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# The Future of Industrial Real Estate: Trends for 2022 and Beyond



**NEWMARK**



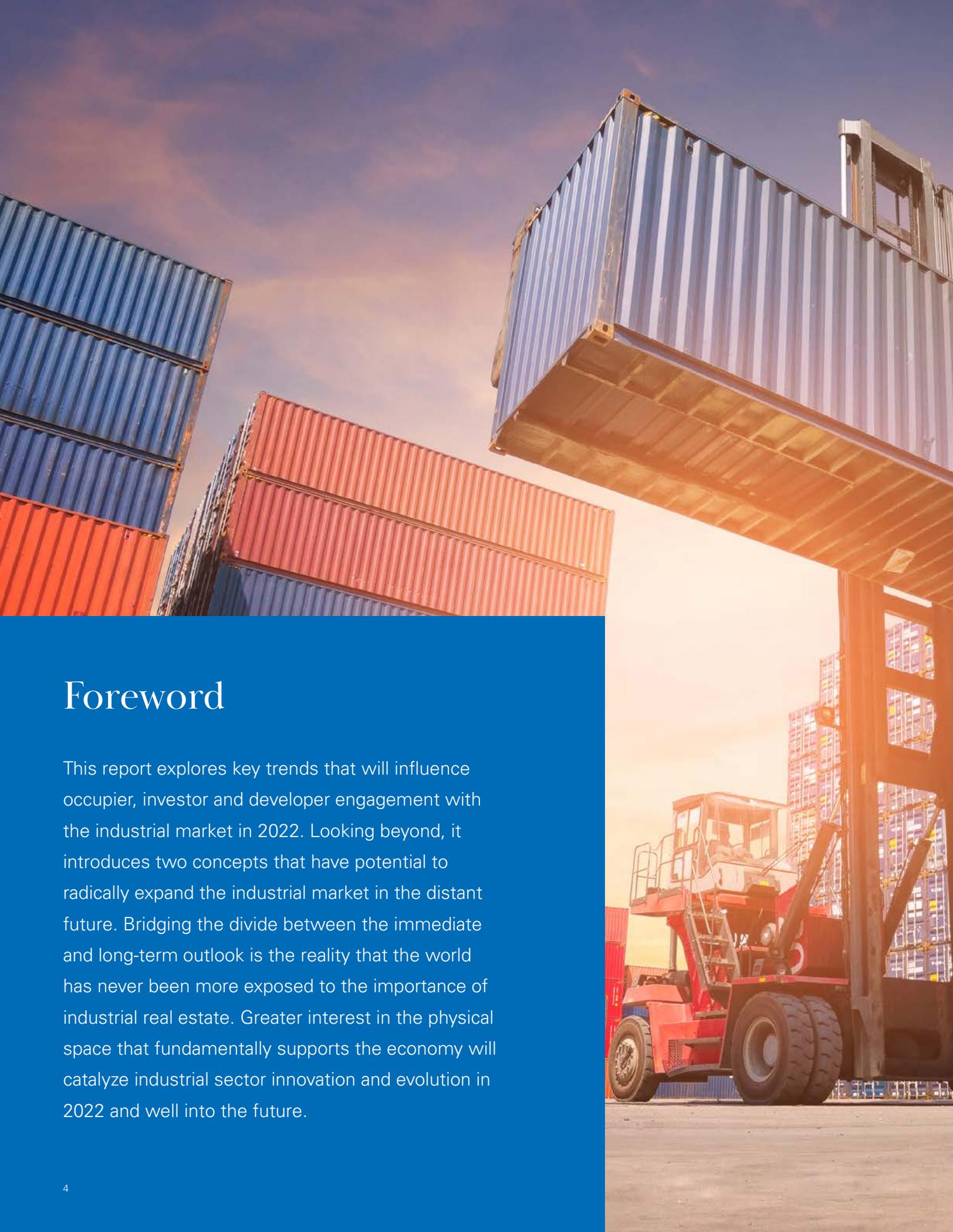
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# The Future of Industrial Real Estate: Trends for 2022 and Beyond

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# Foreword

This report explores key trends that will influence occupier, investor and developer engagement with the industrial market in 2022. Looking beyond, it introduces two concepts that have potential to radically expand the industrial market in the distant future. Bridging the divide between the immediate and long-term outlook is the reality that the world has never been more exposed to the importance of industrial real estate. Greater interest in the physical space that fundamentally supports the economy will catalyze industrial sector innovation and evolution in 2022 and well into the future.







# TRENDS FOR 2022 AND BEYOND

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# I A New Paradigm of Industrial Demand

By March of 2020, the U.S. industrial market had registered 40 consecutive quarters of positive absorption, and the outlook for continued steady growth was strong. Enter the pandemic. Consumer behavioral shifts sparked abnormally high levels of industrial demand commencing in the second half of 2020 as firms reacted to the implications of a persistently remote world. Supply chain buildout to accommodate inflated e-commerce demand clashed with delays and disruption in the delivery of much-needed new industrial space. In 2021, a second round of federal stimulus bolstered household balance sheets and highly effective vaccine deployment stoked desire to participate in the economy. Roaring consumer demand for goods across

the spectrum of retail channels has led to significant inflation and put further stress on the U.S. industrial inventory as there simply was not enough space to meet occupier needs. From the vantage of early 2022, COVID-19 is poised to become an endemic, manageable disease, despite effects still rippling through the economy. The likelihood of another pandemic-driven mass event that warrants additional federal stimulus sent to a wide swath of the population is low. Indeed, in March 2022, the Federal Reserve approved the first of multiple planned interest rate increases to effectively tap the brakes on rampant inflation, which has been further exacerbated by geopolitical volatility following Russia's invasion of Ukraine in late February 2022.

## After an unpredictable, unprecedented two years for the industrial market, what does the future hold for demand performance?

Consumption will inevitably moderate on the heels of persistent inflation, yet pent-up industrial demand will spill into 2022, keeping absorption elevated above pre-pandemic levels, as many firms were unable to fulfill space requirements in 2021. Beyond the spill-over effect, structural trends that drove 40 consecutive quarters of industrial expansion prior to the pandemic will continue to drive robust demand

this year and into the future. In addition, two years and counting of global supply chain upheaval has driven interest and action in expanding domestic manufacturing. **Digitalization, demographics and deglobalization are three key themes for industrial growth in 2022 and beyond.**

### Digitalization

In the 21st century, industrial demand has become less chained to traditional drivers like manufacturing output or gross domestic product and more aligned with consumer spending, which is increasingly done online. E-commerce fulfillment requires three times the amount of industrial space of brick-and-mortar retail fulfillment. Additionally, customers are three times more likely to return products bought online versus brick and mortar retail purchases, and reverse logistics operations require 20% more space than what is needed to support original e-commerce sales<sup>(1)</sup>. In the early days of the pandemic, shopping habits swiftly shifted to e-commerce, pushing 2020 e-commerce sales up 32.4% over 2019 measures. As critical health concerns have moderated, so in turn have online shopping patterns, only to correct back to a trend of sustained growth. Across the panorama of forecasts for U.S. e-commerce spending volume, double-digit annual growth is expected at least through 2025, driving the need for



**Double-digit annual growth in e-commerce sales will continue to drive industrial demand.**

additional warehouse space. Prologis estimates that for every \$1.0 billion in e-commerce sales growth, an additional 1.2 million square feet of warehouse space is needed.

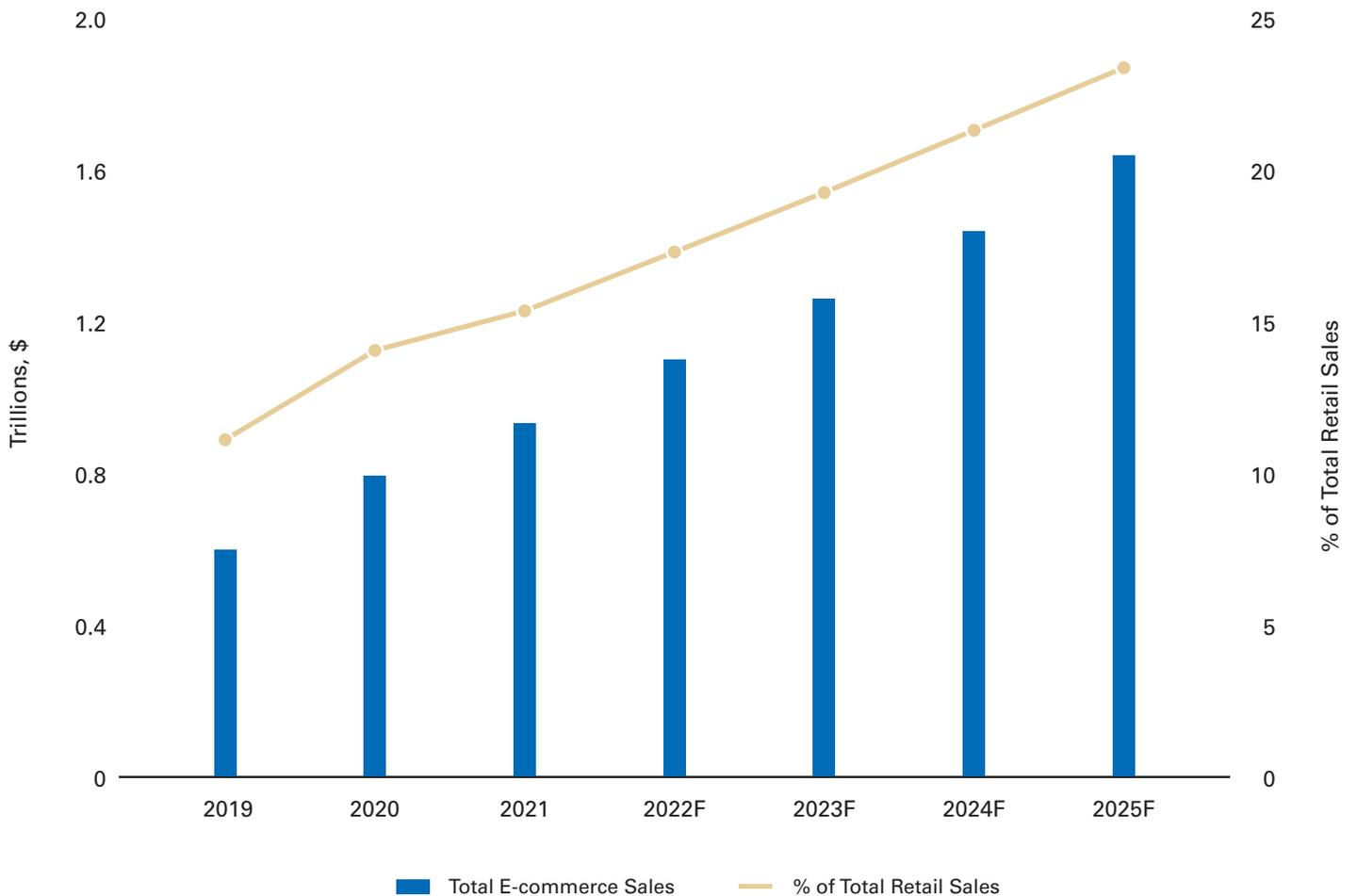
Current sociopolitical priorities also point to increasing digitalization. The Infrastructure Investment and Jobs Act passed in 2021 earmarked \$65.0 billion for expanding and improving internet access, especially to

underserved remote and rural areas, which will bring new customers into the digital economy.

The ceiling for e-commerce penetration is unknown but decades of growth potentially lie ahead: in the U.S., e-commerce is expected to account for 23.6% of retail sales by 2025; in China, that forecasted 2025 share is 56.8%.

**E-commerce Spending and Share of Total Retail Sales**

*United States | 2019 - 2025*



Sources: eMarketer, U.S. Census Bureau, February 2022

## I. A NEW PARADIGM OF INDUSTRIAL DEMAND

### Demographics

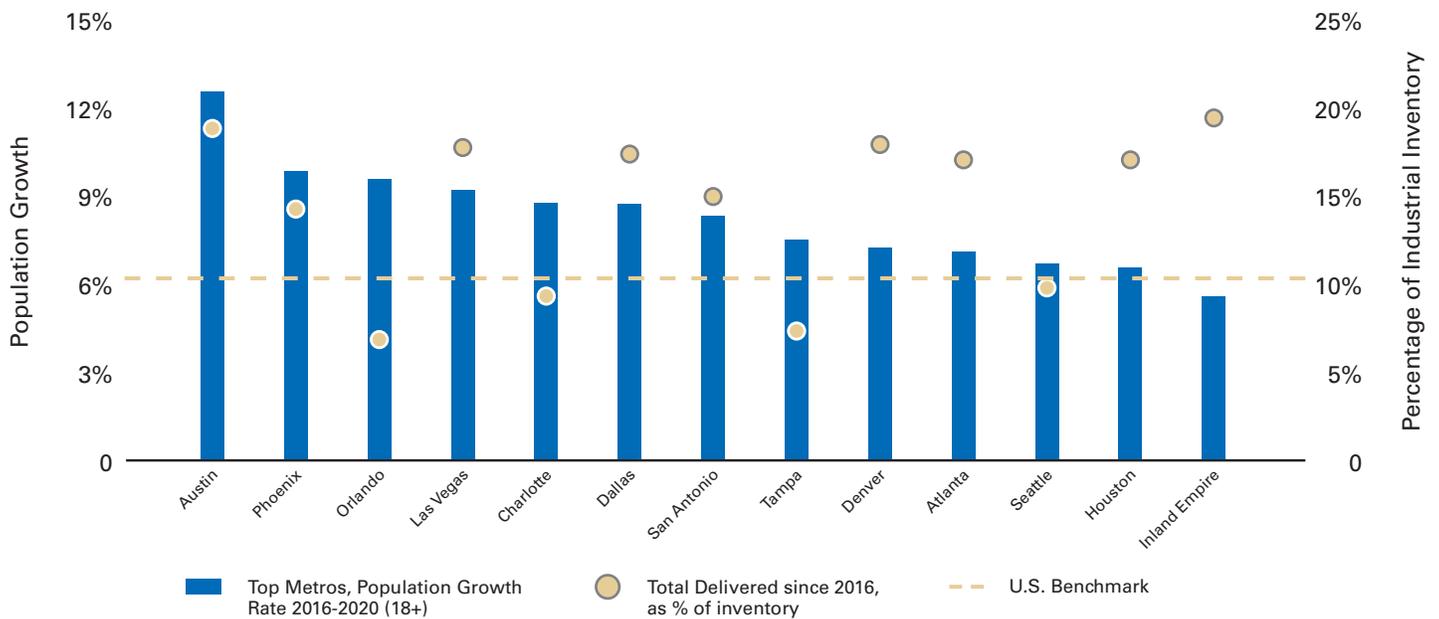
COVID-19 impacted resident migration patterns across the U.S., again accelerating some trends already in motion. During the height of the pandemic, most moves were to counties within the same metro area, although regions that were increasingly attracting new residents before the pandemic saw an acceleration of that growth, particularly Sun Belt markets. Metros that realized the greatest adult-population gains over the past five years have seen a corresponding boom in industrial development as supply chains are built out to support a growing populace with evolving consumption behaviors.

Development in a number of these markets is driven not by population growth alone, but also by superregional distribution needs, supporting higher supply volume in markets such as Phoenix and Dallas, and less in Orlando and Tampa, where supply is added primarily to serve last-mile distribution needs for regional populations. The industrial markets of Los Angeles and the Inland Empire, beyond supporting the second-largest regional populace in the country, also serve as superregional distribution hubs for product passing through the nation's most essential seaport complex, Los Angeles/Long Beach. These two markets currently have vacancy rates hovering around 1% or lower

and are unlikely to see much supply relief in 2022 or beyond due to land constraints, high costs and lengthy entitlement processes. Texas, Arizona and Nevada are the primary destinations for freight flowing out of California and have the logistics infrastructure and land capacity to grow inventory levels to serve not just their own booming metro populations but also to support growing superregional distribution capabilities to defray space constraints in California. Outbound freight tonnage coming from California is expected to grow by 12.2% from 2020 to 2025, much of it undoubtedly landing in Southwestern superregional distribution hubs<sup>(2)</sup>.

### Population and Industrial Development Trends

*Top Metros\* by Growth of Residents 18+, and Deliveries Since 2016 as Share of Industrial Inventory*



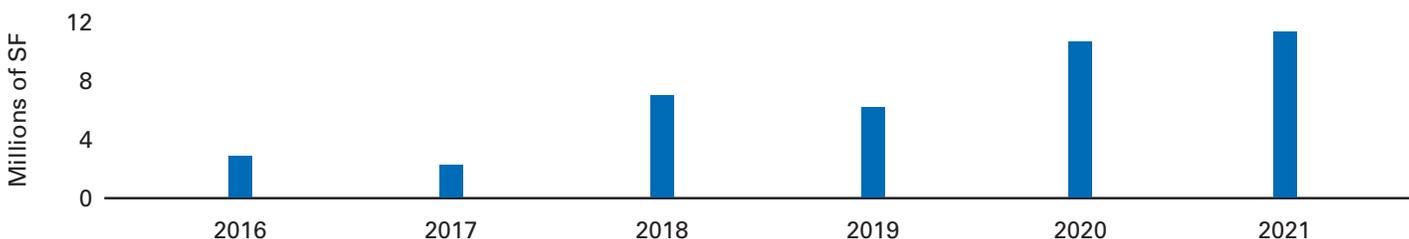
\*Metros with existing populations over 500,000 and with a 5 year growth of at least 150,000 residents

Sources: Newmark Research, JobsEQ, February 2022

Demographics are also a key consideration for industrial occupiers considering geographical labor profiles in site selection processes, especially as in-demand skill sets shift and evolve amid increasingly automated warehouses and domestic expansion of advanced manufacturing. The dearth of skilled labor for jobs in these sectors remains a challenge. The manufacturing skills gap alone could result in 2.1 million unfilled jobs by 2030, according to Deloitte. Fostering skilled labor is a goal that communities, educational institutions, and public-private partnerships should focus on as a geographical differentiator.

### New Manufacturing Plant Construction Starts

United States | 2016 - 2021



Sources: Real Capital Analytics, Newmark Research, February 2022

### Deglobalization

A legacy of the pandemic and a driver of industrial demand will likely be a greater emphasis on supply chain resiliency through deglobalization. It is paramount to note that supply chain globalization has been shaped over decades; digitalization has allowed for supply chains to minimize costs and maximize efficiency by expanding to include many complex processes and geographies. This is unlikely to dramatically change in the mid- or long-term. Yet the persistent volatility in global supply chains since 2020, coupled with risk mitigation around climate change and natural disasters, has caused firms to reconsider the often-labyrinthine path between production and consumption. Geopolitical concerns, especially following Russia's invasion of

Ukraine in February 2022, stand to influence global real estate and supply chain decision-making as well.

U.S. manufacturing reshoring, foreign direct investment and domestic expansion are all accelerating, particularly in the advanced manufacturing sector, which has one of the most globally-integrated supply chains<sup>(3)</sup>. The impact on U.S. industrial demand is already revealing itself in a significant increase in new manufacturing-plant development.

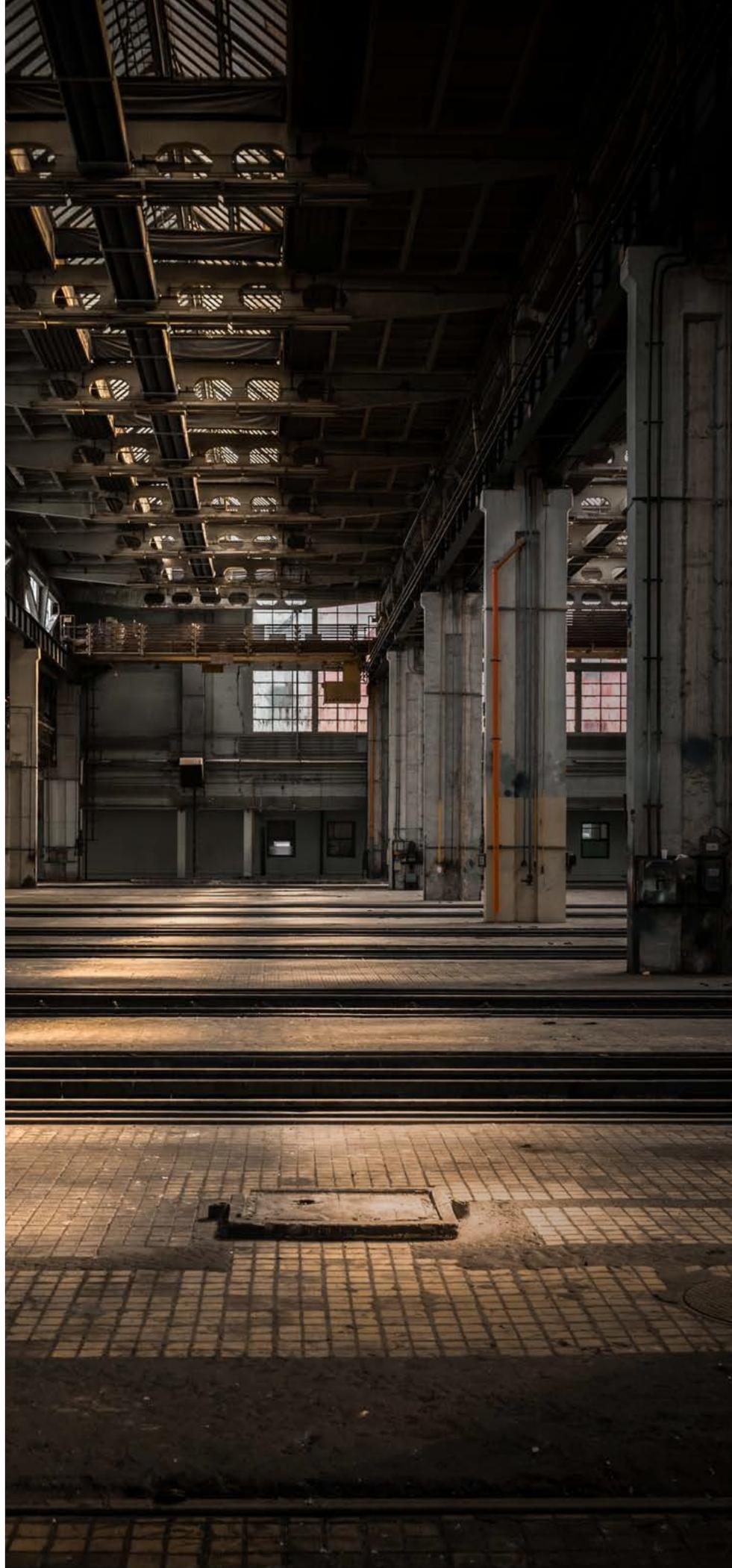
A cavalcade of recent major announcements will drive more development in 2022 and beyond. Among them, 13 new electric vehicle battery plants were announced in 2021 and are expected to be operational within the next five years. In early 2022, Intel announced

an initial \$20+ billion investment in the construction of two new semiconductor chip factories in Ohio with the potential to expand the site into the world's largest chip-making complex. Supplying and supporting these and other new manufacturing plants will lead to greater demand for mining, manufacturing, warehousing and distribution space. As noted in [Newmark's October 2021 research report](#), secondary markets are poised to be the primary recipients of new manufacturing-related demand, thanks to robust population growth, lower real estate costs and larger availability of existing space and developable land. Often, secondary markets also present less resistance to development and greater flexibility in land use planning than dense, land-constrained gateway markets.

## II

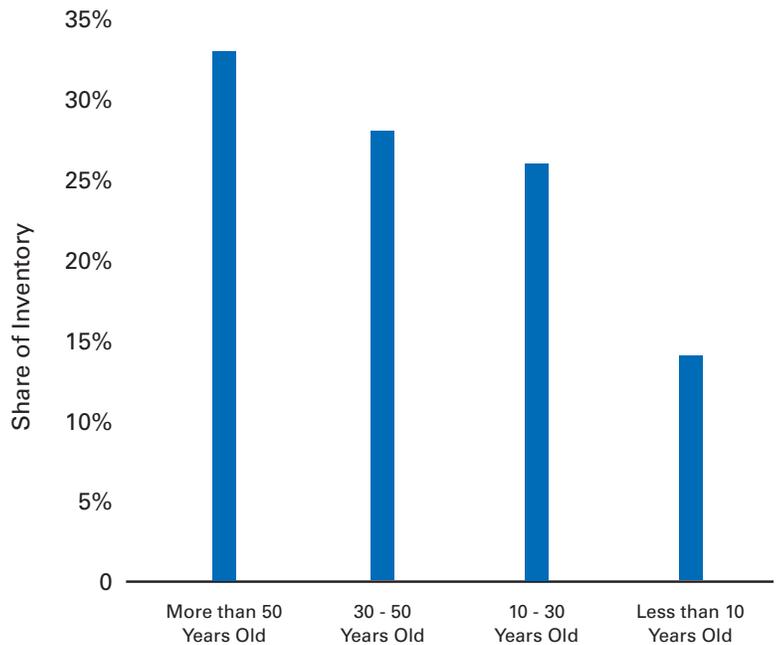
# Inventory Growth and Modernization: Challenges and Opportunities

Logistics operations are most efficient in a modern warehouse design. Despite more than two billion square feet delivered within the past decade and half a billion square feet set to deliver over the next two years, continued market modernization is essential. This is especially key for mature, dense markets that serve the largest metro populations and the nation's most important seaports but grapple with industrial inventories among the oldest in the country. The average age of Northern New Jersey's industrial inventory is 56 years. In Chicago, which houses the largest industrial inventory in the country on a metro basis, the average age is 48 years. Inventory modernization is progressing faster in secondary markets, particularly those with ample land, strong logistics infrastructure, and growing populations. As these markets expand, some are now reaching the tipping point and becoming mature, infill markets.



More than 70% of existing U.S. industrial space was constructed before the 21st century, and a full third of the inventory is over 50 years old.

### Industrial Inventory Share by Building Age United States



\*Inventory measured on square-foot basis.

Sources: Newmark Research, February 2022

### Industrial Construction Growth, Top 10 Markets (4Q21)

Market	Development Pipeline as % of Current Inventory
Charleston	13.9%
Austin	11.1%
Phoenix	8.9%
Salt Lake City	7.2%
San Antonio	7.0%
Indianapolis	6.8%
Dallas	6.5%
Columbus	6.3%
Raleigh / Durham	6.2%
Denver	4.6%
<b>United States</b>	<b>3.2%</b>

Source: Newmark Research, February 2022

## II. INVENTORY GROWTH AND MODERNIZATION: CHALLENGES AND OPPORTUNITIES

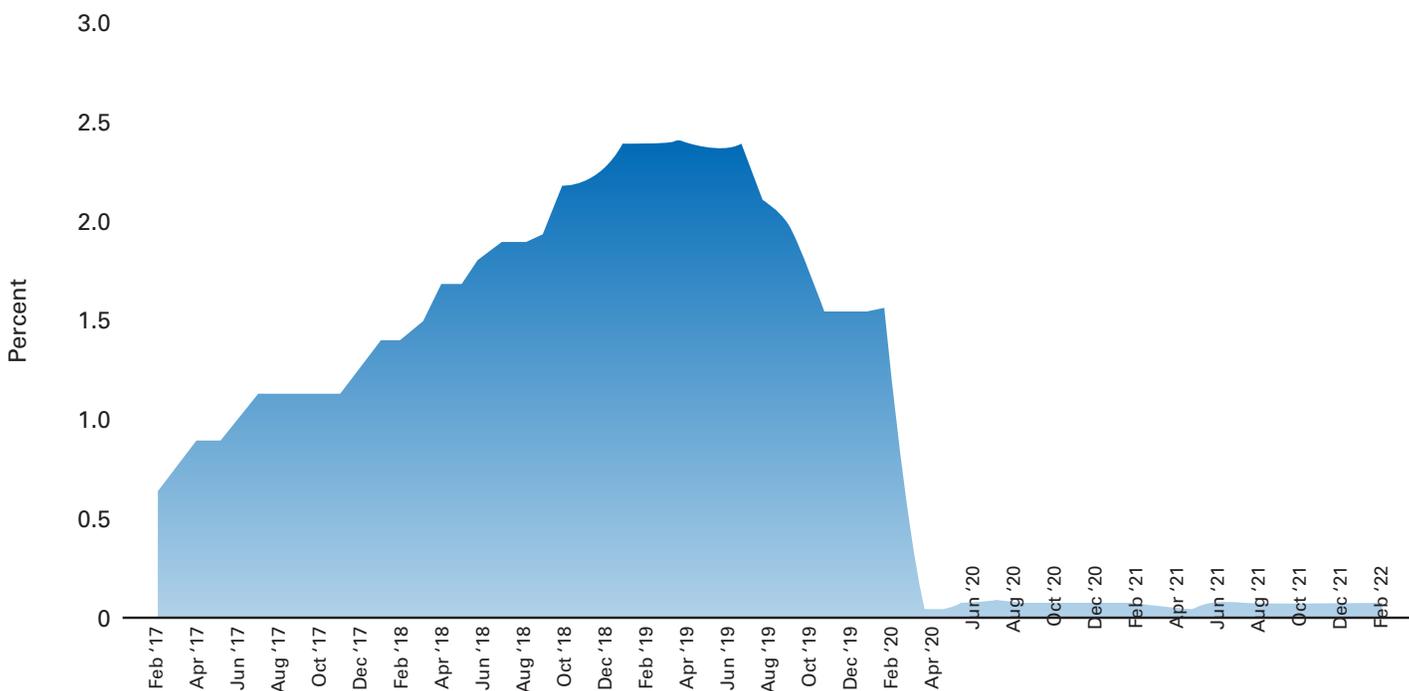
Across the United States, market modernization faces a host of obstacles that range from land constraints, regulatory and entitlements challenges, labor shortages, pricing concerns, and supply chain congestion. Many of these issues will continue to be exacerbated in 2022 by lingering effects of the pandemic and geopolitical volatility, and will have an adverse effect on timely supply additions to the market. For most markets, there is no better time to embark on a new development project than the current moment from a timing and cost perspective,

as well as a demand perspective. The sourcing of materials and labor continues to prove challenging and pricy, and land prices have risen swiftly across the country. Some costs may moderate in the next 12 months, but the cost of capital is certain to rise incrementally from historic lows as the Federal Reserve plans multiple rate hikes in 2022 following the initial 0.25% rate hike in March.

Despite challenges to getting shovels in the ground, the national construction pipeline has risen to an all-time high of 500 million square

feet. Ostensibly a gargantuan figure, net absorption nearly totaled the same amount in 2021 alone. Long-term need for new, modern space, even as demand moderates from abnormally high levels, will require a replenished pipeline. Nearly all of the current volume is set to deliver by 2023, signaling a potential future supply gap if speculative construction starts remain muted in 2022 due to prolonged disruption.

**Federal Funds Effective Rate**  
January 2017 - January 2022



Source: FRED, March 2022

# Inventory Growth and Modernization Strategies for 2022



Prioritizing last-mile inventory additions in high-population-growth areas.

**NEED FOR SPEED:**

99%

of 500+ retailers surveyed will offer same-day delivery by 2025 (35% offer it today).



Staying attuned to tenant size, design needs, and local labor profiles.

**EYES ON THE SIZE:**

<50,000 SF

The national average industrial lease size, as well the average industrial building size. Mega-warehouse properties (500K+ SF) account for **less than 1%** of the national inventory.

Worker per industrial square foot ratios: **1/3,000 SF down to 1/500 SF** depending on seasonality or building use-case.



Expanding market boundaries in search of land and labor.

**SPACIOUS SUBURBIA:**

117,000 acres

of land on average absorbed annually for industrial development nationwide. As core submarket space is depleted, **suburb and exurb submarkets** are emerging around logistics corridors.



Identifying obsolete properties well-positioned for industrial conversion.

**SPACE TO REPLACE:**

45+

obsolete office properties have been redeveloped or are in the process of redevelopment into industrial use since 2018.

Anticipated annual industrial supply additions from retail to industrial conversions measure 5-10 MSF over the next 10 years.



Exploring remediation and revitalization of contaminated land sites.

**A CLEAN START:**

500,000

estimated number of brownfield sites nationwide.

Industrial redevelopment of contaminated land sites takes time, yet has wide-ranging environmental, economic, and social benefits while satisfying continued robust demand for modern industrial space.

Sources: 2022 Bringg Barometer, Newmark Research, Department of Energy, CoStar, Prologis

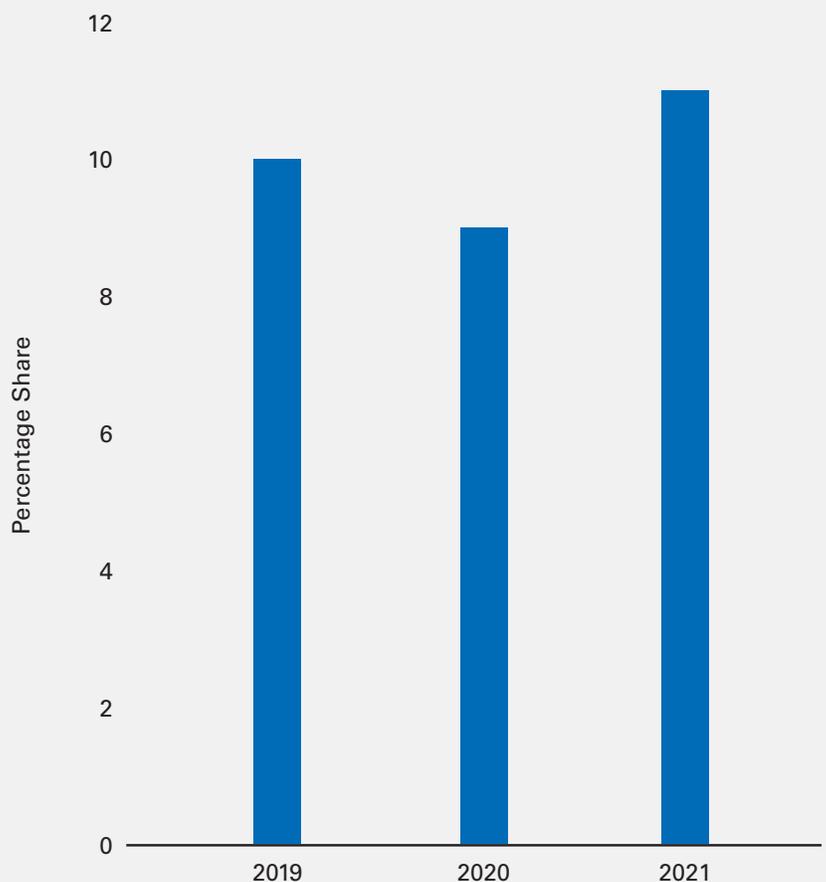


### III

## Seeking Control

Pervasive, persistent supply chain disruption has severely challenged the ability to meet consumer demand in a cost-effective manner. Costs associated with producing and moving goods through the supply chain, including costs to develop, acquire, lease and operate industrial space, have been subject to volatility and pressure. At the macro level, total logistics expenditures increased to an average 11.0% share of total sales revenue in 2021. In a breakdown of logistics costs by category, regardless of methodology and year of survey, transportation is always the largest cost center, with warehousing accounting for approximately 10% or less of total logistics costs.

**Business Logistics Expenditures as a Percentage of Sales Revenue**  
*United States | 2019 - 2021*

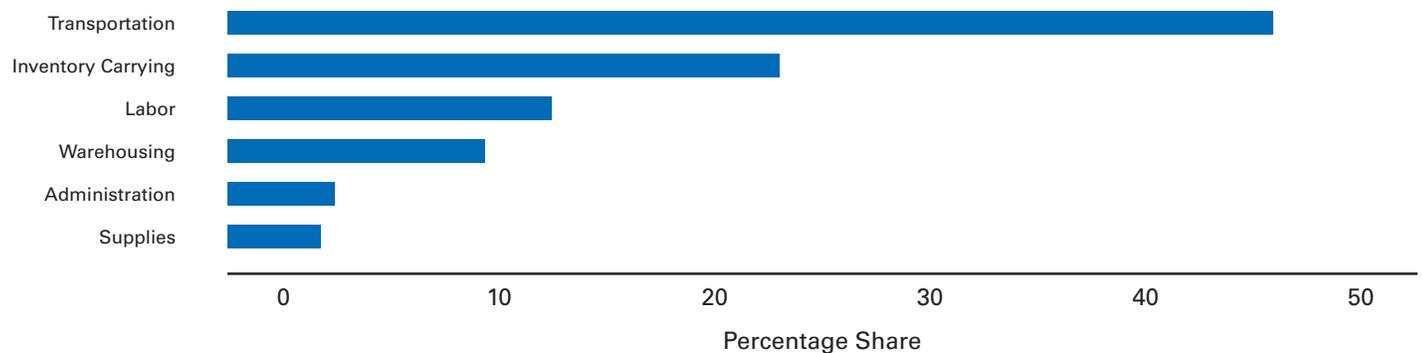


Sources: 2022 Third-Party Logistics Study, NTT Data, PennState and Penske, February 2022



### Logistics Costs by Category

United States | 2020



Source: Establish/Davis Database, February 2022. Costs are from 2020 report.

According to JPMorgan Chase’s 2022 Business Leaders Outlook Survey, ongoing supply chain issues remain a top challenge for firms coming out of 2021. To alleviate disruption, many are changing their business model to include strategic stockpiling. Approximately half have added suppliers from new geographies and are allocating more funds to move goods.

## Solving for Supply Chain Snafus | Top Changes to Midsize Business Plans

**65%**  
Strategic Stockpiling

**51%**  
Adding Suppliers  
from New Geographies

**48%**  
Greater Allocation  
of Logistics Funds

Source: JPMorgan Chase’s 2022 Business Leaders Outlook Survey, January 2022

### III. SEEKING CONTROL

A shift towards strategic stockpiling does not indicate that firms are likely to jettison the cost-effective strategy of “just-in-time” inventory management completely, but rather are learning from the supply-chain crisis of the past two years and reassessing costs in light of risk. Expanding warehousing in key locations to hold strategically chosen inventory could significantly offset transportation costs, which have skyrocketed during the pandemic, and will climb higher in 2022 due to the shock in energy markets following a U.S. ban on Russian oil imports in March of 2022.

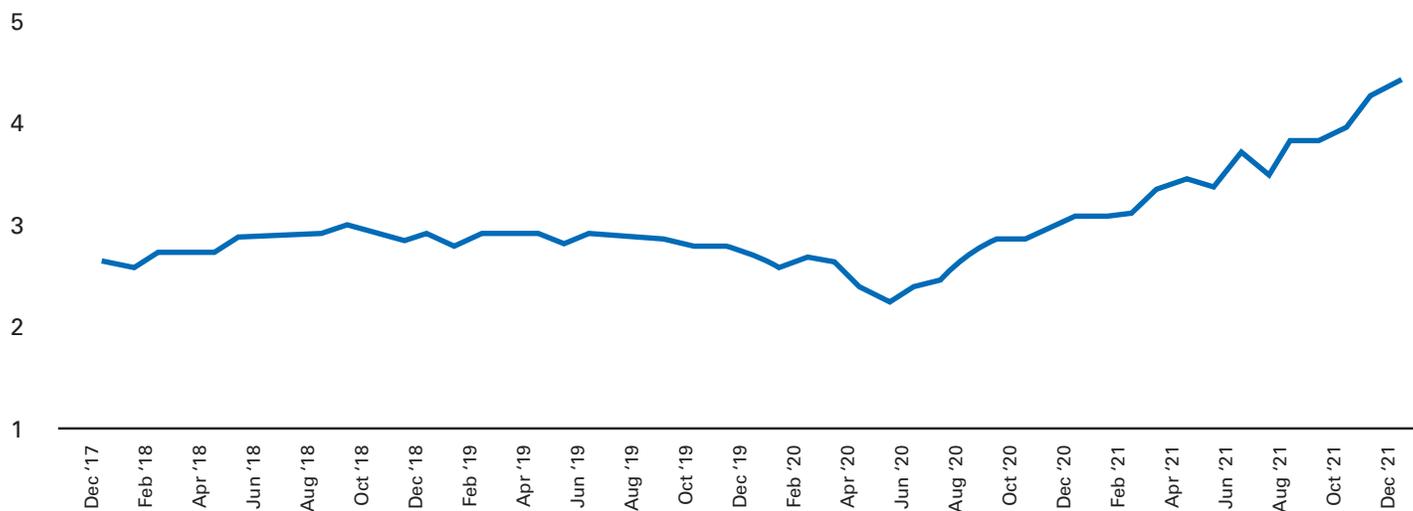
Some firms are looking to take greater control of their supply chain to ensure resilience. Most major companies outsource some or all shipping to third-party logistics firms, but since 2021, a small but notable number of retailers, including Ashley Furniture, BJ’s Wholesale and American Eagle, have acquired logistics operators to bolster supply chain reach and oversight.

Furthermore, as many occupiers of warehouses face challenges such as leasing space in tight markets or sticker shock upon renewals amid the swift pace of pricing escalation, some are choosing to own a greater

portion of their industrial footprint where the opportunity is possible. Since 2020, the 10 largest national retailers have acquired more industrial space (approximately 10.0 million square feet) than in the eight years preceding, combined. A December 2020 Brookings Institute study of company quarterly earnings documents found 2020 year-to-date profits for top retailers rose an average of 40.0% over 2019 levels. Placing extra cash in real estate assets, which can expand supply chain capabilities and be leveraged for future revenue generation, could prove an attractive option for many firms.



### Cass Freight Index: Expenditures December 2017 - December 2021



\* Jan. 1990=1

Source: Cass Freight Index, February 2022

Business logistics expenditures increased to an average 11.0% share of total sales revenue in 2021.

# IV

## Technology and Automation

A new industrial revolution is underway as industrial buildings and supply chain logistics are being re-imagined with new innovations to meet Environmental, Social and Governance standards, improve efficiency, create more robust consumer experiences, shorten delivery times, and solve for challenging labor market conditions.

Medium- and heavy-duty freight vehicles accounted for 22.0% of the worldwide CO2 emission in 2020, while accounting for a much smaller percentage of vehicles on the road. The progress towards viable electrification of long-haul trucks continues, but large-scale adoption will hinge on solving battery range capabilities and establishing a reliable charging network. Last-mile delivery electrification has the potential to be more immediately deployable, with Amazon recently purchasing 100,000 electric vans from Rivian and committing to the soon-to-be released Stellantis Ram ProMaster electric van, as well as UPS purchasing 10,000 electric vehicles from Arrival.

The trucking industry faces a shortage of 80,000 drivers, likely to grow to 160,000 by 2030 as the industry faces a myriad of issues, including an aging demographic, a high turnover rate, low pay, debt associated with training, long periods away from home, and hazardous working conditions, to name a few. Autonomous trucking, while not a panacea,



has the potential to relieve many of the issues facing the trucking industry today. Solutions run the gamut from retrofitting existing trucks while maintaining a human presence in the cab (e.g., PlusDrive) to trucks with no cab space that are entirely remotely controlled (e.g., Einride operating a small fleet of autonomous pods at GE Appliance’s Appliance Park in Louisville, KY).

Amid rising e-commerce sales and overall consumer spending, warehousing and storage employment grew by 58.2% from January 2018 to January 2022, and the industry is struggling with labor shortages even while offering higher wages, signing bonuses, and frequent wage increases.

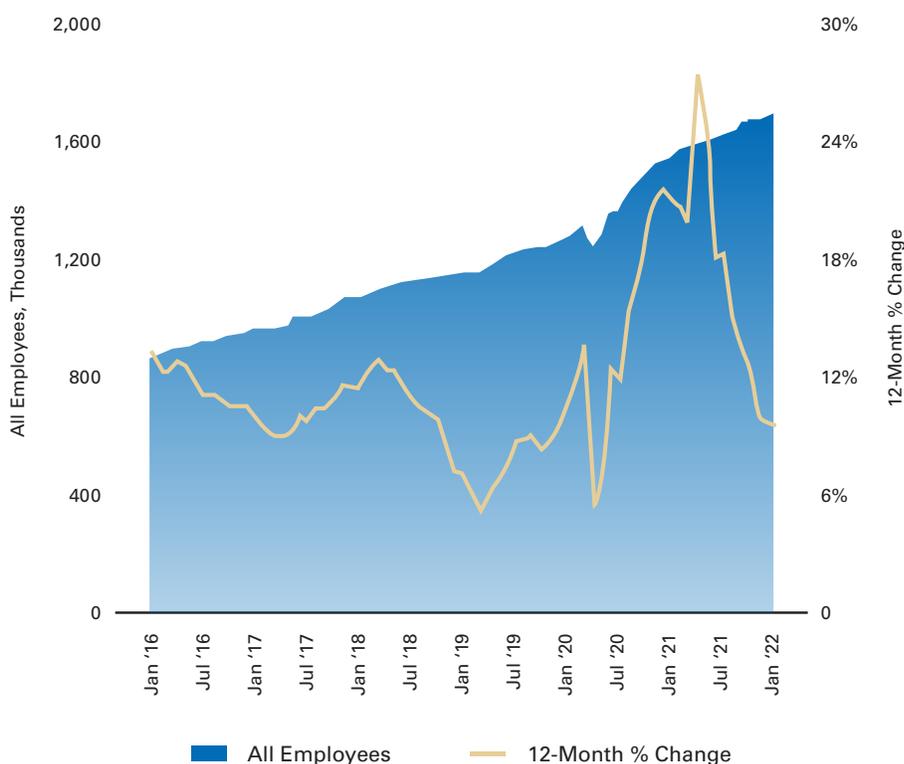
Automation, supply chain management, cloud computing, and artificial intelligence are technologies that will be increasingly deployed to alleviate labor force shortages, improve efficiency, and provide valuable insight into the movement within warehouses. According to a report released in June 2021, “Warehouse Automation – Robots, Technologies, and Solutions Market 2021-2030”, more than 80% of the world’s warehouses today have no automation whatsoever. The warehouse automation market is expected to grow by 1.5 times by 2025 to \$37.6 billion. Automation solutions, which are already ubiquitous in large fulfillment

centers (e.g., Amazon, Walmart, Target), can be customized to accommodate smaller buildings and multi-story warehouses. The increase in warehouse efficiency through automation and warehouse management systems will bring savings that can offset the cost of siting warehouses in urban cores, closer to customers.

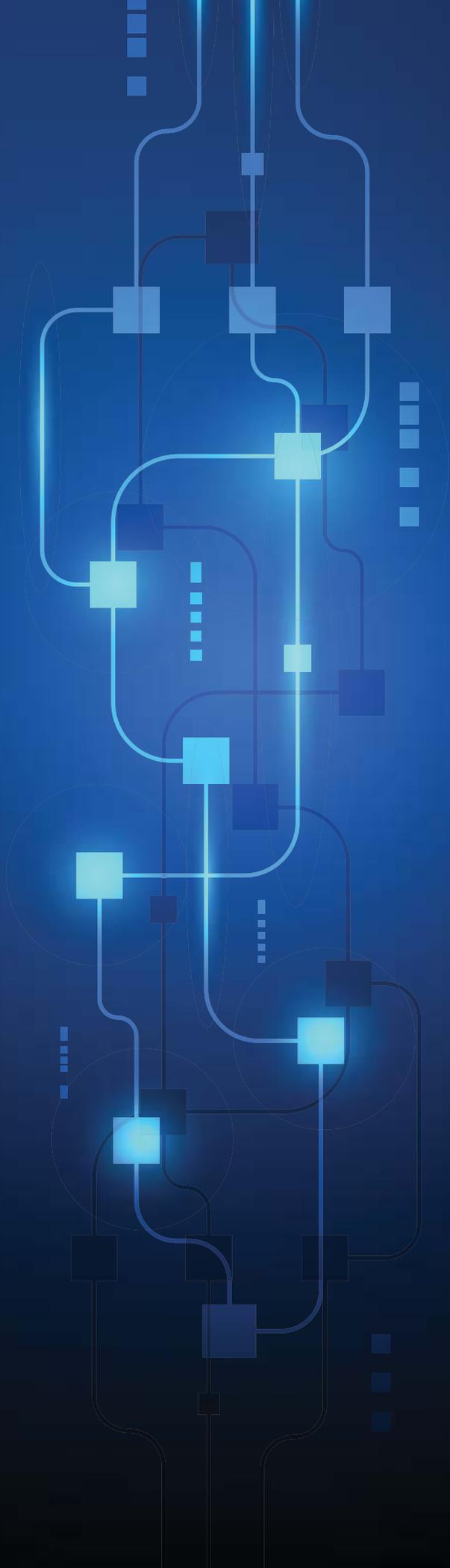
The recently signed Infrastructure Investment and Jobs Act ([see Newmark’s summary on the implications for industrial real estate](#)) has the potential to be an important catalyst for advancing technology and automation in the

industrial sphere. The IIJA funding will address large (and visible) pinch points in the U.S. supply chain that emerged during the pandemic, such as ports, which are on the threshold of much-needed modernization and transformation. It will also include funding for other transportation improvements, improved internet access to under-served communities, support for the electrification of transportation systems and improved electric grid resilience. While the funds will be deployed over the next five years, it will take time for the results of the investment to be fully realized.

**Warehousing & Storage Employment Growth**  
*United States | January 2016 - January 2022*



Source: U.S. BLS, February 2022



# TRENDS FOR 2022 AND BEYOND



# V

## Space: The Next Frontier

The process of decarbonizing transportation networks and increasing fuel efficiency through vehicle electrification is well underway. EV sales made up 9.0% of global car sales in 2021, more than doubling market share from 2020<sup>(4)</sup>. General Motors announced that it would completely phase out production of petroleum-powered vehicles by 2035, one of multiple major-manufacturer commitments to net-zero emissions announced recently. Momentum is high yet widespread EV adoption faces barriers, including cost and limited charging infrastructure. A longer-term potential barrier is the ability for production to meet demand. As noted earlier in this report, 13 additional EV battery factories are expected to be operational in the next five years within the States, as are numerous new semiconductor chip plants, essential to EV production (and to many

other sectors). Current supply-chain congestion aside, sophisticated battery and chip production requires some commodities that are in finite and sometimes geopolitically-sensitive supply, such as cobalt, lithium, and key rare-earth metals. Encouraging innovation in emerging technologies and alternative materials is one avenue to a potential solution; another is expanding material mining, processing and manufacturing operations to a new frontier: space.

Scientists and financial experts alike agree that celestial bodies contain an untold wealth of elements. According to asteroid database Asterank, asteroids circling the earth are composed of quintillions of dollars' worth of minerals, including those in scarce terrestrial supply and key to EV and chip production. Significant investment in infrastructure and advancement in technology would be needed

to support mining activities in space, but as Goldman Sachs advised clients back in 2017, "space mining could be more realistic than perceived." Manufacturing in space is already occurring at modest scale. The private firm Made In Space has been manufacturing products aboard the ISS since 2014, and recently received a \$74.0 million contract for in-space manufacturing from NASA. This and similar public/private partnerships (e.g., NASA's partnerships with SpaceX and Boeing) will be key to progressing towards the potential of a viable "low-earth orbit" economy including celestial mining, advanced manufacturing and supply-chain operations. A record \$17.1 billion in venture-capital investment flowed into space-sector firms in 2021, according to Space Capital, and heightened interest in the limitless possibilities of space is likely to spur more investment, and innovation.

# VI

## Cryptocurrency, NFTs, and CRE

The concept of tokenization, a process in which a valuable item (e.g., money, sensitive data) is represented by a non-valuable item (e.g., casino chips, randomized numbers) –is not new. Bringing that age-old concept into the digital realm, however, is still in early stages. The most valuable and well-known example of digital tokenization is cryptocurrency- digital tokens that represent financial value. Digital tokens and the decentralized ledger technology on which they are transacted and verified, blockchain, are already impacting the industrial market: last year, the United States became the number-one global location for mining the highest-profile and most valuable cryptocurrency, Bitcoin. The States accounted for 35.4% of Bitcoin’s global hashrate, the measure of the mining network’s computing power<sup>(5)</sup>. Much of this computing power occurs in data centers operating on large land sites

in markets with access to abundant, inexpensive energy. While niche, requirements for such land and specialized facilities have grown significantly.

In the future, digital tokenization may impact the industrial market in ways that go beyond user requirements for industrial space for cryptomining. A digital token can represent a unit of value that is equal to any other unit of that same value (i.e., Bitcoin), or it can represent a unique, “non-fungible” asset – digital or physical. This latter scenario, known as a non-fungible token (NFT), allows for ownership of a physical asset such as a building to be represented digitally, and further allows for the divvying of that physical asset into multiple digital shares. This may have radical implications for industrial investment, if ownership stakes in a warehouse, for example, can be bought and sold with transparency,

security and efficiency offered by blockchain facilitation. This hypothetical example would require mass-adoption of blockchain ledger technology, and, mass-adoption of the NFT concept. Blockchain adoption seems the probable future first-step in the CRE sphere. According to PwC, blockchain technology is fundamentally a next-generation business process improvement software. Of the top 100 public companies, 27 already have a fully functioning, live service that was using blockchain technology in 2021, with many more exploring the technology or implementing pilot programs<sup>(6)</sup>.

As described at the beginning of this paper, digitalization has already revolutionized investor and occupier demand for industrial real estate, and its impact on the sector is certain to keep evolving.



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*Sources & Acknowledgments:*

- <sup>(1)</sup> Optoro
- <sup>(2)</sup> National Transportation Research Center
- <sup>(3)</sup> United Nations Conference on Trade and Development
- <sup>(4)</sup> International Energy Agency
- <sup>(5)</sup> University of Cambridge Centre for Alternative Finance
- <sup>(6)</sup> Blockdata

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Newmark has implemented a proprietary database and our tracking methodology has been revised. With this expansion and refinement in our data, there may be adjustments in historical statistics including availability, asking rents, absorption and effective rents. Newmark Research Reports are available at [nmrk.com/insights](http://nmrk.com/insights)

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