM Occupations as a Cross-Cutting Enabler of Competitive Digital Skills Jobs

- Dublin's large share of computing and IT jobs within its STEM workforce remains a key competitive advantage amidst a landscape of increasing digitization across all industry sectors.
- Brookings' landmark 2017 study on the increasing digital skills being integrated across the U.S. workforce notes that relative to earlier decades *"by 2016, the share of jobs requiring high digital skills had jumped to 23 percent. The share requiring medium digital skills rose to 48 percent. And in a huge shift, the share of jobs requiring low digital skills fell from 56 to 30 percent."*
- Even outside of IT and Computing occupations which already span multiple industry clusters, **many of Dublin's leading middle and high skills workforce segments fall within occupation groups that require higher levels of digital skills.**

FIGURE 9



Source: Brookings analysis of O*NET and OES data
Note: Farming, Fishing, and Forestry occupations are excluded due to small employment size.

Source: Brookings Institute, Digitalization and the American workforce, 2017

Tech Talent Bases Like Dublin's Continue to be Critical for Driving Industry Across the Greater Columbus Region

- The Greater Columbus region ranked 31st out of 50 in CBRE's 2022 Tech Talent Scorecard, which evaluated the largest markets in the U.S. and Canada by number of tech talent professionals across 13 metrics.
  - Highlights Columbus' relative importance in this space even when measured against major coastal hubs, and the role this labor force will continue to play in Dublin's growth moving forward.
- The CBRE report emphasizes the role of talent and proximity to leading companies in further attracting industry:

  "Tech clusters with high concentrations of tech talent distinguish the top markets. These clusters typically form around preeminent universities that tend to invest the most in innovation and provide a steady flow of new talent for local companies. ***Tech clusters also form around leading companies that draw other companies to a region and support an innovative ecosystem that spawns new entrepreneurs and companies****. Tech companies use these clusters for synergy and competition, thereby accelerating the innovation process."*
- From both a digital skills and industry attraction standpoint, this talent base continues to play a critical role both within and across industries (see figure), reaffirming its importance to Dublin's economic strategy and growth prospects.

Figure 14: U.S. Tech Talent Workforce Concentration by Industry (2021)

*Includes computer software and services and computer product manufacturing; **Excluding High-Tech.
Source: U.S. Bureau of Labor Statistics, April 2022.

Source: CBRE, Scoring Tech Talent 2022

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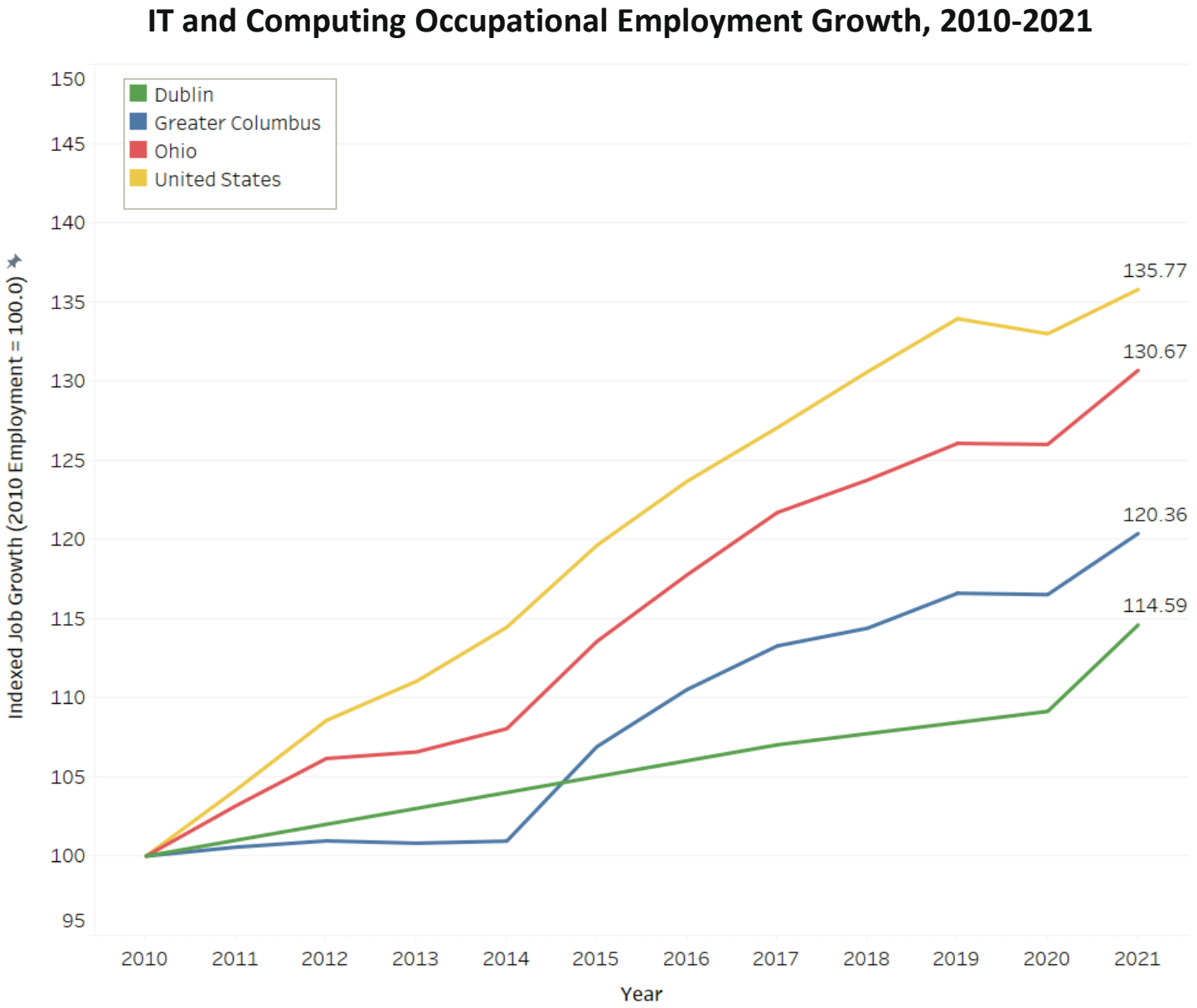
Longer Term Trends in IT and Computing Occupational Employment Growth Show That Dublin is Not Keeping Pace in Growing This Critical Workforce

- While the city is starting from a stronger historical base of occupational employment in computing and IT, it has not maintained the growth of these occupations over time relative to the Greater Columbus Region, the state, or the nation.
  - In addition to aforementioned trends in digitization, ongoing trends in the shift towards hybrid and remote work will continue to have outsized implications for these occupations across Dublin's industry base.



Source: TEConomy's analysis of U.S. Bureau of Labor Statistics (BLS), Occupational Employment Statistics (OES); TEConomy analysis of Census County Business Patterns data

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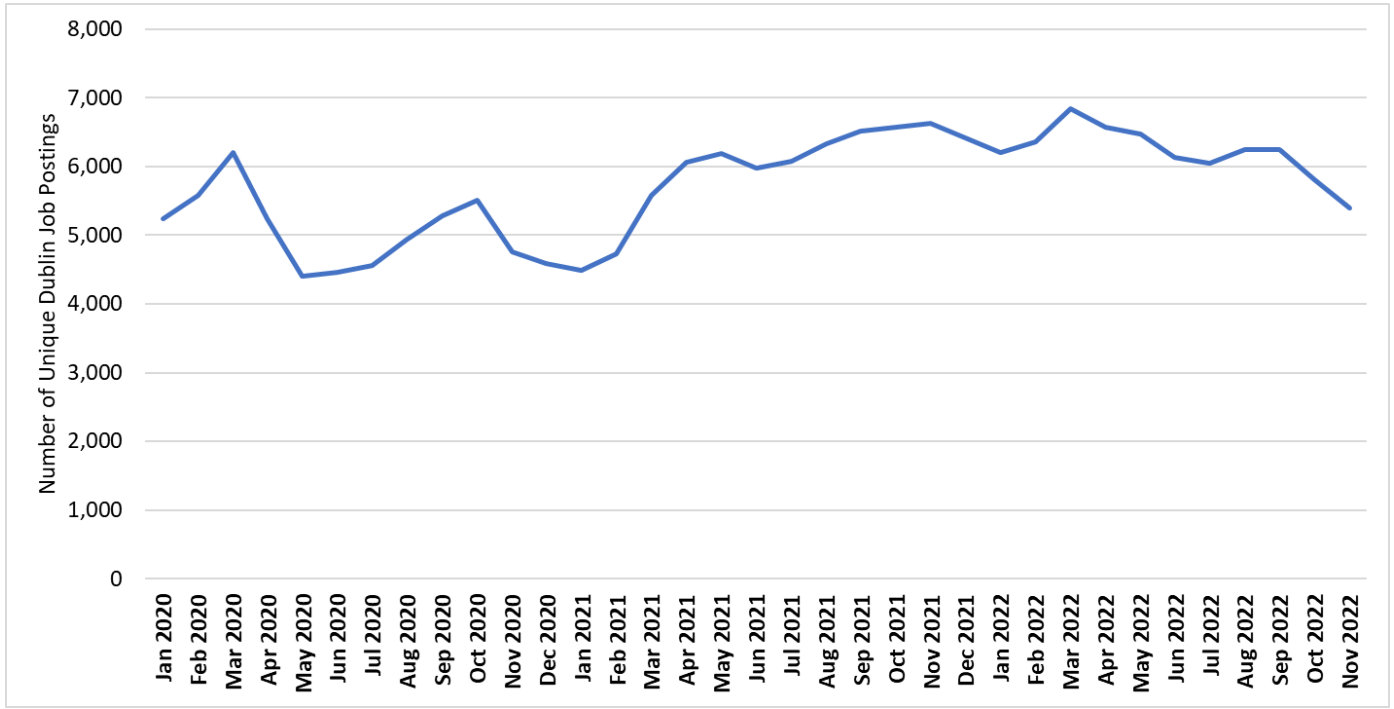
Using Job Postings to Further Inform Occupational Employment Demand from Dublin Companies

- In addition to trends in the occupational mix of Dublin's industry, another perspective of workforce dynamics leverages job postings data from Lightcast to analyze trends related to key hiring activity by local companies and the associated skill sets that are in demand from employers.
  - Job postings data analyzed covers 2020 through the start of Q4 in 2022 and collates unique job postings from cross-posted positions across several major websites and recruitment databases
  - Leverage more recent postings activity in order to track "real-time" demand
  - Only considered postings from companies as opposed to staffing agencies advertising on behalf of others

- Postings activity shows a recovery from lower postings volumes in mid-2020 corresponding to recovery from pandemic.
- Recent downturn in activity since Q3 2022 is a trend to monitor, but too soon to assess implications yet.



Source: Lightcast Job Posting Analytics 2022.4

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Occupations Represented in Dublin Job Postings Activity Show Emphasis on Sales, Office, & Administrative Positions, with Further Demand Driven by Computing & IT, Healthcare, & Business

- Large rise in demand for healthcare workers which aligns with expansion of new healthcare facilities in Dublin.
- Ongoing demand for retail and administrative staff in the wake of pandemic declines in these positions.
- Increase in share of positions advertising remote work from pre-pandemic timeframe (2017-2019) where 3% of total postings offered remote option seems to be holding – overall remote positions ~5% from 2020 through Q4 2022.
  - However, postings data may still not fully capture prevalence of hybrid and other remote work models accurately so this remains a trend to watch going forward.
  - Broader market indications that remote work may create "resident" workforces which are not captured in demand indicators, which track the place of business employment (i.e., office location) rather than place of residence – remote workers may tend to be undercounted.

Occupational Segment	Unique Postings, 2020-2022 Q4	Ranking by Postings Volume, 2020-2022 Q4	Ranking by Postings Volume, 2017-2020	% of Positions Explicitly Advertised as Remote	Average Number of Employers Competing	Leading Occupations Within Segment (Median Advertised Salary)
Sales, Office, & Administrative	16,343	1	1	2%	51	Retail Sales ($27k), Customer Service Reps ($32k), Sales Reps, Wholesale ($47k)
Computing & IT	9,408	2	2	5%	165	Software Developers ($113k)
Healthcare	7,391	3	6	1%	17	Registered Nurses ($69k), Clinical Lab Techs ($36k)
Management	7,080	4	3	3%	58	Marketing Managers ($70k), Medical/Health Services Managers ($50k)
Business & Financial	6,692	5	5	4%	59	Management Analysts ($83k)
Food Services	4,204	6	7	0%	52	Fast Food & Counter Workers ($27k)
Transportation & Materials Moving	2,662	7	4	0%	19	Truck Drivers ($73k), Stockers & Order Fillers ($31k)
Building & Grounds Services	2,330	8	12	0%	39	Janitors and Cleaners ($28k)
Installation, Maintenance & Repair	1,935	9	8	0%	15	General Maintenance & Repair Workers ($40k)
Arts, Entertainment & Media	1,305	10	11	6%	12	Merchandise Displayers ($28k)
Education & Knowledge Workers	1,285	11	10	0%	10	Preschool Teachers ($29k)
Production	1,267	12	14	1%	5	Production Workers, All Other ($31k)
Engineering & Architecture	1,251	13	9	2%	16	Industrial Engineering Techs ($44l), Mechanical Engineers ($84k)
Service Occupations	1,087	14	13	0%	10	Childcare Workers ($30k)
Math & Statistics	970	15	19	4%	40	Data Scientists ($73k)
Community, Social Services & Legal	797	16	15	3%	12	Lawyers ($67k)
Construction & Extraction	597	17	17	0%	5	Construction Laborers ($39k)
Protective Services	561	18	16	0%	7	Security Guards ($31k)
Scientists & Scientific Technicians	269	19	18	3%	5	Life & Physical Science Techs ($42k)

Source: Lightcast Job Posting Analytics 2022.4

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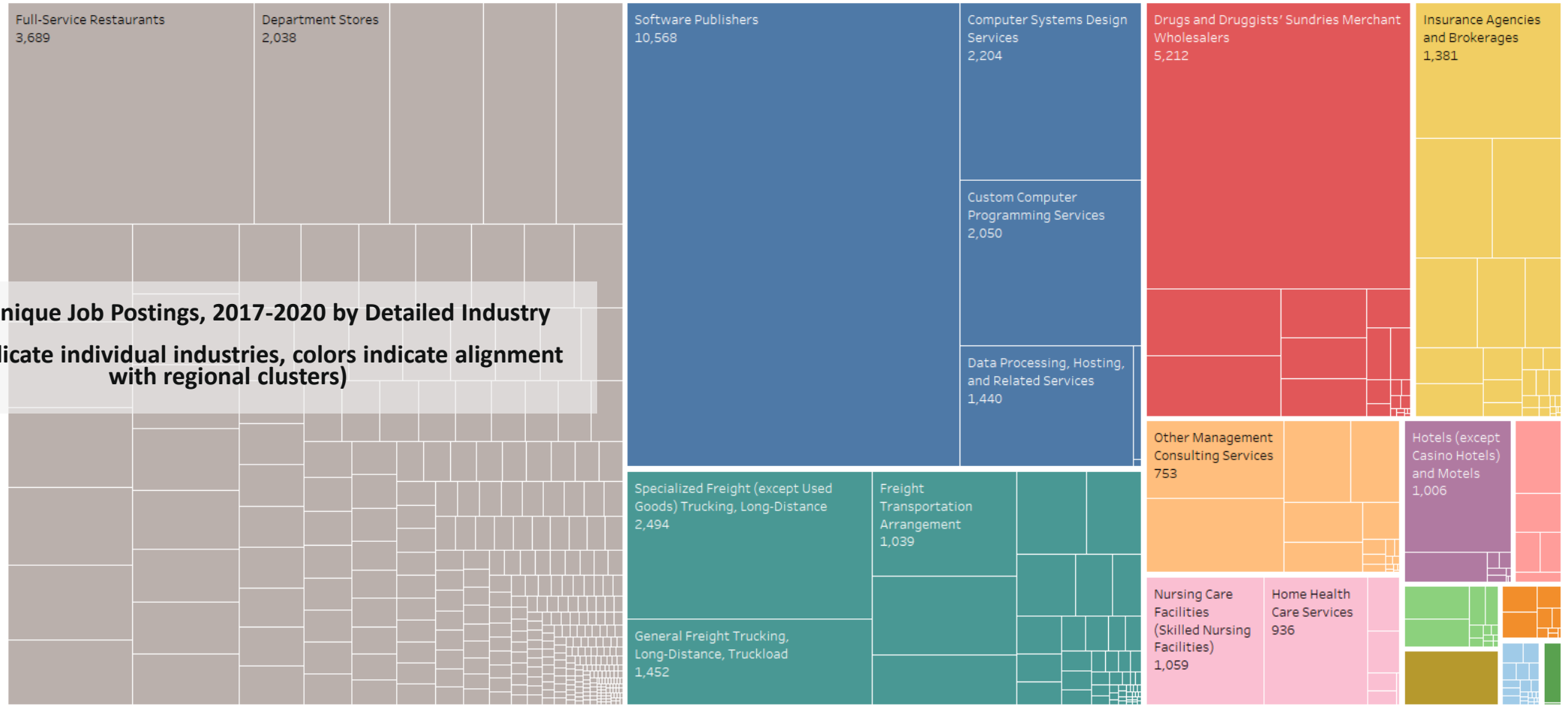
In Prior Analysis, Most Industries Generating Job Postings Activity were Aligned with Regional Clusters with Service Industries Also Exhibiting Demand

Dublin Unique Job Postings, 2017-2020 by Detailed Industry

(boxes indicate individual industries, colors indicate alignment with regional clusters)



Regional Industry Cluster

- IT & Computer Services
- Freight TDL
- Medical Biosciences & Healthcare
- Finance & Insurance
- Business Support Services
- Residential Healthcare Services
- Tourism, Entertainment, and Arts
- R&D & Engineering Services
- Creative & Design Industries
- Electronic/Internet Commerce
- Automotive Manufacturing
- Ag Products & Food Production
- Corporate Headquarters/Managing Offices
- All Other Industries

Source: TEConomy analysis of Lightcast Job Posting Analytics 2021.3

IT & Computer Services industries generating the highest level of activity in traded sectors, followed by Transportation, Distribution, & Logistics

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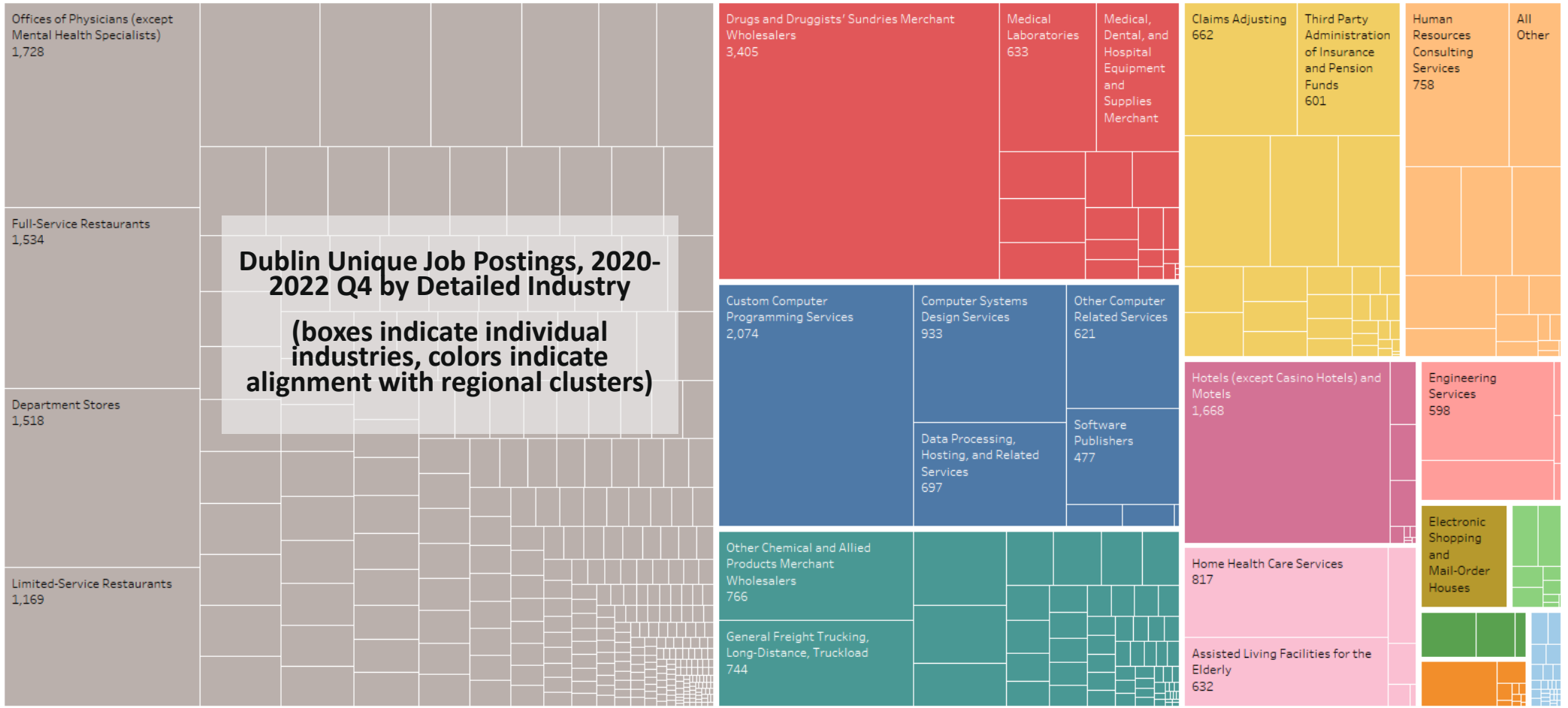
In Updated Analysis, Regional Clusters Still Generating Majority of Demand But Healthcare Postings Rising as Driver of Activity Alongside Other Traded Sectors



Source: TEConomy analysis of Lightcast Job Posting Analytics 2022.4

Service industries also still exhibiting high demand, highlighting ongoing workforce needs to support quality of life industry sectors

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Largest Traded Sector Companies Driving Demand Focused on Headquarters Operations, Sales & Distribution, Healthcare, and Business/Contract Services

- Companies in traded sectors with high volumes of postings largely centered around key headquarters operations in Dublin (Cardinal, OCLC) or around healthcare and other business services.
  - Continues to highlight reliance on key employers for generating large volume job demand as well as business services workforces that are vulnerable to disruption (e.g., digital/remote work and declining need for office space).
- Significant additional job postings activity generated from non-traded industries such as fast food, retail, and grocery chains in the region as well as activity in healthcare/residential healthcare services.

Largest Traded Sector Companies in Job Postings Activity for Dublin, 2020-2022 Q4 (companies with at least 200 job postings over period)

Company	Company Focus	Unique Postings, 2020-2022 Q4	Median Advertised Salary
Cardinal Health	Healthcare supplies/logistics	3,339	$95,104
Fiserv	Financial services	658	$174,848
Univar Solutions	Chemical & ingredient distribution	627	$43,680
Quantum Health	Healthcare coordination	584	$49,920
Labcorp Drug Development (formerly Covance)	Biotech contract research	574	$32,128
XPO Logistics	Transportation/logistics services	502	$44,800
Sedgwick	Claims/insurance services	409	$35,456
Velosio (Microsoft partner)	Software support/integration	388	$100,690
IGS Energy	Natural gas & electric supplier	362	
UnitedHealth Group	Healthcare insurance	357	$57,344
Revel IT	IT staffing & recruiting (Dublin HQ)	339*	$117,632
Online Computer Library Center	Information services	314	$129,536
York Risk Services Group, Inc. (acquired by Sedgwick)	Claims/insurance services	251	$24,000
SS&C Technologies	Financial services	245	$69,888
Bound Tree Medical/Sarnova	Emergency medical supplies/equipment	234	$37,504
Johnson Controls	Infrastructure controls & automation	207	Insufficient data
Sysco	Restaurant/food wholesaler	201	$82,176

*Postings volume not necessarily indicative of local company demand generation given role as IT staffing company

Source: Lightcast Job Posting Analytics 2022.4

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However, Review of Major Dublin Employers Reveals Many Others are Generating Job Demand Across Both Traded & Non-Traded Sectors

- Postings activity distributed across a number of sectors, with evidence of concentrations in:
  - Healthcare products & services
  - Contract research and engineering services, with some emphasis in materials science
  - IT services & solutions
  - Business support & financial services, with some emphasis in process management solutions
  - Logistics & distribution
- As noted in prior analyses, higher job postings activity than reported FTE levels for several large companies can be an indication of significant turnover or shift to remote/non-local workforces.

*Based on listing from city of Dublin Economic Development Website
**Postings volume not necessarily indicative of local company demand generation given role as IT staffing company
Source: Lightcast Job Posting Analytics 2022.4

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Selected City of Dublin Top Employers* Companies in Job Postings Activity for Dublin, 2017-2020

Company	Reported Company FTEs*	Unique Postings, 2020-2022 Q4
Cardinal Health, Inc.	4,800	3,339
OhioHealth	2,000	1,289
Dublin City Schools	1,951	92
Sedgwick	1,622	409 + 251 York Risk Services
OCLC	750	314
The Wendy's Company	725	387
Quantum Health	600	584
Fiserv	600	658
Univar Solutions	550	627
Express Scripts	500	4
UnitedHealth	450	357
IGS Energy	450	243
LabCorp	430	574
XPO Logistics	400	502
Epiq	295	17
Smiths Medical	280	88
Covetrus	259	141
Community Choice Financial	250	80
Ashland	250	No postings reported
Sarnova	250	223
WD Partners	226	105
HP Enterprise Group/DXC Technology	225	50
Johnson Controls	209	207
Genpact	200	43
ViaQuest	200	274
Nestle QA Center	190	No postings reported
Veeva Systems	180	No postings reported
Quest Software	180	151
Kinetics Noise Control	165	23
SS&C Technologies	160	245
Northwoods	150	41
Stanley Steemer	150	122
DNV-GL	140	131
Updox	130	118
INEOS	120	52
T-CETRA	120	178
Air Force One	102	No postings reported
Revel IT	100	339**

Leading Job Titles Listed in Dublin Postings Activity Show Recent Demand on Healthcare & Service Industries

- Several common needs in demand from local companies include:
  - Customer service staff across a number of different roles in retail and hospitality industries.
    - Evidence of significant demand for management staff in these industries as well as frontline workers.
  - Software engineers and developers, which remain the highest volume need in highly skilled positions.
  - Financial & business analysts and project management personnel.
  - Sales, administrative, and other business support staff.
  - Healthcare staff, including clinical, technician, and care management roles.

Job Titles in Postings*	Unique Postings, 2020-2022 Q4	Number of Employers Competing
Customer Service Representatives	541	150
Software Engineers	365	84
Housekeepers	347	49
Maintenance Technicians	321	81
Sales Associates	301	107
Business Analysts	235	89
Administrative Assistants	232	110
Retail Sales Associates	230	59
Registered Nurses	215	57
Project Managers	202	75
Financial Analysts	197	74
Servers	194	49
Receptionists	181	67
Bartenders	180	49
Nursing Assistants	177	33
Dishwashers	174	38
Hosts/Hostesses	172	40
Pharmacy Technicians	171	24
Medical Assistants	168	57
Cashiers	164	45
Assistant Managers	154	74
Licensed Practical Nurses	152	42
Accounts Payable Specialists	149	52
Shift Leaders	145	48
Accounts Receivable Specialists	145	41
Store Managers	142	57
Sales Representatives	141	44
Staff Accountants	140	44
CDL-A Truck Drivers	140	59
General Managers	138	55
Full Stack Java Developers	137	59
Delivery Drivers	135	42
Security Engineers	130	29

*Includes all listed job titles with 130 or more postings over time period; some job titles aggregated across duplicative titles
Source: Lightcast Job Posting Analytics 2022.4

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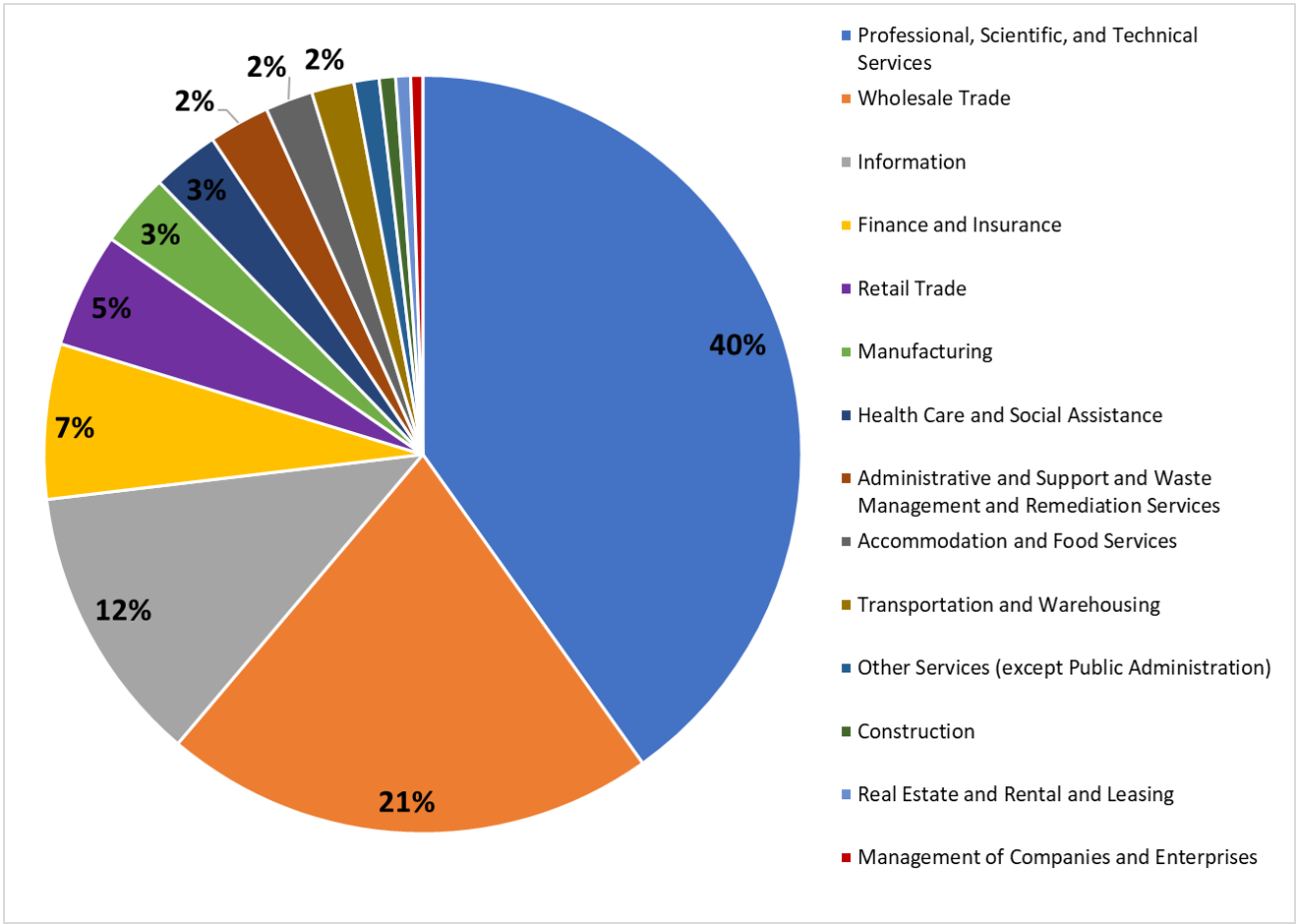
Evidence from Job Postings Further Reinforces the Need for Attracting & Retaining Tech Talent in Dublin to Meet Cross-Cutting Industry Demand

- Most of activity around tech talent observed in job postings in Dublin over the last two years is generated by professional and technical services industries outside of core information industries most closely associated with traditional IT sector, highlighting ongoing demand by multiple industries for this talent base.

Percentage of Average Monthly Job Postings Activity for Computing and IT Positions by Industry in Dublin, 2020-2022 Q4



Source: Lightcast Job Posting Analytics 2022.4

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Section 3: Recent Developments in Dublin's Industrial Innovation Activity

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Highlights of Dublin's Industrial Innovation Activity, 2021-2022

- Building on the previous analyses, industrial innovation activity data was updated through latest available 2022 data to include more recent information.
  - Overall innovation activity remains limited, but some evidence of increasing base of companies generating interest from VC investors.
- Dublin-based companies generated 131 new patents through 2022 since the economic development strategy report last analyzed industrial innovation activity.
  - Patents remain widely distributed across assignees – no primarily Dublin-based companies had more than 7 patents over the time period.
  - Locally-assigned patents across the past year were more focused on medical supplies technologies than in past assessments, with some additional presence of biopharmaceutical compounds.
- Total of $16.5M in venture funding invested in 9 Dublin area companies since 2020 (see details on subsequent slides).
- Total of 6 SBIR grants ($0.8M funding) awarded to 4 Dublin area companies since 2018 (see details on subsequent slides).

131 new Dublin-assigned patents

$16.5M invested in 9 Dublin companies

$0.8M SBIR funding to 4 Dublin companies

Dublin Companies Receiving Venture Capital Investment in 2021 through November 2022

Company	Company Focus	Deal Stage	Amount ($M)
Atreon Orthopedics	Developer of orthopedic products to aid in repair of injury	Early Stage VC	0.3
BridgeFi	Developer of a cloud-based lending platform for loan and financing options	Early Stage VC	Undisclosed
College Aid Pro	Developer of college funding tool designed to help advisors deliver college planning strategies	Angel (individual)	1.0
DasiSimulations	Developer of computational predictive modeling designed for improved patient outcomes and reduced costs	Seed Round	3.4
EzeRX	Developer and manufacturer of medical devices for management of curative and preventive healthcare	Seed Round	0.7
FloQast	Developer of cloud-based close management software to simplify business accounting	Later Stage VC	110
Glo	Developer of a mental training platform intended for youth athletes	Early Stage VC	Undisclosed
Healthy Roster	Developer of sports medicine injury documentation and communication platform	Later Stage VC	2.1
IncludeHealth	Developer of a digital musculoskeletal platform designed to provide smart fitness and rehabilitation services and products	Later Stage VC	13.7
Koloma	Developer of clean energy technology intended to decrease carbon emissions	Early Stage VC	66.3
Matrix F.T.	Developer of three-dimensional nanofiber scaffolds designed to help clients in the production of cultivated meat	Early Stage VC	Undisclosed
Monitored Therapeutics	Developer of remote patient management technology designed to provide treatment of respiratory diseases at home	Later Stage VC	4.3
ParaGen Technologies	Developer of a synthetic scaffold technology designed for tissue engineering	Early Stage VC	4.5
reAlpha	Operator of an online digital marketplace technology platform for short-term rental property investments	Seed Round	6.1
RenovoDerm	Developer of wound care products designed to enhance tissue regeneration	Later Stage VC	0.5
Saama Analytics	Developer of an enterprise platform intended to assist medical companies in risk decisions	Later Stage VC	215

Source: PitchBook Data, Inc.

Dublin Companies Receiving SBIR Awards in 2021 through November 2022

Company	Company Focus	Number of Awards	Amount ($)
Asymmetric Technologies LLC	Engineering services in defense and security tech	5	2,819,921
Guild Associates, Inc.	Basic biological and materials research, systems manufacturing	5	1,940,574
Novaa Ltd	Antenna and RF design (primarily military/defense-related)	5	499,000
LSP Technologies, Inc.	Laser peening equipment and services	3	849,993
SK Infrared LLC	R&D of infrared sensors for military and commercial applications	1	140,000

Source: SIBR.gov

Section 4: Update of Dublin's Socioeconomic and Demographic Profile

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“Quality of Place” Indicators

- In addition to metrics that measure the strength of the local economy and labor force, additional “quality of place” indicators can often provide insights into competitive advantages in quality of life and desirability of communities.
- These indicators largely fall into five broad categories:
  - Income distribution indicators, which indicate how much wealth resides in a community and how different socioeconomic segments are changing over time.
  - Housing indicators, which indicate the availability and desirability of places for a community’s population to live.
  - Education indicators, which, in conjunction with metrics related to education levels of talent and labor force, can show the availability of highly desirable education infrastructure and resident bases.
  - Public infrastructure indicators, which can demonstrate access to and investment in public resources and amenities which attract residents to a community and improve its desirability.
  - Other indicators of community vibrancy related to culture, arts, entertainment, and availability of services.
- The time periods and geographies over which these indicators are available vary widely and introduce some limitations on what can be measured at hyper local levels.
  - For Dublin, only indicators in the first four categories are readily available – the most detailed level at which many arts and culture indices are estimated at the broader MSA scale.

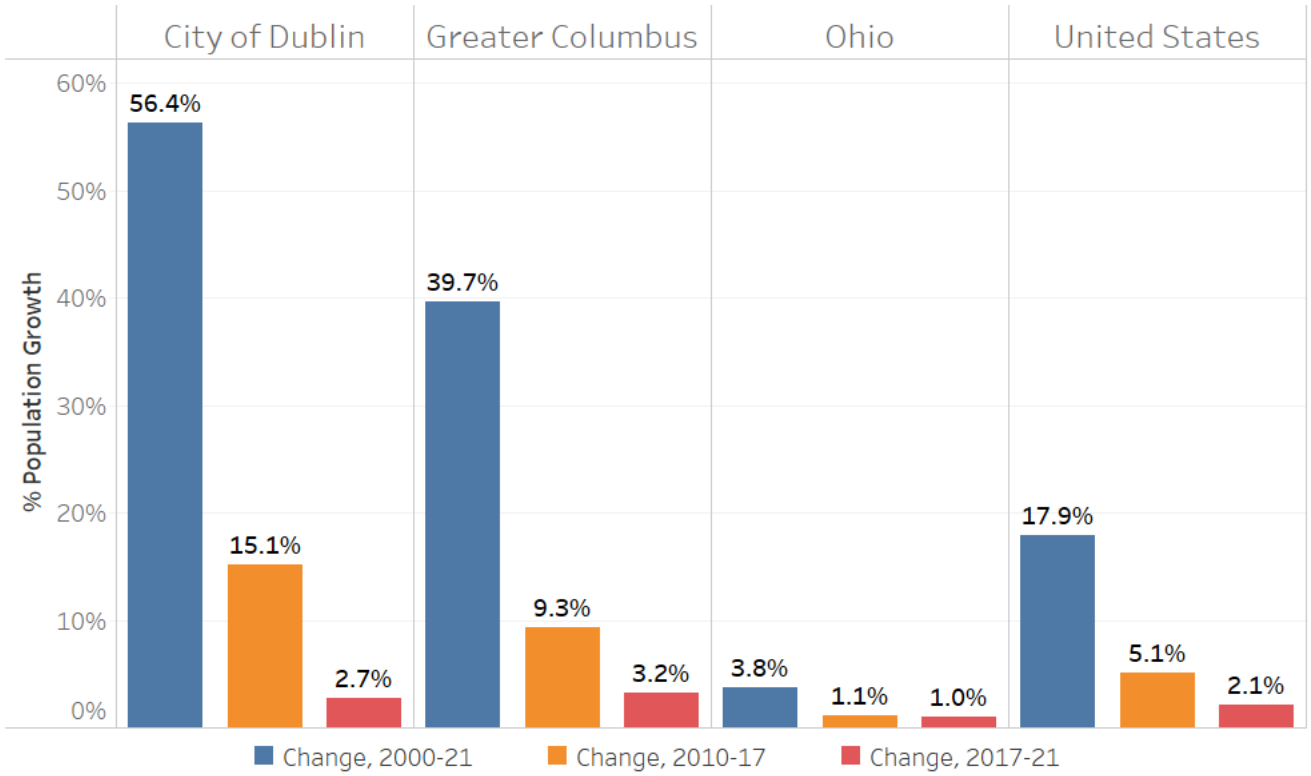
Key Findings from Dublin's Quality of Place Indicators Update

- **Dublin is showing some signs that it may be nearing an inflection point with respect to its population demographics, but continues to have a highly educated population and remains a key commuter workforce destination for the Greater Columbus region.**
  - Population growth has recently begun to fall behind the broader Columbus region, reflecting aging resident populations and changing socioeconomic conditions.
  - The city has partially offset declines in commuter workforce between 2019 and 2020 more recently, but has not completely recovered to previous volumes.
- **The city continues to reflect a high quality of place through its high-income levels, home values, and desirable school quality.**
  - As noted in previous assessments, some of the high wealth and lower affordability demonstrated in these indicators may have the unintended effect of "crowding out" future workforce attraction and retention in key technology-based occupations, particularly in light of changing workforce attitudes and employment models that were accelerated by pandemic conditions.
- Real estate indicators show the city's stock is retaining value, but **a recent assessment notes that future growth potential is limited because most of Dublin's developable land has already been built out.**

Dublin Demographics: Population Growth

- Dublin's population growth rate has fallen slightly behind the region in recent years, though still ahead of the nation.

Region	Avg. Annual Change, 2010-17	Avg. Annual Change, 2017-21
City of Dublin	**2.2%**	**0.7%**
Greater Columbus	1.3%	0.8%
Ohio	0.7%	0.5%
U.S.	0.2%	0.2%



Source: U.S. Census Bureau, Population Estimates.

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Dublin Demographics: Educational Attainment

- Dublin maintains its significantly higher share of highly educated residents, although recent declines suggest the gap will narrow somewhat.

Share of Population Ages 25 and Over by Educational Attainment, 2021

Region	Some College, No Degree	Associate's Degree	Bachelor's & Higher
City of Dublin	**11.8%**	**3.8%**	**73.2%**
Greater Columbus	19.4%	7.6%	38.4%
Ohio	20.0%	8.8%	29.7%
U.S.	20.0%	8.7%	33.7%

Change in Share of the Population with Bachelor's Degrees or Higher, 2010-21

Region	Avg. Annual Change, 2010-17	Avg. Annual Change, 2017-21
City of Dublin	**0.49 % pt.**	**-0.25 % pt.**
Greater Columbus	0.40 % pt.	0.78 % pt.
Ohio	0.44 % pt.	0.62 % pt.
U.S.	0.43 % pt.	0.70 % pt.

Source: U.S. Census Bureau, Decennial Census and American Community Survey.

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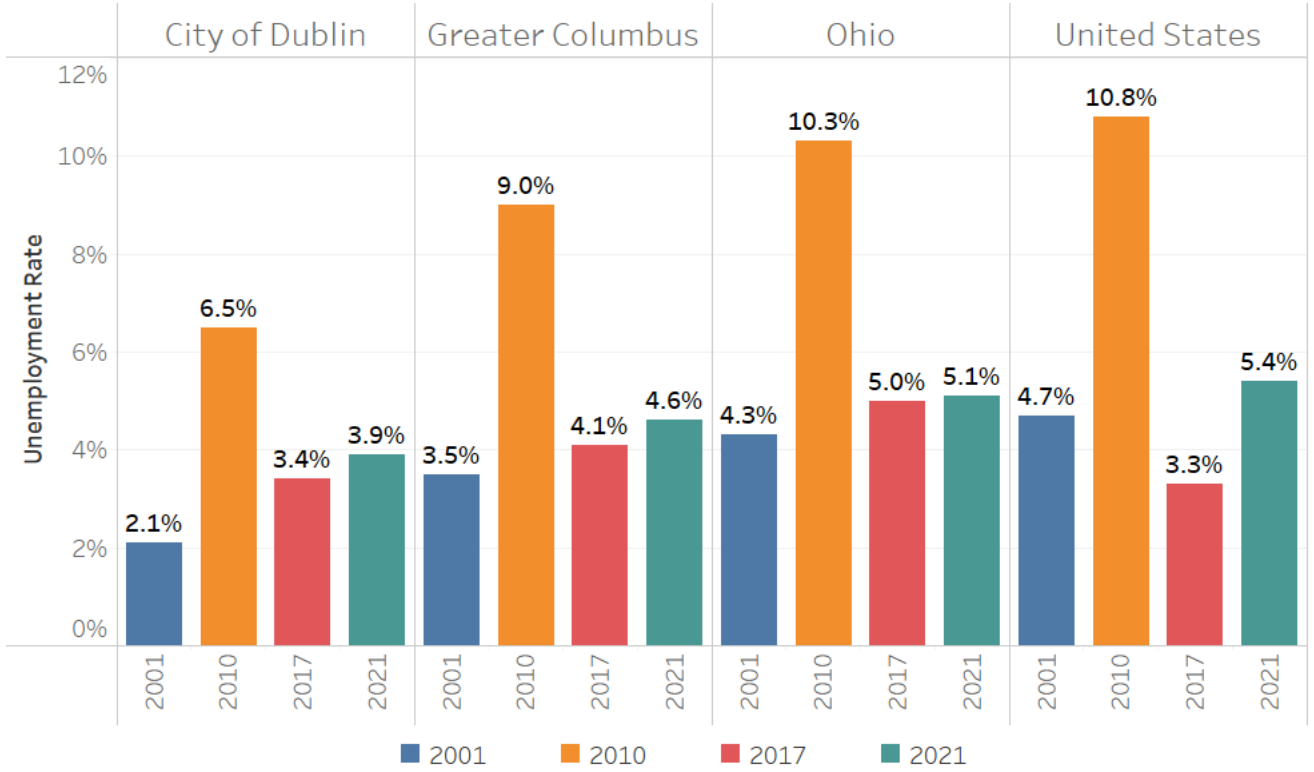
Dublin Economic Indicators: Unemployment Rates

- The city's unemployment rate remains comparatively low, with a growth rate far below that of the nation.

Region	Avg. Annual Change, 2010-17	Avg. Annual Change, 2017-21
City of Dublin	**-0.4 % pt.**	**0.1 % pt.**
Greater Columbus	-0.7 % pt.	0.1 % pt.
Ohio	-0.8 % pt.	0.0 % pt.
U.S.	-1.1 % pt.	0.5 % pt.



Source: BLS, Local Area Unemployment Statistics program data; Current Population Survey (National); data are not seasonally adjusted annual averages.

Dublin's Regional Commuting Patterns, 2021

- Despite the ongoing impact of remote work on workplace location, Dublin continues to serve as a commuting workforce destination for the Greater Columbus Region.
  - However, net commuting volumes remain at lower levels than in prior analyses, indicating that lasting impacts from shifts in workplace destination patterns that are likely to persist despite some recovery from declines in 2021.
  - Notably, zip code 43016 now displays a net negative commuting trend, indicating a potential sign of new trends that may affect the larger employment base in zip code 43017.

Zip Code	2020 Total Employees*	2020 Resident Workers	2020 Net Commuters	2021 Total Employees*	2021 Resident Workers	2021 Net Commuters	Difference in Total Employees, 2020-2021	Difference in Resident Workers, 2020-2021	Difference in Net Commuters, 2020-2021
43016	22,040	23,149	-1,109	22,738	23,703	-965	698	554	144
43017	41,979	26,026	15,953	43,330	26,713	16,617	1,351	687	664
Total	64,018	49,175	14,844	66,068	50,415	15,652	2,050	1,240	808

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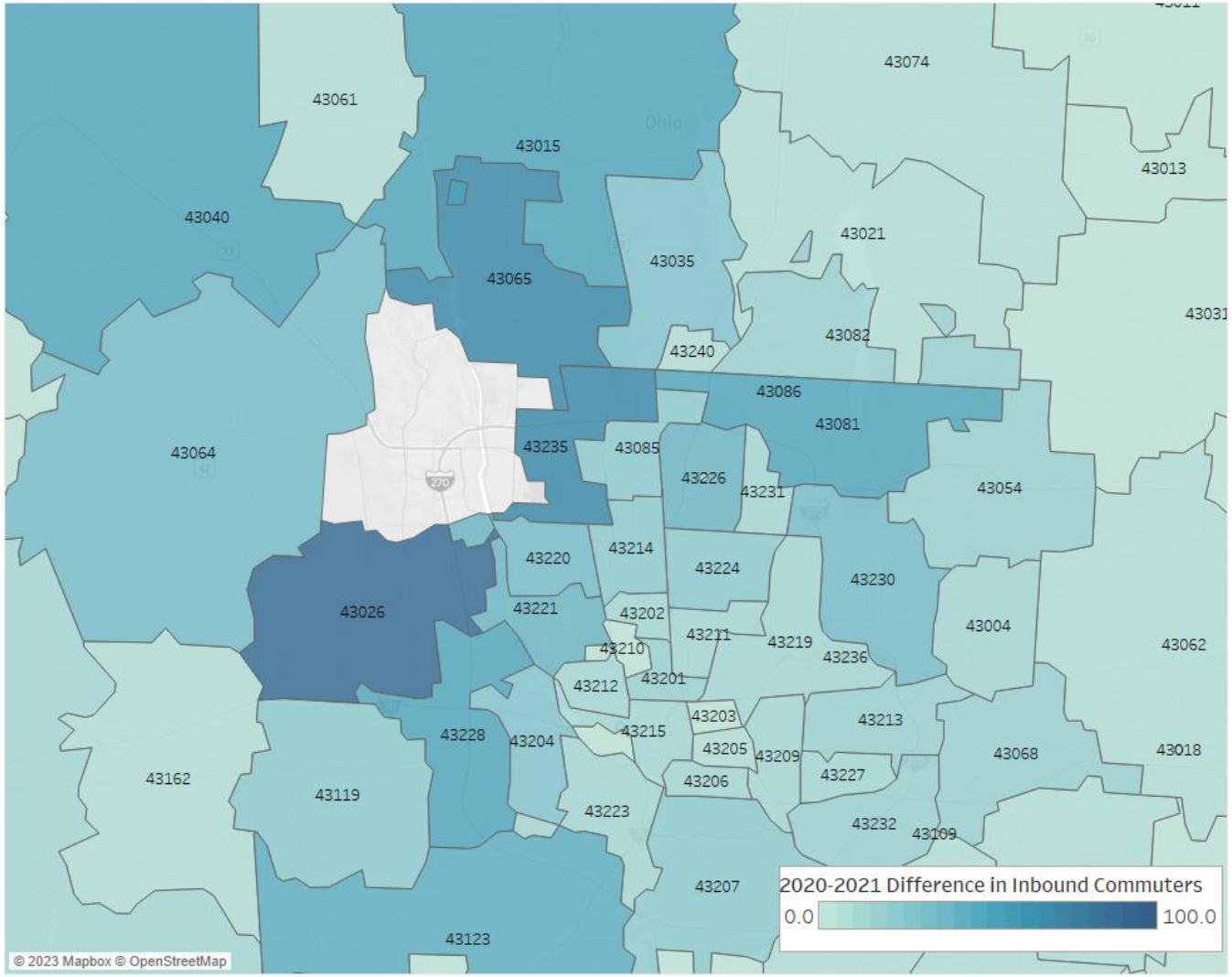
*Note: These zip-based total employment estimates include worker categories not estimated in the previous analyses shown in section 2.0 and should only be used in the context of assessing overall commuting patterns
Source: Lightcast data 2022.4 for zip codes 43016-17

Dublin's Regional Commuting Patterns, 2021 (cont.)

- Many of the declines in commuter volume observed over the 2019-2020 period have been partially reversed, particularly in neighboring zip codes that showed the largest impact on workers.
- Outbound commuting similarly increased in volume relative to the 2019-2020 period, but the impact was more concentrated on adjacent zip codes potentially reflecting changing worker preferences for highly proximate workplaces.

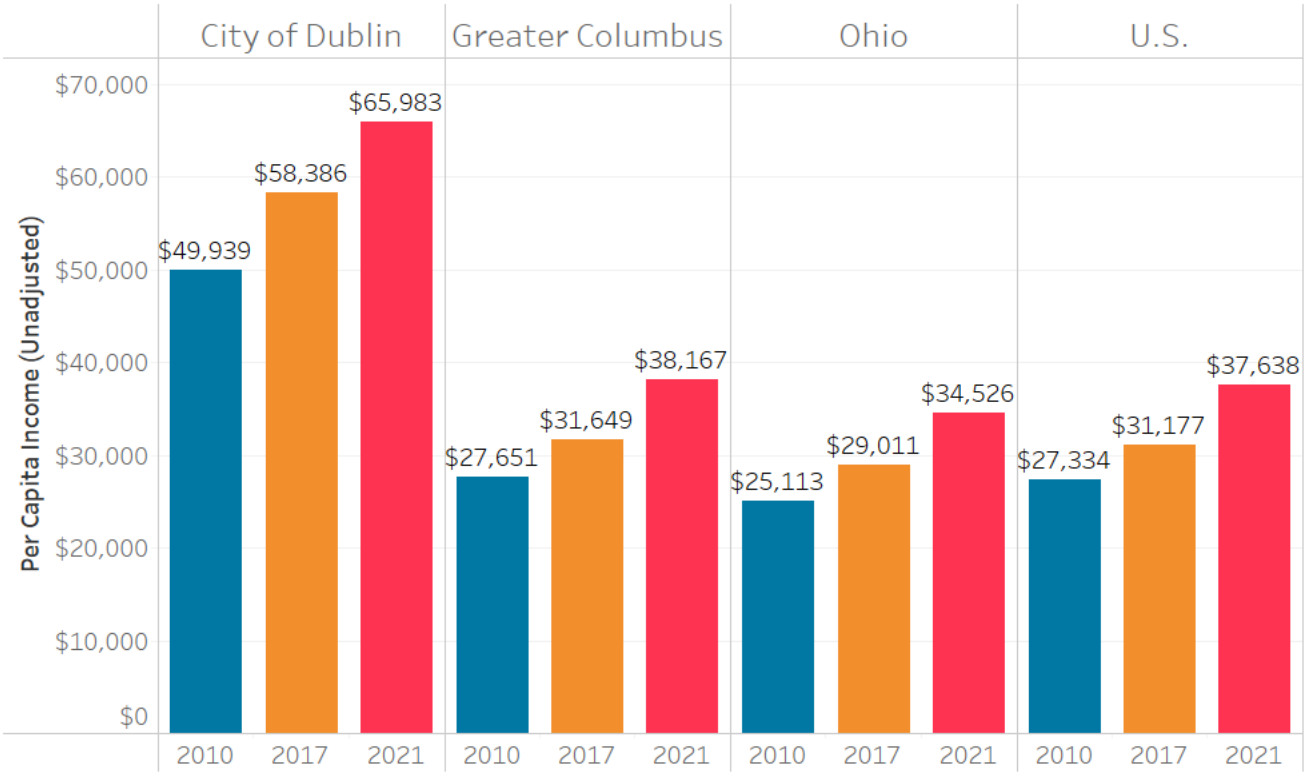


Source: Lightcast data 2022.4 for zip codes 43016-17

Dublin Demographics: Per Capita Income

- Per capita income in Dublin remains high compared to the Greater Columbus Region and the nation.

Region	Avg. Annual Change, 2010-17	Avg. Annual Change, 2017-21
City of Dublin	**2.4%**	**3.3%**
Greater Columbus	2.1%	5.1%
Ohio	2.2%	4.8%
U.S.	2.0%	5.2%

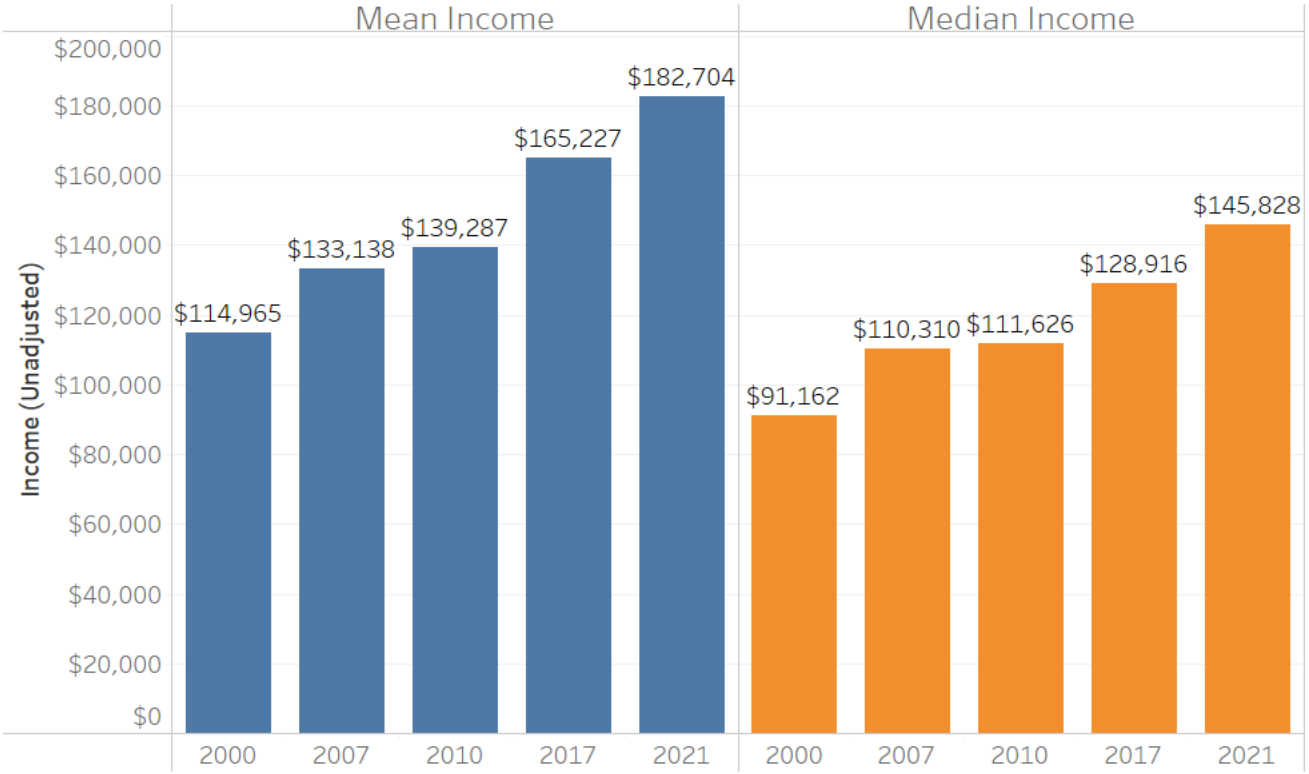


Source: U.S. Census Bureau, Decennial Census and American Community Survey.

Dublin Demographics: Mean and Median Household Incomes

- Long-term income growth had slowed somewhat due to the effects of the pandemic in 2020, but gains in 2020-21 brought annual growth back to a similar level as the previous period.
- Despite the pandemic, both mean and median income continued to increase through 2021.

Measure	Avg. Annual Change, 2010-17	Avg. Annual Change, 2017-21
Mean Income	2.8%	2.6%
Median Income	1.9%	3.3%



Source: American Community Survey, US Census Bureau

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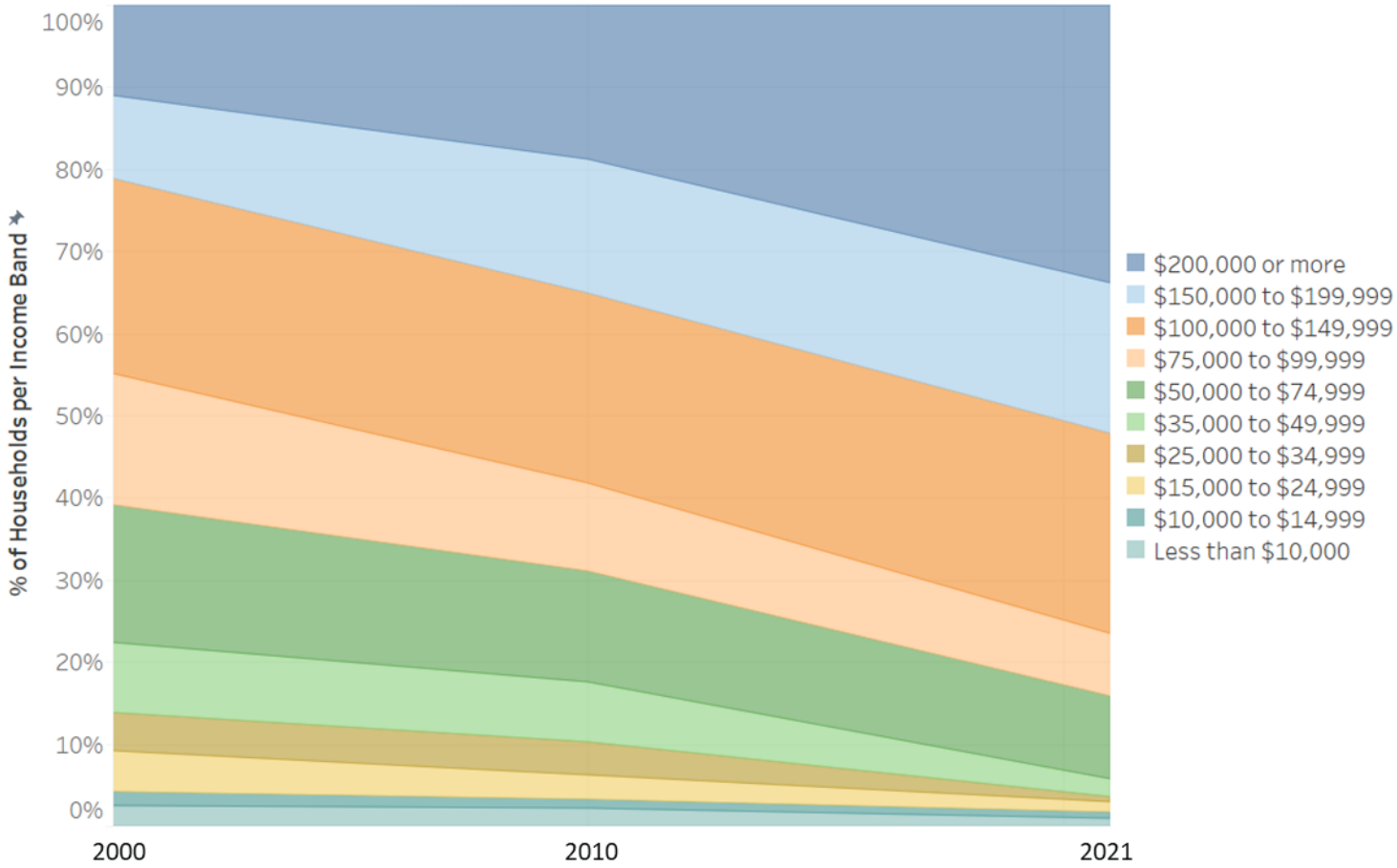
Dublin Demographics: Household Income Distribution

- Consistent with previous economic reports, the household income distribution in Dublin continues to shift towards higher income brackets.
  - This risks "crowding out" middle income brackets over time and impacting perception of affordability for new workforces that the city needs to capture a share of in order to grow technology-based jobs.



Source: American Community Survey, US Census Bureau

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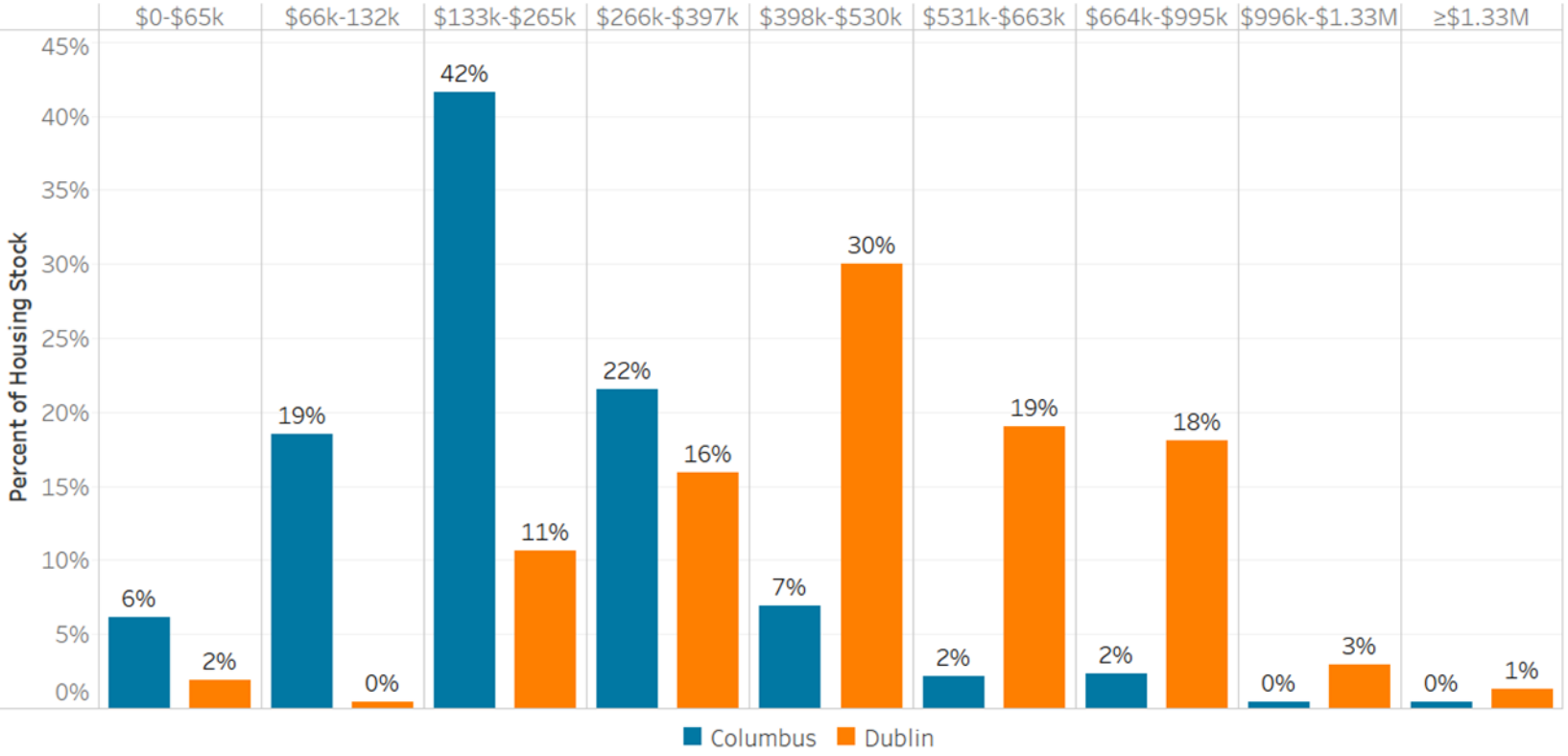
Dublin Real Estate Indicators: Home Price Distribution

- Home prices in Dublin continue to skew significantly higher than the Greater Columbus region, with little variation from the previous analyses.



Source: Neighborhood Scout

Dublin Real Estate Indicators: Home Sales

Additional real estate insights are incorporated from the 2022 *Housing Study & Strategy* report commissioned by the City of Dublin:

- About 72% of home sales in Dublin are single-family detached units, while condos comprise another 25% of sales.
- Single-family detached homes are also driving overall price increases, with a median sales price of at least twice that of other home types due in part to significantly larger square footage.
- Homes built between 1980 and 1999 comprise about 58% of home sales, however homes built in 2000 and later have higher median sales prices.
- The study also concludes that future growth potential is limited because most of Dublin's developable land has already been built out.

Breakdown of Home Sales in Study Area (2017 to 2021)

	No. of Transactions	% of Transactions	Median Sales Price	Median Square Footage	Median Price Per SF
Single-Family Detached	5,650	71.5%	$378,500	2,335	$159.14
Condominiums	1,953	24.7%	$174,000	1,232	$141.34
Duplex/Triplex	228	2.9%	$190,000	1,470	$121.53
Townhouse/Rowhouse	71	0.9%	$138,000	1,200	$122.64
Total	**7,902**	**100.0%**	**$320,000**	**2,021**	**$154.02**

Single Family Sales by Age of Home, Study Area (2017 to 2021)

	No. of Transactions	Median Sales Price	Price Range	Median Square Footage	Median Price Per SF
Home Built Before 1970	246	$335,000	$95,000 to $3,450,000	1,855	$175.37
Home Built 1970-1979	665	$282,000	$110,000 to $1,690,000	1,912	$148.36
Home Built 1980-1989	2,240	$293,000	$49,400 to $3,000,000	1,901	$157.09
Home Built 1990-1999	1,038	$423,000	$95,300 to $3,750,000	2,661	$161.21
Home Built 2000-2009	612	$540,000	$90,000 to $2,600,000	3,355	$160.83
Home Built After 2010	530	$567,900	$71,700 to $1,834,000	3,480	$163.52
No Home Age Information	319	$516,000	$43,000 to $2,400,000	3,154	$171.46
Total	**5,650**	**$378,500**	**$43,000 to $3,750,000**	**2,335**	**$159.14**

Note: The Study Area as defined in the housing report consists of the City of Dublin as well as peripheral areas that constitute Census Tract boundaries
Source: 2022 Housing Study & Strategy report prepared by Urban Partners for the City of Dublin

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Dublin Real Estate Indicators: Housing Stock

- Dublin real estate value has continued to grow, but housing vacancy has also increased.
- The Columbus MSA has experienced stronger trends in both median home value and housing vacancy.

Real Estate Indicator	Dublin, 2010	Dublin, 2021	Columbus, 2010	Columbus, 2021
Median Home Value	$341,600	$415,900	$138,700	$213,600
Housing Vacancy Rate	6.1%	9.1%	14.0%	6.9%
Renter Percentage		33.4%		38.3%

Real Estate Indicator	Dublin Avg. Annual Change, 2010-17	Dublin Avg. Annual Change, 2017-21	Columbus Avg. Annual Change, 2010-17	Columbus Avg. Annual Change, 2017-21
Median Home Value	1.0%	4.1%	0.3%	7.1%
Housing Vacancy Rate	-0.2 % pt.	5.5 % pt.	-0.5 % pt.	-1.7 % pt.

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Source: American Community Survey, US Census Bureau

Dublin Education Indicators: School System Statistics

- Dublin schools have performed well with stronger growth rates than the Columbus MSA in three of five key metrics.

	Dublin City Schools, 2021	Dublin Change, 2017-21	Franklin County Schools, 2021	Franklin County Change, 2017-21
Total Students	16,254	3.4%	196,630	-0.2%
Classroom Teachers	838	2.9%	11,811	10.8%
Student/Teacher Ratio	19.4	0.1	16.6	-1.9
Total Schools	23	21.1%	405	13.2%
Schools per 100k Population	48	11.6%	31	4.8%

Source: National Center for Education Statistics (NCES).

Dublin Education Indicators: Ohio School Report Card Grades, 2021

- Report card data resumed for the 2021-22 school year, though the scoring system has been changed from letter grades to stars (out of 5).
- Dublin schools continue to outperform Columbus city schools, but performance against benchmark regions is mixed.

Ohio School Report Card Grades	Dublin City Schools	Columbus City Schools	Average of Other Leading School Districts in Region*
Achievement	4.0	2.0	4.6
Progress	5.0	3.0	4.9
Gap Closing (meeting expectations for vulnerable students)	5.0	3.0	5.0
Graduation	5.0	1.0	4.3
Early Literacy	3.0	1.0	4.0

*Includes Worthington, Westerville, New Albany, Hilliard, Olentangy, Upper Arlington, and Bexley.
Source: Ohio Department of Education.

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Dublin Education Indicators: Selected School Characteristics

- Dublin's relative growth performance continues to be mixed.
- Recent growth in operating spending per pupil is strong but has been overtaken by Columbus city schools.

School Characteristics	Dublin City Schools, 2021	Dublin Change, 2017-21	Columbus City Schools, 2021	Columbus Change, 2017-21
Percent of Teachers with a Master's Degree	72.7%	-2.0 % pt.	64.9%	1.6 % pt.
Percent of Funds Spent on Classroom Instruction	75.6%	1.9 % pt.	65.5%	0.6 % pt.
Operating Spending per Pupil	$12,846	18.4%	$13,971	36.2%

Source: Ohio Department of Education.

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Selected Infrastructure Indicators

- Dublin's performance in key infrastructure indicators remains similar, growth rates suggest the gap with Columbus is closing in some areas.

Indicator Type	Indicator	Dublin	Dublin Change, 2017-20	Columbus MSA	Columbus Change, 2017-20
Transportation	Proportion of workers whose travel time to work is 20 minutes or less	36.6%	-1.8 % pt.	40.5%	-1.0 % pt.
	Utilization of public transport by population commuting to work	0.5%	-0.03 % pt.	1.5%	-0.20 % pt.
Connectivity	Percent of households with broadband internet access	97.5%	1.8 % pt.	89.1%	6.49 % pt.

Source: American Community Survey, US Census Bureau.

Appendix B:
City of Dublin Economic Development Survey

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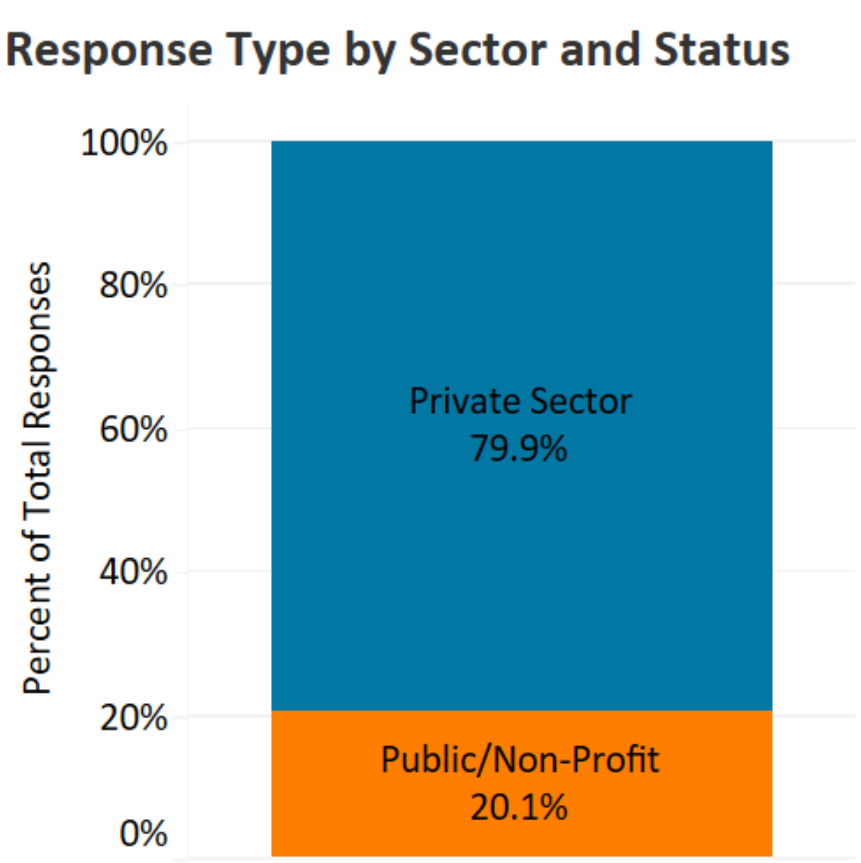
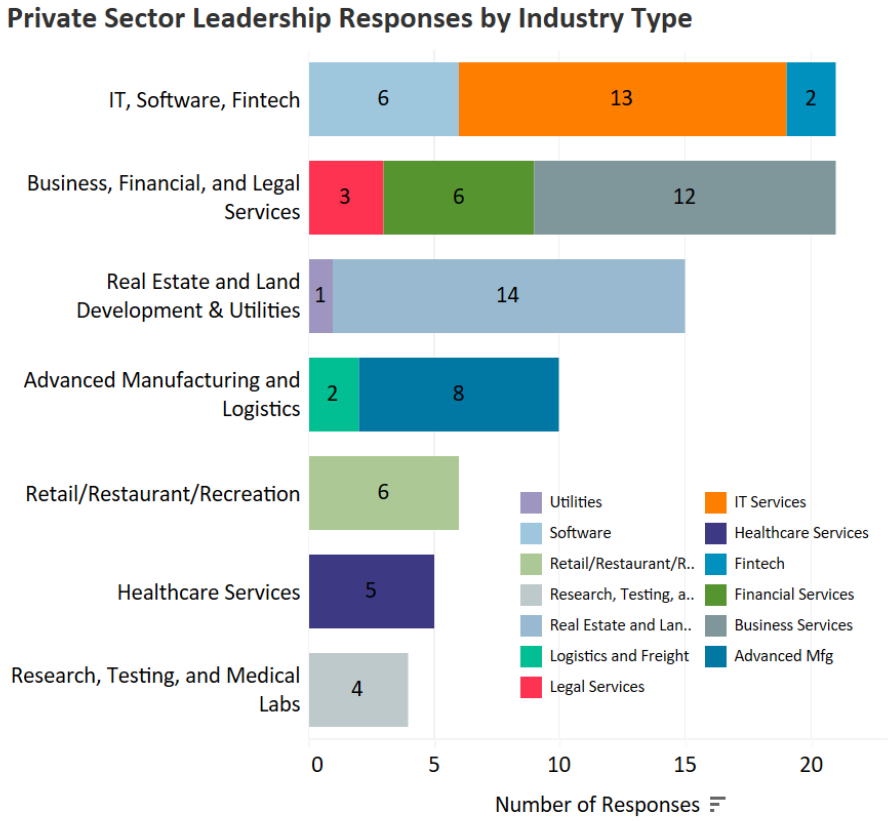
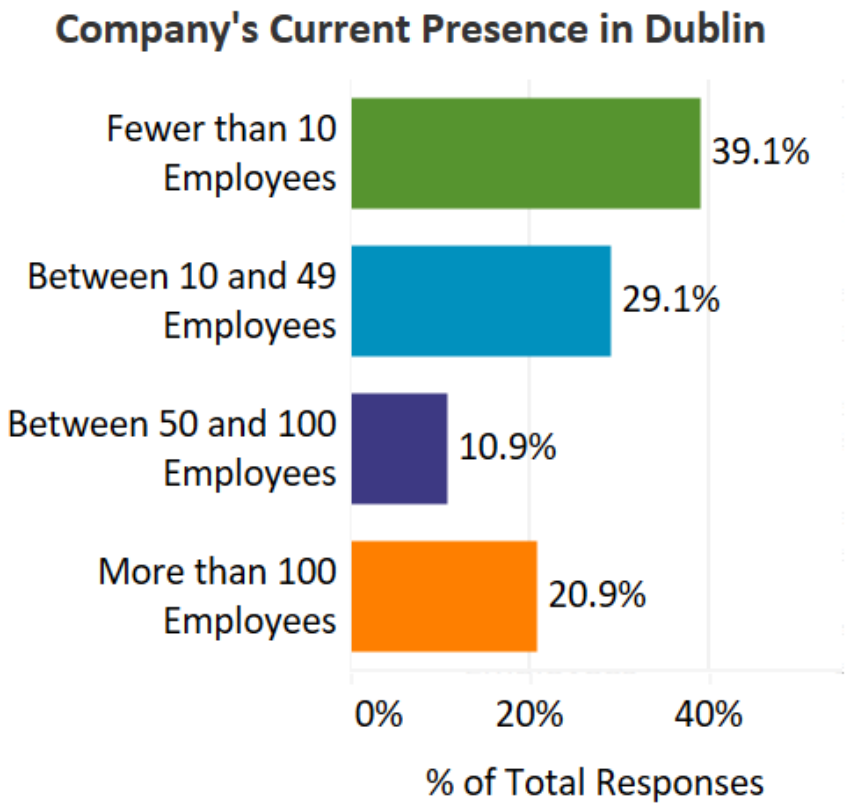
Survey elicited 112 responses, with roughly 80% representing the private-sector businesses critical to Dublin's economic development success.

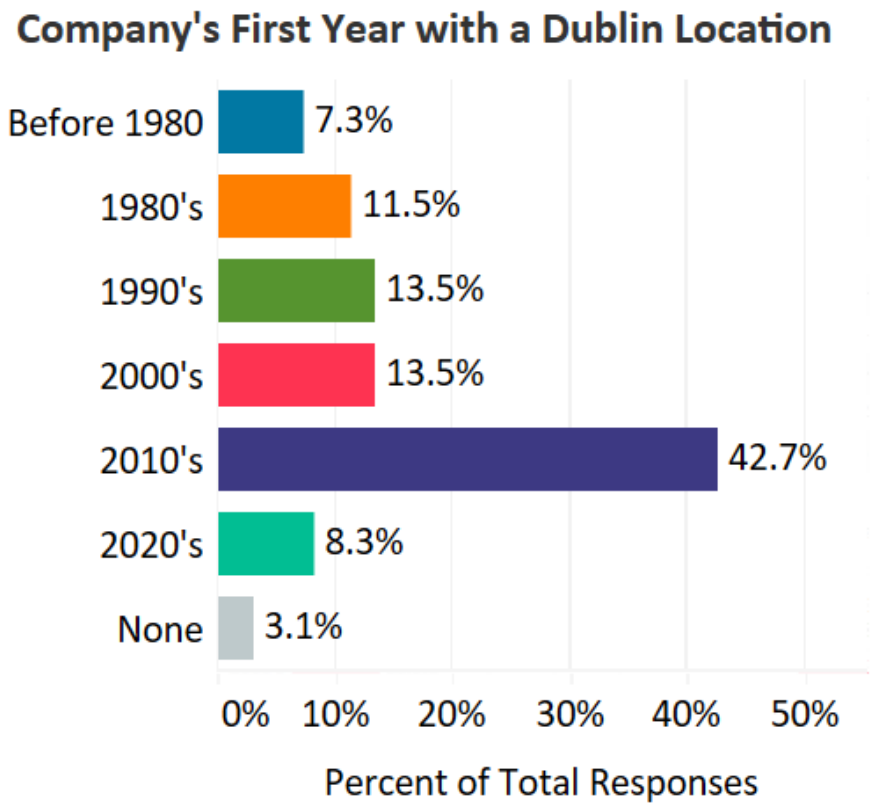




Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: "Private-Sector Leadership" refers to 82 responses from industry leaders, limited to a single response for each company.

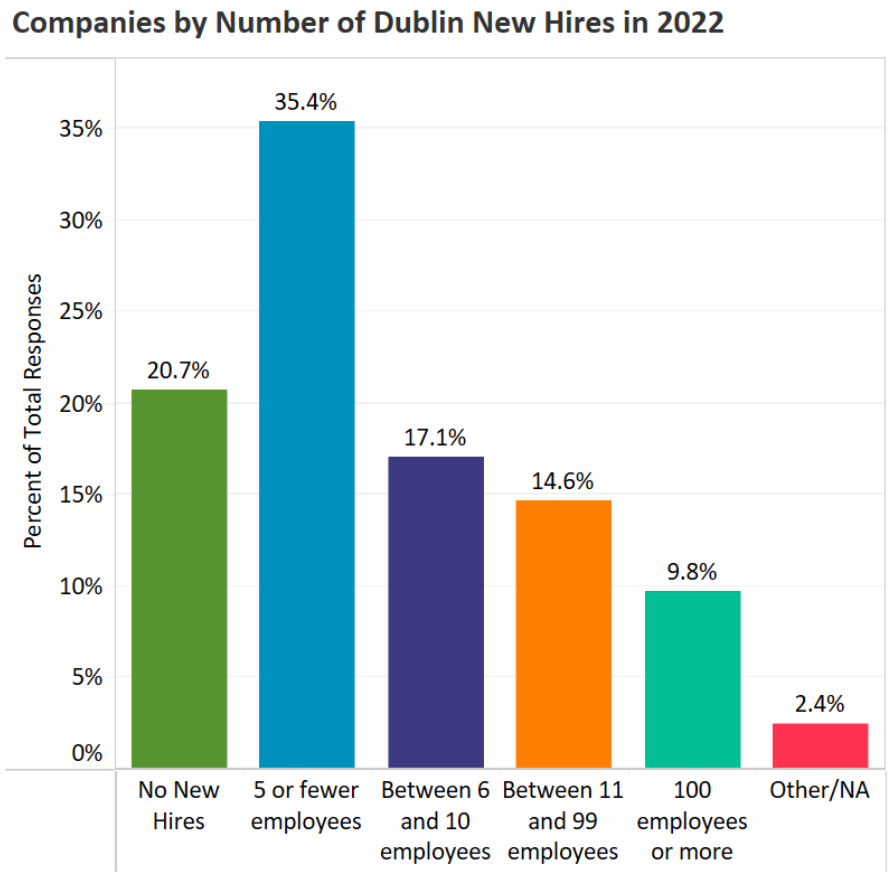
Roughly half opened their Dublin offices in the 2010's or later, and most had fewer than 50 employees.





Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Most private sector leaders indicated they hired employees in 2022, with a good mix of "new" and "replacement" workers

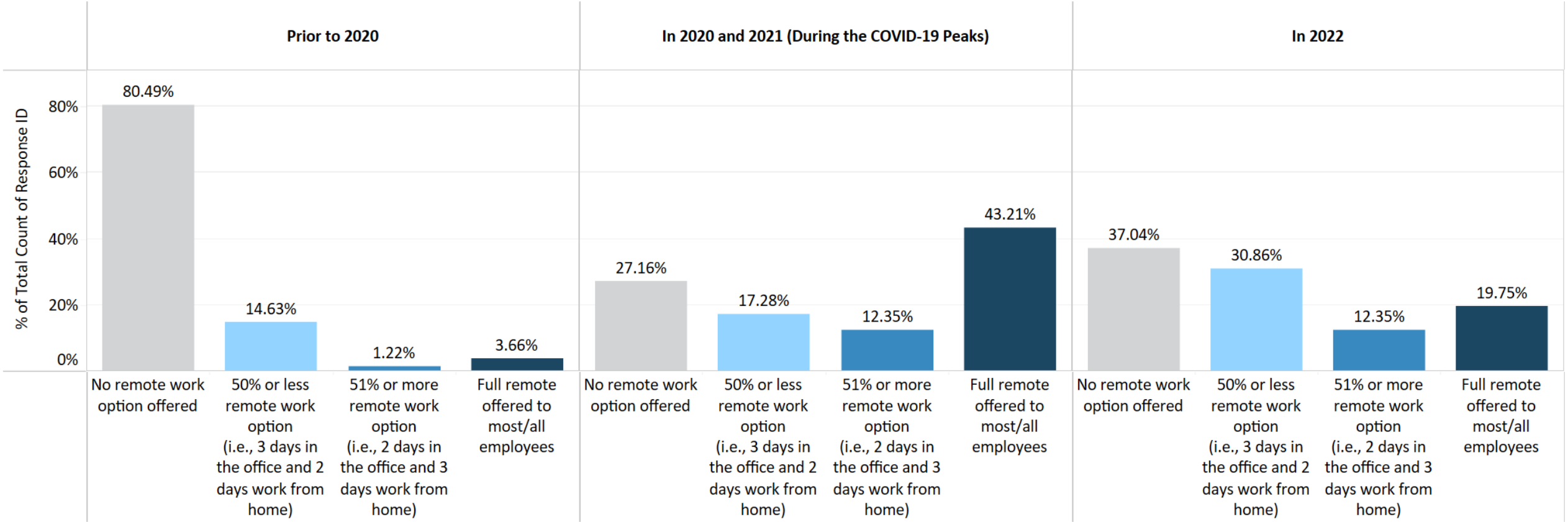


- *Among the 82 private sector leaders surveyed:*
  - *63 companies reported at least one new hire in 2022*
  - *Number of new hires ranged from 1 to 600 employees*
    - *Average: 36 hires*
    - *Median: 7 hires*
  - *These companies combined for 2,281 new hires in 2022 in Dublin*
  - *On average, approximately 38% of these were "new" employees (867) vs. replacement employees (1,332)*

Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Among private sector leaders surveyed, 37% indicated they were now fully in-person, with more than two-thirds in the office 3+ days per week.

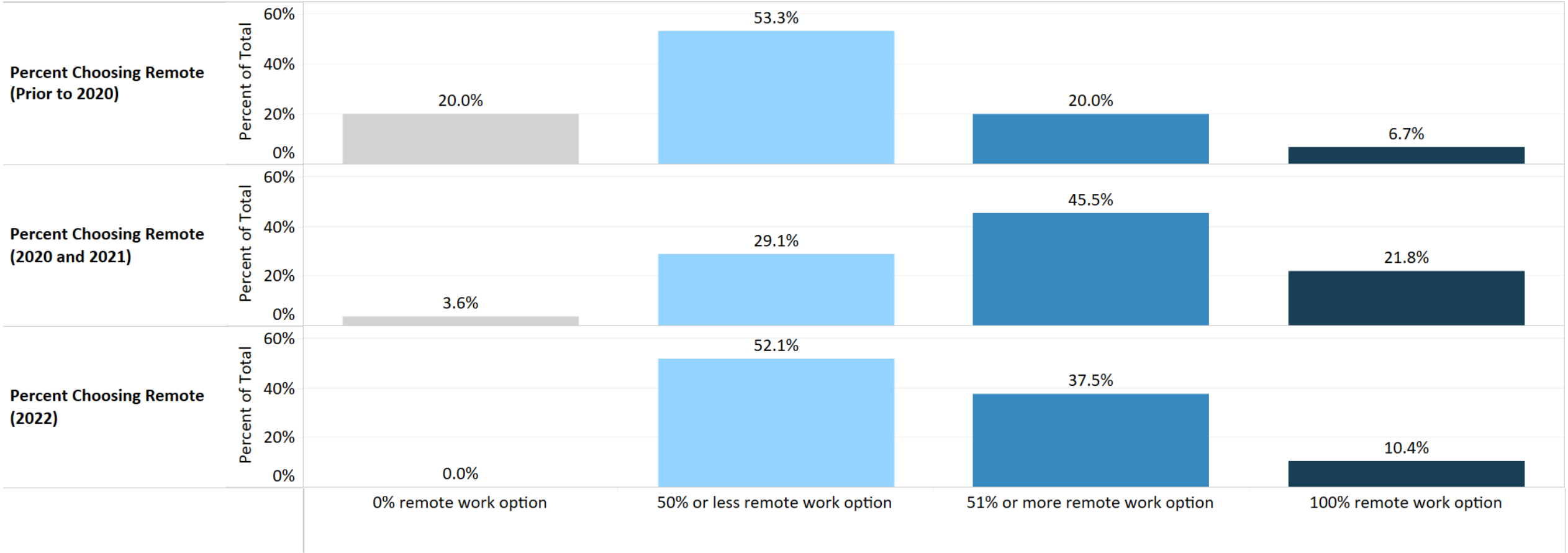
Private Sector Leadership: For the time periods listed, please select the description of the remote work option offered to your Dublin-based employees. Please select the option that describes the overall/most prevalent work-site offering for your Dublin location(s).



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Roughly 90% of leaders surveyed said their employees preferred hybrid work, with more than half choosing to be in the office 3+ days a week.

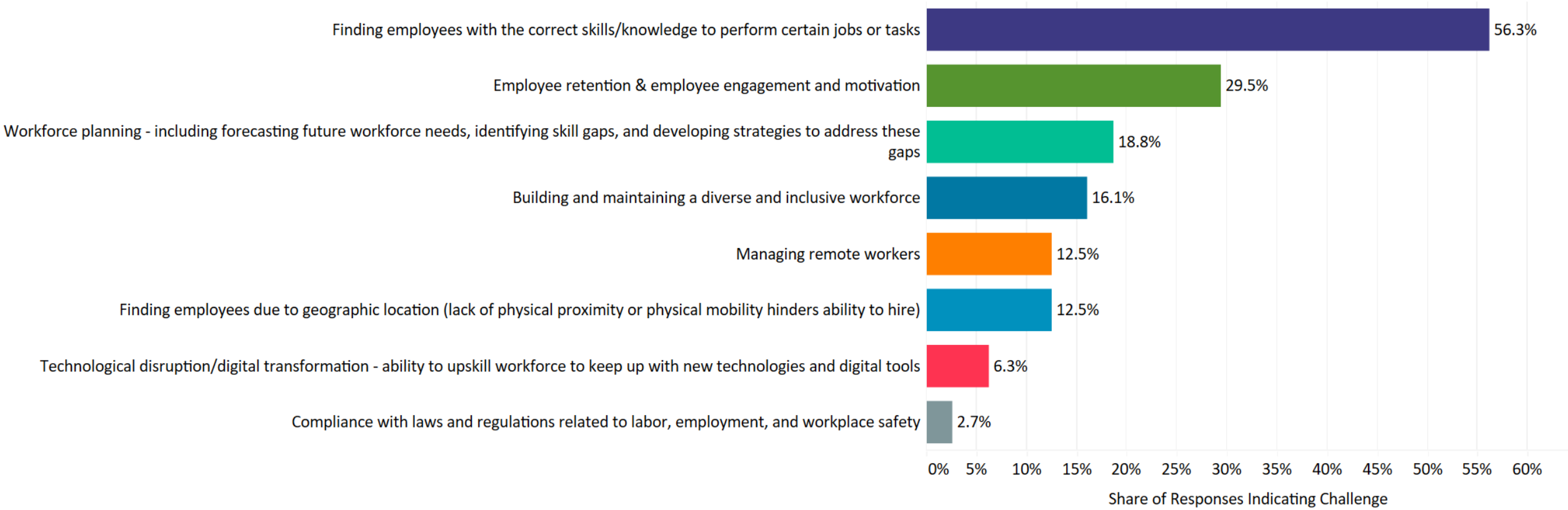
Private-Sector Leadership: What is the approximate percentage of employees who chose remote work versus choosing to continue to work on-site full-time?



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

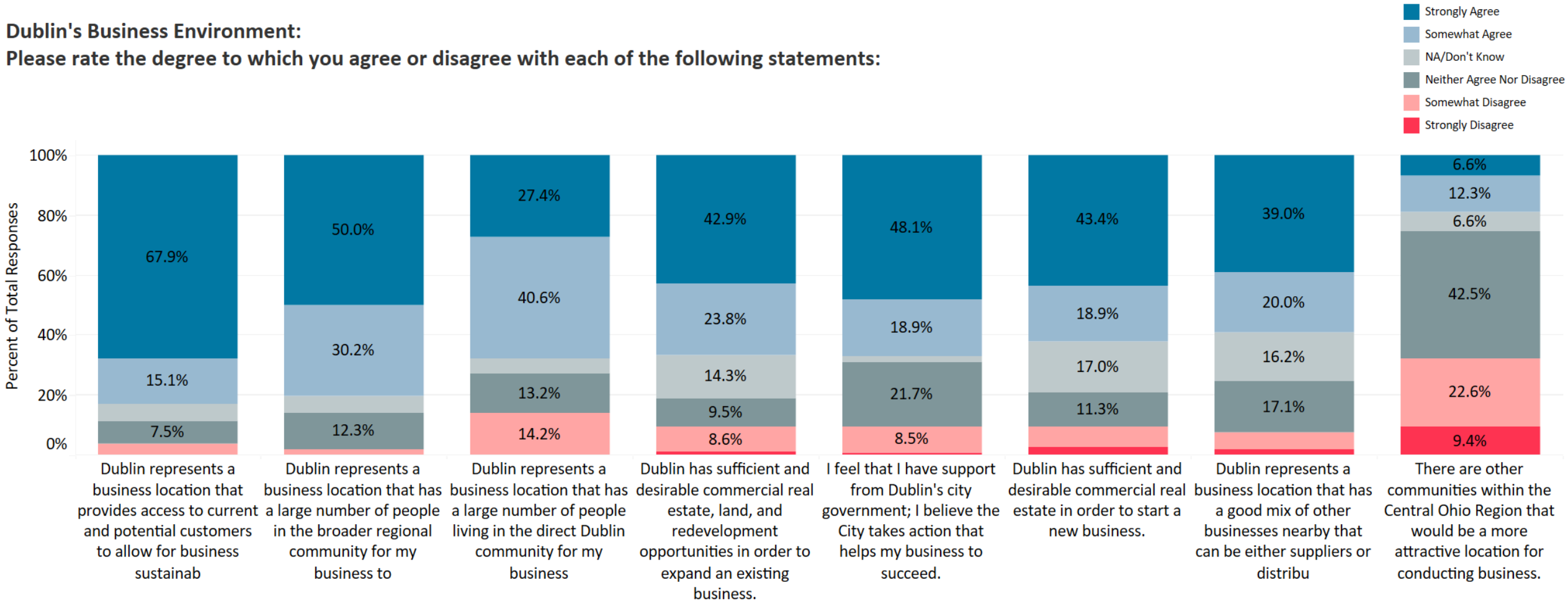
Finding employees – as well as retaining them and keeping them engaged – ranked as the highest workforce challenges among private sector leaders.

Workforce-Related Challenges:
What are the greatest workforce-related challenges facing your organization's operations in Dublin? Select all that apply.



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Includes all survey responses

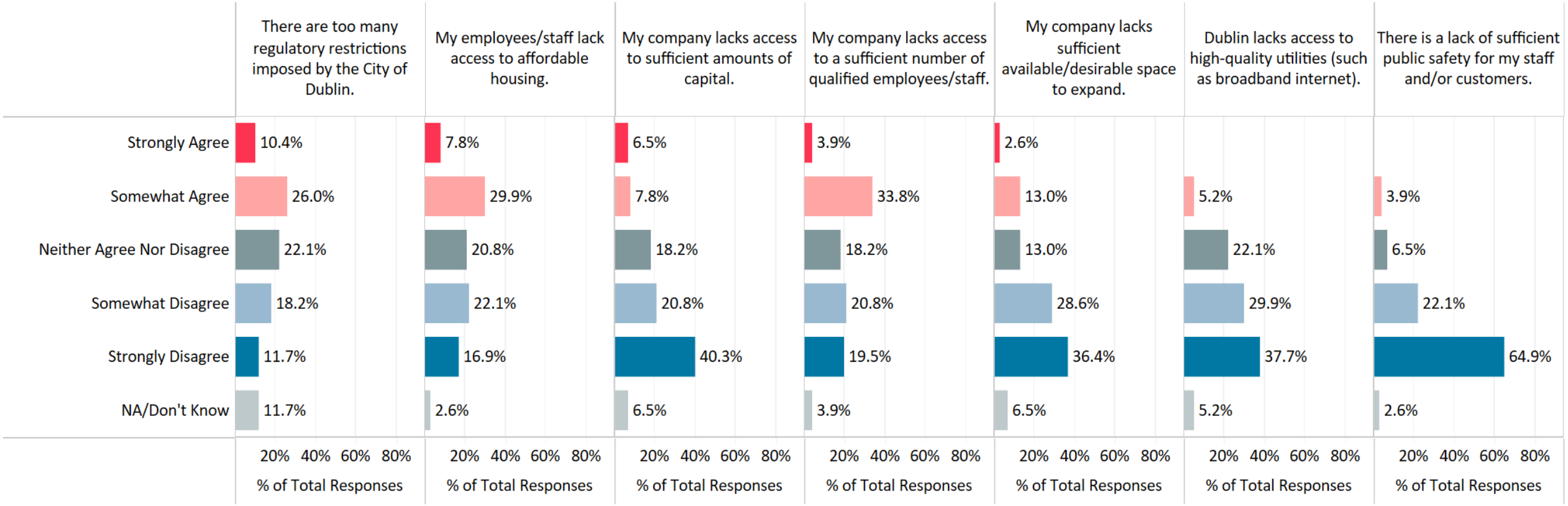
Dublin's business environment ranks favorably: fewer than 20% of respondents felt other Central Ohio areas were more attractive.



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Includes all survey responses

Barriers most frequently cited as concerns include burdensome regulations, a lack of affordable housing, and challenges with finding qualified staff.

Potential Barriers to Company Growth:
Please rate the degree to which you agree or disagree with each of the following statements



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Includes all survey responses

Specific Regulatory Barriers Cited

- “It is very difficult to develop/re-develop commercial property with Dublin restrictions. Additionally, costs are prohibitive as well.”
- “Building and zoning are very difficult to work with due to lack of transparency and providing needed information. It feels like we are always met with roadblocks instead of solutions making it difficult to improve buildings.”
- “It is difficult to develop in Dublin because of the design related requirements and length and difficulty in getting through the city process”
- “Planning and zoning.”
- “Length of time and cost to develop concepts.”
- “Lengthy and cumbersome approval processes.”
- “Lots of regulations on signage, building composition, etc.”
- “Slowness of approval process affects product to market timelines and cost."
- “Sign restrictions are ridiculous. My company launched an international rebranding campaign and Dublin earned the dubious distinction as the hardest city in the US to work with and one of the hardest in the world.”
- “The City needs to do a better job of responding and processing permits faster. Companies expect the built-out process to be faster than what is occurring within the City of Dublin.”
- “The time and steps required to get from site selection to building complete and ready to occupy is long and complicated which makes it hard to give a tenant a firm commitment they can rely on.”
- “Time to obtain approvals due to very active/involved City departments”
- “Dublin economic department seems to have fallen off the earth - no out reach to us as in years past. Unrealistic planning rules prevent upgrade improvements. Seems like after bridge park things have stopped.”

Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Includes all survey responses – does not include responses indicating no challenges or NA

Specific Utility Challenges Cited

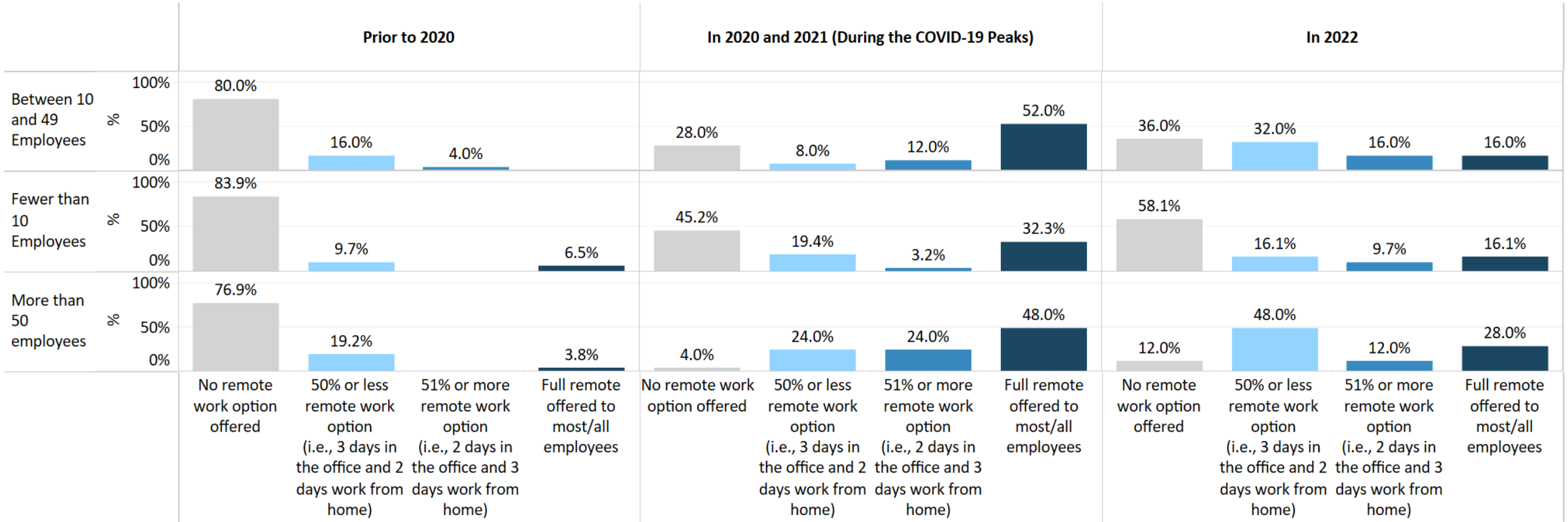
- “Better broadband opportunities with faster rates”
- “Better internet with reliability”
- “High speed internet choices”
- “Internet - We do not have many options at both of our locations.”

Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Includes all survey responses – does not include responses indicating no challenges or NA

Additional Looks *By Industry Grouping*
By Company Size

Remote Work Arrangements by Company Size: One shift since COVID-19 is that relatively few of the large companies are offering an exclusively in-person option.

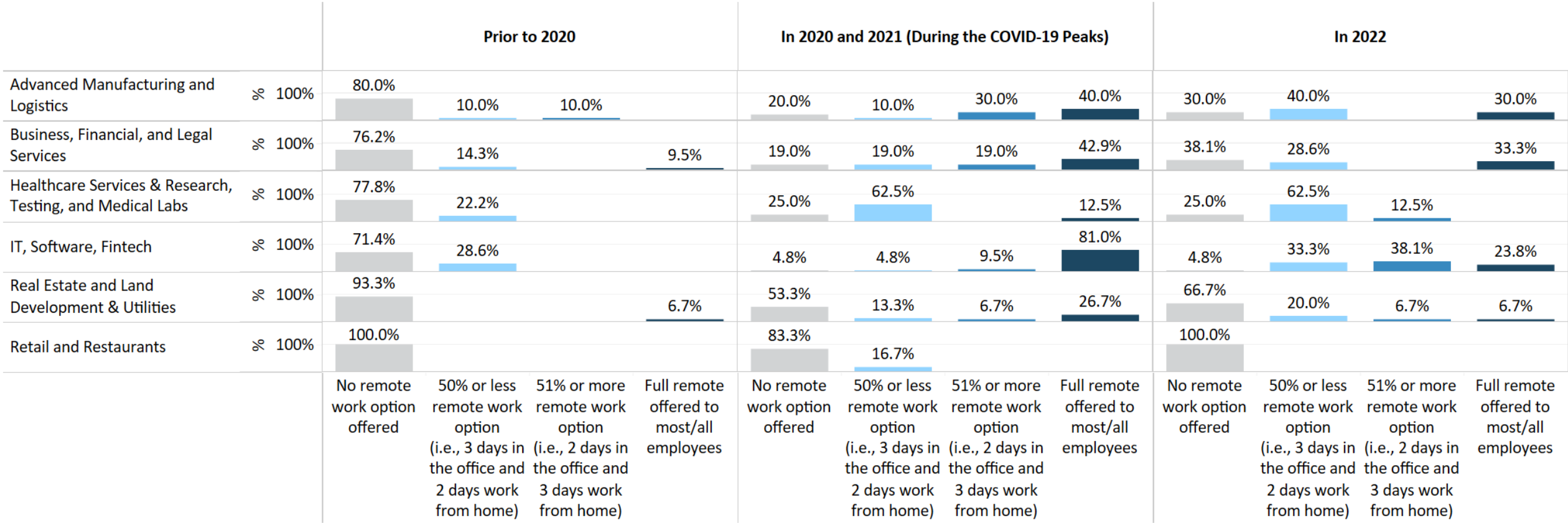
Private Sector Leadership: For the time periods listed, please select the description of the remote work option offered to your Dublin-based employees. Please select the option that describes the overall/most prevalent work-site offering for your Dublin location(s).



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Remote Work Arrangements by Industry: Since the COVID-19 Peaks, Advanced Manufacturing, Business Services, and Real Estate have seen considerable returns to in-person work.

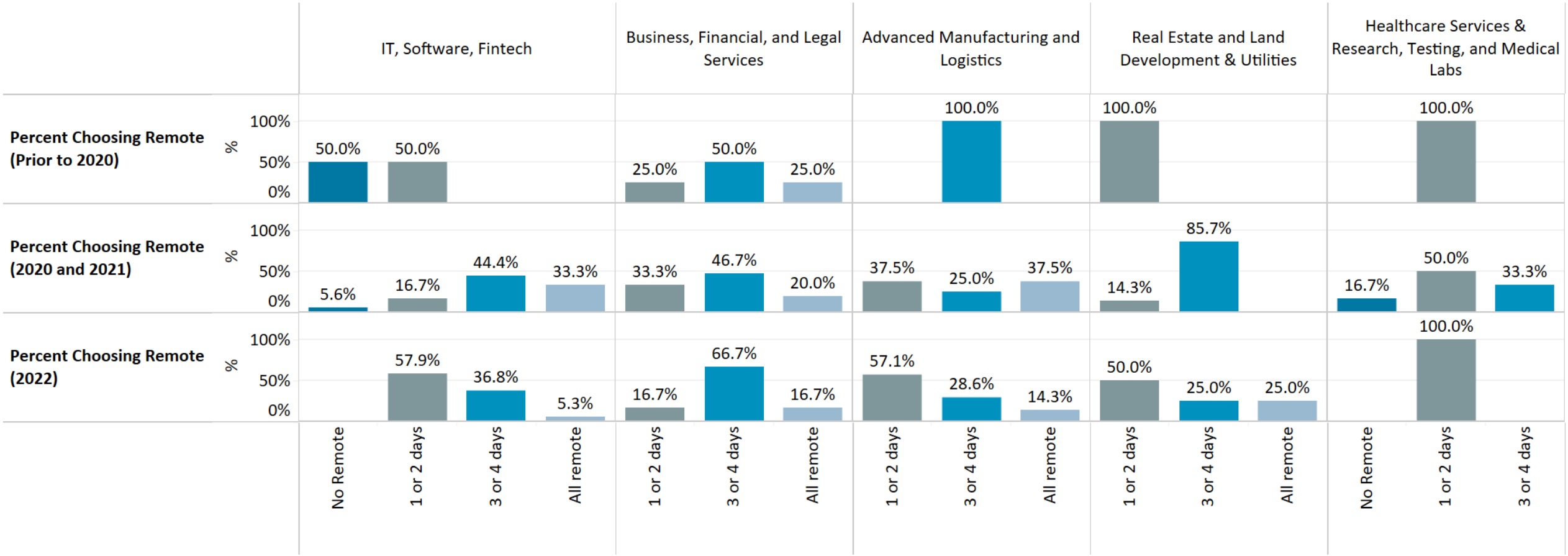
Private Sector Leadership: For the time periods listed, please select the description of the remote work option offered to your Dublin-based employees. Please select the option that describes the overall/most prevalent work-site offering for your Dublin location(s).



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Remote Preferences by Industry:
Persistence of remote-work in business services, while growing in-person in advanced manufacturing, healthcare, R&D services.

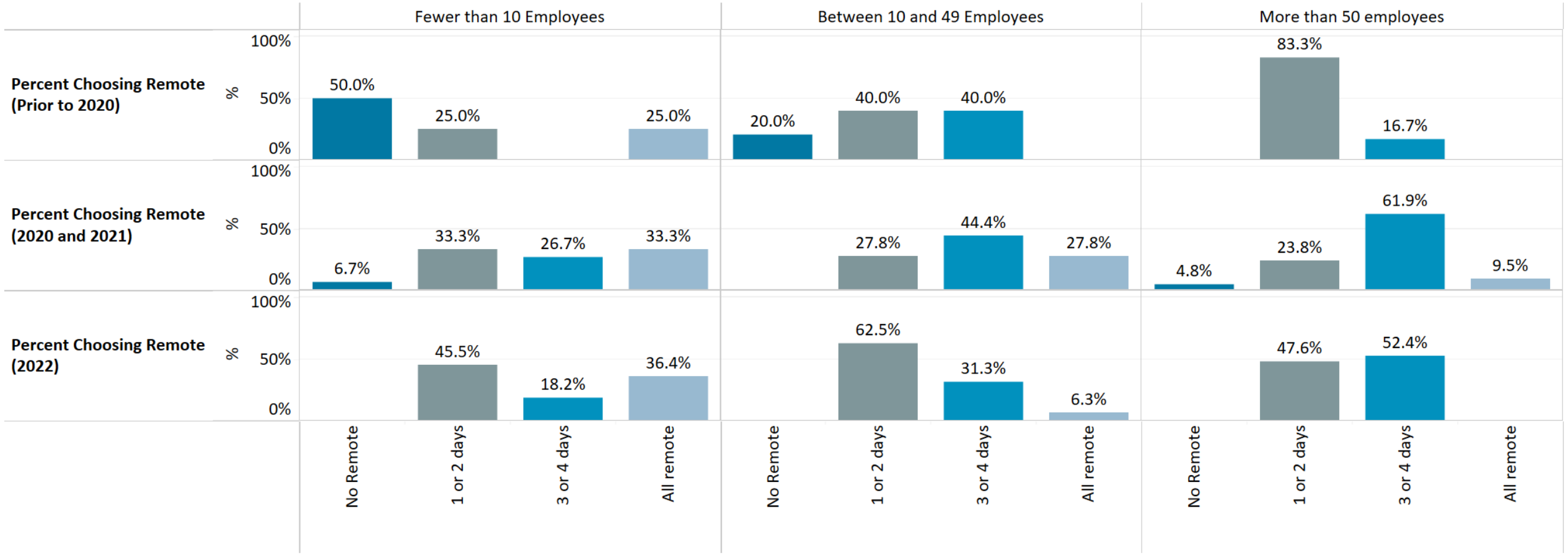
Private-Sector Leadership: What is the approximate percentage of employees who chose remote work versus choosing to continue to work on-site full-time?



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Remote Preferences by Company Size: According to leaders regardless of company size, their employees seem to prefer a hybrid workplace.

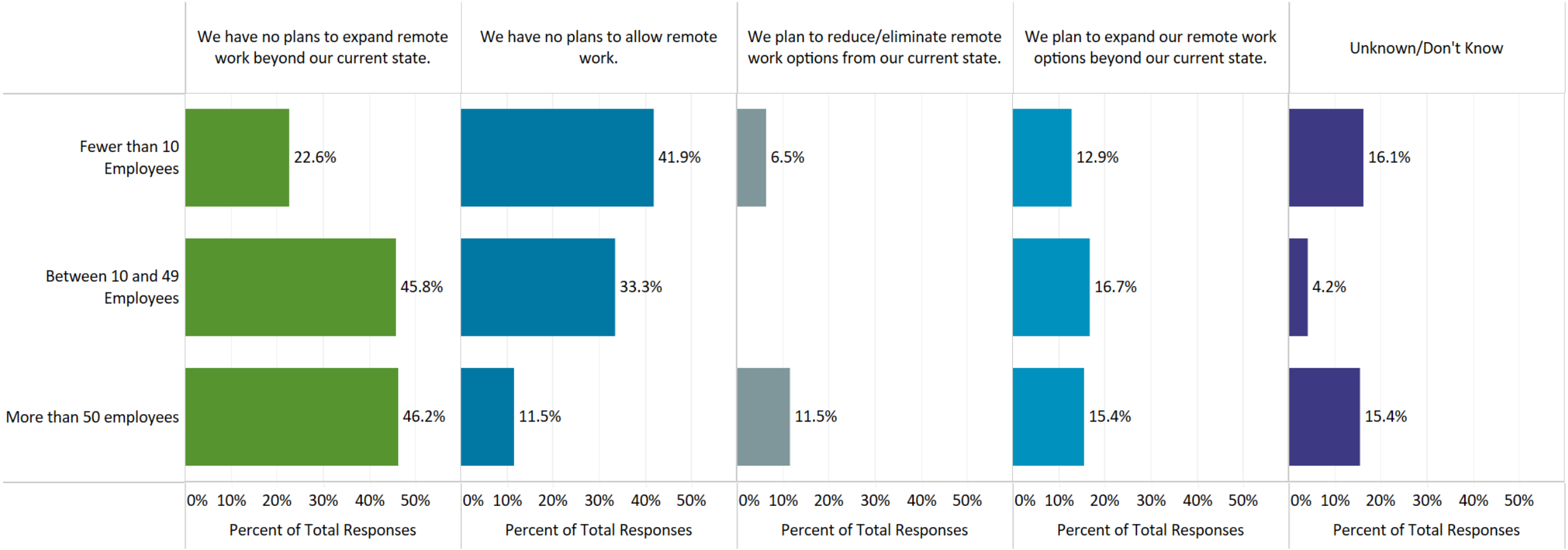
Private-Sector Leadership: What is the approximate percentage of employees who chose remote work versus choosing to continue to work on-site full-time?



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Future Remote Plans by Company Size: Smaller companies are more likely to suggest they have no plans to allow remote work.

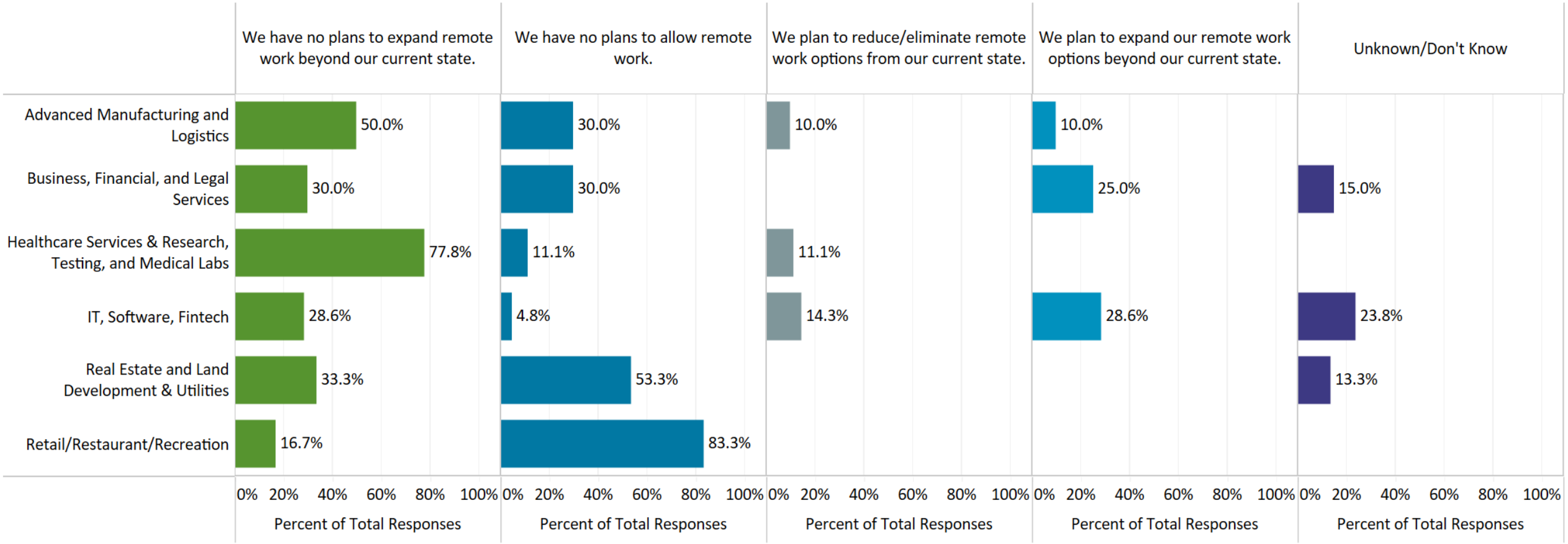
Private Sector Leadership: Looking ahead, what are your organization's plans for remote work? Select the response that best describes your current plans.



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Future Remote Plans by Industry:
Compared to other industries, business services and tech-related companies both plan to expand remote work options.

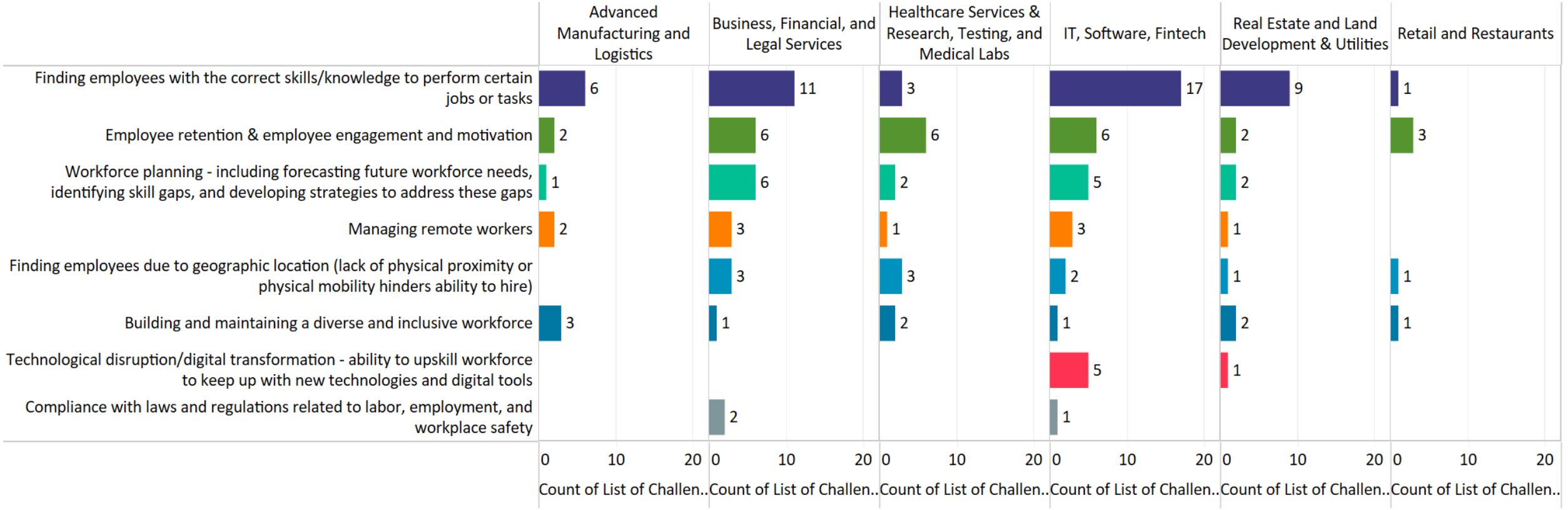
Private Sector Leadership: Looking ahead, what are your organization's plans for remote work? Select the response that best describes your current plans.



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Workforce Challenges by Industry: Workforce challenges tend to cut across industries.

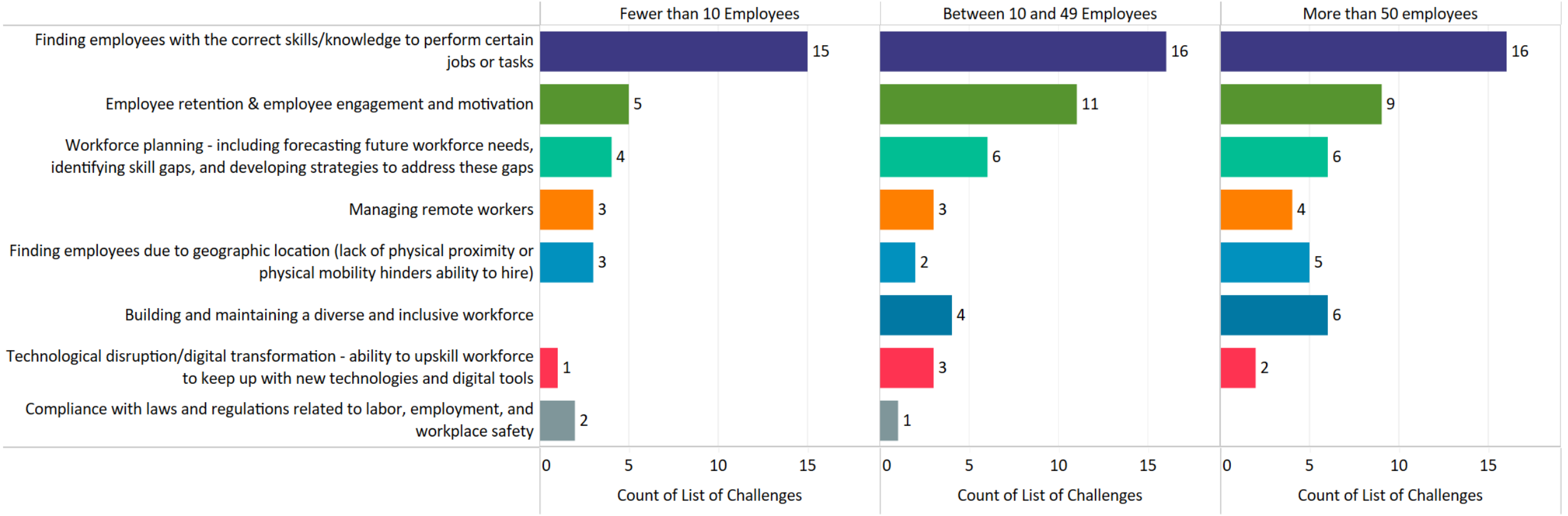
Private Sector Leader Workforce-Related Challenges:
What are the greatest workforce-related challenges facing your organization's operations in Dublin? Select all that apply.



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Workforce Challenges by Company Size: Challenges with employee attraction, retention, and engagement cut across companies of all sizes – though larger firms note challenges related to DEI.

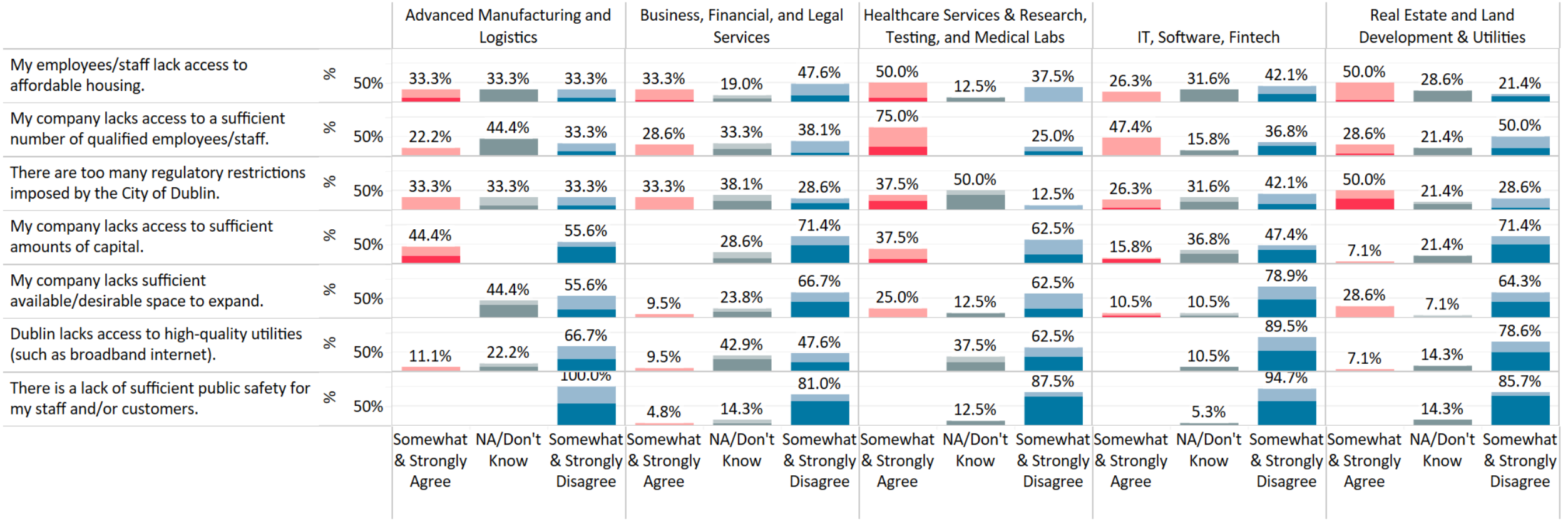
Private Sector Leader Workforce-Related Challenges:
What are the greatest workforce-related challenges facing your organization's operations in Dublin? Select all that apply.



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Barriers to Growth by Industry: Healthcare-related businesses faced the largest challenges with finding workers and affordable housing; regulations challenge the land developers.

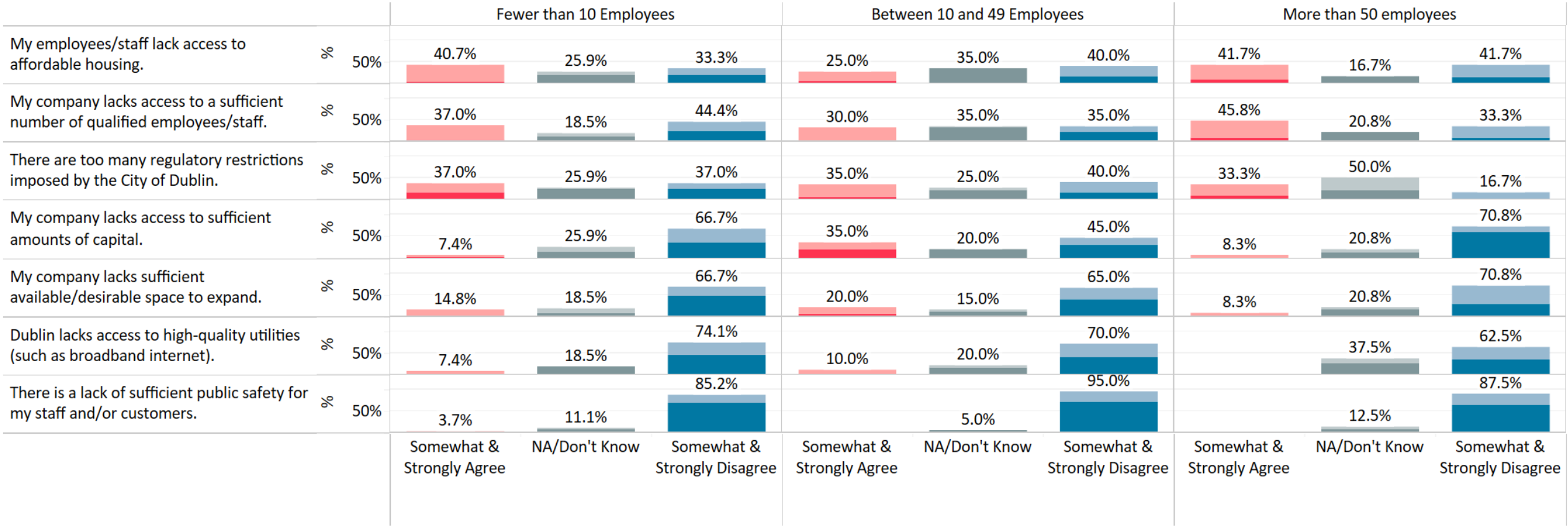
Potential Barriers to Company Growth:
Please rate the degree to which you agree or disagree with each of the following statements



Source: TEConomy Analysis of Dublin Economic Development Survey Results
Note: Only refers to private sector companies and limited to a single response for each company.

Barriers to Growth by Company Size:
The top three barriers were generally the same for small and large businesses, with mid-sized companies struggling with access to capital.

Potential Barriers to Company Growth:
Please rate the degree to which you agree or disagree with each of the following statements



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